

ESPON 111
Potentials for polycentric development
in Europe



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Potentials for polycentric development in Europe

Project report

Separate volumes

Annex report A
Critical dictionary of polycentricity
European urban networking
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Annex report B
The application of polycentricity in European countries
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Nordic Centre for Spatial Development

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Foreword

The present report presents the results from the ESPON project entitled “The role, specific situation and potentials of urban areas as nodes in a polycentric development”. The objective of the study has been to provide the background for a more informed discussion of polycentric development in Europe. This, on the one hand, has implied providing an overview of the European urban system with regards to functional specialisations and current degrees of polycentricity, as well as a prospective analysis of possible effects of regional polycentric integration in different parts of Europe. On the other hand, existing partnerships at the inter-municipal, inter-regional and transnational scales have been analysed, and the different applications of polycentricity in national policies have been reviewed.

This report is divided into the following parts:

- Part 1 consists of an executive summary and an overview of concepts, models and networking.
- Part 2 is the full report.
- Annex A presents relevant additional lists of data, maps and other information.
- Three separate annex reports A, B and C include the full reports from work package 1, 2 and 5.

The team originally consisted of members from 10 research organisations, with an additional four members being included at a later date as more countries joined the ESPON programme. The work was organised into working packages:

- The critical dictionary of polycentricity (Work Package 1) was developed by CNRS-UMR with Nadine Cattan as co-ordinator and the following contributors: Sophie Baudet-Michel, Sandrine Berroir, Anne Bretagnolle, Cécile Buxeda, Eugénie Dumas, Marianne Guérois, Lena Sanders, Thérèse Saint-Julien (UMR Géographie-cités) and Remy Allain, Guy Baudelle, Danielle Charles Le Bihan, Juliette Cristescu, Emmanuèle Cunningham-Sabot (UMR RESO).
- Work on the application of polycentricity (Work package 2) was carried out by Wil Zonneveld (co-ordinator), Bas Waterhout and Evert Meijers, at OTB.
- Analyses of the urban system (Work Packages 3 and 4) were developed by Janne Antikainen. Karin Bradley acted as the main co-ordinator in data gathering/mining, assisted by Jörg Neubauer, Ton van Gestel and several Nordregio assistants.
- Analyses of the proximity of urban centres and of the potentials for regional polycentricity (WP 3-4) were developed by Erik Gløersen at Nordregio together with Carsten Schürmann (RRG), with assistance from Alexandre Dubois (Nordregio).

- Klaus Spiekermann and Michael Wegener from S&W contributed to the accessibility analysis and developed a method to measure polycentricity (WP 3-4).
- The work on European Urban Networking (WP 3-4) was conducted by Nadine Cattan (co-ordinator), Cécile Buxeda, Juliette Cristescu, Grégory Hamez and Guillaume Leseq at CNRS-UMR Géographie-cités.
- Governing polycentricity (Work package 5) was developed by Simin Davoudi (co-ordinator), Ian Strange and Michelle Wishardt at CUDEM.
- The policy recommendations (Work package 6) were developed by Niels Boje Groth at DCFLP and Hallgeir Aalbu at Nordregio, who also conducted the final editing of the report with assistance from Jakob Grande, Lisbeth Harbo and Søren Smidt-Jensen at DCFLP and Erik Gløersen and Chris Smith at Nordregio.

Apart from the project partners, many others have also contributed with useful comments, material and data during the course of the research process. Kai Enkama provided data for population development trend analysis. We are also indebted to Julia Spiridonova, Jitka Cenková, Rivo Noorkõiv, Erzsébet Visy, Ieva Verzemniece, Jolants Austrups, Armands Vilcins, Rita Bagdzeviciene, Algimantas Venckus, Tomasz Komornicki, Serban Nadejde, Dorottya Pantea, Christian Steriade, Miloslava Paskova, Margarita Jancic, Janja Kreitmayer, Tatjana Kerčmar, Marco Kellenberger and others who have contributed with information, data and comments.

Janne Antikainen and subsequently Erik Gløersen at Nordregio were responsible for the co-ordination of the project. Financial management was provided by Anja Porseby and Anita Kullén.

Three interim reports have been produced prior to this final report. After the Third Interim report, the European commission, DG Regio requested an alternative classification of the Metropolitan European Growth Areas (MEGAs), as well as an assessment of levels of polycentricity in NUTS 2 regions. These analyses were financed through an extension to the original contract, and the results have been presented in a separate report. The alternative MEGA typology has been used in the present report; the analysis of polycentricity at NUTS 2 level has been judged non-conclusive, and is therefore not included.

The project report and the four annex reports are available at www.espon.lu

Stockholm, August 2004

<p>The content of this report does not necessarily reflect the opinion of the ESPON Monitoring Committee</p>

ERRATA

A certain number of errors and omission have been notified to us by the ESPON Coordination Unit and the ESPON European Contact Points. Whenever possible, these errors and omissions have been corrected in the present version of the report. This was however not possible in some cases:

- Because the Novo Mesto FUA in Slovenia was not positioned correctly, it appeared to share less than one third of its PUSH area. The Ljubljana and Novo Mesto PUSH should normally have been considered as a Polycentric Integration Area (PIA).
- In the case of Switzerland, the results are based on population data from 1990. This may have had an influence on the classification of certain Swiss FUAs, e.g. Zürich.
- The Hungarian ECP informs us that the city of Pécs has probably been classified incorrectly in the FUA classification (map 1.3), as it should have been ranked as a FUA of National or Transnational importance.
- The French Outermost Regions (*Départements d'Outre-Mer*) have not been included in any of the analyses of the present report, as the French statistical office (*INSEE*) has not produced any delimitation of FUAs in these areas.

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Part 1

Summary

1 Summary

1.1 Executive summary

1.1.1 The concept of polycentricity

Polycentricity has two complementary aspects. The first relates to *morphology*, i.e. the distribution of urban areas in a given territory (number of cities, hierarchy, distribution). The second concerns the *relations* between urban areas, i.e. the networks of flows and co-operation. These flows are generally related to proximity, though networks can also be independent of distance.

We can speak about polycentricity in two different situations. Looking at an urban system from a continental or national perspective, polycentricity occurs when the system is characterised by several cities at different levels rather than just being dominated by one city. At this level, polycentric policies stimulate the growth of centres and regions outside the core. At the regional or local scale, polycentricity occurs when two or more cities have functions that complement each other and even more so, if the cities co-operate with each other in order to be able to act jointly as a larger city. At this level, policies for polycentricity stimulate the functional division of labour, as well as the flows and the level of co-operation between neighbouring cities. The two situations are interlinked when e.g. polycentric integration at the regional level contributes to counterbalance the dominance of the national centre.

Polycentricity originated as an empirical concept in the 1930s, with the development of central-place theory. The concept of polycentricity first appeared at the European level with the adoption of the Leipzig principles in 1994 in relation to the ESDP process. Polycentricity is a key policy aim of the ESDP. It is hoped that a more polycentric urban structure will contribute to a more balanced regional development, to reducing regional disparities, to increasing European competitiveness, to the fuller integration of European regions into the global economy, and to sustainable development.

Polycentricity is opposed to monocentricity, in which service provision and territorial management competence is increasingly concentrated to a single centre. Polycentricity is also opposed to urban sprawl, in which the structure of secondary centres is diluted in a spatially unstructured continuum. Rather, polycentricity is about promoting the balanced and multiscalar types of urban networks that are most beneficial from a social and economic point of view, both for the core areas and for the peripheries.

At the European level (*macro*), polycentricity is seen as a useful alternative model to enhance regional development more evenly across the European territory. A polycentric Europe is thus seen as an attractive alternative to a European space dominated by *the Pentagon*, the area delimited by London, Hamburg, Munich, Milan and Paris, i.e. the European core with approximately 14% of the EU27 area, 32% of its population and 43% of its GDP. This situation is often contrasted with that of the USA, where there are several

global integration zones. A European wide application of polycentricity is designed to promote several larger zones of global economic integration in the EU in addition to the Pentagon.

At the interregional or *meso* level, urban complementarities are important. Two or more cities can complement each other functionally by offering the citizens and companies in their conjoined hinterlands access to urban functions that would usually only be offered by higher-ranking cities. Rather than competing to build up the same urban functions, the ESDP recommends that cities should co-operate by joining existing assets, in particular assets that are complementary.

In the context of intra-regional development (*micro*), urban functional and economic complementarities are emphasised. An urban region can improve its economic performance through better co-operation and improved links within the region. An intra-regional application of polycentricity thus promotes integrated spatial development strategies for city clusters.

The idea of polycentric development thus runs parallel to the shift in regional policies towards an emphasis on the development of specialised regional competencies, where synergy and strength are sought and developed through regional networks of specialists, suppliers, specialised education and labour markets, much of which is nested in tacit abilities and competencies that are difficult to codify and hence, difficult to reproduce elsewhere.

Previous research on this general topic has focused predominantly on the intra-urban scale and on the organisation of cities at the local level. For the ESDP, as well as for this project however, the point of departure is that of the European scale, as little research has as yet been done in respect of the European level (macro) or the inter-regional level (meso) in this regard. As such, this project, as with the other projects in the ESPON programme, is rather unique, both because it has a top-down perspective and because it covers all 29 countries of the ESPON space.

1.1.2 The morphology of the urban system in Europe

The building blocks of polycentricity are the functional urban areas (FUAs). A FUA consists of an urban core and the area around it that is economically integrated with the centre, e.g. the local labour market. Our first task then was to map the urban structure of the EU27+2 as comparatively as possible. In countries that have definitions of travel-to-work areas, commuter catchment areas, urban poles etc., these are used for the identification of FUAs. In countries lacking official definitions, the identification of FUAs was based on insights provided by our national experts. The use of national definitions means, however, that the choice of FUAs is not totally comparable across Europe.

In countries with more than 10 million inhabitants, a FUA is defined as having an urban core of at least 15,000 inhabitants and over 50,000 in total population. For smaller countries, a FUA should have an urban core of at least 15,000 inhabitants and more than 0.5% of the national population, as well as having functions of national or regional importance. Based on

this definition, a total of 1,595 FUAs with more than 20,000 inhabitants have been identified in EU27+2 (map 1.1), of which London, Paris and Madrid have more than 5 million inhabitants, and 44 FUAs have 1-5 million inhabitants.

A dense urban structure covers the central parts of Europe, stretching from the UK in the north via the Netherlands, Belgium, western Germany and northern France, and continuing both east and west of the Alps in the south; in the west to Italy, and to the east through the Czech Republic, southern Poland and Slovakia, into Hungary.

The countries to the north and to the south of this area are less populated and have less dense urban systems. This is particularly true of Ireland, the northern areas of the UK, Norway, Sweden, Finland, Estonia, Latvia and Lithuania, but also for parts of Spain, Portugal, Greece, Bulgaria and Romania.

1.1.3 The degree of polycentricity in national urban systems

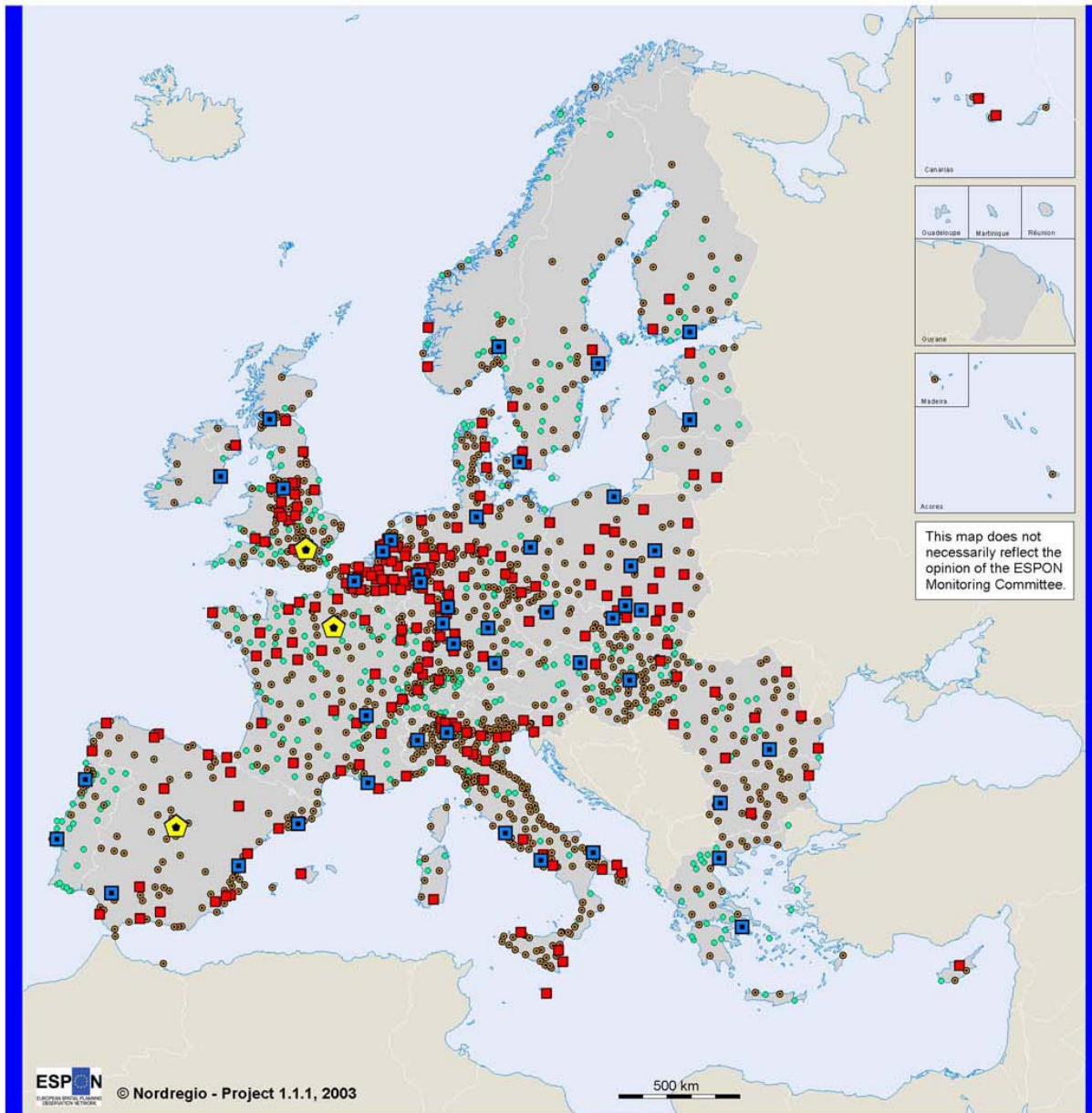
The countries are the best-integrated territorial level in Europe, and are therefore best suited for a discussion of the degree of polycentrism. With the FUAs as building blocks, we have analysed the national urban systems on the basis of the following three dimensions of polycentricity:

- *Size.* A flat rank-size distribution is more polycentric than a steep one, and a polycentric urban system should not be dominated by one large city.
- *Location.* A uniform distribution of cities across a territory is more appropriate for a polycentric urban system than a highly polarised one where all major cities are clustered in one part of the territory.
- *Connectivity.* In a polycentric system, both small and large FUAs have good accessibility. The more accessible lower-level centres are compared to the primary city, the less monocentric is the urban system.

Based on indicators for each of these three dimensions, a comprehensive index of polycentricity was constructed for 26 countries, excluding Luxembourg, Cyprus and Malta where the number of FUAs is insufficient (map 1.2). The most polycentric countries are Slovenia, Ireland, Poland, Denmark and the Netherlands, though they are so for rather different reasons. Slovenia and the Netherlands have a high score for all three dimensions, Poland has a balanced size distribution and Ireland and Denmark have a good distribution of FUAs over their territory.

Other countries generally thought to be polycentric score less well because they are deficient in one of the dimensions, e.g. Italy, Germany and the UK where cities are concentrated in one part of the country. The most monocentric countries are Norway, Finland, Spain, Hungary, Portugal and Sweden.

FUA population (mass function)



Total FUA population in FUAs with more than 20 000 inhabitants 2000-2001

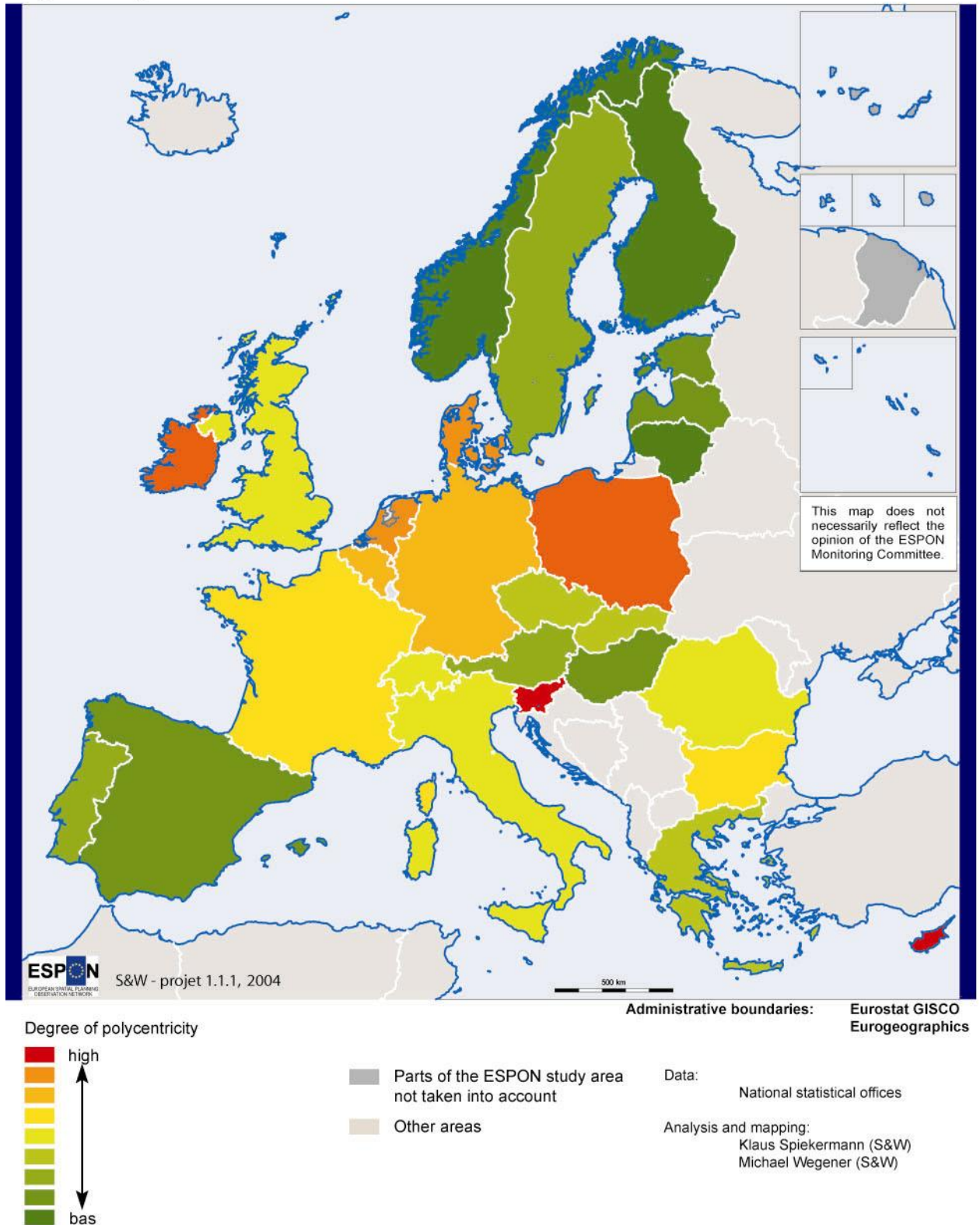
Geographical Base: Eurostat GISCO

- ▣ > 5 million inhabitants
- ▣ 1-5 million inhabitants
- ▣ 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

Origin of data: National Statistical Offices, National experts
Source: Nordregio

Map 1.1 Functional urban areas in EU 27+2

Polycentricity index



Map 1.2 The degree of polycentricity in national urban systems

As polycentricity is not a goal in itself but one of the means to achieving policy objectives such as economic competitiveness, social equity and sustainable development, the

polycentricity index was confronted with indicators for these three factors. Here we find a correlation between polycentricity and GDP *per capita*, confirming that countries with a more polycentric structure are economically more successful. There is also a correlation between energy consumption (used as an indicator for sustainability) and polycentricity, showing that polycentric countries use less energy. However, these relationships are not particularly strong. Moreover it is difficult to deduce any causal links from them, as both better economic performance and lower energy consumption in polycentric countries may be linked to other factors. Among the new EU member states, more polycentric countries have smaller differences in income levels between central and peripheral regions than do monocentric ones. This correlation is however not found in the old member states.

1.1.4 The functional specialisation of urban nodes

Functional specialisation is an important dimension of polycentricity as it is these functions that make cities different from each other and produce the flows necessary for economic and political integration. We have therefore mapped the functional specialisation of the FUAs and made a classification of the urban areas in EU 27+2.

All FUAs are obviously not of the same importance in the national or European urban system. Some are larger than others, and do therefore display a greater variety of functions and services. Some are of national and/or European significance based on the strengths of their manufacturing or service industries; others are the sites of regional, national and/or European administrations.

Only limited access is available to statistics on the level of FUAs. We have identified seven functions of urban areas that, taken together, provide us with an initial indication of their role in Europe, and we have further identified indicators that it is possible to measure in a comparable fashion. Each FUA has been ranked according to its importance for each variable. The analysis reveals the following pattern:

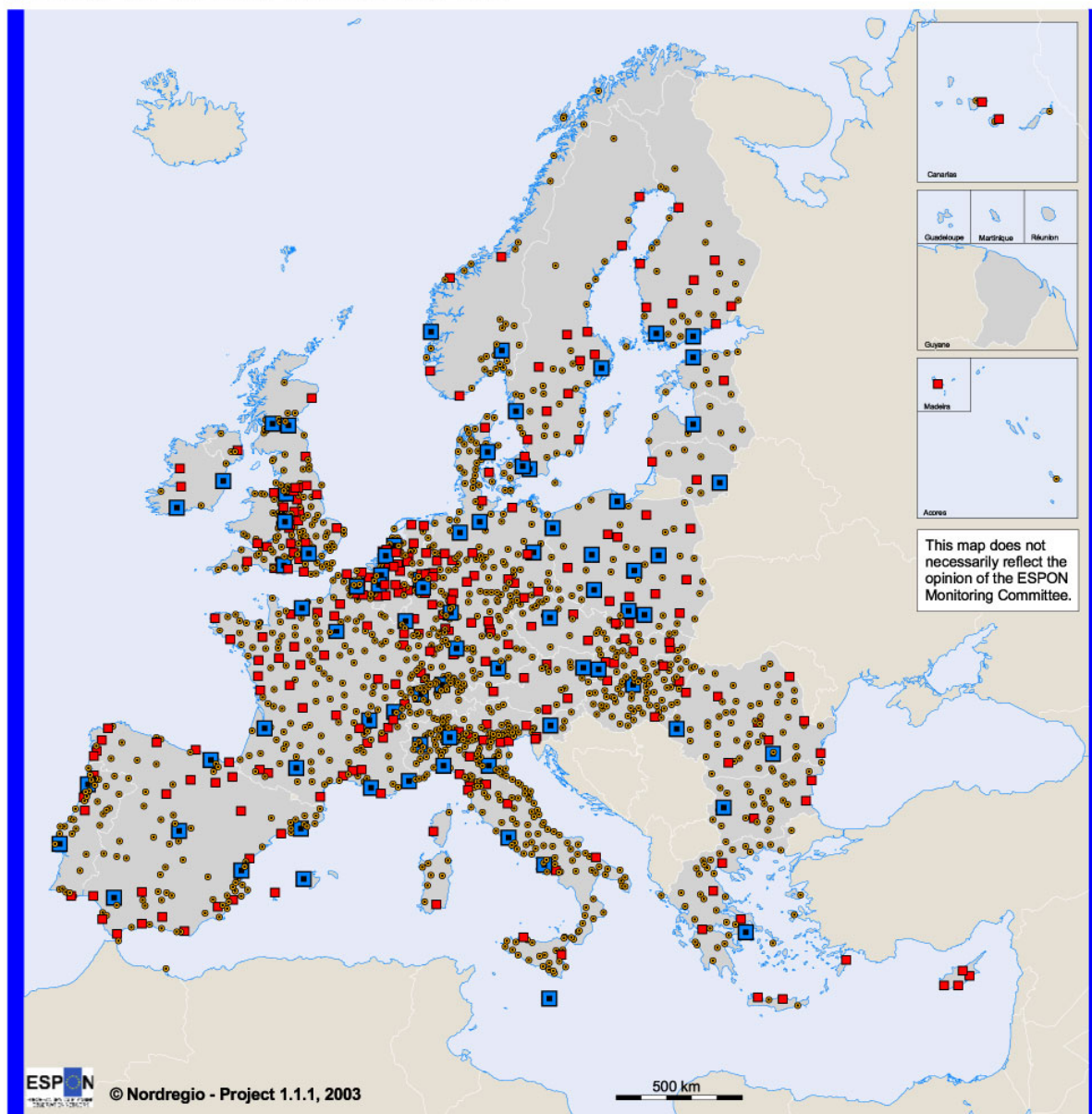
- *Population:* For both private and public-sector investments the demographic weight naturally constitutes the most favoured indicator for choosing the location of certain services and facilities. Population is concentrated in the Pentagon, though there are extensions reaching down to Southern Italy and to central and Eastern Europe, where there is a strong concentration of large urban agglomerations. In peripheral Europe most of the large urban agglomerations are more insular.
- *Transport:* The connectivity of the FUAs constitutes one of the central factors of polycentrism. Any sharing of economic functions cannot be really effective unless accompanied by an efficient transport infrastructure and by accessibility. Transport is measured by means of the main airports and major container traffic harbours, in order to explicitly identify transport-oriented cities. As a result, the general picture is rather monocentric, particularly in the geographically small countries. The busiest transport nodes are found in the Pentagon. Not one acceding country has a transport node of European significance.

- *Tourism:* Tourism is an indicator for attractiveness. Most of the FUAs strong in tourism are different from those that score highly in other functions, and they are mainly located in the Mediterranean area and the Alps. Only a few highly tourist-oriented FUAs of European-level significance exist beyond these two zones. Globally significant urban destinations are to be found in London, Paris and Rome. Capital cities are in general also important nodes as regards tourism.
- *Manufacturing:* The urban systems are in many countries the result of industrialisation. Manufacturing industries are in decline in most regions, though they remain however the backbone of the economy in many others. Many industrial FUAs are trading globally, even the smaller ones. As such, industrial strength was measured by calculating the gross value added in manufacturing. The strongest FUAs are to be found in the Pentagon. Gross value added is often low in the acceding countries, except in capital regions and in Poland.
- *Knowledge:* This function is measured by calculating the number of students attending higher education institutes. In all countries, the capitals are the strongest nodes in knowledge terms, though many other FUAs are also important. The general picture is therefore rather balanced, as higher education is distributed across all parts of Europe, and within most of the countries as well.
- *Decision-making in the private sector:* Any urban system's 'capacity to influence' is not solely dependent upon its level of competitiveness and demographic weight, but also on its actual economic attractiveness to private investors. The distribution of the headquarters of top European firms is an indicator of economic attractiveness. Business headquarters locate in places with good accessibility and where they are close to business services. Decision-making however remains highly concentrated to the Pentagon, as Stockholm is the only FUA outside the Pentagon that makes the top list.
- *Decision-making in the public sector:* Strong hierarchies within urban systems are often due to the development of administrative functions. The current picture of Europe is thus the result of the growth and development of individual national systems with the capitals being the main nodes of the European administrative system.

Most crucial economic functions such as the location of European decision centres are concentrated within the Pentagon. The knowledge function is more balanced due to the location of universities in national educational systems all over Europe. The tourism and transport indicators are different, showing a pattern of the functional division of labour at the EU level. Thus, tourism is concentrated in the Alps and the Mediterranean coastal regions and transport within the northern-most parts of central Europe.

In Map 1.3, all variables except Tourism and Administration have been combined to give an overall ranking of the FUAs into three groups. The 76 FUAs with the highest average score have been labelled *Metropolitan European Growth Areas* (MEGAs).

Typology of Functional Urban Areas (FUAs)



Geographical Base: Eurostat GISCO

- Metropolitan European Growth Areas (MEGAs)
- Transnational / national FUAs
- Regional / local FUAs

Origin of data: EUROSTAT, National Statistical Offices, National experts

Source: Nordregio

Map 1.3 Typology of Functional Urban Areas (FUAs)

1.1.5 Possible counterweights to the Pentagon

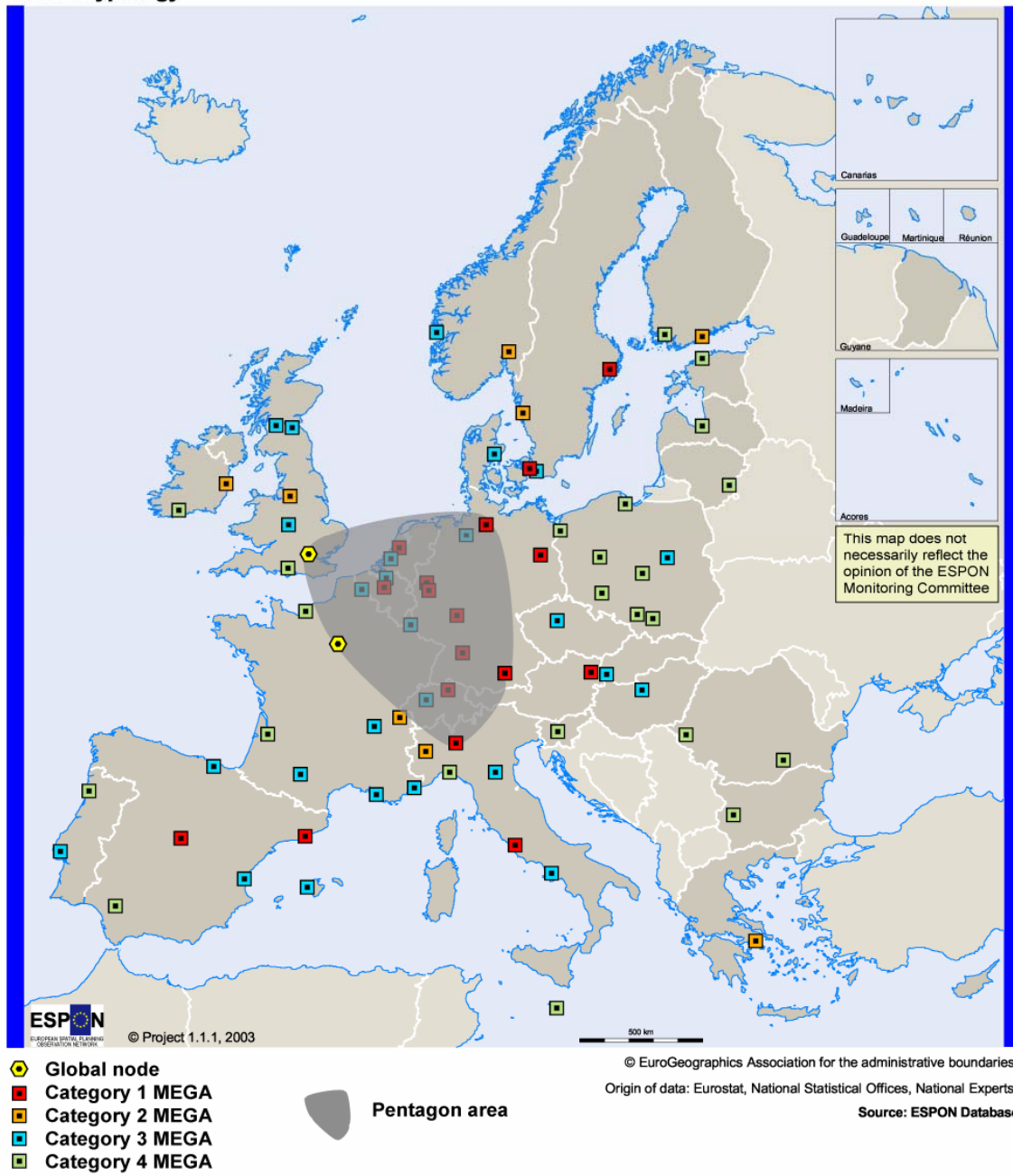
The strengths of the strongest FUAs, the 76 MEGAs, are analysed further in a discussion of where the most likely counterweights to the Pentagon are to be found. The analysis here is based on indicators for each of the following four qualities:

- *Mass*. The denser a regions' economic environment is, the more likely it is to present favourable conditions for its development. Mass is measured by the population size and the size of the economy.
- *Competitiveness*. The degree of attractiveness for private companies is measured by the GDP *per capita* and the location of head offices for the top 500 European companies.
- *Connectivity*. Attractive regions have good connectivity to other regions. Indicators used here are the number of airport passengers and the regions' multimodal accessibility.
- *Knowledge basis*. The percentage of the population with higher education and the share of the employed working with R&D measure the attractiveness of a FUA.

The MEGAs are compared with each other for each quality, ranked and divided into five groups (map 1.4):

- Two *global nodes* are identified, London and Paris. These are the largest, most competitive and have the best connectivity.
- There are 17 *Category 1 MEGAs*, large city regions with a good score on all indicators: Munich, Frankfurt, Madrid, Milan, Rome, Hamburg, Brussels, Copenhagen, Zurich, Amsterdam, Berlin, Barcelona, Stuttgart, Stockholm, Düsseldorf, Vienna and Cologne. Ten of these are located within the Pentagon.
- At the next level comes the 8 *Category 2 MEGAs*, cities that are relatively large, competitive and often with a strong knowledge basis. Most MEGAs in this category have one or two qualities that are notably weaker than the others, usually relating to either mass or accessibility. These are Athens, Dublin, Geneva, Gothenburg, Helsinki, Manchester, Oslo and Torino.
- 26 MEGAs are labelled *Category 3 MEGAs*. These are usually smaller, with lower competitiveness and accessibility levels. They often have one quality that is stronger than the others. The four strongest city regions in the new member states are in this category: Prague, Warsaw, Budapest and Bratislava together with the three other capitals Bern, Luxembourg and Lisbon. The rest are non-capital cities in their countries: Lyon, Antwerp, Rotterdam, Aarhus, Malmö, Marseille, Nice, Bremen, Toulouse, Lille, Bergen, Edinburgh, Glasgow, Birmingham, Palma de Mallorca, Bologna, Bilbao, Valencia and Naples.

MEGA Typology



Map 1.4 MEGA typology

- The remaining 23 regions are the *Category 4 MEGAs*. Most of these have a low score on all four qualities. 15 of them are located in the new member states or accession countries (Bucharest, Tallinn, Sofia, Ljubljana, Katowice, Vilnius, Krakow, Riga, Lodz, Poznan, Szczecin, Gdansk-Gdynia, Wroclaw, Timisoara and Valetta), four are cities of north-western Europe situated outside the main transport corridors (Cork, Le Havre, Southampton and Turku) while the remaining four are non-capital cities in the southern part of EU15 (Bordeaux, Seville, Porto and Genoa).

This analysis has identified the strongest urban regions in Europe. Many of them are located within the Pentagon, while others such as Rome, Vienna, Berlin, Manchester and Copenhagen are located in relatively close proximity to the Pentagon. There are only a few top category MEGAs in the peripheral parts of Europe: Madrid, Barcelona and Athens in south, Dublin in west and Stockholm, Helsinki, Oslo and Gothenburg in north. MEGAs with high scores in the new member states are also located close to Pentagon, with Warsaw being the only exception.

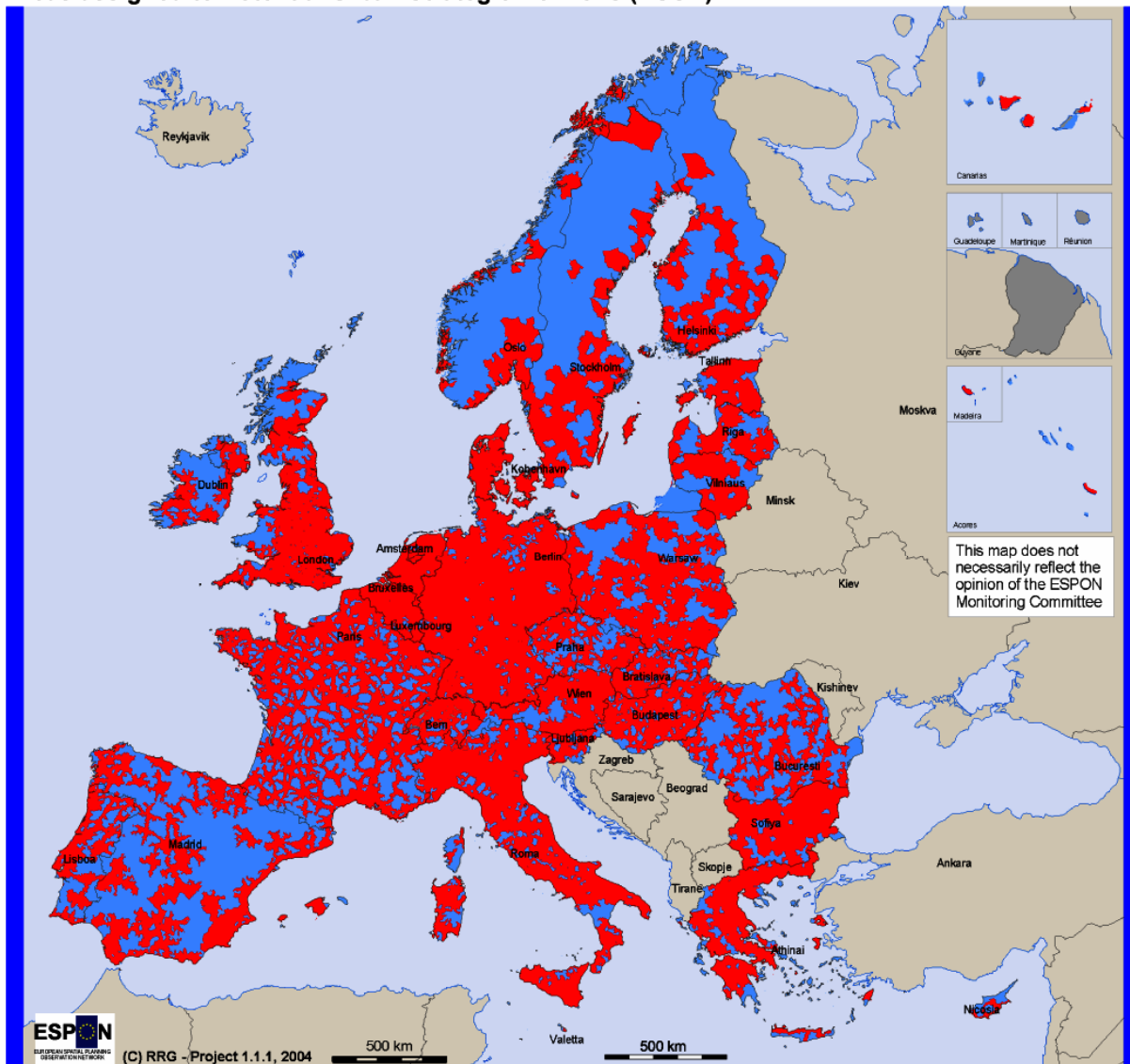
1.1.6 The potential for polycentricity based on morphological proximity

Thus far, the analysis has been descriptive. The next question then is where can we find the most promising potential for development towards a more polycentric urban system for Europe? The preconditions for polycentricity are best where cities are located in proximity to each other. The question is therefore where new functional entities, created through increased integration and co-operation, may change the European urban hierarchy: where can new nodes emerge, strong enough to counterbalance the Pentagon?

Morphological proximity is of course no guarantee of co-operation, but proximity does nevertheless provide cities with a better opportunity for functional integration. Our hypothesis is that cities with overlapping travel-to-work-areas have the best potential for developing synergies. For each of the FUAs, we have calculated the area that can be reached within 45 minutes by car from the FUA centre. These areas are then approximated to municipal boundaries, as municipalities are potential building blocks in polycentric development strategies. This approximation also makes it possible to use population data at the NUTS 5 level, i.e. for municipalities. The resulting areas are labelled *Potential Urban Strategic Horizons* (PUSH).

Several countries are almost entirely covered by PUSH areas (map 1.5), while large parts of the most peripheral countries are located far away from any FUA centre. On average, 66% of the EU27+2 area is covered within 45 minutes travel time of a FUA centre. The values range from 98-93% in Luxembourg, Belgium, Denmark, the Netherlands and Germany, to 36-33% in Cyprus, Sweden, Malta and Finland, down to only 25% in Norway.

Areas assigned to Potential Urban Strategic Horizons (PUSH)



■ PUSH areas

Geographical Base: Eurostat GISCO
Eurogeographics

Map 1.5 Area assigned to PUSH area (in red) – municipalities of which at least 10% of the area is within 45 minutes from the nearest FUA centres

The population in these PUSH areas is different from the FUA population, as the PUSH areas are defined according to 45-minute isochrones and can overlap each other. The largest differences here are to be found in the smaller cities located within the vicinity of major metropolitan areas. In the most urbanised zone stretching from the Midlands in the UK down to southern Italy, more than 10 and up to 43 PUSH centres can be reached within 45 minutes.

In the next step, Potential Polycentric Integration Areas (PIAs) were identified, based on the hypothesis that neighbouring cities with overlapping travel-to-work-areas can be functionally integrated and can gain from co-operation. A total of 249 areas were found where at least two PUSH areas shared more than 1/3 of their area with each other. These areas concern 1,139 PUSHs, while the remaining 456 PUSHs are more isolated. The 249 areas are well distributed across Europe, with the exception of Ireland and the northern parts of the UK, Norway, Sweden and Finland.

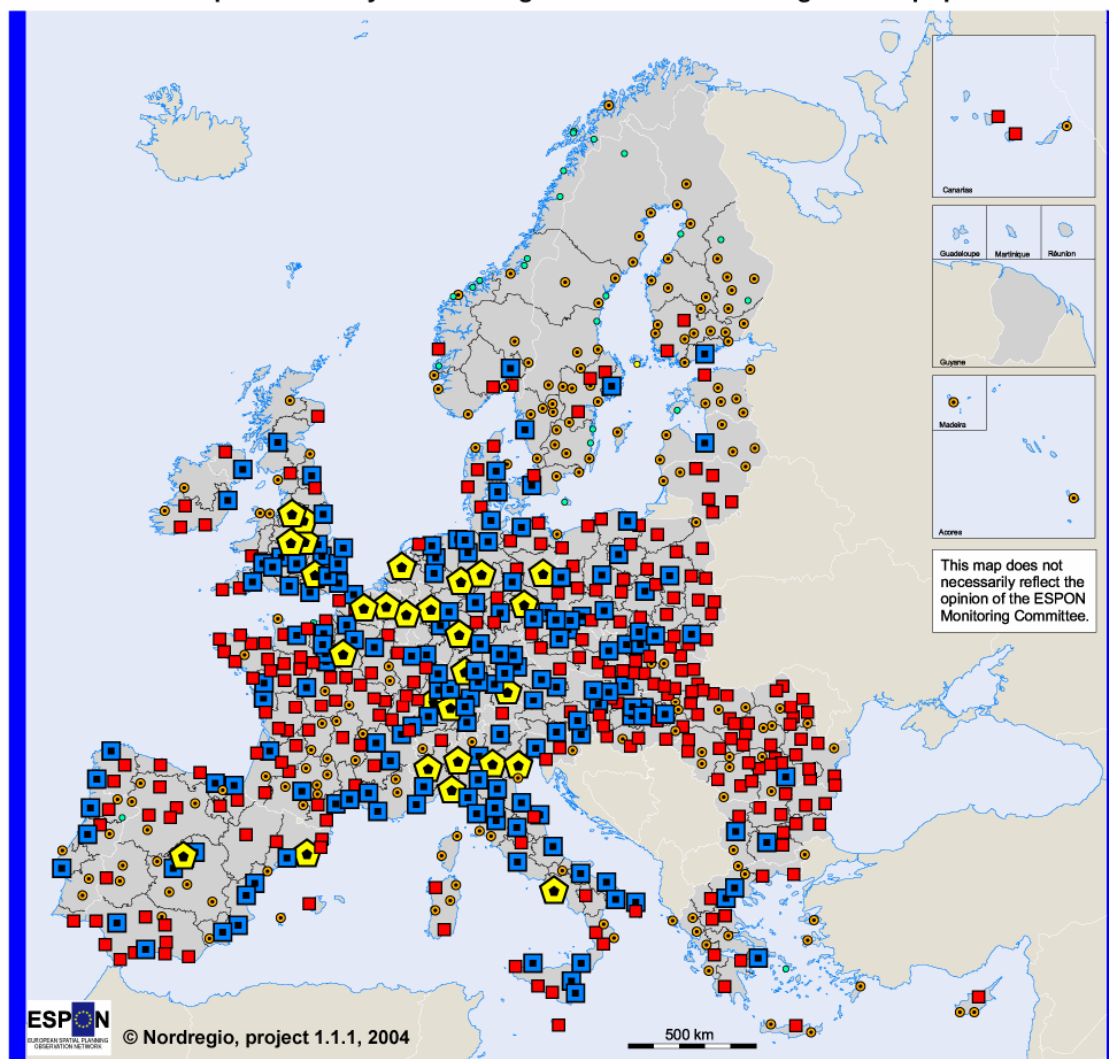
Map 1.6 illustrates the potential mass each PIA can aim for in absolute terms. It shows the population of PIAs, using the same threshold values as for the FUAs in Map 1.1. These population levels can of course not be obtained simultaneously by all PIAs, as their delimitations overlap. Here again, the concentration of PIAs with an exceptionally high population potential from the UK Midlands to Northern Italy and over most of Germany is apparent. Outside this extended Pentagon area, Naples and Barcelona are the only new centres with more than 5 million inhabitants as compared to Map 1.1.

A wide range of cities could significantly increase their demographic mass, and thus also their position in the European urban hierarchy through polycentric integration. The majority of these cities are situated inside this extended Pentagon area. The larger peripheral PIAs that would improve their position most through integration are Montpellier, Decin, Rimini, Palermo, Messina, Copenhagen, Bari, Alicante, Oslo, Belfast, Porto, Glasgow and Valencia.

One conclusion here is that the definition of the European core as 'the Pentagon' is too narrow. In terms of population and dense city networks, Manchester, Berlin, Venice, Genoa and Paris define the corners of the European core.

A second conclusion is that polycentricity at the European level must build upon functional specialisation, i.e. stimulate cities outside the core area to develop functions for the whole of Europe. Increasing the demographic mass of cities through regional polycentric integration is, if it is done everywhere across Europe, likely to further enhance the contrasts between the European core area and the rest of the European territory. We cannot currently identify any region in the European periphery where the polycentric integration of neighbouring cities could increase the population mass sufficiently to the extent that the potential for a new global integration zone was created.

Classification of potential Polycentric Integration Areas according to total population



This map does not necessarily reflect the opinion of the ESPON Monitoring Committee.

Geographical Base: Eurostat GISCO

Number of inhabitants in Potential polycentric integration Area

- ⬠ > 5 million inhabitants
- ⬠ 1-5 million inhabitants
- ⬠ 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

Origin of data:
National Statistical Offices

Data sources:
ESPON NUTS 5 database

PUSH delimitation: RRG
PIA identification: Nordregio

Map 1.6 Potential Polycentric Integration Areas in EU 27+2

1.1.7 Transnational networks and co-operation

Thus far, we have mapped the urban system and investigated its functional specialisation. The discussion of the potential of polycentricity is based on morphological proximity. A third important precondition for polycentricity is that of functional integration and co-operation. However, data on flows and networks is difficult to obtain. It is therefore not possible to study the degree of integration at the pan-European level. We can however provide some examples of specialised and thematic networks and co-operation between cities at the European level. Networks are monocentric if they are oriented towards a limited number of strong centres, and more polycentric if connections are more evenly distributed between partners.

The network of air traffic reflects the actual market for travel services as well as the organisational structure of the air traffic business, where some cities act as hubs and consequently have the best accessibility. Over the last decade a noticeable trend has emerged towards the increasing polarisation of flows through London and Paris. The highest growth in passenger numbers are thus to be observed between the peripheral capitals and the centrally located capitals, with the largest traffic growth in cities such as Lisbon, Madrid, Barcelona, Prague, Munich, Berlin and Warsaw. The most significant flows between Europe and the rest of the world go through London. Paris and Frankfurt are also important gateways, as is Madrid, which acts as a gateway to South America.

A second example is the network of student exchanges between universities, supported by the EASMUS programme. The dynamic of student exchange flows primarily reflects the location of national capitals. Secondly, there is a significant concentration at the European level towards Paris, Madrid, Barcelona, London and Berlin. With regard to the new member states and to the accession countries the numbers here are rather small, with the concentration to one city region being quite high. Thus, while we can see that a rather balanced network exists in this regard between universities across Europe, in the smaller countries only a limited number of cities are actually involved.

A third example of transnational networks is that of the Interreg programme, where authorities are encouraged to co-operate across national borders. We have analysed programme participation in two Interreg IIIB regions, NWMA and CADSES. In the NWMA programme, there are interesting differences between France and Belgium on the one hand, where the participants are located in a very limited number of cities, and the UK and the Netherlands on the other, where networks are much denser. Other types of contrasts can be found in the CADSES area, where Austrian participants are concentrated to Vienna while German participants are more widespread. These two countries are the most active, while the other participating countries, namely, Bulgaria, the Czech Republic, Greece Italy, Hungary, Poland, Romania, Slovakia, Slovenia and the nine additional non-ESPO countries have been less active. This illustrates the multiple scales involved when trying to assess the degree of poly- or Monocentricity of a network: The organisation of cities at the national scale influences the spread of partners in each country, while contrasts between Member states can create an imbalance in the number of partners on each side of the border.

These examples illustrate the fact that size should not be considered as a comprehensive indicator when identifying nodes of polycentric development. Transnational networks between universities, private companies and other urban functions are particularly important for the development of polycentricity if networking is established between 2nd order cities and are thus able contribute to stabilising the position of these cities in the national urban hierarchies. The transnational networking within *meso*-regions such as e.g. the Interreg regions, contributes to the development of polycentricity if regional integration and competitiveness results from such co-operation.

1.1.8 The experience of co-operation and partnership in spatial policies

The benefits of partnership are described as synergy creation, transformation and consensus construction, budget enlargement, place promotion, co-ordination, and the legitimisation of pro-growth policies. In the literature, the rise of partnerships is mainly described as an approach to tackling urban problems, i.e. below the spatial focus of this study.

Polycentricity at the *micro*, *meso* and *macro* levels is about functional integration and co-operation between urban areas. Two questionnaire surveys of existing partnerships were undertaken to provide an overview of institutional networking and partnership arrangements around spatial strategic issues.

The first survey concerned inter-municipal co-operation at the level of FUAs, with 21 countries responding. While functional urban regions in many cases are the level of socio-economic analysis, there are very few examples to be found of policies actually being implemented at that level. Public administration is not organised on the basis of functional regions, and there is no formal structure of governance at this level.

The late 1980s and early 1990s marked the beginning of a growing number of inter-municipal partnerships across Europe. Some are small, single-sector networks (such as the National Centre Mid-Vest in Denmark and the Association of Municipalities of Lima Valley in Portugal); others are large multi-sector networks (such as Patto Territoriale del Sangone in Italy with 108 partners). Their objectives can be divided into four categories: Strategic development, project implementation (often time-limited), networking and advocacy. Most partnerships do not have executive powers. They do however influence policy-making processes by making recommendations, lobbying or through undertaking studies and programmes. Their strengths are in the co-ordination of resources, goals and objectives; building access to knowledge and expertise, and the promotion of mutual dependence and shared understandings of common challenges. Their main weaknesses are often their lack of resources and political commitment.

The second survey concerned inter-regional and trans-national co-operation at the European level. Seven potentially polycentric cross-border areas responded, and information from another five was also utilised in the analysis. Economic and commercial development was the most common field of co-operation here. The rationale for preparing joint strategies focussed on the need to develop complementarities and the need to exploit

the broader marketing potential of two or more centres. Improving functional complementarity and enhancing economic co-operation was the stated aim of e.g. the Gorizia/Nova Gorica (Italy and Slovenia) and Øresund (Denmark and Sweden). There are few examples of joint strategic planning however, though this is perhaps somewhat surprising, as we would expect transport to be a significant issue for trans-national co-operation. In some cases tendencies towards competition remain (e.g. Edinburgh-Glasgow and the "Alpine Diamond" with Lyon, Geneva and Torino), and in some cases dependence rather than partnership prevails (e.g. the larger Bologna). The potential for polycentric development is mentioned as a key factor in partnership establishment only in Silesia/Moravia-Silesia (Poland and the Czech Republic) and Gorizia/Nova Gorica.

Apart from the above-mentioned examples, polycentric integration of the urban network was rarely mentioned as an instrument or an objective by the partnerships covered by the surveys. Current debates over polycentricity at the European level have however contributed to placing this issue on the table in terms of the future of partnerships at the local, regional and trans-national levels.

1.1.9 Polycentricity in national spatial planning and regional policies

The application of the concept of polycentricity has been encouraged by the ESPD. We have, through a questionnaire, collected information on the use of polycentricity in plans and strategies at the national level throughout the ESPON space. As the *word* polycentric is only rarely used, the information covers spatial policies in a wider sense. Of the 29 countries covered, 18 claim to pursue polycentric development in one way or another.

Two different clusters of objectives can be identified here. The most important goal is to enhance urban competitiveness, while the second is to reduce disparities between urban areas. These objectives do not necessarily exclude each other.

Polycentric policies for competitiveness link the size and importance of cities, and classify the national urban system in a hierarchy often based on a desired future rather than current realities. Several countries have developed appealing metaphors for internationally competing centres, such as European Metropolitan Regions (Germany), Gateways (Greece, Ireland), *Centres de Développement et d'attraction* (Luxembourg), Europols (Poland) and Anchor cities (Portugal). In many cases, urban competitiveness is promoted by inter-municipal co-operation (i.e. France, Germany, Italy, the Netherlands) or by administrative reform (i.e. France, Greece, Latvia, Spain).

The types of urban disparities addressed are different from country to country. In countries such as Denmark, Estonia, France, Ireland and Latvia the focus is on the gap between the capital regions and the rest of the cities. In Germany, Italy, Norway and Poland there are north/south or east/west disparities, while countries such as Finland, Greece and Portugal focus on the need to strengthen the medium-sized cities in their urban hierarchies.

There are three types of instruments used in policies for polycentric development:

- *Spatial implementation instruments.* These are often regional policy measures, with their own budget and regulations attached. They aim to have a direct impact on the economic development of a specified area. They can obviously have an impact on the balance between regions, and will, if successful, contribute to a more polycentric structure. Such instruments are however not normally mentioned as examples of polycentric policies.
- *Non-spatial instruments.* Administrative reforms are important for polycentric development, as they are so important for the institutional capacity of regions. There are structural obstacles to co-operation between neighbouring cities, or between core and periphery municipalities within a given Functional Urban Area. The ability to influence the development of such instruments is however well beyond the power of the average spatial planner, who has only limited access to, and influence over, the wider politico-administrative system.
- *Strategic planning instruments.* Planning instruments are most frequently used in policies for polycentric development, particularly spatial visions (17 countries) and regional development strategies. In most countries, a spatial vision is the only policy instrument that explicitly voices the promotion of polycentric development. Spatial visions are particularly important because of their inherent communicative power.

There is currently no single definition of what a polycentric policy is, with the understanding of the concept being different from country to country. In most cases, a policy that may be interpreted as contributing to a change in the urban system is *not* labelled “polycentric”.

1.1.10 Policy recommendations

The meaning of polycentricity depends upon the context and territorial level within which it is applied - the *micro*, the *meso* or the *macro* level. Consequently, policy recommendations will be addressed to cities and regions, as well as to national authorities and the EU.

At the *micro level*, cities should be encouraged to co-operate and join forces, with the aim of improving their urban ranking in the national urban systems. One possibility here is to take the list of PIAs as a frame of reference for locally based considerations of the options for forming new inter-municipal co-operations. To enhance economic integration, urban policies should focus on the development of *linkages between cities*, e.g. by *defining common planning strategies, determining the economic role of each node and developing common service provision facilities*. It is also necessary to document concrete examples of the advantages as well as the bottlenecks of inter-city co-operation.

Governance is a key issue when promoting collective action across administrative borders. More could however be done by national governments to improve the framework for local governance, to create more robust policy frameworks and greater political commitment. The variety of organisations, methods and achievements of governance show a significant potential for further learning. There is therefore a need to facilitate the exchange of methods and achievements of local governance. In the context of Structural Fund

programmes, it could be possible to allocate resources to enhancing governance relations at a variety of scales, and to the building up of institutional capacity at the local level.

The formation of strategic policy documents has shown itself to be a key instrument of inter-city governance and co-operation. National governments and the EU could do more to encourage the development of regional spatial strategies by inter-city co-operations, explicitly considering the potentials of enhancing urban functional complementarity. For this to be effective, a set of guidelines for the understanding of polycentricity at the regional level would however be necessary.

The options for enhancing functional polycentricity at the regional level should be facilitated by structural fund regulations. A geographical zoning of programme regions that covers economically functional regions should be encouraged. Discussions of the urban structures or the functionality of an integrated urban region are rare in economic development programmes. Therefore, it should be considered whether this could be included in the regulations for programming a paragraph that encourages regions to describe their urban structure and its impact on economic development, e.g. as a part of the SWOT analysis.

At the national and transnational *meso* level, polycentricity is about the balance within the urban system. The EU can influence national and regional policies directly in countries where large parts of the territory are eligible for structural support. This is particularly so for the cohesion countries, where investment in transport and environmental infrastructure may be co-funded by the Structural Funds.

The EU can also contribute to a more polycentric national urban structure by agenda setting, i.e. by encouraging national spatial planning and regional policy agencies to elaborate spatial development strategies and to do so within trans-regional and trans-national horizons.

Spatial strategies are primarily concerned with economic development and urban competitiveness. The urban structure and the degree of polycentrism are however considered in only a limited number of countries and regions. In order to promote the body of professional knowledge and skills with regard to national and transnational planning, a systematic examination of the professional standards, methods and paradigms of strategies related to spatial development at the national and trans-national levels should be initiated.

The observations of the morphological polycentricity of national urban systems were to some extent hampered by the differences in national definitions on functional urban areas. In order to improve the validity of comparative studies on polycentricity, a pan-European definition of Functional Urban Areas should be developed and data at this territorial level collected. It is also necessary to analyse the trends in the national urban system towards monocentricity or polycentricity in each country. Both functional and morphological aspects should be considered, as well as the forces behind the trends and the possibility of influencing them through public policy.

At the *macro* level, the main issue is to stimulate the development of *zones of economic global integration* beyond the Pentagon. Our study has documented the fact that cities in

the periphery can gain in size through integration regionally. However, the preconditions for gaining strength through polycentric development are more likely to be present in the core than in the periphery. At the European level, polycentricity must build upon functional specialisation, not size. One should therefore strategically use the opportunity to locate EU institutions in cities outside the Pentagon, and to consider the possibility of supporting functional specialisation when making these decisions.

The EU can use structural fund regulations to encourage countries and regions to analyse their urban structures. The EU can also use instruments such as Interreg and Interact in the promotion of networking, the development of common strategies covering several cities (also cross-border) and for the dissemination of 'good practice' themes between the city regions that are in the forefront of polycentric thinking.

There is also a need for the identification of complementary policy instruments for those areas and regions not favoured by polycentricity policies through, for instance, policies directed at the improvement of urban-rural partnerships and thematic networking.

We have identified policy options at the *micro*, *meso* and *macro* levels. But is it possible to achieve polycentricity simultaneously at all levels? The ESDP scenario in Figure 1.1 illustrates the ideal situation, where increased polycentricity at the intra-urban level (*micro*) makes city regions stronger and therefore produces a more polycentric national or trans-national urban system (*meso*). In the next step, stronger functional areas at the *meso* level can work together to produce strongholds for a more balanced Europe, heralding the eventual emergence of several Global Integration Zones in addition to the Pentagon (*macro*). We must however recognise here that there are inherent difficulties embedded in this model, as contradictions manifestly exist between the policies at different geographical levels. At the *macro* level, it is possible for urban regions beyond the Pentagon to enhance their status compared with other regions through the development of a polycentric structure with better functional integration. But if polycentricity is successfully implemented across Europe, regions located within, and in proximity to, the Pentagon will inevitably gain most. At the national and trans-national scales (*meso*-level), a policy for increased polycentricity and spatial balance at the European level will strengthen the already strongest urban regions. Investment will have to be concentrated in these regions, and as a result, the urban systems of the countries in question may actually then become more monocentric.

Consequently, a European level polycentricity must build upon functional specialisation, rather than population size.

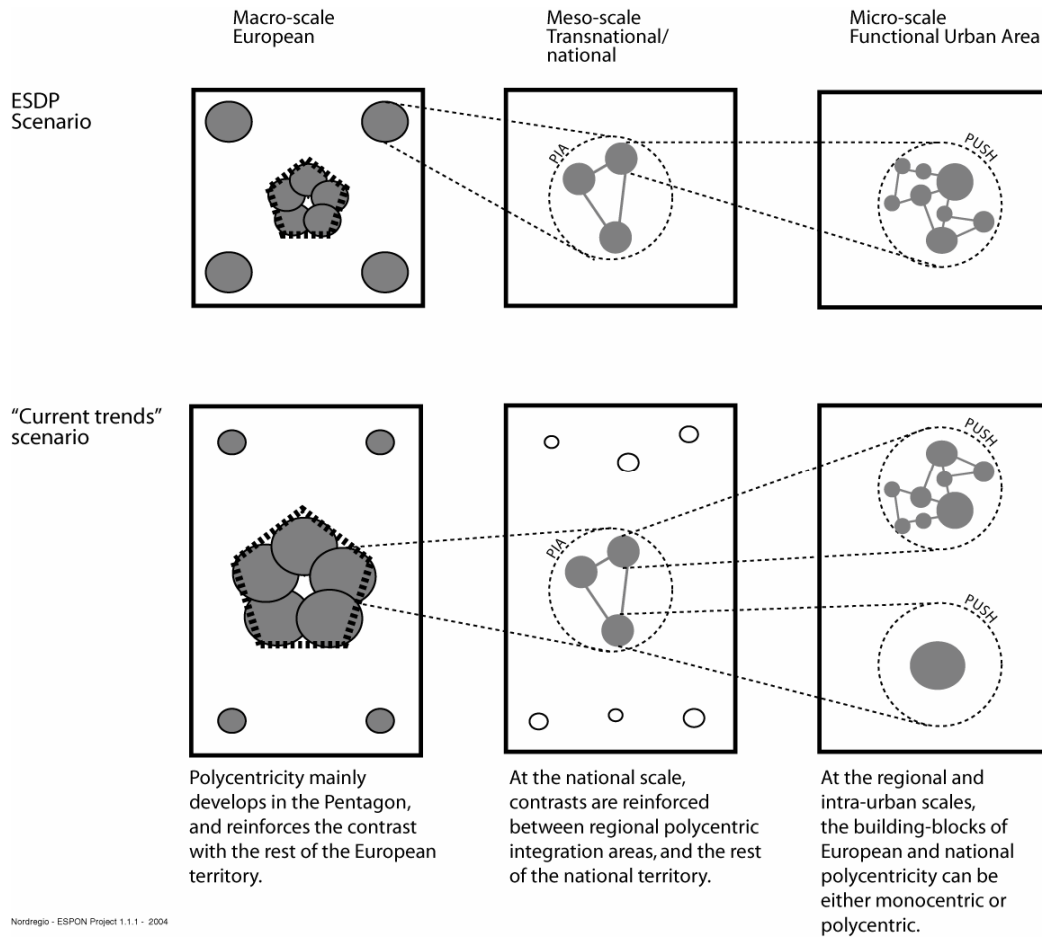


Figure 1.1: Challenges in the implementation of polycentricity at all spatial scales

1.2 Concepts, methodologies, typologies and indicators

1.2.1 Concepts

Two concepts have been constructed as a basis for the description and typology of the urban network in Europe:

- *FUA (Functional Urban Area)*: For countries with more than 10 million inhabitants, a FUA is defined as having an urban core of at least 15,000 inhabitants and over 50,000 in total population. For smaller countries, a FUA should have an urban core of at least 15,000 inhabitants and more than 0.5% of the national population, as well as having functions of national or regional importance. 1595 FUAs with more than 20,000 inhabitants have been identified in Europe.
- *MEGA (Metropolitan European Growth Area)*: MEGAs correspond to FUAs with the highest average score with regard to Population, Transport, Manufacturing, Knowledge and Decision Making. 76 MEGAs have been identified in Europe.

Two additional concepts have been coined in order to analyse the territorial context of cities and the potentials for polycentric integration based on morphological proximity:

- *PUSH (Potential Urban Strategic Horizon)*: PUSH areas include all municipalities of which at least 10% of the area can be reached within 45 minutes from each FUA centre by car. There are as many PUSH areas as there are FUAs. PUSH areas of neighbouring FUAs can overlap.
- *PIA (Potential Polycentric Integration Area)*: PIAs have been constructed by merging the PUSH areas of neighbouring cities, if the, demographically speaking, smaller one shares at least 1/3 of its PUSH area with the larger one. Each PUSH area belongs to one PIA only, the largest neighbouring city being preferred when there are multiple overlaps. Multiple tiers of integration can occur within a single PIA. Neighbouring PIAs can overlap.

1.2.2 Methodologies

Several different methods are utilised in this report. *Literature reviews* form the basis for the discussion of the background to the concept of polycentricity and for the construction of the critical dictionary of polycentrism.

Data for the size of FUAs, their distribution across the territory and their accessibility is used to analyse the urban system and its degree of polycentrism in European countries, as well as to produce an index of polycentricity. *The multimodal accessibility of FUAs* was calculated as part of this exercise. Thereafter, this index is confronted with indicators for economic competitiveness, social equity and sustainable development and used in an assessment of the benefits of polycentric national urban systems. This is, as far as we know, the first

attempt to evaluate polycentricity. The results of course depend upon the quality of input data and the availability of indicator data.

The functional specialisation of FUAs is described by means of *a mapping of five functions* expressing crucial factors such as size, manufacturing activities, knowledge and decision-making. The indicators used here are produced through a combination of European and national data sets. At the next level, indicators for the seven functions are combined into a typology of FUAs in EU27+2. The choice of indicators for this analysis was somewhat pragmatic, since available comparative data sets are rare. Data was collected by national experts and based on available regional statistics. In addition, some pan-European data sets are utilised. Used at the European level, the results are robust enough. However, differences in national definitions and data access do produce a number of anomalies, which make the results less useful for analysis at the national and regional levels. Another issue is the choice of indicators and their relative weight, as changes here do make a difference in the final typology.

The strongest FUAs have been labelled Metropolitan European Growth Areas (MEGAs), and they are analysed further in a discussion of where the most likely counterweights to the Pentagon are likely to be found. This analysis is based on a slightly different indicator set, including *data from the ESPON database*. The MEGAs are compared with each other on four different themes, ranked and divided into five groups in a new typology. The results are again dependent upon the indicator weighting.

At the *meso*-level, the hypothesis here is that cities with overlapping travel-to-work-areas have the best potential for developing synergies. *For each of the FUAs, we have calculated the potential area that can be reached within 45 minutes by car from the FUA centre*. These isochrones are then approximated to municipal boundaries to make it possible to use population data at the NUTS 5 level. These new urban areas are called *Potential Urban Strategic Horizon* (PUSH). The strength of this method is its independence from national definitions of travel-to-work-areas. NUTS 5 level data was provided by a study for DG Regio on Mountain regions. *Nordregio* was lead partner for this study, and could therefore easily combine these data sources.

This delimitation of potential Polycentric Integration Areas (PIAs) is in the next step used to map the areas in Europe with the largest potential for polycentric development. PUSHs are considered to have major potential for polycentric integration if they share over 1/3 of their area with each other. This leads to the identification of 249 PIAs, comprising 1139 PUSHs.

Co-operation is also an important precondition for polycentric development. To investigate networking, *data for air traffic, student exchange and Interreg programme participation* is used. European data sources are used here. These datasets provide examples at the *macro*-level. The major difficulty here is actually finding comparative data on flows or co-operation for any level.

Polycentricity at the *micro*, *meso* and *macro* levels is about functional integration and co-operation between urban areas. As noted previously, *two questionnaire surveys* were undertaken to provide an overview of institutional networking and partnership

arrangements around spatial strategic issues. The first survey concerned inter-municipal co-operation at the level of FUAs, with 21 countries responding, while the second dealt with examples of inter-regional and trans-national co-operation at the European level. These surveys cannot produce a fully comprehensive picture, though they do provide an overview of the issue.

We have also used a *questionnaire* to collect information on the use of polycentricity in plans and strategies at the national level throughout the ESPON space.

Table 1.1. summarizes the different scales at which polycentricity has been analysed, and lists the respective chapters.

Table 1.1 Aspects of polycentricity investigated

Spatial level	Polycentricity	Constituting elements	Potentials for polycentric developments		Measuring Polycentricity	
			Morphology	Functional specialisation	Flows	Plans and co-operation
Macro	Europe 27+2	Global economic integration zones	Chapter 5.1		Chapter 6	
Meso	Inter-metropolitan	Metropolitan regions and urban clusters	Chapter 3.2			Chapter 7.1+7.2 7.4 Chapter 8
Micro	Intra-regional and inter-urban	Functional urban areas	Chapter 3.1 5.2	Chapter 4		Chapter 7.1+7.2 7.3
City	Intra-Urban	Urban sub-centres	Chapter 5.3			

1.2.3 Typologies

The project produced three typologies:

- A typology of FUAs, in which the highest scorers were labelled, MEGAs.
- A typology of MEGAs, divided into 5 categories, including a specific category for the two global nodes of London and Paris.
- A typology of intra-urban settlement structures.

1.2.4 Indicators

The reference year for all indicators is 2000. In cases where data was unavailable for that year, data from 1999 or 2001 was used instead.

The national and regional polycentricity indices are based on the following indicators:

- Size index, with 4 sub-indicators:
 - Slope of regression line of the rank-size distribution of FUA populations;
 - Primacy rate in terms of FUA population;
 - Slope of regression line of the rank-size distribution of FUA GDP;
 - Primacy rate in terms of FUA GDP.
- Location index: *Gini* coefficient of the size of the Thiessen polygon around each FUA.
- Connectivity index, with two sub-indicators:
 - Slope of the regression line between the accessibility and the population of FUAs;
 - The *Gini* coefficient of the accessibility of FUAs;

In order to evaluate the policy relevance of polycentricity, the following indicators were used:

- Economic competitiveness: GDP/Capita
- Social equity: *Gini* coefficient of the GDP *per capita* of NUTS 3 regions
- Environmental sustainability: Energy consumption in oil equivalents/GDP

In order to evaluate the FUA definitions, the following indicators were calculated:

- Average population in FUAs in each country
- Number of inhabitants (national population) per FUA in each country

The FUA typology, differentiating FUAs from MEGAs, is based on the following indicators:

- Population: Number of inhabitants per FUA, and classification in four categories.
- Transport, with two sub-indicators (classification in four categories).
- Presence of airports with more than 50 000 passengers.
- Presence of port with more than 20 000 TEU.
- Manufacturing (classification in four categories).
- Knowledge/Higher education institutions: Presence of university and number of university students (classification in four categories).
- Decision Making: Presence of headquarters of the top 500 companies in each country, rated by turnover (classification in four categories).

Two additional indicators have been calculated, but not used for this typology

- Tourism: Number of bed places in hotels or similar establishments (classification in four categories).
- Administrative status (classification in four categories).

In order to evaluate the MEGA definitions, the following indicators were calculated:

- Average population in MEGAs in each country.

- Number of inhabitants (national population) per MEGA in each country.

The MEGA typology, differentiating five categories of MEGAs, is based on the following indicators, calculated or compiled at NUTS 2 level:

- Mass criterion, with two sub-indicators
 - Population
 - GDP in Euros
- Competitiveness, with two sub-indicators
 - GDP *per capita* in PPS
 - Location of TOP 500 European companies
- Connectivity, with two sub-indicators
 - Number of passengers at airports
 - Multimodal accessibility indicator
- Knowledge basis, with two sub-indicators
 - Education level
 - Share of employment in R&D

As part of the delimitation of PUSH areas, the following indicators have been calculated:

- Extent of 45-minute Isochrones;
- Extent of each PUSH area;
- Proportion of each country's area covered by PUSH areas;
- Ratio between PUSH Area and Isochrone area;
- Population of each PUSH area;
- Ratio between PUSH area population and FUA population;
- Number of FUA centres included in each PUSH area;
- Number of countries covered by each PUSH area (identification of trans-national PUSH areas);
- Proportion of PUSH area overlapping with other PUSH areas;
- Number of PUSH areas overlapping each municipality's area by at least 10%.

As part of the identification of PIA, the following indicators have been calculated:

- Number of FUAs included in each PIA;
- Number of levels of integration in each PIA;
- Proportion of FUA population in each PIA living in main FUA;
- Ratio between PUSH population of main node in PIA, and total PIA population;

As part of the classification of PUSH areas according to their internal settlement structure, the following indicators have been calculated:

- Proportion of settlement areas in each PUSH area;
- Number of settlement areas in each PUSH area;
- Ratio between the size of the second largest and largest settlement areas;
- *Gini* coefficient of settlement areas in each PUSH area;
- Area concentration index of each settlement unit;

- Average area concentration index in each PUSH area;
- Standardised maximum area concentration index in each PUSH area.

1.3 Networking

The project team consisted of 10 member institutions from the outset. Later, as participation in the ESPON programme was extended with new countries signing up, four additional partners joined the team. The participants were:

Nordregio, Stockholm, Sweden	University of Torino, Turin, Italy
ÖIR, Vienna, Austria	NTUA, Athens, Greece
CUDEM, Leeds, UK	Quatenaire, Porto, Portugal
CNRS-UMR, Paris, France	NIBR, Oslo, Norway
OTB, Delft, the Netherlands	IRL, Zurich, Switzerland
DCFL, Copenhagen, Denmark	VÁTI, Budapest, Hungary
S&W, Dortmund, Germany	UPIRS, Ljubljana, Slovenia

The project partners in the left-hand column undertook responsibility for specific working packages, and were therefore more involved than those in the right-hand column. All partners were involved in discussions and provided data for the analysis. Three meetings of the full team were arranged during the course of the project, in Stockholm, Leiden and Oslo.

This project has pursued a policy of active interaction with several other project teams within the ESPON programme. The project meeting in Leiden was arranged back-to-back with a project meeting for ESPON project 1.1.2 on urban-rural relations. There has also been a particularly fruitful exchange with ESPON project 3.1 on integrated tools, both on conceptual and data issues. As the concept of polycentricity is of importance for the whole ESPON programme, discussions took place with almost all other projects. Several project partners are also members of other ESPON project teams, and this project has gained immeasurably from the exchange of data and ideas with these other projects.

Representatives from this project participated in all ESPON seminars and lead partner meetings, as requested by the Managing Authority.

The ESPON programme has made the process of intense networking across Europe not only possible, but has actually seen it become a reality. Communication within our project team, with other transnational project teams and with the Monitoring Committee and the Co-ordination Unit has been both straightforward and rewarding. One of the benefits of the

ESPON programme is the establishment of a pan-European community of researchers and practitioners on the topic of spatial planning at high territorial levels.

1.4 Further research issues and data gaps

1.4.1 Metadata, time series and flow data

Our analysis of urban areas as the nodes in the process of polycentric development requires data to be gathered at intra-regional scales (i.e. lower than NUTS 3). At this level, we have considered Functional Urban Areas and municipalities. While data at the municipal scale is available for all countries of the study area, it still needs to be gathered in a systematic way, with adequate metadata indicating the differences in methodology from country to country. Furthermore, coherent time series data at the municipal scale needs to be built up so as to allow for the analysis of trends.

Data on flows at the intra-urban level is currently however practically non-existent. The availability of such data would have allowed us to integrate the network dimension in European polycentric development in a more systematic way. This would, for example, make it possible to assess to what extent second order cities bypass capital cities in flows of persons and goods.

1.4.2 The morphological, functional and political potentials at the *micro* and *meso* levels

The potentials for enhancing a polycentric urban tissue identified in this project are related to morphology - i.e. to the proximity and size of cities. If these potentials are to be exploited by local authorities, companies, agencies and institutions, co-operation, functional relations and a division of labour between the cities must be established. Accordingly, the real potentials for developing a more polycentric tissue depend on several aspects, most of which need to be further examined. Two kinds of studies are needed. Firstly, statistical research is needed to set up indicators for functional specialisation with regard to FUAs, in order to widen the comparative research of urban systems. Secondly, case studies are needed to examine the interrelationships between the statistical measures and political and institutional factors.

1.4.3 Functional importance versus agglomerative strength at the European level

At the European level, the study showed that regional integration based upon proximity is relevant at both the micro and meso levels. However, at the European level, it seems unlikely that Global European Integration Zones strong enough to counter the core of Europe will develop, given the potential levels of the polycentric integration areas identified. As such then, other strategies are needed. One such strategy could be to develop regionally specialised functions of European level significance outside the core of Europe. In the era of globalisation new functional relations and divisions of labour are established across national borders involving not just the capital cities but also cities of functional importance. Within

this context research should be undertaken on the possibility that regions outside the pentagon will be able to compensate for their lack of agglomeration strengths by instead undertaking tasks of specialised functional importance.

Part 2

Report

2 The concept of polycentricity: origin, meaning and questions for research

Encouraged by the European Spatial Development Perspective (ESDP), polycentricity is now developing as a key concept in policies for spatial planning. Polycentricity is primarily about the creation of synergies from local assets through cooperation between cities and city regions. The idea of polycentricity relates to other political ideas such as balanced regional development (cohesion), taking local assets and endowments as the point of departure for regional development and economic growth (competitiveness) and widening the ownership of political decisions (governance).

The concept of polycentricity is only indirectly defined by the ESDP, and it retains a variety of meanings. It is applied at three levels: the European (macro), the national and interregional (meso) and the intraregional (micro), with different operational definitions. This chapter will provide an overview of the political and conceptual background to the concept (section 2.1.), discuss how polycentricity relates to regional development (section 2.2), highlight the issues raised by previous research (section 2.3) and finally identify the aspects of polycentricity that will be studied in this report (section 2.4).

2.1 Polycentricity in ESDP and ESPON

2.1.1 The origin of the concept

The term polycentricity is a novelty in European discussions. Although it makes sense to associate the emergence of the concept with the final agreement over the ESDP in 1999 this is essentially erroneous. The first full draft of the ESDP was published two years previously, referred to as the Noordwijk document (Dutch Presidency, 1997). Notwithstanding this however we need to go even further back in time, as the main principles of the ESDP were agreed upon in 1994 - the Leipzig principles (Bundesministerium für Raumordnung, Bauwesen und Städtebau, 1993, 1995). In Germany, the polycentric approach was advocated as early as 1993. The indicative, non-binding policy document which advocated the principle of polycentricity (Bundesministerium für Raumordnung, Bauwesen und Städtebau, 1993) was prepared in the same ministry as the document discussed in Leipzig, which gave birth to the EU polycentricity concept in the ESDP.

Going even further back, the earliest expression of polycentricity *avant la lettre* is probably that of the French concept of *métropoles d'équilibre* of the early 1960s, as part of a policy approach aiming at economic *équilibre* at the national level (in modern EU political language these principles would be referred to as counterweight metropolitan areas and cohesion). This approach of course had everything to do with the political sensitivities surrounding the economic and demographic dominance of the French capital. The *métropoles d'équilibres* were all located at the outer edges of the French 'hexagon'. This policy was initiated in the same year (1963) as the agency DATAR (*Délégation à l'Aménagement du Territoire et à*

l'Action Régionale) was established. During the 1970s the policy of counterweight metropolitan areas was replaced by a policy putting the emphasis on medium sized cities and rural areas. An EU type polycentric concept, laying the emphasis on the larger French cities however again rose to prominence in the course of the 1980s in the wake of the European debate on the ESDP.

Has the polycentricity concept had any clearly detectable influence on "hard" and concrete policy instruments and on spatial development in the countries of the ESPON area? A straightforward answer has to be "no".

However, we do see examples of application in spatial planning documents. Without exception these documents are non-binding. In general their main purpose is to stimulate discussion and to communicate novel policy approaches. The Danish National Planning Report of 1997 with polycentricity as a central concept is a good example here.

The impact of non-binding documents, such as the Danish report and the ESDP, should not however be underestimated. They are often able to initiate a process of the introduction and diffusion of new policy approaches, thus setting out important policy agendas for "hard" policy measures and initiatives. Polycentricity is now the subject of discussion in several countries. Indeed in countries where spatial planning is already a well-respected policy domain, spatial planning agencies do have authoritative power. Such a list would include for e.g. Denmark, Switzerland, France and the Netherlands. In countries where spatial planning is more peripheral in the national administrative system, concepts such as polycentricity can however still filter down into operational decision making as e.g. in Italy.

In unitary states it makes sense to look at the relations between different policy domains on the national level in order to explain differences in the application of a policy concept such as polycentricity. In federalized unitary states, such as Spain and Italy, or federal states like Germany, Austria, Switzerland and Belgium one has to look at other institutional factors. Between the federal states there are striking differences. Although in Germany the national ministry of spatial planning has very limited powers it nevertheless is in a position to effectively stimulate a discussion on the desirability of the polycentric development of the national territory. Although in Austria a standing ministerial conference on spatial planning exists, just as in Germany, there are no other institutions able to disseminate planning reports and documents. This then may explain why the concept of polycentricity is barely known and used in Austria. In Switzerland the related concept of urban networks is widely known in the administrations of the country and the regions. Although not a EU member state there is a lively discussion on the concept of polycentricity, which is explicitly promoted by the federal spatial planning strategy.

In countries with established traditions in the field of spatial planning or, alternatively, territorially relevant traditions such as regional planning, polycentricity often competes with other, already accepted policy concepts. In other countries, with a less solid track record in the field of spatial planning, a novel policy approach such as the ESDP notion of spatial planning might fill a vacuum, while there may also be a role for a policy concept like polycentricity.

2.1.2 Polycentricity in the ESDP

A key concept

Polycentricity is a key policy aim in the ESDP. It is used as a self-explanatory concept, characterising something that is opposite to monocentricity on the one hand and dispersal and sprawl on the other.

Polycentricity is supposed to contribute to *balanced* regional development, European *competitiveness* and *sustainable* development, and to facilitate new urban-rural *partnerships*. As stated in section 1.3 of the ESDP *Underlying Objectives of the ESDP* (§19): "Spatial development policies promote the sustainable development of the EU through a "balanced spatial structure". Accordingly, "the Ministers responsible for spatial planning agreed upon three policy guidelines for the spatial development of the EU:

- development of a balanced and polycentric urban system and a new urban-rural relationship;
- securing parity of access to infrastructure and knowledge; and
- sustainable development, prudent management and protection of nature and cultural heritage."

Three goals are subordinated the achievement of a *balanced regional development*:

To reduce regional disparities at all levels. Special attention is given to the avoidance of further excessive economic and demographic concentration within the core area of the EU (§§68, 69, 70). This goal is based on the observation that many activities, particular high-quality and global functions are concentrated within the core area of the EU (the "pentagon") and a few metropolises and isolated islands of growth, e.g. Barcelona and the Øresund Region, outside the core (§68). The pentagon is seen as the only European outstanding larger "geographic zone of global economic integration", hence leaving other regions in more marginal positions of economic development. Accordingly, it has been made a specific goal of the ESDP to foster the development of several dynamic zones of global economic integration outside the pentagon comprising a network of internationally accessible metropolitan regions and their linked hinterland, thus promoting a polycentric European space.

- To revitalise less densely settled and economically weaker regions (§76). This goal copes with the negative impacts of concentrated regional development. It acknowledges that the peripheral regions cannot wait for measures of the first kind to be effective, i.e. the reduction of regional disparities. Separate measures focusing on the revitalisation of peripheral regions are needed. The ESDP supposes that cities should co-operate to develop functional complementarities (§76) and to solve common problems (§77).
- To avoid the negative spatial impacts of sectoral policies (Chapter 2 and §64). Several EU sectoral policies influence spatial and regional development in unforeseen ways that have to be considered within the context of spatial analysis and spatial strategies. Taking into consideration the fact that sectoral institutions and infrastructure are always allocated in space and are usually related functionally with space, i.e. hinterlands and commuter catchment areas, it is obvious that sectoral policies should consider how they could contribute to the enhancement of a polycentric spatial development.

The goal of *strengthening European competitiveness* at the global scale is described from two perspectives, a macro and a regional bottom-up perspective:

- Greater competitiveness of the EU on a global scale demands a stronger integration of European regions into the global economy (§67). This goal is facilitated by the above-mentioned idea of building several “dynamic global economy integration zones”. On the one hand the development of “dynamic global economic integration zones” outside the pentagon should contribute to a more balanced European territory. On the other hand “the creation and enlargement of several dynamic global economy integration zones provides an important instrument for accelerating economic growth and job creation in the EU,..” (§67).
- The economic potentials of all regions should be utilised (§67). Thus, a spatial development perspective restricted to the development of individual metropolitan regions or a restricted number of dynamic global integration zones is not sufficient. “This is an essential prerequisite for developing the real locational advantage of the EU *vis-à-vis* other large economic regions in the world” (§71).

Each of these goals is formulated within separate contexts (the EU level, the intra-regional level, peripheral regions and sector policies). In each of these contexts the ESDP asks for policies to meet the goals. However, what seems to be even more challenging, though barely considered by the ESDP, is the question of how to set up policy measures that are able to meet conflicting goals.

It is emphasised (§70) that the ESDP has an impact on the emergence of *new principles* for spatial development. Thus, it is argued that previous policy measures on spatial development focused primarily on improving the links between the periphery and the core area in the field of infrastructure. The idea then was to make peripheral areas benefit from the advantages of the core areas. More recent ideas of regional development are however rather different in their focus. On the one hand, it has been acknowledged that improved links between core and periphery often make peripheral areas more dependent on the core. On the other hand, it has become widely acknowledged that regions should be more inclined to build upon their own competencies. In accordance with this the ESDP, it is argued, is offering the peripheral areas new development perspectives through a more polycentric development of the EU territory.

Depending on the context

Polycentricity, as introduced by the ESDP, is an ambiguous concept. This is partly due to the multitude of contexts within which polycentricity is applied.

Generally, polycentricity denotes the opposite of monocentricity. This general concept is applied within different contexts.

At the European level (macro), polycentricity is seen as an alternative model to enhance regional development more evenly across the European territory. A polycentric Europe is seen as an attractive alternative to a European space dominated by the pentagon: growth poles (“global economic integration zones”) should thus be established outside the pentagon.

At the interregional level (meso), urban complementarities are important. Two or more cities should complement each other functionally by offering the citizens and companies in their joined hinterlands access to the urban functions that would usually be offered only by higher-ranking cities. Rather than competing on building up the same urban functions, the ESDP recommends that cities should co-operate by joining existing assets, especially assets that are complementary.

In the context of intra-regional development (micro), urban functional and economic complementarities are emphasised. An urban region can improve its economic performance through better co-operation and improved links within the region.

Co-operation is key. When cities cooperate in their efforts and act together they are in a stronger position *vis-à-vis* the outside world.

Thus, the idea of polycentricity is further developed into several concepts depending on different political contexts, which means that the policy measures recommended by the ESDP reveal different aspects of polycentricity:

The strengthening of several *larger zones of global economic integration* takes place via transnational spatial development strategies (§79,1), including follow-up strategies such as the Interreg action programmes, and other transnational development perspectives such as e.g. "Vision and Strategies for the Baltic Sea Region 2010 (VASAB)."

Related to this is the recommendation on the promotion of integrated spatial *development strategies for city clusters* in individual Member States, within the framework of transnational and cross-border co-operation, including corresponding rural areas and their small cities and towns (§79,3).

Enhancing *complementarity* between cities is recommended in several aspects of urban policies (§74). Thus complementary urban relations should be expanded from the economic realm to all urban functions such as culture, education & knowledge and social infrastructure. It is emphasised that the need for complementary co-operation also applies to city networks at the interregional, transnational or even the EU levels.

The enhancement of *urban networking* is recommended especially for smaller towns in less densely settled and economically weaker regions (§76). It is also stressed that co-operation between urban centres in order to develop functional complementarity may be the only way to achieve viable markets and to maintain economic institutions, something that could not be achieved by single towns or cities. Cities far apart should co-operate in networks aimed at solving common problems.

Policy *decisions and investments affecting spatial development*, including the use of funding from the structural funds particularly in the Objective 1 areas should be oriented towards a polycentric development model (§72). This measure has to be introduced at the EU as well as national level in sectoral policies that are not familiar with, but have serious impacts on, spatial development.

Closely related to this measure is the proposal to establish closer co-operation between structural policy and policy on the TENs, including the suggestion to improve the links between international/national and regional/local transport networks (§79, 2).

2.1.3 Polycentricity in ESPON

As a follow-up to the ESDP, polycentricity is one of the core topics of the European Spatial Planning Observatory Network (ESPON) programme. A number of links to other policies and projects are also mentioned, e.g. the indicators of the Urban Audit, practical experience on the transnational scale of Interreg IIC and IIB and the Study on European Polycentricity, conducted by the Conference of Peripheral Maritime Regions of Europe (CPMR).

The ESPON programme stresses the need to enhance polycentricity at all spatial levels. In so doing, a clear distinction of different functional ideas of polycentricity related to different spatial levels is needed. In line with the argument, the terms of reference for the current project (ESPON 1.1.1) emphasises in §1.1:

1. A European wide application of polycentricity by promoting "several larger zones of global economic integration in the EU"
2. a macro-regional application of polycentricity by promoting "a polycentric and more balanced systems of metropolitan regions, city clusters and city networks" and
3. an intra-regional application of polycentricity by promoting "integrated spatial development strategies for city clusters in all Member States".

Special attention is given to the promotion of "larger zones of economic global integration". The programme asks for an analysis of what kind of investments and transnational co-operation will be needed, as well as asking in addition, what kinds of obstacles need to be taken into account in order to promote the creation of global integration zones outside the Pentagon. The aim here is to enhance European competitiveness as well as to foster the East-West and North-South Cohesion of the European Territory.

The ESPON programme emphasises the fact that polycentricity is more than the morphological presence of several centres, rather than one centre. It has to do with urban networking and co-operation. Thus, three types of networks are mentioned: (1) specialised (thematic) networks, (2) strategic co-operation between clusters of cities across administrative borders and (3) transnational urban networks. The enhancement of such networks should take place in particular between cities with growth potential and between cities that reveal potentials for further developing polycentric relations with other cities, e.g. the potentials for establishing and promoting co-operation based in complementary urban functions. Accordingly, the identification of such potentials is made a core issue.

The ESPON programme asks for policies and strategies at all policy levels, i.e. the EU, national and local levels. At the EU level the focus is on the Structural Funds and policies and programmes with spatial impacts. At the national level, it is acknowledged that regional policies might differ substantially, due to the variations of national urban systems across Europe.

2.2 Polycentricity and regional development

2.2.1 Views on the urban system in regional policies

The ESDP emphasises the *new principles* for spatial development: rather than strengthening external relations between peripheral regions and the core regions, the ESDP highlights the need to strengthen the regions through development perspectives that build upon their own assets and endowments. The development of polycentricity is one important measure of this strategy, which emphasises the possibilities of enhancing regional strengths by joining the assets of complementary urban functions in neighbouring cities.

Empirical evidence indicates that growth centres induce a convergence of income and welfare (R. J. Cavazos, 2001). In accordance with this theory, the spatial policies of the 1950s and 1960s often stimulated the development of hierarchical urban systems. Furthermore, the rank-size theory showed that the hierarchical ordering of cities was an optimal spatial response to the distribution of goods and services with service and market areas of different size. The hypothesis was that the hierarchical urban systems are both efficient (in terms of economies of scale) and equitable (in terms of even access to services). During the period of increasing welfare after the Second World War, expanding infrastructure and industrial production the hierarchical urban system thus became a normative concept for national spatial policies and plans.

In the 1970s, regional development changed. One reason for this was increasing price competition in the manufacture of standard products, due to the opening up of international markets. This was further facilitated by new international trade agreements and a major decline in transport costs. Industrial manufacturing responded in at least two ways. First, manufacturing moved elsewhere. Secondly, industrial companies specialised and participated in international chains of production. These developments changed the economic life of cities and regions, and within regional policies the focus was now on capabilities and competencies *within* the regions. Companies and regions with products that were unique due to branding or specialising, and thus difficult to copy elsewhere, held the strongest positions in international competition. Thus, the new wisdom was to develop specialised regional competencies. The single company may specialise, but more viable synergies and strength will be developed when specialised competencies are developed in regional networks of specialists, suppliers, specialised education and labour markets, much of which is nested in tacit abilities and competencies that are difficult to codify and hence, difficult to copy elsewhere.

This also gave rise to the search for regional identities, as it was believed that special economic competencies embedded in the region endowed the region with a particular identity. As a result, the branding of regional identities is now an integral element of current regional policy making.

The traditional growth centre model overlooks the fact that smaller cities can be more global than larger ones. The large cities are the centres for business services, administration and some special branches of high technology, whereas the small and medium-sized cities are

usually dominated by manufacturing production. Moreover, as manufacturing production is the object of a greater volume of international trade than the service-production of the large cities, it follows that small and medium sized cities can often be more international than the larger cities (Illeris 2002). This observation may run contrary to a general impression that the largest cities are the most internationalised. To the extent that small and medium sized cities have become international they are becoming generators of local regional development rather than just mediators of regional development spreading from the large centres.

2.2.2 Spatial trends and possible policy responses

Cities embracing complementary urban functions may co-operate to constitute the functionality that would usually only be present in higher-ranking cities. And they may also co-operate on the establishment of labour-market facilities, education and specialised business services in order to build up competencies that are needed in the region but may be too specialised for each city to establish on its own. Local urban co-operations have been further encouraged by shifts in national regional policies from paying subsidies to declining industries to assisting cities and regions in developing the framework conditions for growth. In this process, cities are increasingly being encouraged to co-operate and to develop joint strategic development perspectives from below. Thus, from the perspective of small and medium sized cities the idea of sustaining urban networking and polycentricity seems to be logical as a follow-up strategy on emerging trends.

However, trends of spatial concentration prevail and indeed seem to have gained an even greater momentum during the 1990s. In the ongoing process of restructuring the industrial society towards that of a service-oriented society, industrial production lost in small and medium sized cities tends to be replaced by service and high-tech production concentrated in the largest cities. This is a process of spatial concentration, which at the local regional level is revealed by the increased size of commuter catchment areas and of the labour- and housing markets more generally.

In figure 2.1 the trend towards spatial concentration is described as the outcome of reduced transportation costs and increasing economies of scale. As illustrated by the figure, polycentric regional systems are more likely to occur in two positions: (1) if low transport costs and low economies of scale are combined or (2) if high economies of scale and high transport costs are combined. However, both of these positions are difficult to achieve, since they are counteracted by the dominant trends of decreasing transport costs and increasing economies of scale.

From a purely logical point of view, taxation on transport should be seen as a political measure if e.g. companies producing standard products dominate national urban systems. On the contrary, if the taxation of transport is not a political option, measures should be taken to encourage the regional specialisation of production. This idea has become ever more popular, in line with the mainstream way of thinking in respect of regional politics: Regions must develop niche-products, i.e. unique and specialised products in order to stay competitive.

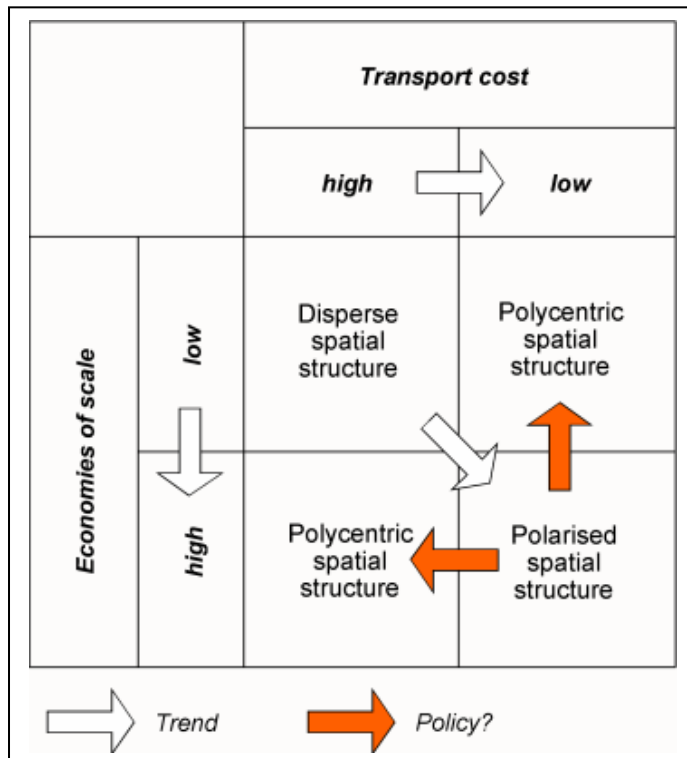


Figure 2.1 Spatial trends and policy responses

2.3 Polycentricity in research

Our point of departure here is the ESDP and its political visions of polycentricity. But how may we ask have researchers dealt with polycentricity and related phenomena in explaining territorial development? Robert C. Kloosterman and Sako Musterd (2001) have undertaken an overview of the discussion on polycentricity as it can be found in research articles. And as we will see below, significant focus has been laid on the local level, i.e. within the cities, a territorial level *below* the scales discussed in the ESDP.

At the city level, polycentricity refers to a number of phenomena that opens up the former traditional monocentric city, e.g. road transport that acts independently of the central railway stations, new retail centres located beyond the city centre, the diversified location of urban functions due to the splitting up of 'front' and 'back' office needs, and due also to the separate needs of the production of goods and information, the diversification of household traffic due to two earner households and new transport needs caused by shopping, leisure and the transport of children. Thus, the former city radiating from the centre towards the periphery has been replaced by a city with urban functions and centres generating cross cutting traffic in a complex pattern. Intra-urban polycentricity can therefore be seen as a product of urban functions becoming less dependent on each other. However, *intra-urban* polycentricity is beyond the level relevant to the ESDP.

Inter-urban polycentricity is a more interesting subject for our study, and can be seen as a product of cities becoming more dependent on each other. Kloosterman and Musterd highlight four aspects of research on inter-urban polycentricity:

The polycentric region does not have any common or typical *physical form*. Concentrations of population and employment and, hence, patterns of commuting, may be radial, linear along corridors or along a ring depending on the history and topography of the region. The region lacks the hub-and-spoke form of the city and the land-use density gradients decreasing from the centre to the periphery. It contains urban zones and rural landscapes in diverse constellations and a diversity of physical patterns of road networks.

The polycentric developments within the intra-urban context take place usually within one *political entity* or within negotiations between one, usually dominant, core city and its adjacent suburbs. In the polycentric region, political governance is undertaken by the political entities of independent cities and by the private stakeholders of regional development. This is a highly challenging political situation. However, as several authors stress, the forming of regional governance between political urban identities and between public and private agencies is crucial for regional polycentricity.

A *functional division of labour* is a crucial characteristic of polycentricity. Usually, the evolving spatial division of labour takes place within the existing configuration of cities. However, the functional distribution may be *weakened*, as the larger polycentric urban region becomes more of a homogenous economic environment. On the other hand, the functional distribution may be *strengthened* as cities begin to specialise in specific functions for the whole of the polycentric region. The first trend relates to expanding labour markets, while the second concerns the synergies of complementarities. The economic aspects of the regional functional relationships are important in terms of our analyses of polycentric urban regions. This is due to the generally accepted observation that regions rather than individual cities are the locus of competitive advantages. Regions are perceived as the relevant level of spatial aggregation where specialised, innovative production is embedded in particular informal cultures and systems of social regulation. Thus, regions have replaced cities as spatial entities of localised economic development. Accordingly, studies focusing on regions competing in a world economy only seldom touch upon the issue of (polycentric) urban form.

When regions become the spatial entities of development they also transcend the boundaries of the historically rooted *identities* of former individual cities. *Vis-à-vis* the outside world the region is thus becoming the locus of identification. This is why regional branding has become a key issue on the agenda of regional (polycentric) development co-operations.

Kloosterman and Musterd argue that we have reached a point where the monocentric model is no longer suitable for exploring the evolving urban and regional patterns in Europe, North America and Japan. Thus, we must develop further our knowledge of polycentric regional development. On the one hand, the role of regional clusters of cities seems to be an inevitable fact, while on the other, it seems that regional development could be further

facilitated by policies aimed at releasing and catalysing the as yet unexplored potentials for polycentric development, e.g. the synergies of joint regional labour markets and co-operation on urban complementary functions. The conclusion here is then that inter-urban polycentricity can occur when there are a number of historically and spatially distinct cities,

- not clearly dominated and led by one city,
- not differing that much in terms of size or overall economic importance,
- located in more or less close proximity (mainly within maximum commuting distance),
- constituted by independent political entities.

There is clearly a gap in the territorial scale between the scientific focus as presented by Klosterman and Musterd on the one hand, and the level discussed in the ESDP on the other. ESDP is concerned with the European scale (macro), the inter-regional scale (meso) and the inter-urban scale (micro), while the main focus in previous research has been on the intra-urban scale and the organisation of cities. Obviously, this raises the question of conceptual consistency across all levels.

2.4 Aspects of polycentricity to be studied

2.4.1 Morphology and relations

Two structural aspects are of particular relevance to polycentricity (figure 2.2):

- Morphological, laying out the distribution of urban areas in a given territory
- Relational, based on the networks of flows and co-operation between urban areas at different scales.

The observation of a system of cities automatically implies the observation of several nodes and centres. The urban pattern may be either strongly or weakly hierarchical. Two extreme patterns can be identified:

- *Mono-nuclear pattern*: one dominant city and several peripheral/dependant cities.
- *Poly-nuclear pattern*: no dominant city. Cities are quite similar in size.

Cities or nodes of comparable size structure all paradigmatic and most empirical examples of polycentric urban systems. Thus, in general it is supposed that polycentric urban relations are most likely to develop in systems of even-sized cities that could see an opportunity in achieving the advantages of one larger "city" by establishing binding political relations and co-operation across complementary urban functions. However, urban relations based on urban specialisation might also occur between cities of different size.

We can therefore conclude that polycentricity is facilitated by a poly-nuclear pattern, but that polycentric policies may still be successfully implemented within a hierarchical spatial configuration without necessarily remodelling the balance between the concerned nodes.

Relations between cities are crucial for polycentricity, as nodes without relations do not form a polycentric system.

Relations, flows and co-operation, may be oriented in different ways between centres. Two extreme patterns can be identified (figure 2.2):

- *Mono-oriented*: relations are preferentially oriented towards one centre.
- *Multi-directional*: relations have no obvious orientation.

As argued above, hierarchical patterns of flows constitute no hindrance to polycentricity. However, the development of synergies of cities implies the development of significant mutual connections between cities, and not just linking up with a main node. Accordingly, a mono-oriented relational pattern is therefore incompat

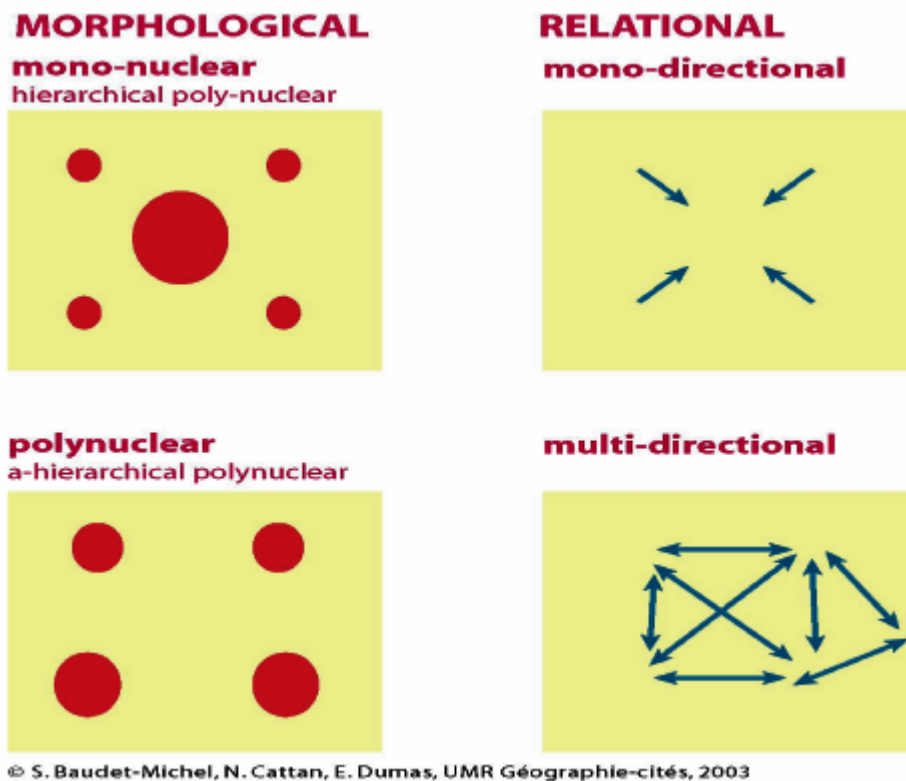


Figure 2.2 Polycentricity: two complementary aspects

2.4.2 Institutional and structural relations

Urban relations of polycentric systems may be identified as follows (figure 2.3):

- Institutional, based on voluntary co-operation;
- Structural, resulting from “spontaneous” spatial development.

Institutional or political polycentricity relies on co-constructions, co-operation, and on the willingness of territorial agencies to work together on joint projects and strategies.

The cities may, or may not, be complementary with regard to urban functions. The functional complementarity is not a pre-condition for cooperation. What is important here is

that two or more cities develop common projects in order to build thematic and joint projects, actions and strategies, to exchange knowledge, best practices etc. and to share equipment and upgrade infrastructure (cultural, social, transport, etc.).

Structural polycentricity is related to the organisation of a territory via spatial patterns of economic or functional relations and flows. Structural relations and flows are not necessarily nested in urban strategies. Rather, they are “spontaneous” products of overlapping housing or labour markets, of specialised networking between urban located actors or simply historically established cultural, economic or social relations. Thus, structural polycentricity may be identified as road, rail and air traffic, financial flows, information flows, etc.

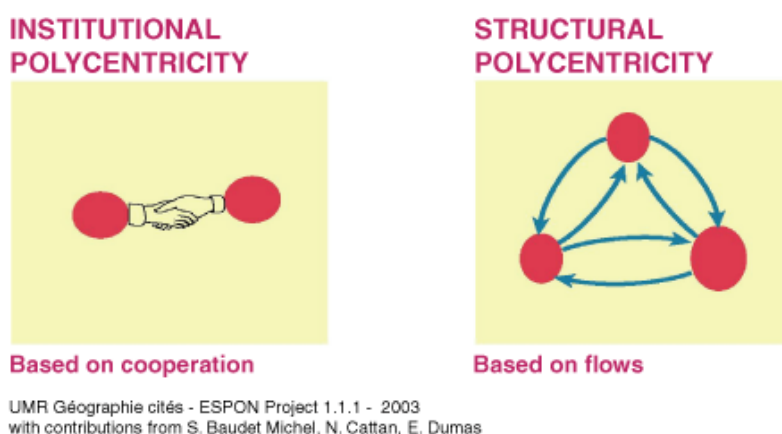


Figure 2.3 Polycentricity: two main processes

2.4.3 Different territorial scales

Connections over large distances

Different kinds of polycentricity are related to different spatial levels. Distant urban areas may be connected through various types of relations such as market-based flows or exchanges, or co-operation directed towards the sharing of experiences, methods, or information, or by participating in a development project, etc. These relations are characterised by connectivity rather than proximity. Keeping in mind the distinction between institutional and structural relations, distant polycentricity may be illustrated by the following examples:

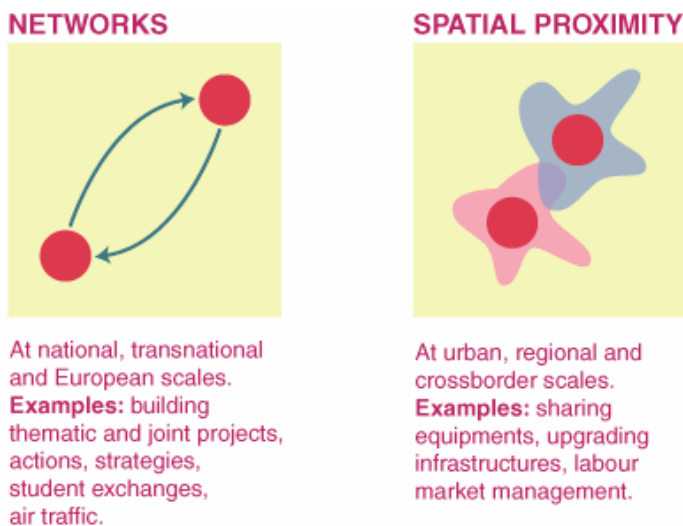
Several EU programmes have encouraged institutional relations between cities and regions that can often be distant from each other. Examples here include the “URBAN” community initiative programme, with the exchange of experiences between distant cities around thematic issues, and the INTERREG III B and III C programmes, where regions co-operate on spatial planning issues. Examples of structural links can be financial flows, telecommunications networks, the exchanges of students, air traffic links, etc.

Connections based on proximity

Spatial proximity between urban areas potentially allows for other forms of co-operation and integration to take place:

- Economies of scale through shared infrastructure, such as universities and hospitals.
- Common strategies to manage flows and exchanges generated by commuters, telephone calls, etc.

The most frequently used indicator for economic integration is travel-to-work intensity between cities. A situation with intense commuter flows in both directions would be a sign of integration and of polycentricity. Examples of institutional polycentricity are co-operation in spatial planning, common visions, shared functions etc. The EU has encouraged co-operation in cross-border regions through Interreg IIIA programmes.



UMR Géographie cités and Nordregio - ESPON Project 1.1.1 - 2004
with contributions from S. Baudet Michel, N. Cattan, E. Dumas, E. Gloersen

Figure 2.4 Polycentricity: different territorial scales

2.4.4 Aspects to be studied

The various spatial levels, the morphological and relational aspects, the distinction between institutional and structural relations and between relations based on proximity and connectivity constitute *different forms of polycentricity* which need to be analysed in conjunction with each other. Since this study is related to policy, the analysis shall focus both on the current pattern of polycentricity and on regions in which polycentricity may be more fully developed, i.e. *potential* polycentric regions.

Especially at the European level and at the meso-level, the concept of polycentricity has remained largely rhetorical. There is no operational definition, no established method to identify or measure polycentricity at different spatial scales, and no method to assess the

impacts of polycentricity (or the lack thereof) with respect to policy goals such as efficiency (competitiveness), equity (cohesion) and sustainability. It is therefore not possible to determine an optimal degree of polycentricity somewhere between the extremes of total monocentricity and full dispersal.

Ideally, policymakers should be able to answer questions in respect of:

Analysis. How can polycentricity be defined in a way that makes it measurable? How polycentric is the European settlement structure? Are there countries that are more polycentric than others? Are there trends towards more polycentricity or towards more polarisation? Are these trends the same in all countries, or are there significant differences?

Evaluation. Is polycentricity desirable? Are polycentric systems more efficient and more competitive? Does polycentricity increase spatial cohesion? Is it good for the environment? Are there disadvantages, such as agglomeration dis-economies, marginalisation of peripheral areas or more traffic and congestion? Is there an optimum degree of polycentricity (a balance between efficiency, equity and sustainability)?

Policy analysis. What should be done? Is it necessary to contain the growth of central regions? Should one strengthen medium centres or support peripheral areas? Which policies are available – taxation, regulation, subsidies, infrastructure?

Forecasting. What would be the impacts of such policies? What would be their effects not only on polycentricity but also on regional competitiveness and economic performance, on spatial cohesion and on the environment?

Implementation. How can the policies be implemented? Which policies need to be implemented at the European level, and which should be left to national and regions governments?

This aim of this report is to delve deeper into the discussion on polycentricity than have previous research attempts, especially at the macro- and meso-levels. We will study the following issues:

The morphology of the urban system in Europe. A comparative European study of the urban system should ideally build upon a general and well-established definition of city regions. No such definition however currently exists. National definitions are sometimes built upon population densities in administrative regions, sometimes on travel-to-work areas, and thus definitions are different from country to country. The first issue then is therefore to map the system of functional urban areas (FUAs) in Europe, as these are the building blocks for polycentricity.

The degree of polycentrism in national urban systems. The nation states are the best-integrated territorial level in Europe, and are therefore best suited for our focus on a discussion of the degree of polycentrism. With the FUAs as building blocks, the national urban systems can be then analysed comparatively. We will also analyse the correlation

between the degree of polycentrism and the economic performance of in the ESPON area of 27+2 countries.

The functional specialisation of urban nodes. Functional specialisation is an important dimension of polycentricity, since it is these functions that make cities different from each other and produce the flows necessary for economic and political integration. The next step is therefore to map the functional specialisation of the FUAs and to make a classification of the urban areas in EU 27+2.

The potential for polycentricity based on morphological proximity. A more polycentric Europe, at the macro-scale, should have strong city regions in addition to the Pentagon. We will therefore identify the strongest FUAs, since these will be the cornerstones of new "global integration zones", and in particular look for the parts of Europe (beyond the Pentagon) where strong FUAs are located in proximity to each other.

City networks and co-operation. Institutional and structural relations are of course of paramount importance when analysing polycentricity. However, data on flows is difficult to obtain. We will therefore give some examples of networks and co-operation between cities at the European level.

The presence of polycentricity in national spatial planning and regional policies. The application of the concept of polycentricity in European countries will be investigated as an input to the analysis of possible policy measures at different geographical levels.

Experiences of partnership and governance in spatial policies. Co-operation between city regions is a key notion in polycentric policies. We will therefore assess such experiences from horizontal and vertical co-operation between various levels of government. The development towards governance, where organisations with disparate responsibilities work together in partnership, is important here.

The integration of these elements is described in table 2.1. A more comprehensive discussion of the aspects, processes, levels and integrative processes of polycentricity is provided in the Critical Dictionary of Polycentricity in Annex report A.

Table 2.1 Aspects of polycentricity investigated

Spatial level	Polycentricity	Constituting elements	Potentials for polycentric developments		Measuring Polycentricity	
			Morphology	Functional specialisation	Flows	Plans and co-operation
Macro	Europe 27+2	Global economic integration zones	Chapter 5.1		Chapter 6	
Meso	Inter-metropolitan	Metropolitan regions and urban clusters	Chapter 3.2			Chapter 7.1+7.2 7.4 Chapter 8
Micro	Intra-regional and inter-urban	Functional urban areas	Chapter 3.1 5.2	Chapter 4		Chapter 7.1+7.2 7.3
City	Intra-Urban	Urban sub-centres	Chapter 5.3			

3 National polycentricity in Europe

3.1 The FUA approach and concept

The analysis of urban areas as nodes in polycentric development has a twofold approach: First, seven different statistical parameters have been compiled and calculated as a basis for establishing a typology of Functional Urban Areas (FUAs), delimited according to national definitions. In a second phase, a unified delimitation of 'Isochrone areas' has been used: These Isochrone areas correspond to a zone within which travel to work daily migration is most likely to occur, and are based on a 45-minute car travel time from the centre of these FUAs.

The former approach allows for a detailed analysis of the strengths and weaknesses of individual FUAs, and thereby gives some indications of functional complementariness between them. The latter shows to what extent these FUAs are spatially interconnected, i.e. to what extent their respective influence areas overlap. Combining the two approaches, functional complementariness and spatial overlaps and interconnections one gets a picture of possible polycentric integration scenarios. One must however keep in mind that spatial proximity is only one aspect of the interaction between cities. Another, potentially more important one, is the network aspect. Due to the lack of data, the present project has not endeavoured to present a comprehensive analysis of network interaction between cities. Some important theoretical points are however presented and exemplified in chapter 6.

In this chapter, we'll look specifically at polycentrism at the regional and European levels. The classic definition of regional polycentrism is that a region (1) consists of more than two cities that are (2) historically and politically independent (no hierarchy) and that (3) are in proximity to each other and further (4) have a functional relation and are complementary to each other. However, within each region, different polycentric systems can be identified, depending on whether you look at them from a functional (systems of FUAs consisting of different specialised and complementary urban functions), economic (systems of FUAs highly integrated into the labour market, industrial clusters and trade) or political (systems of FUAs working together on joint strategies) point of view. A major political challenge is to find a good compromise when the spatial boundaries for metropolitan governance.

Establishing governance bodies able to promote balanced development and productive competition and complementariness within polycentric urban regions across Europe is a prerequisite for achieving European polycentrism. The concept of European polycentrism was originally coined by the CPMR study.

3.1.1 Three concepts of urban areas

Three key concepts related to polycentrism are urban agglomeration (UA), Functional urban area (FUA) and Metropolitan Growth Areas (MEGAs) (table 3.1).

There's no common European definition for Urban Agglomerations (UA), which refers to contiguous built-up areas. The United Nations have the most common definition, but it is not standardised. Other bodies such as CORINE and N.U.R.E.C also have some groundwork classifications concerning contiguous built-up areas. Lacking comprehensive and definitive definitions, this research could only look at various national definitions of UAs. To do this, the most important issue was to identify the core of FUAs (to pinpoint where the centroid of the FUAs are situated). Secondly, the share of total population that lives in a FUA's contiguous built-up areas had to be identified and then used in an estimation of the urbanisation rate of a country (this exercise has been carried out in project 1.1.2., where the population is indexed based on the rural population.). The population of UAs are also important factors in this analysis: it can be argued that only UAs that exceed a certain threshold level (e.g. 10 000) can be labelled urbanised areas. In 1.1.1, only the core of such UAs have been identified. Only those UA cores, which are centres of Functional Urban Areas (see below), with more than 20 000 inhabitants (or functionally important) have been identified.

Functional Urban Areas (FUA) consist of the UA/core municipality plus adjacent commuting areas (fringe municipalities). The commuting data on the NUTS 5 level is a prerequisite for defining these FUAs, but commuting data (according to Data Navigator) is available for this territorial level only for Austria, Belgium, Denmark, Finland, France, Germany Luxembourg, Norway and Sweden. FUA has a national counterpart definition (often named functional urban region, travel-to-work-area, Commuter Catchment area, commuting zones or similar) in 18 countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary (regional labour centres), Italy, Norway, Luxembourg, Netherlands, Sweden, Switzerland, Slovak Republic, Slovenia and the United Kingdom). Due to the lack of data, 1.1.1 uses the national definitions of FUAs, or the closest available counterparts. FUAs that have a population of 20 000 inhabitants are considered urban, and even smaller FUAs are considered if they have a functional role within the national urban system.

FUAs are the building blocks of the polycentric region. Polycentric regions are established by two or more FUAs reinforcing each other. At two levels, we are dealing with polycentric urban regions, the (sub) national level (national polycentric regions) and the trans-national level (cross-border polycentric regions).

Table 3.1 The key spatial concepts of urban areas

Acronym	Signification
UA	Urban Agglomeration
FUA	Functional Urban Area
MEGA	Metropolitan European Growth Area

3.1.2 What is a FUA?

Regional analysis often draws from statistical material based on conventional administrative units, i.e., municipalities (NUTS 3) or regions (NUTS 5). It is obvious that most of the municipalities are simply too small in spatial terms to be used in the comprehensive analysis of regional development trends. On the other hand, the alternative level of spatial unit analysis, namely the regions, is too heterogeneous to portray the actual spatial patterns of society. It is for this reason that the more recent concept of Functional urban area (FUA) has risen in status to become the significant functional level in the urban and regional system. (Antikainen & Vartiainen 2002)

The concept refers to agglomerations of municipalities that are grouped together according to their functional orientation in order to reflect the actual daily operational conditions of people, enterprises, and community organisations. FUA is a useful concept also when analysing regional development from a functional viewpoint. Using FUA as the level of analysis enables to distinguish internal development dynamics from the features of external development more explicitly. Internal dynamics refer to development conditions and features within the functional urban region, while external development relates to the inter-regional, national, and international levels. (Antikainen & Vartiainen 2002)

The most important quality of the concept of FUA is thus its capacity to extend beyond administrative boundaries. As a result, the needs of economic activity and service production can be more efficiently mapped. This leads to more coherent strategic planning and visioning. Many European countries have inserted some statistical levels between the municipal and regional levels, thus giving shape to the current urban areas and inter-municipal co-operation. FUAs have been identified in various manners by the European countries as functional urban regions, districts, travel-to-work-areas, local labour market areas, daily urban systems, commuting zones and sub-regional units as well as others. (Antikainen & Vartiainen 2002)

This drive towards the creation of FUAs has played a central role in the implementation of regional development policy and statistical monitoring. At the operational level, districts are thus utilised in targeting regional policy incentives according to their disparities and characteristics. The feasibility of using the concept of FUA can also be justified within the context of urban change. FUAs are highlighted by the ongoing global process of regionalisation. Initially, regionalisation referred to the growth of diversified large and medium-size urban regions and, intra-regionally, to the branching out of population growth from the centre to the surrounding rural areas. In practice, economic activities and jobs were concentrated at the centre of these urban regions although population grew in the fringe areas, i.e., in the surrounding municipalities. The core (the centre) of the urban region along together with its fringe areas thus formed an increasingly interwoven and interactive functional region. The process is now considered to be the most important structural change impacting upon the urban and regional systems. Generally speaking, inter-municipal co-operation strengthened throughout the last decade, with the FUA level

now being considered as one of the basic levels of regional and community strategy formulation and planning for both local and national policy-making. In this way FUAs have become to attract increased levels of governmental capacity instead of being mere statistical units of analysis. (Antikainen & Vartiainen 2002)

Functional Urban Areas definition and delimitation - The cases of France and the Nordic countries

Most of the European countries have a national definition for Functional Urban Areas. The existence of such areas is an important prerequisite for an analysis of polycentric urban trends; indeed, statistics based on morphological boundaries or administrative boundaries will in most cases not reflect the actual role played by a city. However, different national definitions of FUAs can create a bias in a comparative European analysis.

By establishing a European map of national FUA areas, ESPON 1.1.1. seeks to illustrate these different national approaches. Furthermore, these delimitations allow for an analysis of the internal structures of FUAs across Europe. Internal structure partly explains the way in which the FUA relates to other cities in the national and European urban systems. A delimitation of FUAs across Europe contributes to making an analysis of the interaction between the regional and European scales of polycentrism possible. It is therefore an important contribution both to the analysis of cities, both as nodes in a European scale polycentrism, and as spatial contexts for regional and local polycentrism.

Finally, as statistics seldom exist for FUAs as such, identifying which municipalities they are composed of is helpful when gathering data (e.g. identifying the infrastructure present, or significant company headquarters in each FUA).

This preliminary methodological discussion deals with the cases of France and the Nordic countries, for which information on the NUTS 5 composition of each FUA has been the most readily available. As shown below, these cases illustrate some of the difficulties that can be encountered when gathering and comparing different kinds of FUAs.

Definitions of areas based on commuting patterns vary greatly from country to country, and are more or less based on predetermined statistical criteria:

- In France, the FUA is an area attracted by an Urban Pole, i.e. a group of municipalities with over 5000 jobs. Municipalities are considered to be attracted to the urban pole if over 40% of the active and employed resident population work there or in any other municipality attracted by it.
- In Sweden and Finland, the FUA is an area attracted to a labour market centre. A municipality is considered a labour market centre if less than 20% of its resident employed population commutes to areas out of the municipality, and if no other municipality attracts more than 7,5% of this resident employed population. All municipalities that do not satisfy these criteria belong to the FUA of the labour market centre to which the greatest number of resident employees commute. If a municipality sends the greatest number of employees to another non-labour market centre, which itself sends the greatest number of employees to a labour market centre (chain migration), all these municipalities belong to the FUA of the labour market centre.

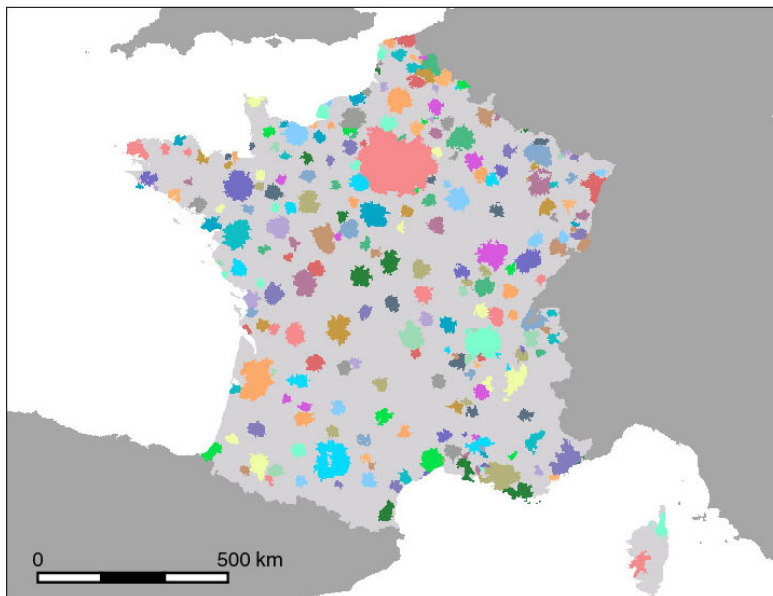
- In Norway, more qualitative criteria have been used, even if the delimitation is in general based on travel times and commuting patterns. A first group of labour market areas is composed of municipalities within 30 minutes travel time of an urban core area, as well as those within a 75 -minute travel time distance, which send at least 10% of their resident employed population to the core urban area. Other municipalities with little out-migration constitute the second group, and these municipalities are then grouped into one entity if the travel time from one to the other is less than 30 minutes. While the first group corresponds to the general approach of FUAs, the latter should rather be envisaged as non-attracted areas. This is also the case for the municipalities that are not grouped to any other in this classification, unless their internal labour market is considered to be of significant importance.
- In Denmark, a Commuting area (CA) is an area in which the number of people living and working is more than twice as large as the number of daily commuters (in- and outgoing commuters) to and from the area.

This review shows that each definition should be analysed carefully, and may perhaps be improved if one can gain access to the original data used for delimitation. Indeed, when statistics on migration from municipality to municipality exist, these can be of great help in homogenising different national approaches.

A second major parameter is the size of municipalities. As shown by figure 3.1, while the limited size of French municipalities allows for a precise distinction between the Urban Areas and the rest of the territory, municipalities in Finland, Norway and Sweden create erratic delimitations of FUAs. In inner and northern parts of these countries, one finds FUAs with an extensive spatial delimitation, despite the fact that all of their population is concentrated in a single urban centre. As illustrated in figure 3.1 and 3.2, this leads to functional urban areas with population densities below 10 inh/km². Delimitations could, in such extreme cases be revised, in order to correspond better to demographic and economic spatial structures.

Despite some limitations due to the diversity of national approaches, which can partially be compensated by a reinterpretation of the data used for delimitation, a spatial delimitation of FUAs opens up new perspectives for their statistical analysis, through the use of GIS-data. One can for example examine the pattern of the infrastructure network with each FUA, look at the number and location of universities positioned in and around it, or look at how functional urban areas co-exist with agricultural land by the use of CORINE-data.

Functional urban areas with over 20 000 inh in France



Functional urban areas with over 20 000 inh in the Nordic countries

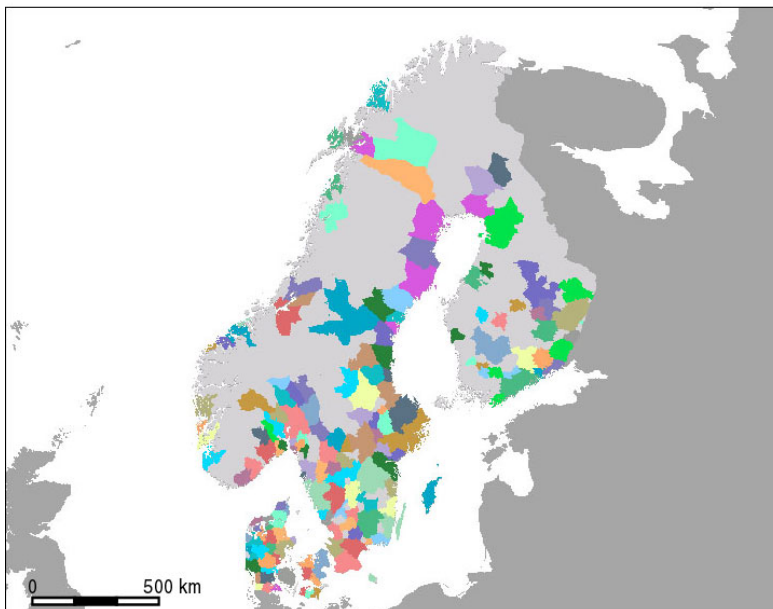
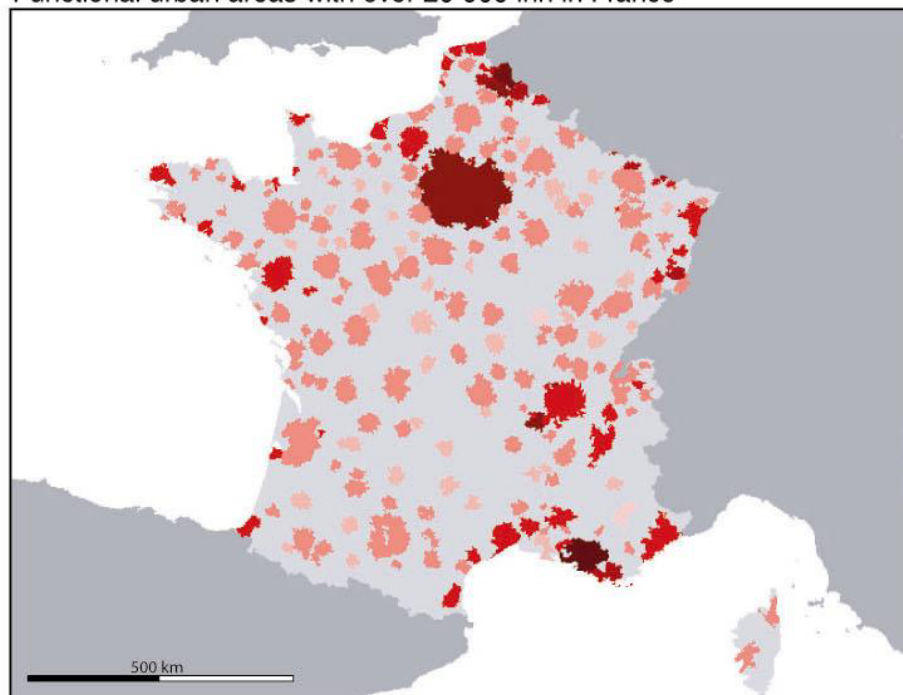
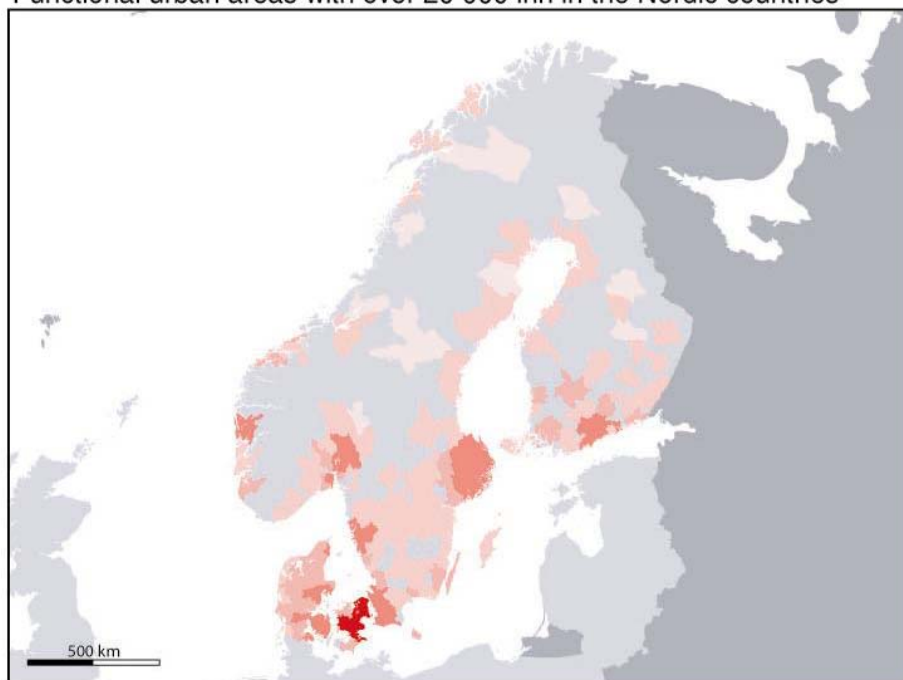


Figure 3.1 Functional urban areas with over 20 000 inhabitants in France and in the Nordic countries

Functional urban areas with over 20 000 inh in France



Functional urban areas with over 20 000 inh in the Nordic countries



Population density in FUA (inh / km²)

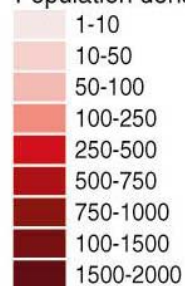


Figure 3.2 Functional urban areas with over 20 000 inhabitants in France and in the Nordic countries - population density

3.2 National polycentricity in Europe

3.2.1 Three dimensions of polycentricity

How polycentric or monocentric are the European countries? And are polycentric countries more balanced (cohesion) or more competitive? In this chapter, these questions will be discussed with the FUAs as building blocks.

The approach proposed here is to identify and measure polycentricity by investigating three dimensions, namely, *size*, *location* and *connectivity*, of a functional urban area (FUA). These three dimensions are in line with the distinction between the *morphological* aspects of polycentricity (hierarchy, distribution, number of cities) and the *relational* aspects (flows and co-operation between urban areas at different scales): size and location describe morphological aspects, whereas connectivity describes relational aspects. The three dimensions of polycentricity are measured by the indices, *Size Index*, *Location Index* and *Connectivity Index*. The three indices are defined as follows:

Size Index

The first and most straightforward prerequisite of polycentricity is that there is a distribution of large and small cities. It can be shown empirically and postulated normatively that the ideal rank-size distribution in a territory is log linear. Moreover, a flat rank-size distribution is more polycentric than a steep one. Finally, a polycentric urban system should not be dominated by one large city.

To operationalise this, two sub-indicators of the Size Indicator were defined: (a) the slope of the regression line of the rank-size distribution of population and (b) the degree by which the size of the largest city deviates from that regression line. When calculating the regression line, all but the largest city are considered.

In addition, an indicator of economic size or importance was defined as the rank-size distribution of gross domestic product (GDP) of FUAs. As with the rank-size distribution of population, two sub-indicators were defined: (c) the slope of the regression line of the rank-size distribution of GDP and (d) the degree by which the GDP of the city with the largest GDP deviates from that regression line. When calculating the regression line, all but the city with the largest GDP are considered.

Location Index

The second prerequisite of a polycentric urban system is that its centres are equally spaced from each other – this prerequisite is derived from the optimal size of the service or market area of centrally provided goods and services. Therefore, a uniform distribution of cities across a territory is more appropriate for a polycentric urban system than a highly polarised one where all major cities are clustered in one part of the territory.

A second step in the analysis of polycentricity is therefore to analyse the distribution of cities over the territory. One possible approach is to subdivide the territory of each country

into service areas such that each point in the territory is allocated to the nearest centre – such areas are called Thiessen polygons. Thiessen polygons can be constructed by dividing the territory into raster cells of equal size and to associate each cell with the nearest urban centre. In this way the area served by each centre can be measured.

In the present analysis airline distance was used to allocate raster cells to centres. In future research, the log sum of travel times and/or travel costs by road and rail (at higher levels of the hierarchy also by air) might also be used. As a measure of the inequality of the size of service areas (e) the Gini coefficient of inequality was used. The Gini coefficient measures the degree of inequality of a distribution between zero and one (or zero and 100), where zero indicates perfect equality and one (or 100) maximum polarisation.

Connectivity Index

A third property of polycentric urban systems is that there is a functional division of labour between cities, both between higher-level centres and the lower-level centres in their territory and between cities at equal levels in the urban hierarchy. This implies that the channels of interaction between cities of equal size and rank, but in particular between lower-level and higher-level cities, must be short and efficient. It is obvious that this requirement may be in conflict with the postulate that cities of equal size and rank should be equally spaced over the territory.

There are principally two ways to measure connectivity. One is to measure actual interactions. Ideally, the analysis would reveal functional relationships between cities of equal size or rank and between cities of different size or rank in the urban hierarchy. Appropriate indicators of such interactions would be flows of goods or services, travel flows or immaterial kinds of interactions, such as telephone calls or e-mails. The second possibility is to measure the *potential* for interactions. Measures of interaction potential could be infrastructure supply, i.e. the level of road connections (motorways, roads) or the level of service of rail (number of trains) or air (number of flights) connections. An urban system with good connections between lower-level centres is more polycentric than one with mainly radial connections to the dominant capital. In polycentric urban systems lower-level centres also have good accessibility.

In measuring interaction potential the multimodal accessibility of FUAs is used. Two sub-indicators were defined: (f) the slope of the regression line between the accessibility and the population of FUAs and (g) the Gini coefficient of the accessibility of FUAs. The two sub-indicators have a similar meaning: the flatter the regression line, the more accessible are lower-level centres compared to the primary city, and the lower the Gini coefficient, the less polarised is the distribution of accessibility.

3.2.2 Measuring European polycentricity

The three dimensions of the polycentricity of all FUAs in Europe are presented in figures 3.3 to 3.5. There are altogether 1,595 FUAs in the FUA database. Of these, seven FUAs on the Azores, Madeira and the Canary Islands were not considered. Of the remaining 1,588 FUAs,

countries or regions with only one or two FUAs were excluded because they cannot be viewed as polycentric.

The rank-size distributions of population and GDP of the 1,588 FUAs in Europe are presented in figure 3.3. The polycentric nature of the urban system of Europe is clearly apparent. In both respects, with regard to population and economic activity, there is a wide range of medium-size urban centres with no overpowering "European capital". It may even be said that from an efficiency point of view, even the largest urban areas in Europe are too "small" for a continent of Europe's size. There is a remarkable drop in the rank-size distribution of population below a threshold of 50.000 inhabitants (the dotted line) probably caused by an uneven selection of cut-off points in different countries. However, the similar drop in the rank-size distribution of GDP below 500 million Euro (the dotted line) can be explained by the lower GDP *per capita* in the accession countries (indicated by the red dots).

Figure 3.4 shows the service areas of FUAs. When calculating the Thiessen polygons, it was assumed that national borders still act as borders; therefore no services cuts across national boundaries. Again the polycentric structure of the European urban systems is apparent. However, there are clear clusters of FUAs concentrated in the British midlands, the Benelux countries, the Rhein-Ruhr and Rhine-Main conurbations, the upper Rhine valley and northern Italy – the Blue Banana revisited. In contrast, FUAs are much more widely spaced in the more peripheral countries such as Spain, Ireland, most east European countries (except Hungary) and the Baltic and Nordic countries. In particular the low-density regions of northern Norway, Sweden and Finland have few urban centres and consequently very large service areas.

Figure 3.5 shows the correlation between population and the accessibility of FUAs. Although the calculations were done with untransformed population data, in the scatter plot, population is presented in logarithmic transformation for better readability; consequently the regression line (in grey) becomes a curve. The diagram shows that the largest FUAs do not necessarily have the highest accessibility with respect to suppliers and markets.

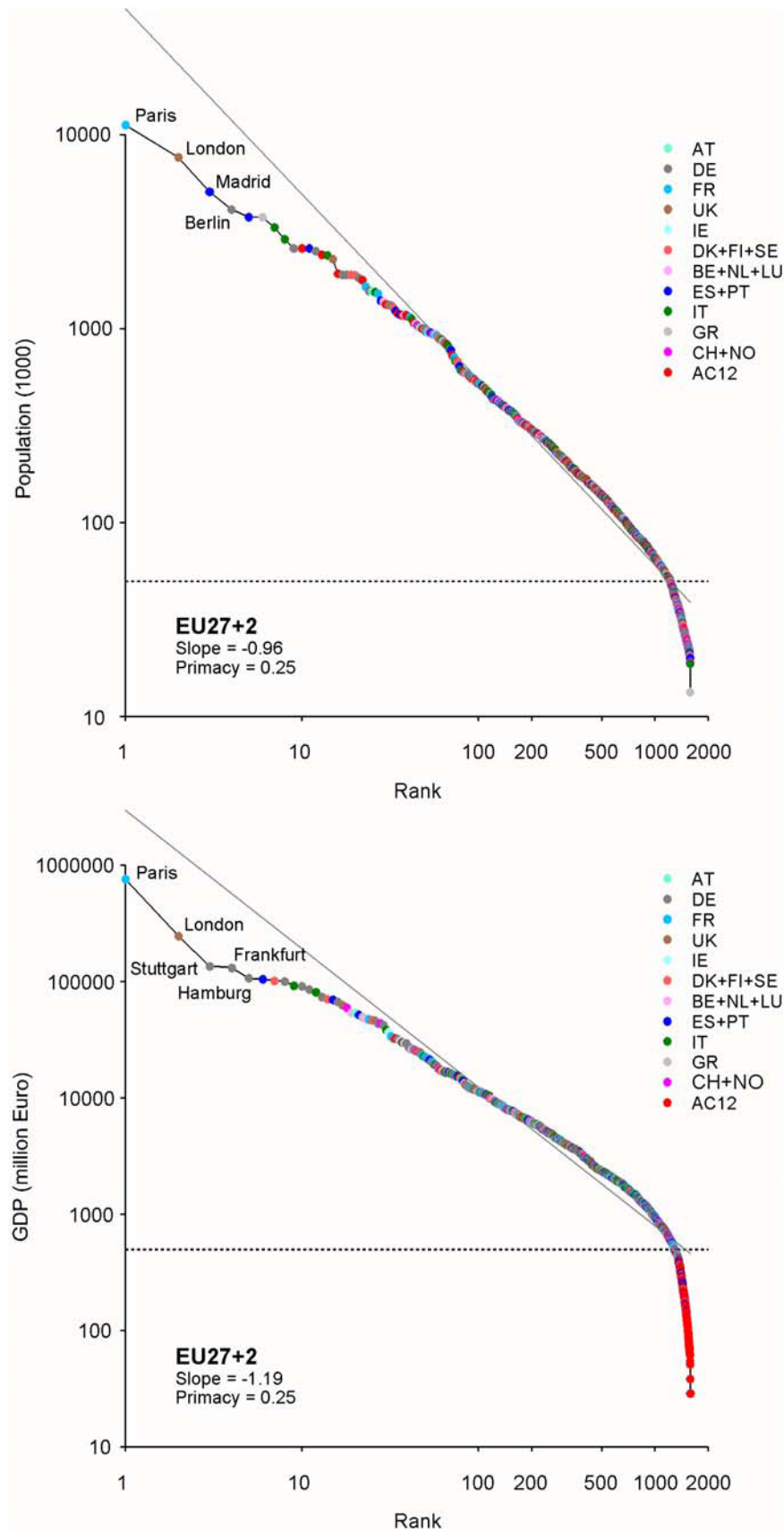


Figure 3.3 Rank-size distributions of population (top) and GDP (bottom) of FUAs in Europe

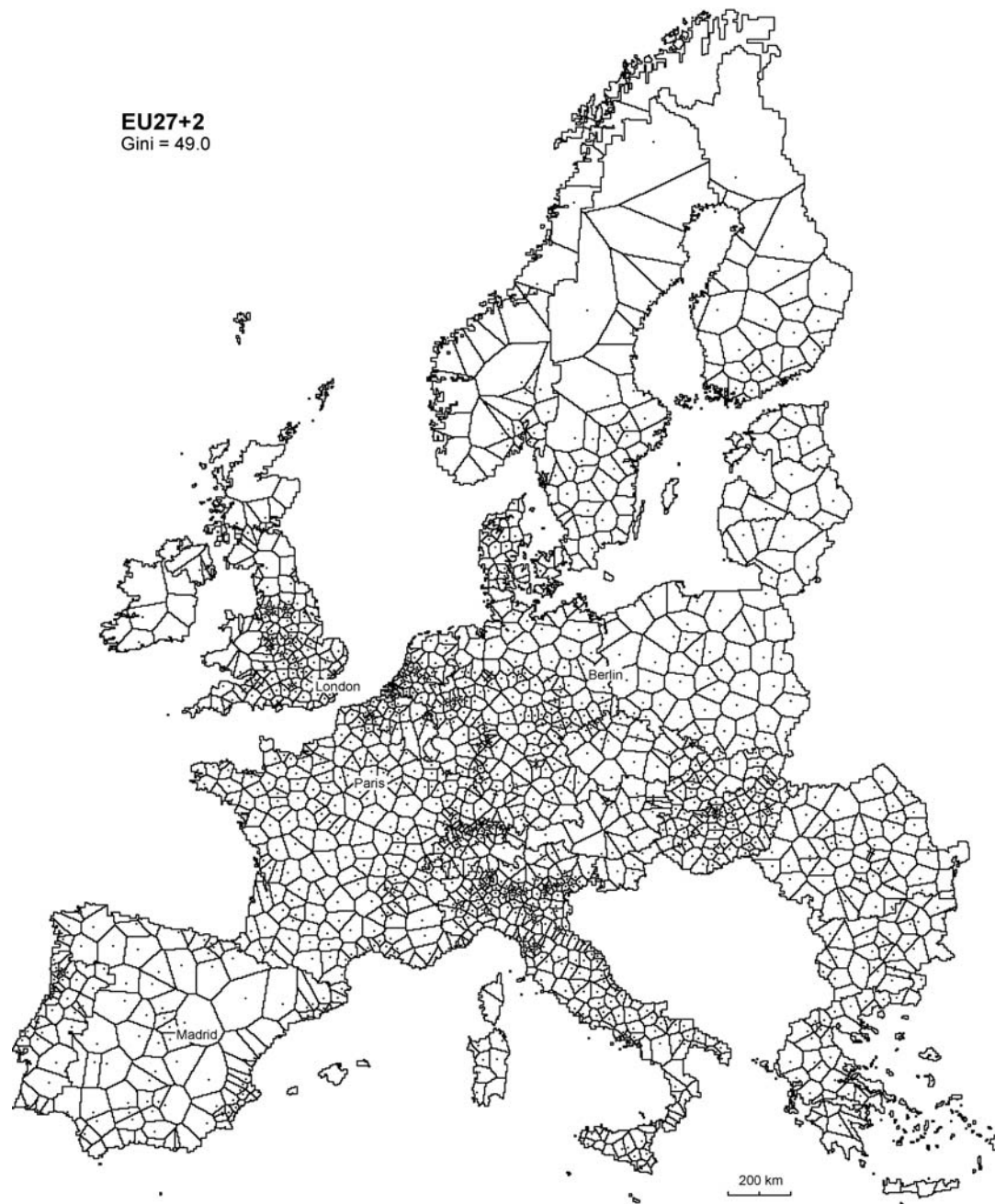


Figure 3.4 Service areas of FUAs in Europe

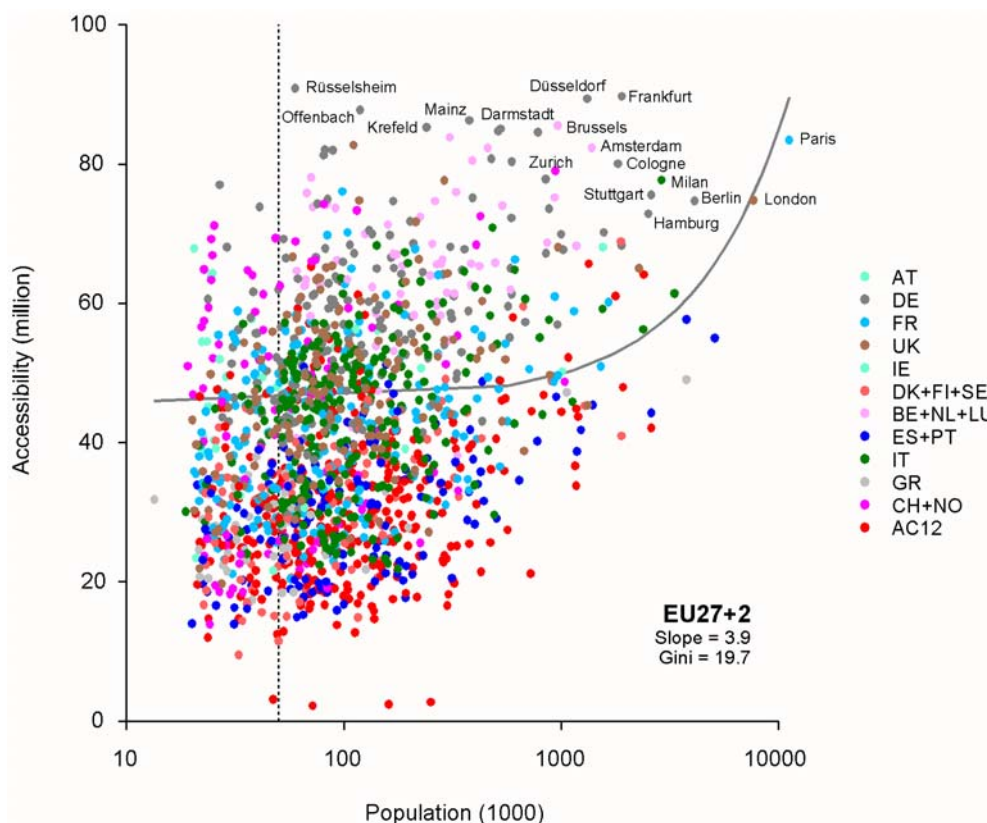


Figure 3.5 Population and accessibility of FUAs

There are many small and medium-sized FUAs that are more accessible than the much larger urban areas, which is something that favours polycentricity. However, this is due to the European perspective, which puts central and peripheral countries into one basket and so hides inequality in accessibility within individual countries.

This short overview shows that the European urban system is clearly polycentric but that polycentricity is not evenly distributed in space. Therefore in the next section polycentricity will be examined at the national level.

Measuring the polycentricity of countries

In this section the polycentricity of the urban systems in the 25 EU member states plus Norway, Switzerland, Bulgaria and Romania are examined. Luxembourg and Malta are not considered because of their insufficient number of FUAs, so the number of countries examined is 27.

Figure 3.6 to figure 3.7 presents examples of the rank-size distributions of the population and GDP of FUAs, the service areas of FUAs and a correlation of the population and the accessibility of FUAs for selected countries. In each case, two examples of highly polycentric urban systems and two of more polarised urban systems are shown. The full set of 27 x 4 diagrams is presented in Annex 10.

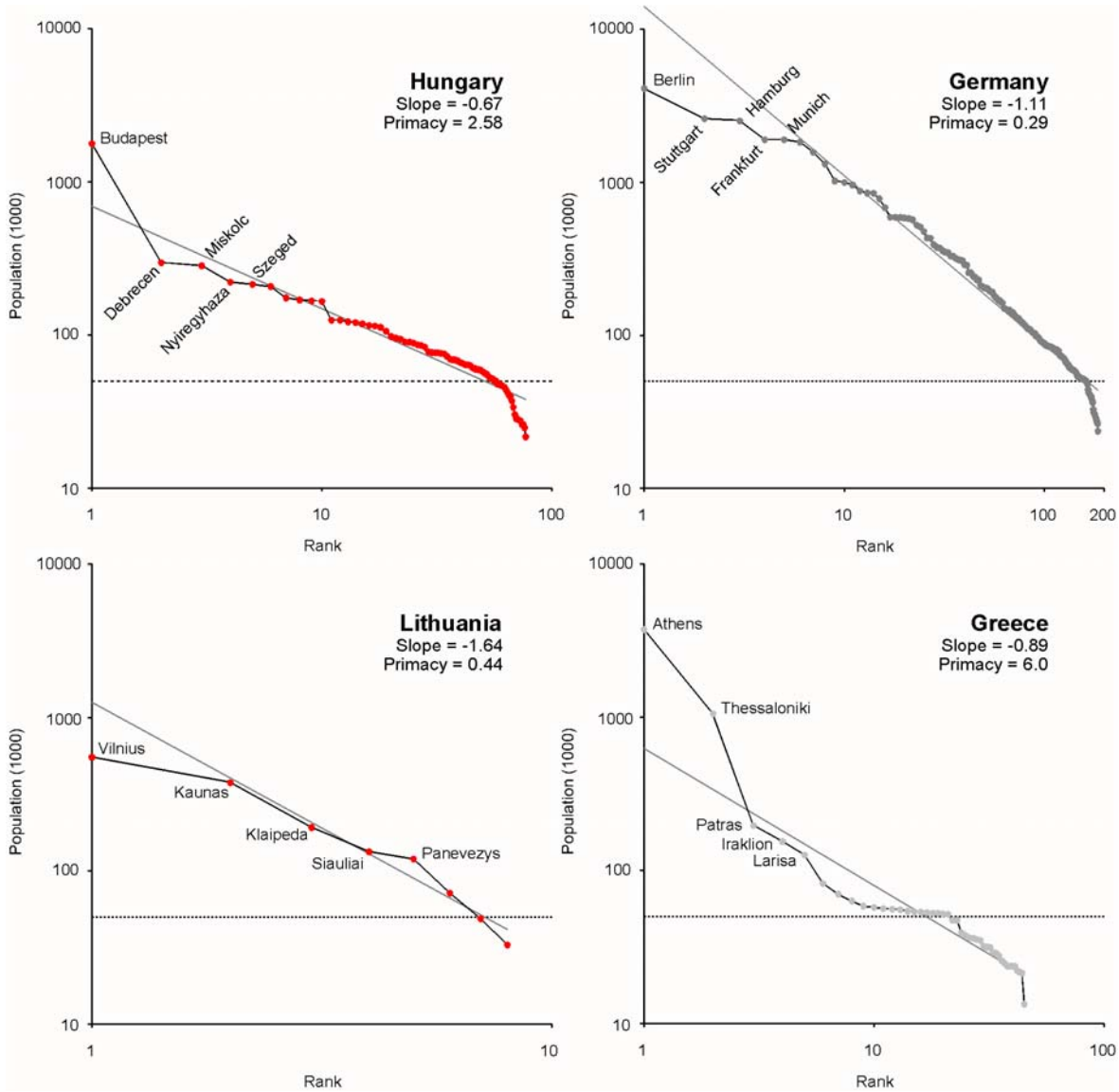


Figure 3.6 Rank-size distributions of population of FUAs in selected countries

Figure 3.6 presents rank-size distributions of population of FUAs. The upper two diagrams show two countries that excel in one sub-indicator of the Size Index: Hungary has the flattest size distribution of FUAs of all European countries, if all FUAs except the largest city are considered. However Budapest, its capital city, for historical reasons is far too large for this small country, in fact two-and-a-half times too large. Germany's capital city, Berlin, on the other hand, is far too small for the size of the country, as are its next-largest FUAs, even though the slope of the rank-size distribution of Germany is much steeper. The lower two diagrams show countries that perform poorly with respect to the two sub-indicators: Lithuania has the steepest rank-size distribution of all countries (note that the slope appears flatter because of the difference in horizontal scale), although its capital Vilnius is not oversized. However, Athens and Thessaloniki are far too large for the remaining urban system in Greece.

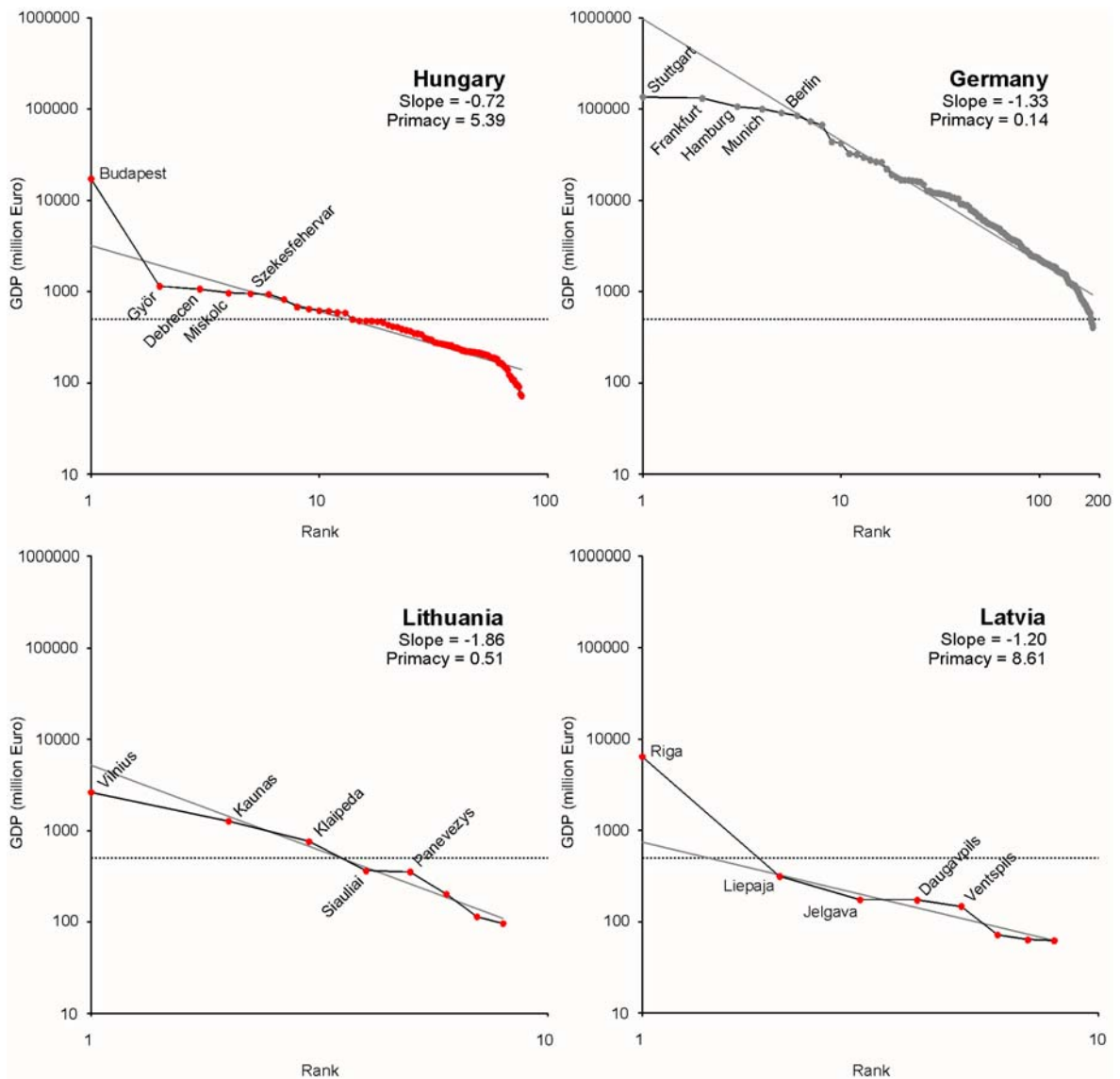


Figure 3.7 Rank-size distributions of the GDP of FUAs in selected countries

Figure 3.7 shows rank-size distributions of the GDP of FUAs for selected countries. Here the picture is very similar to the rank-size distributions of population indicating that in general the largest cities are also the economically most successful. Again Hungary excels with its balanced distribution of economic centres except its overwhelmingly dominant capital, Budapest. Germany shows the opposite combination of strong medium-sized cities with an economically weak capital city. Again Lithuania shows the steepest slope of the rank-size distribution, whereas Latvia now leads with respect to the most dominant primate city.

Figure 3.8 overleaf shows enlarged maps of the service areas of selected countries shown already in figure 3.4. Ireland and Latvia show a balanced distribution of FUAs over their territory, whereas in Norway and Finland, cities are concentrated mostly in the south resulting in large differences in the size of service areas.

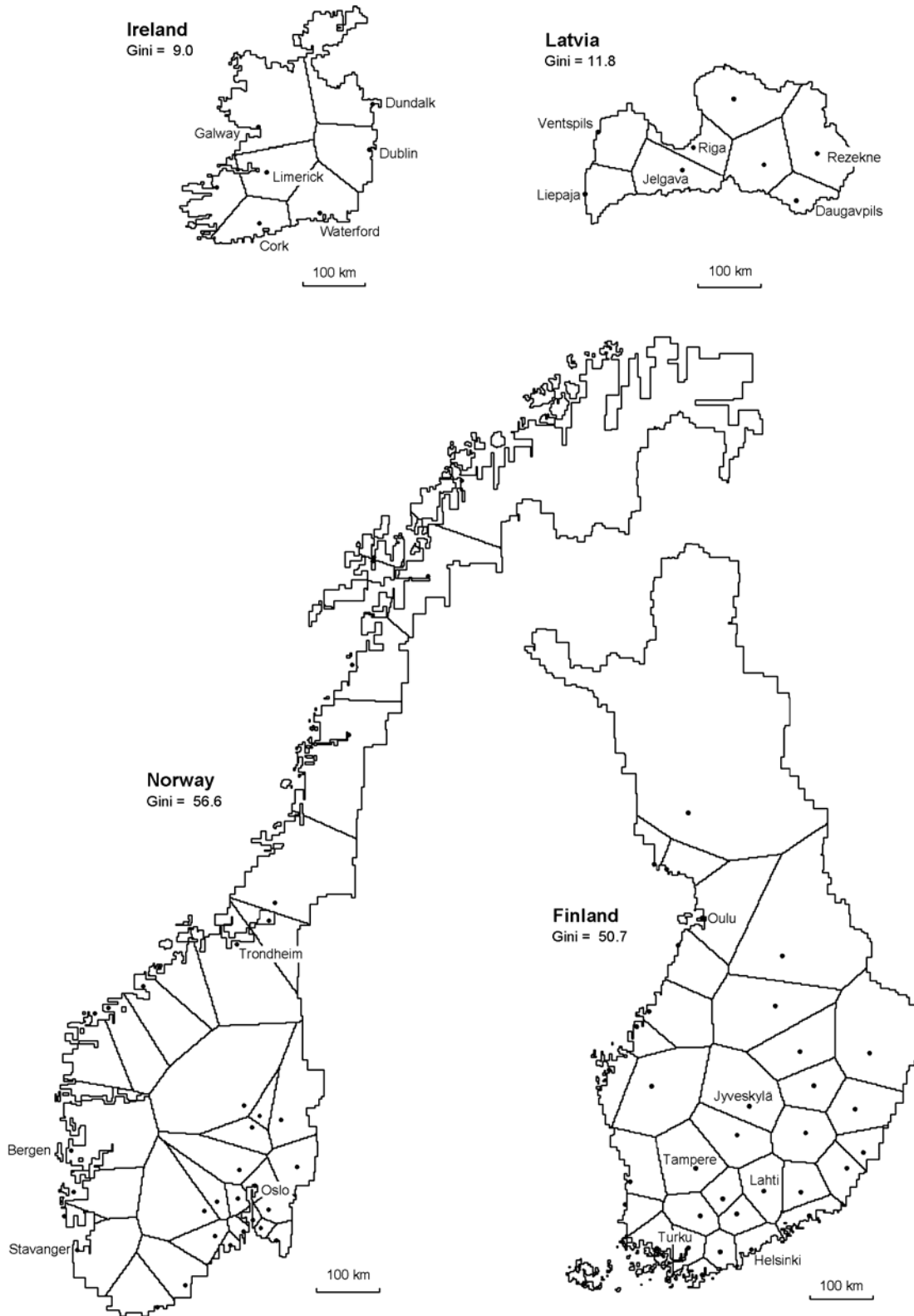


Figure 3.8 Service areas of FUAs of selected countries

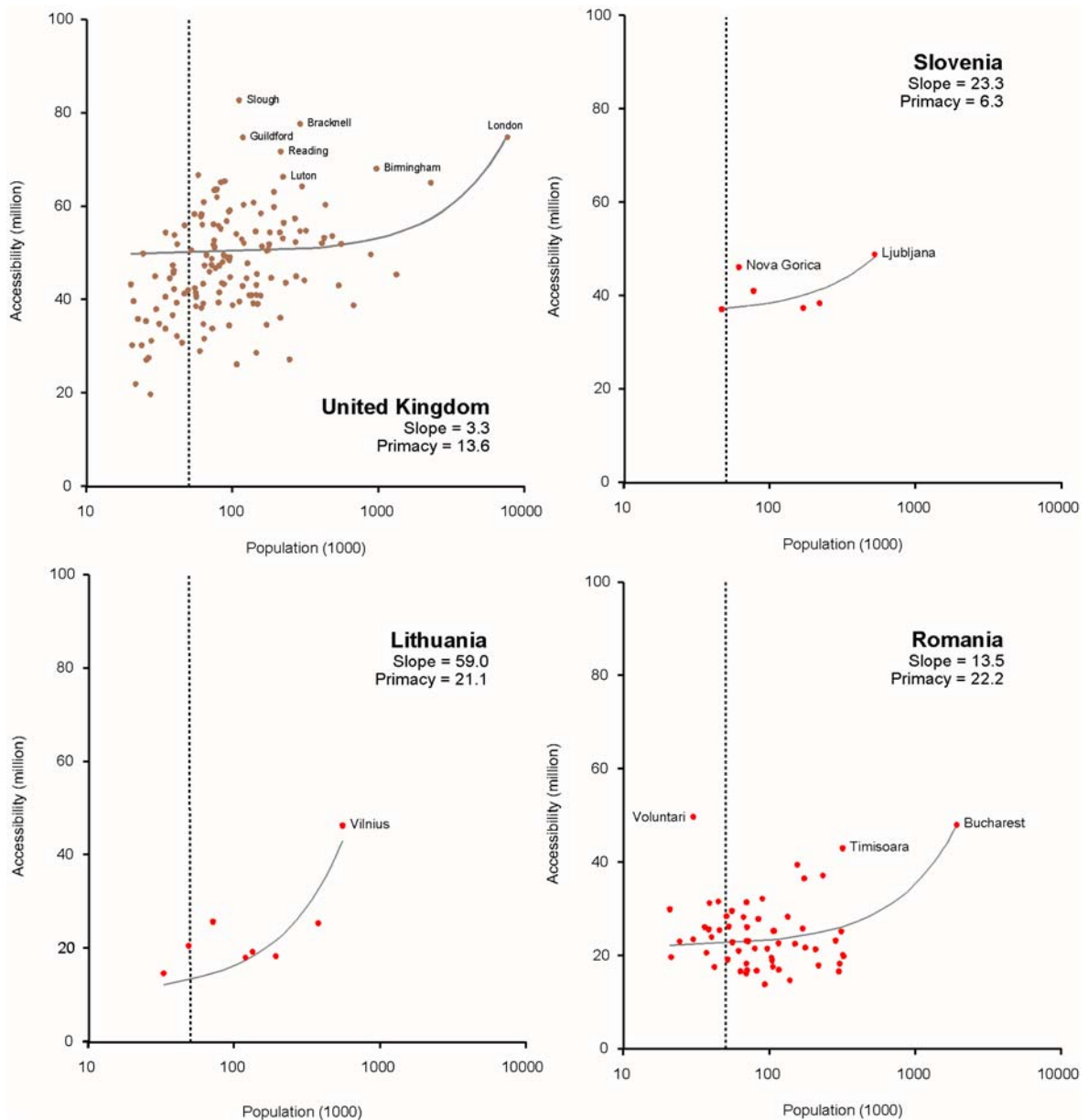


Figure 3.9 Population and accessibility of FUAs in selected countries

Figure 3.9 presents the correlation of the population and the accessibility of FUAs in selected countries. The diagrams confirm that larger cities are not always more accessible. In the United Kingdom, for instance, there are smaller cities in the vicinity of London that are even more accessible than London itself. Accordingly, the slope of the regression line (which appears as a curve in the diagrams because of the logarithmic transformation of the horizontal axis) is extremely low. In Slovenia the slope of the regression line is somewhat steeper though the differences in accessibility (indicated by the Gini coefficient) are very small. In Lithuania and Romania, however, the capital cities are significantly more accessible than the remaining FUAs, with an extreme slope of the regression line in Lithuania and the largest Gini coefficient of all countries in Romania.

The results of the analysis of the polycentricity of countries is summarised in table 3.2. The columns of the table contain the sub-indicators of polycentricity (a) to (g) as defined at the beginning of this section (i.e. 3.2.2). The last row of the table contains the corresponding values for the whole ESPON Space as shown.

Table 3.2 Polycentricity indicators of countries

Country	No. of FUAs	Rank-size distribution of population		Rank-size Distribution of GDP		Size of service areas	Population and accessibility	
		Slope (a)	Primacy (b)	Slope (c)	Primacy (d)	Gini (e)	Slope (f)	Gini (g)
Austria	24	-1.07	2.89	-1.21	2.74	46.4	11.2	7.7
Belgium	21	-0.86	0.53	-1.06	0.82	33.7	23.6	8.6
Bulgaria	31	-0.78	1.54	-0.90	2.31	21.9	14.8	18.8
Switzerland	48	-1.03	0.82	-1.14	0.82	35.3	25.9	10.2
Cyprus	4	-1.78	0.46	-1.79	0.46	9.73	0.9	5.2
Czech Republic	25	-0.92	0.94	-0.96	2.18	39.0	13.1	13.9
Germany	186	-1.11	0.29	-1.33	0.14	36.3	5.2	10.6
Denmark	35	-1.05	1.57	-1.06	2.80	15.4	16.7	14.8
Estonia	10	-1.14	1.66	-1.09	4.16	13.1	50.7	19.9
Spain	105	-0.95	1.06	-1.01	1.27	51.6	5.2	17.1
Finland	35	-0.93	1.66	-0.95	2.57	50.7	17.9	18.8
France	211	-1.03	1.44	-1.06	4.30	23.6	3.5	18.4
Greece	45	-0.89	6.00	-0.96	6.13	12.4	5.0	11.5
Hungary	77	-0.67	2.58	-0.72	5.39	35.4	14.8	19.9
Ireland	7	-1.63	1.74	-1.77	2.13	9.0	18.9	8.4
Italy	253	-0.83	0.69	-0.87	0.83	38.8	7.7	14.9
Lithuania	8	-1.64	0.44	-1.86	0.51	19.9	59.0	21.1
Latvia	8	-1.02	3.81	-1.20	8.61	11.8	23.3	16.0
Netherlands	39	-1.00	0.51	-1.10	0.62	33.9	13.2	8.7
Norway	36	-0.97	1.30	-1.02	2.50	56.6	21.6	16.4
Poland	48	-0.95	0.59	-1.23	0.83	20.2	9.6	17.5
Portugal	44	-0.94	3.72	-1.03	5.84	36.5	6.3	11.2
Romania	59	-0.85	1.47	-0.90	1.95	21.4	13.5	22.2
Sweden	47	-1.03	0.99	-1.03	1.44	47.6	5.0	13.9
Slovenia	6	-1.49	0.76	-1.35	1.30	15.1	23.3	6.3
Slovakia	27	-1.04	0.54	-1.04	1.24	23.8	46.5	13.7
United Kingdom	146	-0.96	1.63	-1.06	1.48	36.7	3.3	13.6
ESPON Space	1588	-0.96	0.25	-1.19	0.25	49.0	3.9	19.7

Measuring the polycentricity of regions

It can be asked whether the measurement method presented thus far can be also applied to regions smaller than a country or to transnational regions covering parts of two or more countries, such as Interreg regions. The answer is: in a formal sense yes, but with higher spatial resolution the database needs to be complemented by lower-level centres of the central-place system below the level of FUAs. As an example of measuring the polycentricity of NUTS-1 regions, figure 3.10 shows the same analysis presented for countries applied to North-Rhine Westphalia in Germany.

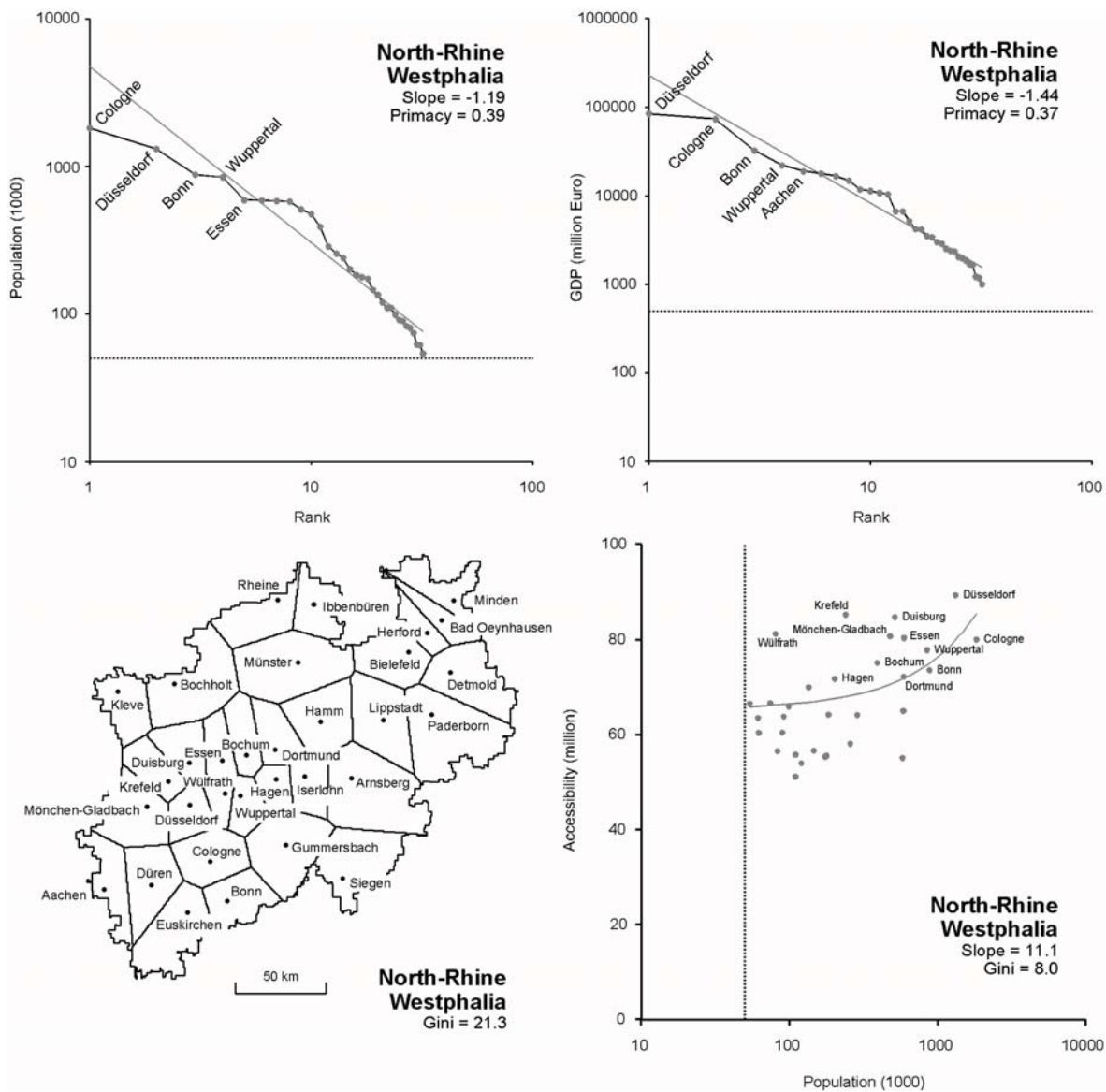


Figure 3.10 Polycentricity indicators of North-Rhine Westphalia

The highly polycentric structure of the region is apparent: medium slopes of the rank-size distributions and very low primacy rates indicate a differentiated system of central places. The service areas of FUAs differ somewhat because many of the FUAs are concentrated in the densely populated Ruhr area. However, accessibility is distributed quite evenly across the region.

The same analysis can be performed for other NUTS-1 regions in Europe but not for all of them because some NUTS-1 regions do not contain a sufficient number of FUAs. For instance, the Ile de France, a region with a population of more than 11 million people, contains only two FUAs, Paris and the small town of Montereau-faut-Yonne, which is a consequence of the decision to combine all cities in the wider Paris region into one FUA.

3.2.3 Comparing national polycentricity

Evaluation of polycentricity

With the three partial polycentricity indices, the Size Index, the Location Index and the Connectivity Index, a comprehensive Index of Polycentricity can be constructed.

In a first step, the seven sub-indicators are converted to utility scores using z-shaped value functions: For each sub-indicator two threshold levels were defined: The first threshold level specifies the indicator value at which polycentricity is zero; the second threshold level indicates the indicator value at which polycentricity is one hundred. Between the two threshold values linear interpolation was performed; indicator values outside the range defined by the two threshold levels are zero or one hundred, respectively.

Table 3.3 shows the threshold values defined for each of the seven sub-indicators:

Table 3.3 Value functions of sub-indicators

	Rank-size distribution of population		Rank-size distribution of GDP		Size of service areas	Population and accessibility	
	Slope (a)	Primacy (b)	Slope (c)	Primacy (d)	Gini (e)	Slope (f)	Gini (g)
Indicator value at which polycentricity is 0	-1.75	7.5	-1.75	10	70	75	25
Indicator value at which polycentricity is 100	-0.5	0	-0.5	0	10	0	0

Next the utility scores so generated are aggregated to one comprehensive Index of Polycentricity by weighted aggregation. The following weights (in percent) are used for the aggregation:

Size Index (33%)

Population (50%)

- Slope of regression line (20%)
- Primacy rate (80%)

GDP (50%)

- Slope of regression line (20%)
- Primacy rate (80%)

Location Index (33%)

Gini coefficient of size of service areas

Connectivity Index (33%)

Correlation of population and accessibility

- Slope of regression line (50%)
- Gini coefficient of accessibility (50%)

Additive aggregation was used at the lower levels, whereas the three component indices were aggregated to the Polycentricity Index multiplicatively.

Table 3.4 shows the results of the evaluation for the three component indices and the total Index of Polycentricity for the 27 countries and the ESPON Space at large.

Table 3.4 Component indices and Polycentricity Index of countries

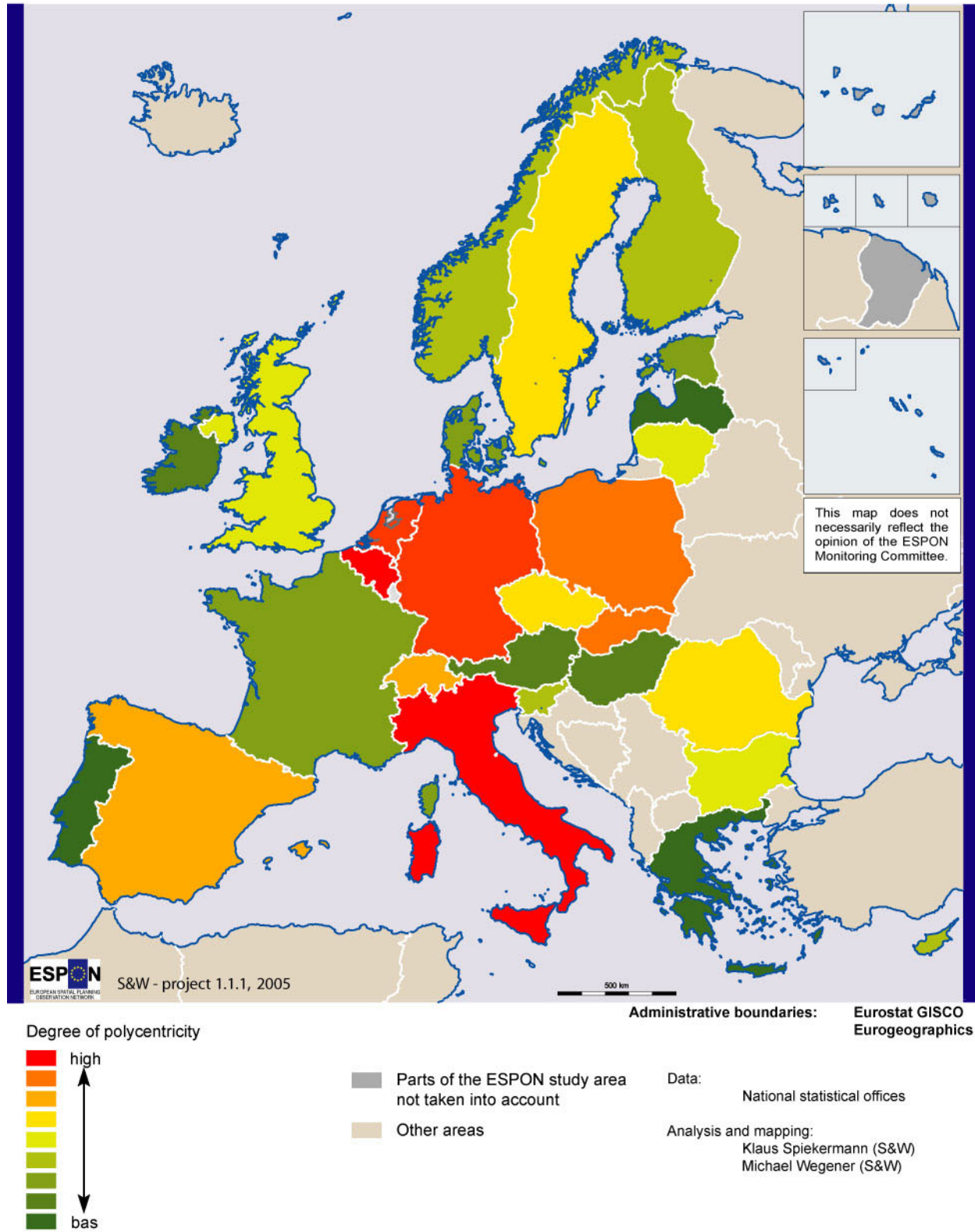
Country	No. of FUAs	Size Index	Location Index	Connectivity Index	Polycentricity Index
Austria	24	63.3	39.3	77.1	57.4
Belgium	21	86.6	60.5	67.1	70.3
Bulgaria	31	77.1	80.2	52.6	68.5
Switzerland	48	82.9	57.9	62.3	66.6
Cyprus	4	75.7	100.0	89.1	87.3
Czech Republic	25	79.2	51.7	63.5	63.6
Germany	186	86.4	56.1	75.2	71.2
Denmark	35	71.6	90.9	59.3	72.5
Estonia	10	64.7	94.8	26.4	54.3
Spain	105	81.6	30.7	62.3	53.6
Finland	35	73.9	32.1	50.6	49.1
France	211	66.4	77.3	60.9	67.6
Greece	45	36.6	95.9	73.6	63.4
Hungary	77	61.6	57.7	50.4	56.1
Ireland	7	63.1	100.0	70.6	76.1
Italy	253	87.5	52.0	65.0	66.3
Lithuania	8	76.5	83.5	18.5	48.9
Latvia	8	35.5	97.0	52.4	56.3
Netherlands	39	86.0	60.2	73.8	72.2
Norway	36	75.1	22.3	52.7	44.4
Poland	48	84.1	83.1	58.7	74.0
Portugal	44	49.0	55.8	73.3	58.3
Romania	59	78.3	80.9	46.6	66.3
Sweden	47	80.4	37.3	69.0	58.9
Slovenia	6	76.0	91.6	72.0	79.1
Slovakia	27	83.5	77.0	41.6	64.2
United Kingdom	146	77.3	55.5	70.6	66.8
ESPON Space	1588	88.5	35.0	57.9	56.2

The spatial distribution of the three component indices and the Polycentricity Index are presented in maps 3.1 to 3.4.

It can be seen that the three component indices measure different dimensions of polycentricity. The Size index measures whether the urban system consists of a balanced mixture of large and small cities and is not dominated by one major capital city. This is persuasively demonstrated by the high scores of the Size Index for the Benelux countries, Germany and Italy with their long tradition of merchant cities and small independent territories. The Location Index measures the equal distribution of cities over space. Here, somewhat surprisingly, some peripheral countries, such as Ireland, Estonia and Latvia and Greece stand out, whereas the larger central-European and Nordic countries have more clustered patterns of cities. The Connectivity Index measures the equality of accessibility as

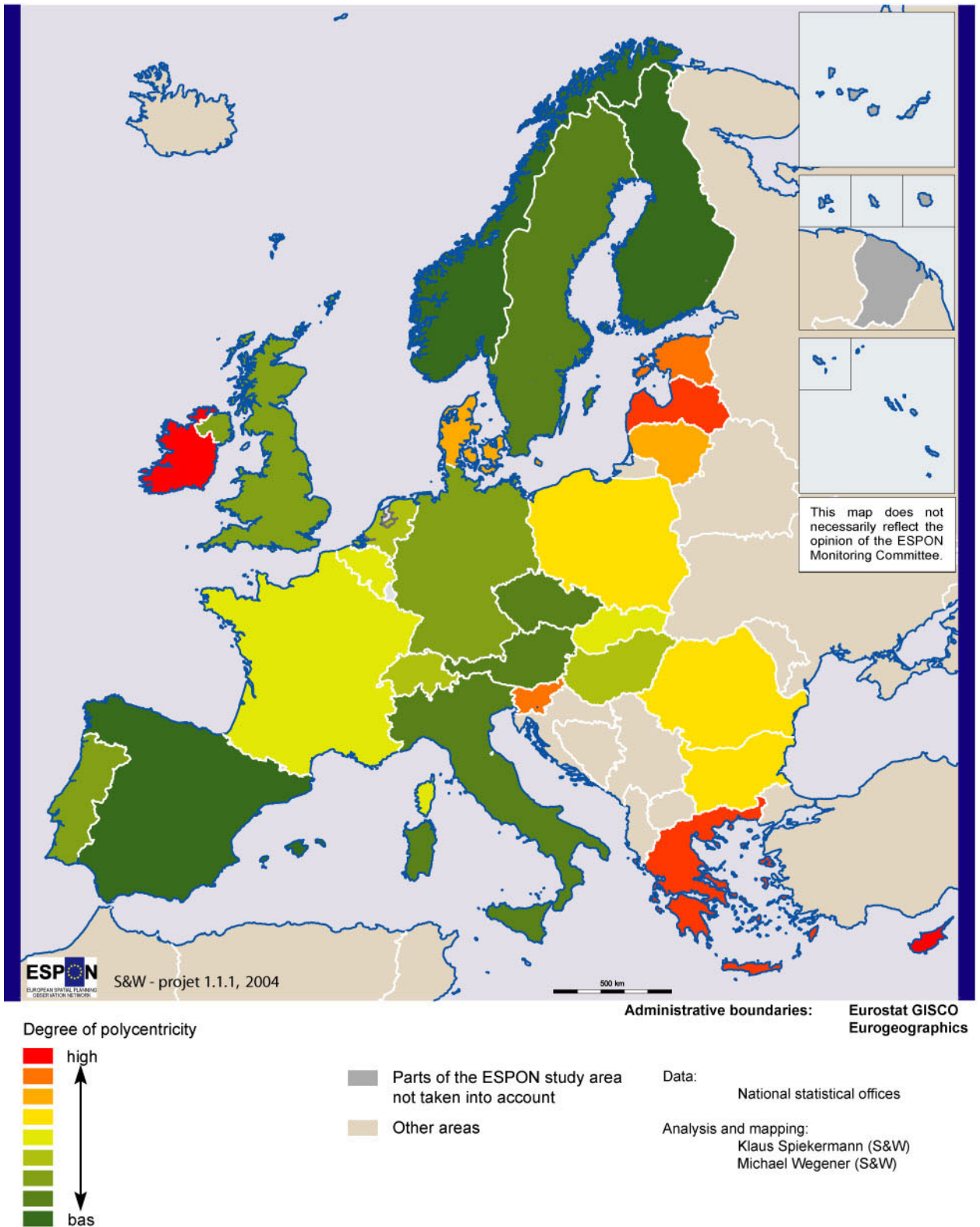
an indicator of potential interaction. Here again the central European countries stand out, but so also do the two peripheral countries, Portugal and Greece.

Size index



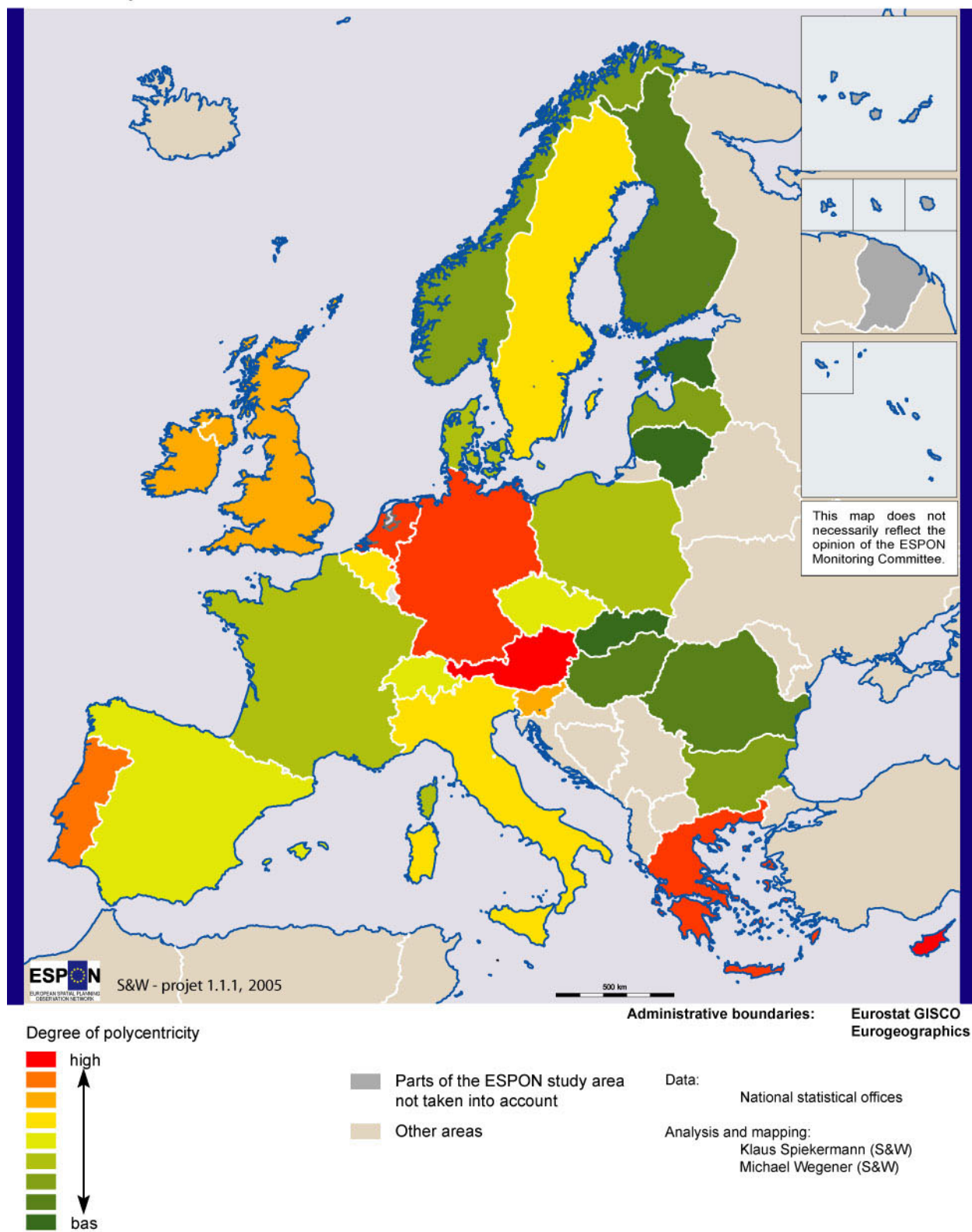
Map 3.1 Size Index of polycentricity

Location index



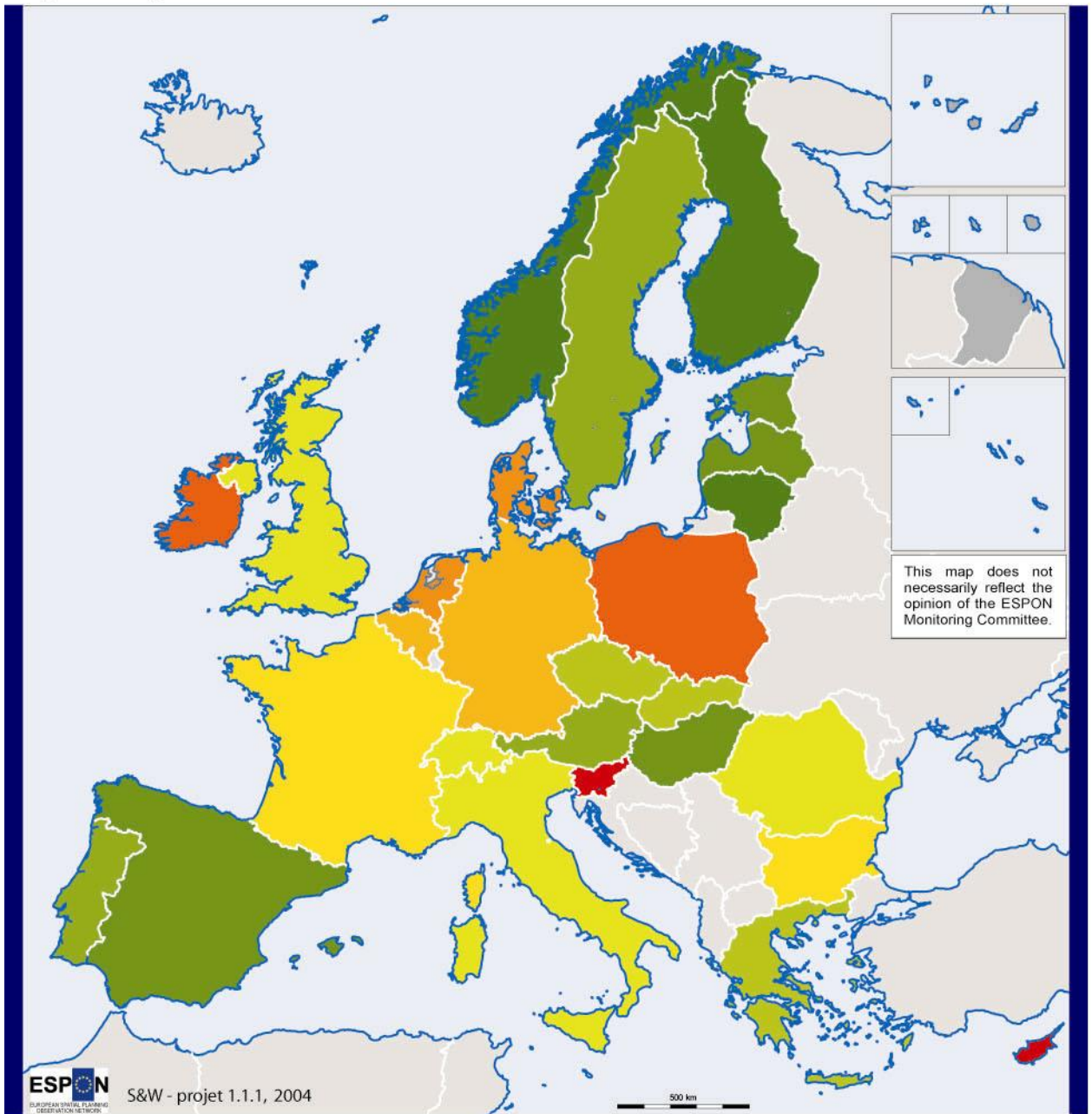
Map 3.2 Location Index of polycentricity

Connectivity index



Map 3.3 Connectivity Index of polycentricity

Polycentricity index



ESPON S&W - projet 1.1.1, 2004

Administrative boundaries: Eurostat GISCO
Eurogeographics

Degree of polycentricity



- Parts of the ESPON study area not taken into account
- Other areas

Data: National statistical offices
Analysis and mapping: Klaus Spiekermann (S&W)
Michael Wegener (S&W)

Map 3.4 Polycentricity Index

The Polycentricity Index measures the combined effect of the three dimensions of polycentricity represented by the three component indices. Slovenia, Ireland, Poland and Denmark are the most polycentric countries in Europe, though for different reasons. Slovenia benefits from its high scores in all three dimensions, in particular with respect to the Location Index. Ireland also takes advantage of the balanced distribution of FUAs over its territory despite the clear primacy of Dublin. Poland scores highly because of its balanced size distribution of cities and their equal distribution over its territory, even though accessibility in Poland is largely concentrated on Warsaw. Denmark, like Slovenia, benefits mostly from the equal distribution of cities over the country.

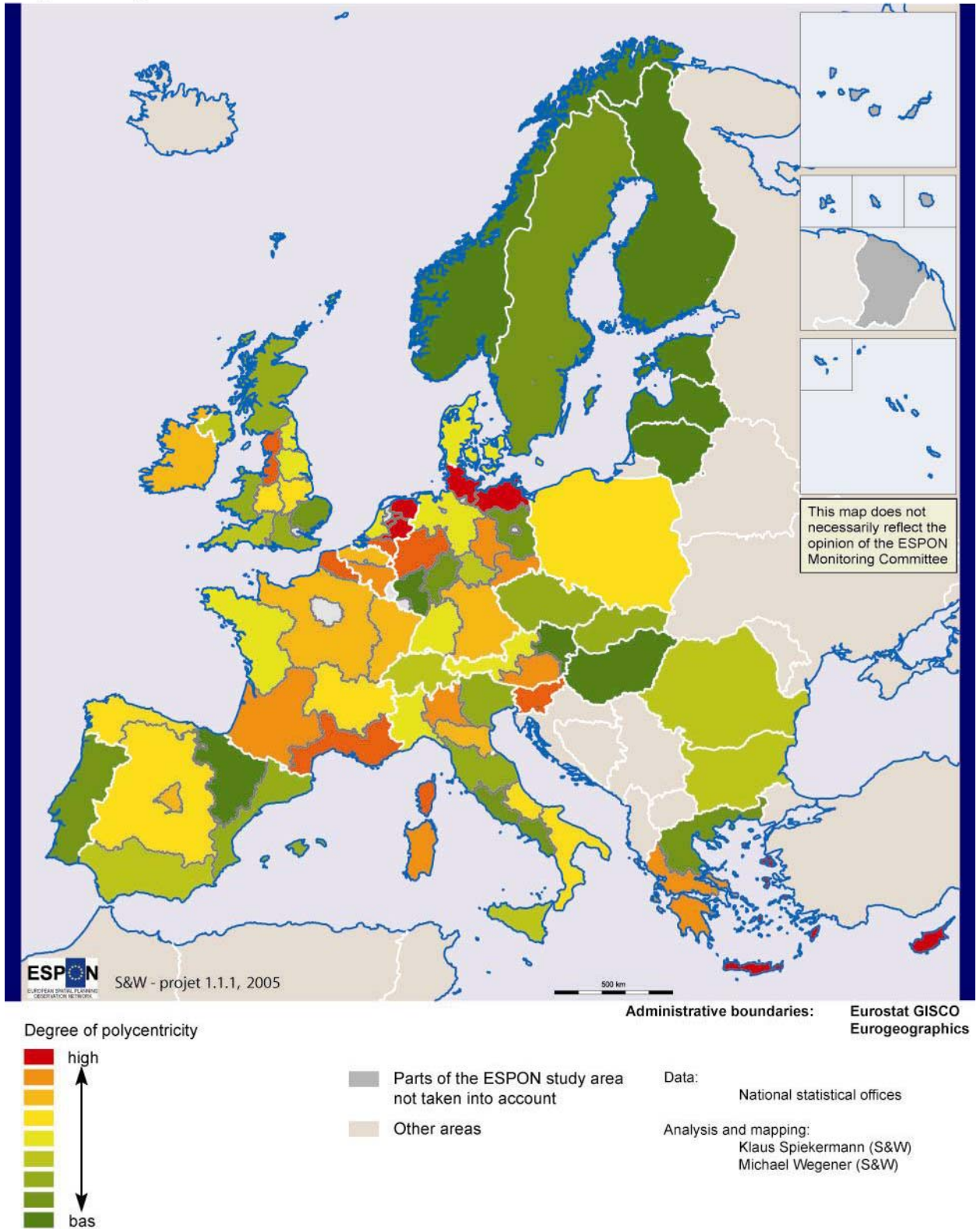
Other countries, generally thought to have polycentric urban systems score lower because they are deficient in at least one dimension of polycentricity. Germany, for instance, scores highly on the Size Index and Connectivity Index but its cities are concentrated in the west and south of the country. The same is true for the United Kingdom, perhaps because urbanisation in Britain was historically linked to coal mining and heavy industries and therefore heavily concentrated to the locations of resources and waterpower. France, conventionally viewed as a country largely oriented towards Paris, somewhat surprisingly scores in the middle range, mainly because of its relatively equal spatial distribution of provincial cities.

The countries with the least polycentric urban regions are Spain and Portugal, the Nordic countries, (except Denmark), and most of the accession countries in Eastern Europe. The low scores for Spain, Portugal and the Nordic countries can best be explained by the existence of large rural areas with a low population density in these countries. The low degree of polycentricity in the Baltic states, the Czech Republic and Hungary may be related to their recent history as planned economies with little incentive for decentralisation – however Poland, which has had the same history, seems to contradict this explanation.

Map 3.5 on the following page shows the results of the same analysis for NUTS-1 regions as reported above in the Section on “Measuring the polycentricity of regions”.

As we expected, smaller regions are more homogenous and therefore tend to score higher in terms of polycentricity, therefore the colours in map 3.5 cannot be directly compared with those in map 3.4. However, it becomes clear that there is a significant variation in polycentricity within countries. Germany and Italy, for instance, have regions with very different levels of polycentricity. The French urban system, which at the national level is dominated by Paris, emerges as quite polycentric if Paris is disregarded. The analysis suffers from the fact that many countries are themselves NUTS-1 regions, i.e. have no intermediate regional subdivision, this why Poland seems to be less polycentric. Moreover many NUTS-1 regions fall out of the analysis because they have only one or two FUAs. This is why no indices could be calculated for the Ile de France. The conclusion is that the analysis of the polycentricity of smaller regions requires data on cities below the level of FUAs.

Polycentricity index



Map 3.5 Polycentricity Index of NUTS-1 regions

3.2.4 The policy relevance of polycentricity

As the final step in this analysis, we asked whether the Polycentricity Index so derived could be used for policy analysis. For this it is necessary to test whether the major policy goals of the European Union relate to different degrees of polycentricity. After all, polycentricity is not a goal in itself, but one of the many means used to achieve policy objectives such as economic competitiveness, social equity and environmental sustainability.

To examine this question, the Polycentricity Index of the 27 countries was confronted with three indicators that are related to the three major policy objectives of the European Union, economic competitiveness, social equity and environmental sustainability. To make the analysis more meaningful, it was conducted separately, first for the 15 old member states of the European Union and then for the 10 new member states (plus Bulgaria and Romania). Additional information values for Switzerland and Norway are also indicated. The results are presented in figure 3.11 to 3.13.

Figure 3.11 confirms the hypothesis that countries with a more polycentric spatial structure are economically more successful. However, this relationship is stronger in the old member states than in the accession countries. Moreover, the wide gap in GDP *per capita* between the old and new member states of the European Union is much more significant than the differences related to polycentricity.

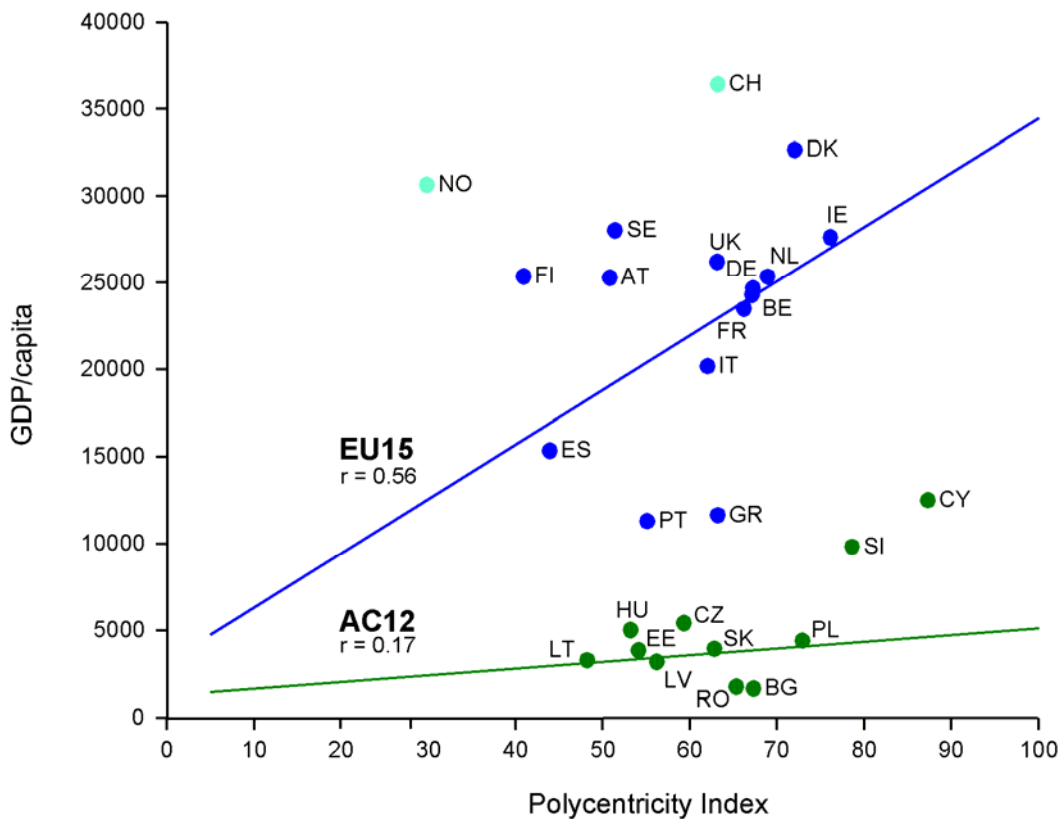


Figure 3.11 Polycentricity Index and economic competitiveness

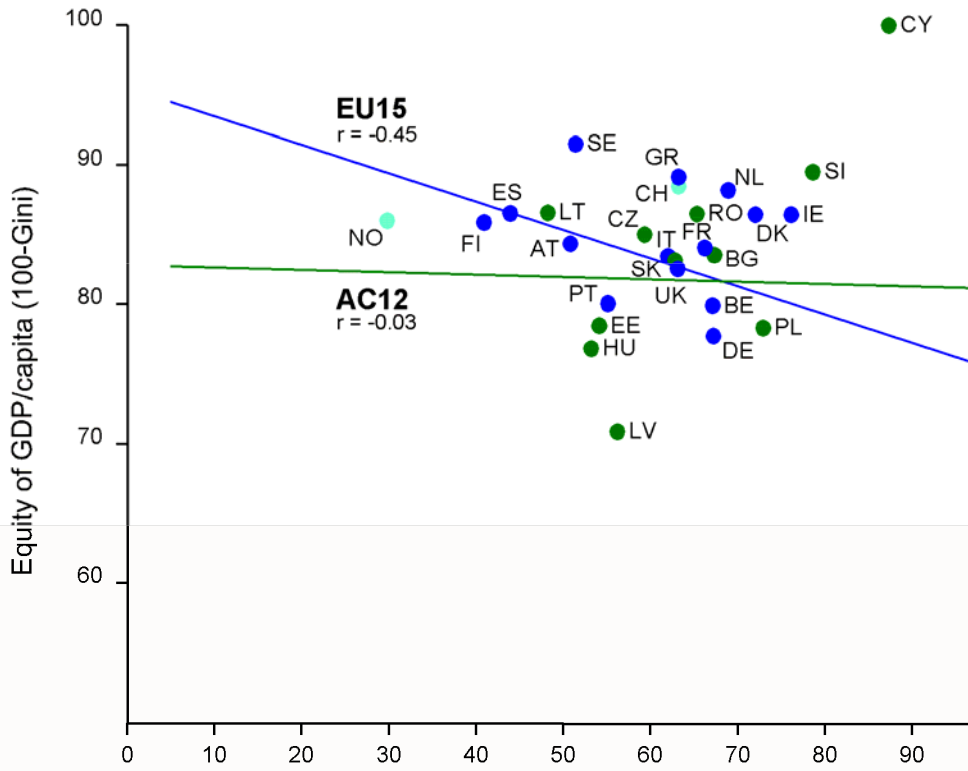


Figure 3.12 Polycentricity Index and social equity

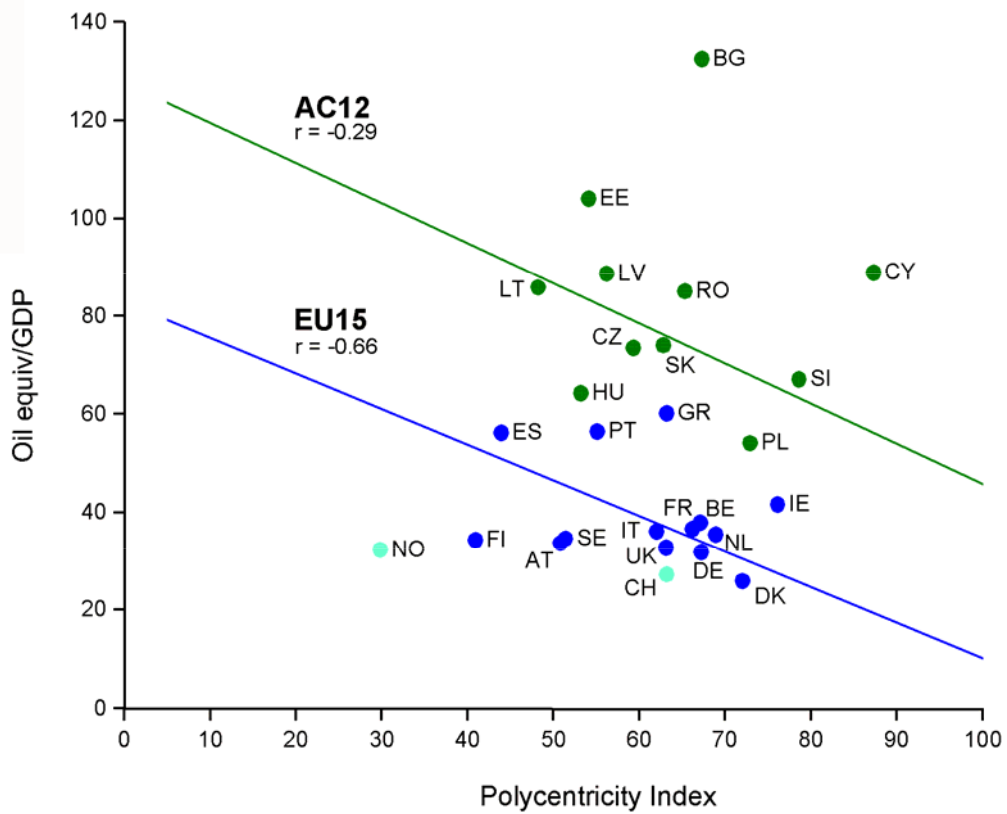


Figure 3.13 Polycentricity Index and environmental sustainability

The situation is more complex with respect to equity. Figure 3.12 shows the correlation between the Polycentricity Index and a measure of territorial cohesion, the Gini coefficient of the GDP *per capita* of NUTS-3 regions in each country. In the accession countries the correlation between polycentricity and equity is almost zero, i.e. polycentricity does not contribute to spatial cohesion. However, in the old member states there is a negative correlation between polycentricity and spatial equity; i.e. more polycentric countries tend to have larger differences in income between central and peripheral regions.

Figure 3.13 shows a similar analysis for environmental sustainability. Here total energy consumption for transport (in oil equivalent) was taken as an indicator of environmental sustainability. In order to neutralise the effect of income differences between countries, energy consumption per unit of GDP was used. With this indicator, there is a clear correlation between polycentricity and energy consumption: more polycentric countries use less energy for transport per unit of GDP than do monocentric countries, and this holds true for both old and new member states. Again the correlation is stronger in the old member states than in the accession countries.

Forecasting polycentricity

The method can also be used to forecast the likely future development of polycentricity in Europe for different scenarios of urban growth and linkages between cities taking account of macro trends such as the enlargement of the European Union, further integration of the world economy and intensification of the competition between regions and cities and the development of energy cost, transport technology and telecommunications.

This is done in respect of the impacts of European transport policy in ESPON 2.1.1. ('Territorial Impact of EU Transport and TEN Policies') and the impacts of EU enlargement in ESPON 1.1.3 ('Particular Effects of the Enlargement of the EU and Beyond on the Polycentric Spatial Tissue'). In both projects regional economic models are used to backcast regional economic development over the last two decades and to forecast regional economic development until the year 2020.

A methodological difficulty however exists here in the fact that the models used to backcast and forecast spatial development in Europe in ESPON 2.1.1 and 1.1.3 are based on using NUTS-3 regions as the spatial units and not FUAs. Therefore the following assumptions were made to bridge the gap between NUTS-3 regions and FUAs:

- *Size Index*. The population and GDP of an urban centre changes in accordance with changes in the population and GDP levels of the NUTS-3 region in which it is located.
- *Location Index*. The number of urban centres, and hence the number and size of service areas, remains constant.
- *Connectivity Index*. The accessibility of an urban centre changes in accordance with changes in the accessibility level of the NUTS-3 region in which it is located.

Preliminary results of forecasts of polycentricity will be presented in the Final Report of ESPON 2.1.1 and in the Third Interim Report of ESPON 1.1.3. At this point we can summarise our preliminary findings in relation to the backcasts and forecasts undertaken:

- In the past two decades, the level of polycentricity has declined in all European countries.
- The decline in polycentricity has been due to the faster growth in accessibility, economic activity and population of the larger metropolitan areas.
- The decline in polycentricity is likely to continue in the future.
- All transport policy scenarios examined in ESPON are likely to accelerate the decline in polycentricity.

With respect to developments in the accession countries before and after the enlargement of the European Union, the following, still tentative, observations can be made:

- The urban systems in the accession countries are, on average, still more polycentric than those of the old EU member states.
- The decline in polycentricity in the accession countries is faster than that in the old member states and is likely to continue in the future.
- With the exception of the transport pricing scenarios, all transport policy scenarios examined in ESPON are likely to accelerate the decline in polycentricity in the accession countries.

However, these tentative results will have to be substantiated during Year Two of ESPON 1.1.3.

3.2.5 Conclusions

In this section a comprehensive indicator of polycentricity consisting of the components size, location and connectivity was developed and applied to functional urban regions (FUAs) in the whole ESPON Space, as well as in individual countries and NUTS-1 regions.

The three component indices, the Size Index, the Location Index and the Connectivity Index measure different dimensions of polycentricity. If aggregated to the Polycentricity Index, significant and plausible differences in polycentricity between NUTS-1 regions become apparent.

Polycentricity so defined is clearly associated, though statistically only weakly, with major policy objectives of the European Union, such as economic competitiveness, social equity and environmental sustainability.

The method developed does however have its limitations. While the individual values of the sub-indicators selected proved to be robust with respect to minor variations of data definition and calculation, the values of the three component indices and the Polycentricity Index were sensitive to the value functions and weights used in the aggregation of sub-indicators to component indices and of component indices to the Polycentricity Index. Furthermore, it is unclear how the size of a country or region influences the results. As the analysis moved from countries to NUTS-1 regions, the greater homogeneity of the smaller regions led to generally higher index values. The question thus remains does this effect invalidate the comparison between large and small countries? A third potential deficiency is that the present method is unable to distinguish between different levels of the urban hierarchy and thus between vertical and horizontal linkages between centres. A final caveat here is that the set of FUAs used in the analysis was partly normatively defined, rather than

being the *outcome* of an empirical analysis of functional linkages for each spatial level. It is hoped that in the future, with access to a more comprehensive city data set, such an analysis will be possible.

Nevertheless, if these limitations are taken account of, the Polycentricity Index can be used to forecast polycentricity trends and the impacts of EU policies on polycentricity.

Future potential applications of the method to measure polycentricity would be for the assessment of future TEN transport and telecommunications policies. The underlying hypothesis here is that in a well developed and balanced polycentric urban system the interactions between higher-level centres are more intense and cover greater distances than those between lower-level centres, or between higher-level centres and their subordinate lower-level centres, and that therefore higher-level centres should be connected by higher-level and faster transport and telecommunications links than lower-level centres. In the absence of true interaction data, accessibility can be used as a proxy for potential interaction; in this case the analysis contributes to the identification of polycentricity. In a reversal of this argument, the analysis can also be used to examine whether a corresponding hierarchy of networks supports the polycentric hierarchy of centres.

On a more advanced level, the analysis of polycentricity can be used to determine the *optimal* degree of polycentricity with respect to policy goals such as economic competitiveness, territorial cohesion or environmental sustainability under different scenarios of macro trends such as the further integration of the world economy, intensification of the competition between regions and cities, and the development of energy cost, transport technology and telecommunications. It is expected that the optimum degree of polycentricity will ultimately depend upon these macro trends.

4 The functions of the urban system

4.1 Introduction

Polycentricity is about a functional division of labour between urban areas. This chapter describes the functional specialisation of FUAs at the European level.

The aim is to identify FUAs that can complement the Pentagon functionally. We have used indicators for size of population and economy, position in the transport system, attractiveness and position in private and public decision systems as shown in table 4.1, amounting to seven indicators in total.

Table 4.1 Features and functions of FUAs

Feature / Functions	Measured variable
Population (mass function)	Population
Transport function	Airport (passengers), ports (container traffic)
Tourism function	Number of beds in hotels (and similar)
Industrial function	Gross 'value added' in industry
Knowledge functions	Location of university, number of students
Decision-making centre	Location of top 500 companies
Administrative functions	Administrative status of FUA

The analysis is based on data that proved to be available in almost all of the 29 countries covered. The information is collected from Pan-European sources and via questionnaires to national experts. Full country reports were annexed to the Third Interim Report from this project. The chosen indicators are described in Table 4.2. The 'criteria column' describes the requested information and the respondents' comments describe problems related to the data gathering.

4.2 The functions of functional urban areas

4.2.1 Population

The mass of the FUA is measured in terms of population. The demographic weight of an urban system constitutes an important factor in the settlement of people and activities. For both private and public-sector investments it naturally constitutes the most favoured indicator for choosing the location of certain services and facilities. The demographic criterion also corresponds to human resources, i.e. being able to tap into a labour force that is large enough to offer sufficiently diversified skills. Mobility nevertheless offers only a very partial response to reducing demographic disparities. It does however constitute one of the main reasons for seeking functional links between urban areas in order to form a more significant labour-market-area. Polycentricity is thus dependent to a large extent on the mass criterion.

Table 4.2 Data gathered in making the list of FUAs

Function	Criteria	Sources	Comment
FUA population (mass function)	Units used are nationally significant FUAs with population over 20 000 inhabitants. Statistical proxies.	National experts, who have used available national statistics. – If statistics not available, list of FUAs over 50 000 inhabitants from 2nd interim report (Spain, Germany)	The national definitions of FUAs vary. Some countries have very large FUAs, for example the Netherlands (over 154 000 inhabitants), while other countries have defined much smaller functional regions. The years of the population figures vary slightly.
Transport	Airport with more than 50 000 passengers (2000) or port with more than 20 000 TEU container traffic (2001)	Aéroport Magazine. Port of Hamburg website.	If a FUA has both an airport and port, it is rated according to which is the relatively largest (see coding key).
Tourism	Number of bed places in hotels or similar establishments 2001. NUTS 3 level	Eurostat for EU15, NO, CH- National statistical offices	Most figures from 2001, some from 1999 or 2000.
Industry	Gross value added in industry 2000.	EUROSTAT, National statistical sources	Analysis on NUTS 3. Data is not available at the FUA-level. For some of the acceding countries some data is from 1999.
Higher education institutions	Location of universities (only main location) and number of university students. ISCED classification 5A and 6.	Statistics provided by national experts	The definitions of universities can vary slightly as well as the years of the data on students.
Location of company headquarters	The location of the headquarters of the top 500 companies in each country. Rated by turnover. (2001)	Ratings published by national financial magazines - Listing of the TOP 15 000 European companies by Euroconfidential, Belgium	For most countries a list of the top 500 has been used. However, some countries only have official ratings of top 100 or top 200 companies, which have thus been used. For the "Global" and "European" ratings on decision making a list of the top 1000 European companies have been used. However, the data is by postal addresses and not on FUA level, which makes the figures not totally reliable.
Administrative status	Based on the national administrative system, cities that are the administrative seat of the different levels, national capitals, province centres, regional centres etc.	National experts	

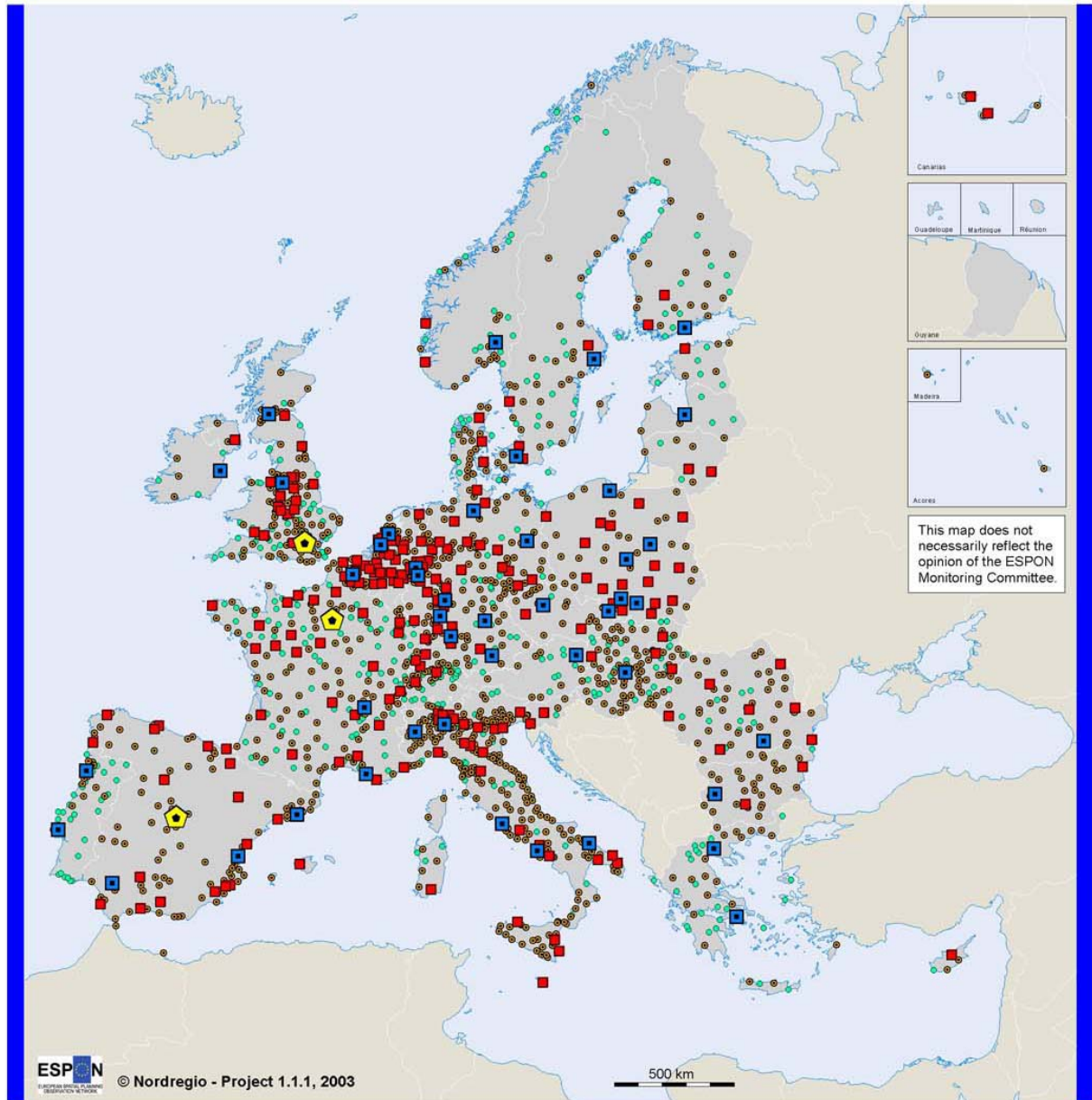
The population is concentrated to the Pentagon, but there are three extensions to the Pentagon, one reaching down to the east coast of Spain, one to Southern Italy and one to central Eastern Europe where there is a strong concentration of large urban agglomerations. In more peripheral Europe most of the large urban agglomerations are more insular (map 4.1).

Table 4.3 Population (mass function) – country reports

Country	No of FUAs	% of pop. in FUAs	Average size of FUAs	Comments
Austria	24	35	120 000	Austria is strongly dominated by Vienna and lacks medium-sized FUAs. The low share of people living in FUAs is partly due to the national interpretation of functional urban area (same as core city) and partly to the Austrian settlement structure being based on units smaller than FUAs. There is strong population growth in small FUAs, while cities above 100 000 inhabitants have declining populations.
Belgium	21	69	337 000	Belgium has two large centres and a balanced number of small and medium-sized FUAs. Strongest growth is in medium-sized cities.
Bulgaria	31	63	155 000	Sofia dominates Bulgaria, and there are two other medium-sized cities. All FUAs are declining, with the smallest FUAs losing most of their population.
Switzerland	48	63	96 000	Switzerland is dominated by Zurich, but it has four medium-sized FUAs and a large number of small FUAs. The largest growth is in the small FUAs.
Cyprus	4	69	133 000	Cyprus has four FUAs, all of which are growing rapidly.
Czech Republic	25	60	247 000	The Czech Republic has two large FUAs (Prague and Ostrava) and a couple of medium-sized cities. FUAs with 100-200 000 inhabitants are growing. Large cities are losing population.
Germany	186	58	264 000	Germany has a large number of FUAs. There is no correlation between size and population change, but there are significant structural changes taking place in eastern Germany.
Denmark	35	97	150 000	Denmark is dominated by Copenhagen. Most FUAs are growing. The larger cities have the highest growth.
Estonia	10	69	98 000	Estonia is dominated by Tallinn. All but one of the FUAs is losing population.
Spain	110	75	274 000	Spain has two large FUAs, but also a balanced network of other large and medium-sized FUAs. Strongest growth is in small FUAs, while large FUAs are losing population.
Finland	35	79	117 000	Finland has one dominating FUA, Helsinki, a few medium-sized FUAs, and a few dozen small FUAs. Large FUAs are growing, while small ones are losing population.
France	211	71	200 000	France is strongly dominated by Paris. Three other FUAs have populations over 1 million. Strong growth takes place in all size-classes; only small FUAs are losing population.
Greece	45	65	154 000	Greece is dominated by Athens, and has Thessaloniki as its second-city. Other FUAs are small. Almost all FUAs are growing, with the smallest are growing relatively faster.
Hungary	77	81	105 000	Hungary has one dominant city, Budapest, supported by a network of small and medium-sized cities. The largest cities are losing population, there is growth in a few small and medium-sized cities.
Ireland	7	37	207 000	Ireland is dominated by Dublin. All FUAs are growing strongly, with the smallest growing relatively more.
Italy	235	79	181 000	Italy has three poles and a large number of medium-sized cities as well as a vast number of small cities. Most of the FUAs are losing population.
Lithuania	8	42	191 000	Lithuania has a balanced urban structure. Small FUAs are growing, while larger FUAs are losing population.
Luxembourg	2	58	130 000	Luxembourg is a bipolar country (two FUAs), both growing.

Latvia	8	73	215 000	Latvia is strongly dominated by Riga. All FUAs are losing population.
Malta	1	100	397 000	Malta is considered as one FUA. The population is growing.
Netherlands	39	63	259 000	The Netherlands has a large number of medium-sized FUAs. Almost all FUAs are growing, with the small and medium-sized ones growing relatively faster.
Norway	36	81	102 000	Norway is dominated by Oslo. There is population growth in all size-classes.
Poland	48	51	406 000	Poland has a balanced urban structure. The large FUAs are losing population, only cities with less than 500 000 inhabitants are growing, some of them very rapidly.
Portugal	46	60	132 000	Portugal is bipolar country, and it has a large number of small FUAs, most of them located near to large cities. Large cities are growing; some of the small FUAs are losing population rapidly.
Romania	59	38	144 000	Romania is dominated by Bucharest, and has seven FUAs with 280 000 to 320 000 inhabitants. All but two FUAs are losing population.
Sweden	47	89	169 000	Sweden is dominated by Stockholm, but has a number of growing medium-sized cities. The largest FUAs have the strongest growth.
Slovenia	6	52	167 000	The urban structure is rather balanced. There is a steady population growth in all FUAs.
Slovakia	27	64	129 000	Slovakia is rather polycentric. Most of the weight of the urban system is in medium-sized cities. Most of the FUAs are growing, but there is no discernable relation between size and population change.
United Kingdom	146	51	208 000	The UK is strongly dominated by London, which is growing strongly. The low share of people living in FUAs is due to the national interpretation of functional urban area. There is no correlation between size and population development. Data quality is poor, due to changes in the statistical units used.

FUA population (mass function)



Total FUA population in FUAs with more than 20 000 inhabitants 2000-2001

Geographical Base: Eurostat GISCO

- > 5 million inhabitants
- 1-5 million inhabitants
- 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

Origin of data: National Statistical Offices, National experts
Source: Nordregio

Map 4.1 FUA Population (Mass function)

4.2.2 Transport

The connectivity of the FUAs constitutes one of the central factors of polycentricity. Any sharing of economic functions cannot be really effective unless accompanied by transport infrastructure and good accessibility.

Transport intensity is measured through traffic levels at the main airports and the number of tons handled at major container harbours (excluding bulk), in order to identify explicitly transport-oriented cities. As a result, the general picture is rather monocentric, both at the European level and nationally, in particular in geographically small countries. The busiest transport nodes are, of course, located in the Pentagon. However, maritime transportation has more weight in the Mediterranean region, where several major transport hubs are located. Not one of the new EU member states or accession countries has a transport node of European significance.

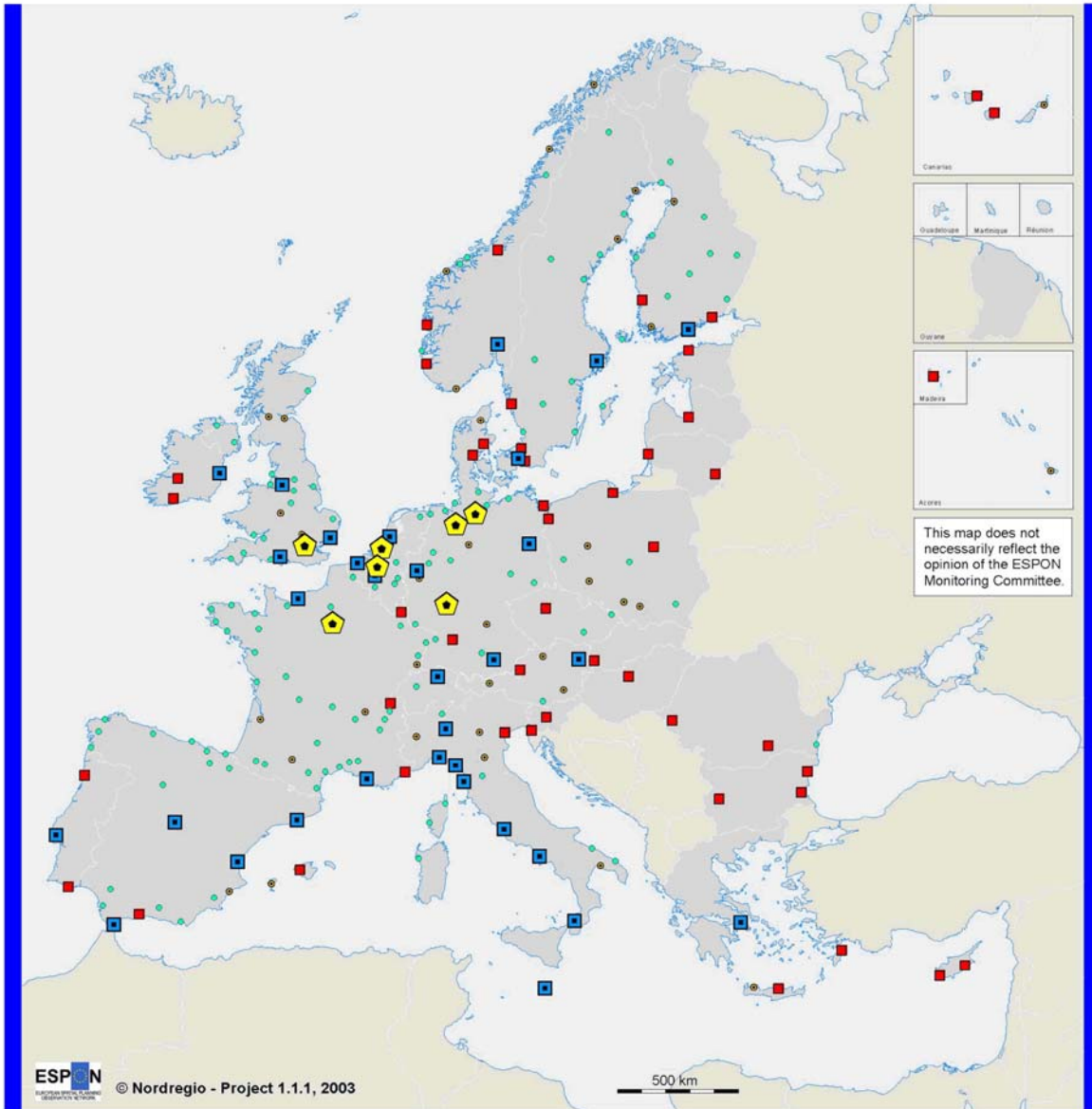
The transport system favours polycentricity particularly in Austria, Germany, Italy, Finland, Norway and Sweden. The transport system is however more monocentric than one would expect on the basis of the settlement structure in the Czech Republic, Hungary and Slovakia in particular (map 4.2).

Table 4.4 Transport function – country reports

Country	Observations
Austria	The transport structure is dominated by Vienna, but is more balanced than the settlement structure.
Belgium	Antwerp is a global node in maritime transport, while Brussels dominates air traffic. Two FUAs score in terms of local significance. The transport system is polycentric.
Bulgaria	There is no FUA of European significance. Sofia, Burgas and Varna are national nodes.
Switzerland	Zurich is the main node in transport, being a European node. Geneva is also strong (national significance). Bern and Lugano have small airports.
Cyprus	The transport system is bipolar as air traffic is channelled to two FUAs, one at each end of the island.
Czech Republic	There is no FUA of European significance. The transport system is rather monocentric. Prague is the most important transport node, though Brno and Ostrava have regional airports.
Germany	Germany has three FUAs of global and three of European significance. All parts of the country have a strong node, enabling a balanced national urban network.
Denmark	The transport system is monocentric, with Copenhagen as a European transport node, both in terms of air traffic and maritime transport.
Estonia	There is no FUA of European significance. The structure is monocentric, as Tallinn is the only transport node in the country.
Spain	The transport structure is polycentric, with four nodes that have European significance and four nodes with a national role.
Finland	Helsinki is the most important transport node, having European significance. Two harbour FUAs are important in terms of maritime transport. There are many small nodes in the transport system.
France	Paris is a global transport node. Two FUAs have significance on the European level as hubs for maritime transport. Nice is an important national node. There is an extensive network of small airports and harbours.
Greece	Athens is the main transport node, having European significance. Other important nodes have significance mainly due to their tourist flows.

Hungary	There is no FUA of European significance. The transport system is monocentric, with Budapest as the only node in country.
Ireland	Dublin is the main transport node, having European significance. Other nodes of national significance are Cork and Limerick.
Italy	The transport system is polycentric, with a seven FUAs of European significance. One FUA has national significance and 10 FUAs have smaller airports or harbours.
Lithuania	There is no FUA of European significance. The transport system is bipolar. Vilnius is the main node for air traffic and Klaipeda for maritime traffic.
Luxembourg	There is no FUA of European significance.
Latvia	There is no FUA of European significance. Transport is very monocentric: Riga is the only node.
Malta	Valletta harbour is of European significance.
Netherlands	Rotterdam is a global node in terms of maritime transport. Amsterdam has European significance as an air traffic node.
Norway	Oslo is the main transport node of European significance. In a country with long travel distances there are many small nodes in the transport system.
Poland	There is no FUA of European significance. Warsaw is the main node; the others are nodes in maritime transport.
Portugal	Lisbon is a European node in transport. Porto has national significance, as do two small FUAs as nodes for maritime transportation.
Romania	There is no FUA of European significance. In addition to Bucharest, Timisoara has the role of a transport node of national significance.
Sweden	Stockholm is the most important transport node with air traffic scoring on the European level. Other large cities also score highly, mainly due to maritime traffic. There are many small nodes in the transport system.
Slovenia	There is no FUA of European significance. The transport system is monocentric, Ljubljana being the only major node in the country.
Slovakia	There is no FUA of European significance. The transport system is very monocentric, with Bratislava as the only node in the transport system.
United Kingdom	London is a global node in transport. Three FUAs score on the European level: Manchester is an important node in air traffic, and two FUAs are significant maritime nodes. The transport system is more monocentric than that the settlement structure would suggest.

Transport function



Location of airports with more than 50 000 passengers/year (2000) or ports with more than 20 000 TEU container traffic (2001)

Geographical Base: Eurostat GISCO

Origin of data: Aéroport Magazine, Port of Hamburg website
Source: Nordregio

- ▣ Global transport hub
(more than 5% of European total)
- ▣ Transport hub of European significance
(1-5% of European total)
- ▣ Major transport node
(more than 5% of national total but less than 1% of European total)
- Minor transport node
(2-5% of national total)
- Small airport (more than 50 000 passengers per year) or harbour
(more than 20 000 TEU per year)

Map 4.2 Transport function

4.2.3 Tourism

Tourism is the most balancing function in terms of polycentricity. It is the strongest force favouring polycentricity driven by the private sector. Most of the FUAs that are strong in tourism are different to those that score highly in other functions. The weight of the urban system, when measuring the tourism function, is in the Mediterranean area (Spain, France, Italy, Greece, Cyprus) and in the Alps (Italy, Austria, Switzerland). Only a few highly tourist-oriented FUAs of European significance can be identified beyond this area.

Globally significant urban destinations are London, Paris and Rome. Capital cities are often also important nodes as regards tourism. However, there are countries where FUAs score only on the regional or local levels (Estonia, Latvia, Lithuania). Some of the tourist oriented FUAs have grown very rapidly. In the new EU member states and the acceding countries only a few strong nodes can be identified (a few capital cities and destinations on the Black Sea). The economic base of strongly tourist oriented FUAs are often strongly service oriented.

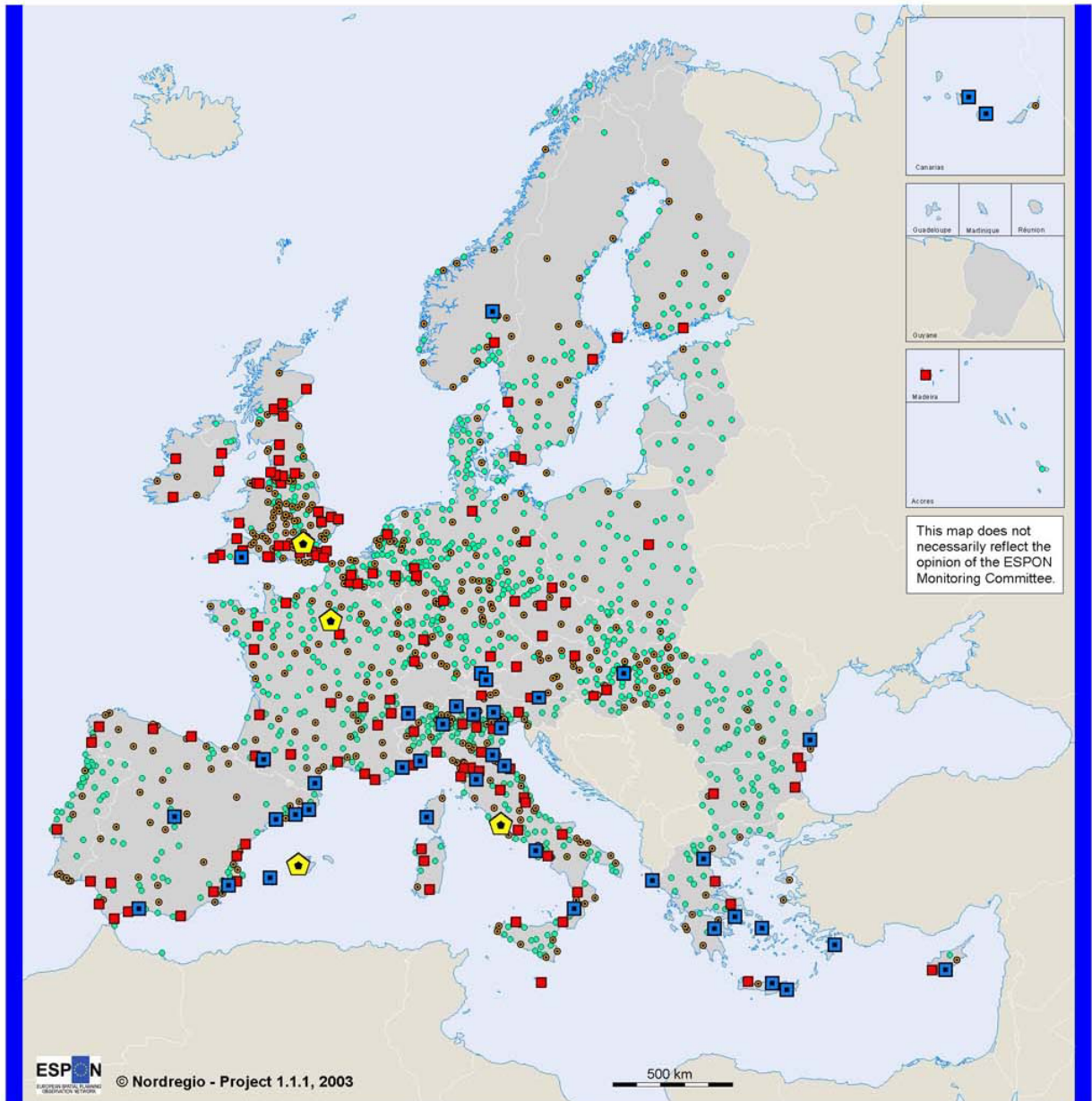
The tourism-based urban system favours polycentricity particularly in Austria, Cyprus, Greece, Ireland, and the UK. The tourism-based urban system is monocentric (more monocentric than what one would expect on the basis of settlement structure) in Bulgaria, Germany, Poland and Romania (map 4.3).

Table 4.5 Tourism function – country reports

Country	Observations
Austria	Tourism enhances polycentricity in Austria. It has two FUAs of European significance, three of transnational/national significance, and a dozen of regional significance. Austria has a strong position as regards tourism.
Belgium	Belgium lacks FUAs with a significant role in tourism at the global or European levels. Brussels is the strongest node. Four FUAs score at the regional level. Tourist oriented cities located on the coast balance the urban structure.
Bulgaria	Bulgaria lacks a FUA with a significant role in tourism on the global or European levels. Four FUAs have national, and two FUAs regional significance in tourism. Tourist oriented cities located on the coast balance the urban structure, though in general, tourism is not yet an important factor in making Bulgaria more polycentric.
Switzerland	No data available
Cyprus	Limassol has European significance in tourism; Paphos has national significance, and Larnaca regional significance. The capital FUA is the weakest. Tourism is genuinely increasing polycentricity.
Czech Republic	The Czech Republic lacks a FUA with a significant role in tourism on the global or European levels. Five FUAs score at the national level, and seven FUAs have regional significance. Tourist oriented FUAs do not score high in other functions. In that sense this favours a division of labour between cities, and hence polycentricity.
Germany	Germany does not have any global nodes in tourism. Small tourist oriented FUAs and a number of MEGAs score at the European and national levels. Tourist oriented FUAs do not score highly in other functions.
Denmark	Denmark lacks a FUA with a significant role in tourism on the global or European levels. Copenhagen is the main node. Other major cities have regional significance.
Estonia	Estonia lacks a FUA with a significant role in tourism on the global or European levels. Tallinn is the strongest tourism node, but it does not score more highly than the regional level. The remaining FUAs have only a local role.

Spain	Tourism enhances polycentricity in Spain. It has one FUA (Mallorca) that has global significance and nine FUAs with European significance. Dozens of coastal FUAs are strongly tourist oriented. Spain has a strong position in tourism.
Finland	Finland has no FUA with a significant role as a tourism node on the global or European levels. There are two FUAs that have national, and nine that have regional significance in tourism. In Finland, tourism does not favour polycentricity.
France	Four FUAs of European significance are located in the southern part of France. Paris has a global position in tourism. Four FUAs have European significance, 21 score nationally, while 54 are of regional significance. Tourist oriented FUAs do not score highly on other functions.
Greece	Tourism enhances polycentricity in Greece. Many FUAs' positions in the national tourism network is stronger than their population mass would suggest. In total eight FUAs are of European significance, three have national significance, and 11 have a regional significance. Tourist oriented FUAs are usually FUAs other than those that score highly in other functions.
Hungary	Budapest is the strongest tourist node, with European significance. Two other small FUAs are highly tourist-oriented and have a national significance. 25 FUAs have a regional significance. Tourist oriented FUAs are usually FUAs other than those that score highly in other functions.
Ireland	Ireland has no FUA with a significant role as a tourism node on the global or European levels, but several FUAs has a higher weighting in tourism than their size suggests.
Italy	Tourism is more polycentric than the settlement structure. Rome is a global magnet. In addition, Italy has twelve FUAs of European significance, most of them located in the north of the country.
Lithuania	The tourism sector is weak in Lithuania. Lithuania is the only country where not one FUA scores higher than the local level.
Luxembourg	Neither of Luxembourg's two FUAs have a significant role in tourism.
Latvia	Latvia lacks a FUA with a significant role in tourism on either the global or the European levels. Riga is the strongest tourism node, but it does not score higher than the regional level. The remaining FUAs have only a local role.
Malta	Tourism is important for Malta. However, in European comparison it does not score on the European level, only on the national level.
Netherlands	The Netherlands has no FUA with a significant role as a tourism node on the global or European levels. Amsterdam and Maastricht are the main nodes on the national level. 10 FUAs have regional significance. Tourism is more monocentric than the other sectors.
Norway	In Norway Lillehammer FUA is highly tourist oriented (European significance). Oslo scores on the national level. 13 FUAs have regional significance.
Poland	Poland has no FUA with a significant role as a tourism node on the global or European levels. Warsaw is the main node. Six FUAs have regional significance. Tourism is not as polycentric as other functions in Poland.
Portugal	Portugal has no FUA with a significant role as a tourism node on the global or European levels. In addition to Lisbon, Funchal FUA has national significance in tourism. In addition, nine FUAs have regional significance. Tourist oriented FUAs are FUAs other than those that score highly in other functions. In that sense it favours the division of labour between cities and polycentricity. However in Portugal the effect of tourism in terms of polycentricity is smaller than in other countries in the Mediterranean area.
Romania	Romania has one FUA by the Black Sea (Constanta) of European significance in tourism.
Sweden	Sweden has no FUA with a significant role as a tourism node on the global or European levels. Small FUAs are not as attractive tourist destinations as their mass criterion would suggest. Sweden is an example of country in the north where tourism does not increase polycentricity (cf. Mediterranean countries).
Slovenia	The weight of tourism in Slovenia is still light. Koper is a small FUA with a high tourism orientation, but it does not score higher than the regional level of significance.
Slovakia	Slovakia has no FUA with a significant role as a tourism node on the global or European levels. The tourism sector is rather weak, only four FUAs score on the regional level.
United Kingdom	London is also a global node in tourism. Torquay in the southwest is a highly tourist oriented FUA. 33 FUAs score on the national level, and 68 have regional significance. Tourism is making the UK more polycentric as most of the tourist oriented FUAs are located on the south coast and in the north.

Tourism function



Number of bedplaces in hotels or similar establishments 2001

Geographical Base: Eurostat GISCO

Origin of data: EUROSTAT for EU15, CH and NO;
National Statistical Offices

Source: Nordregio

- ▣ Global tourist attraction
(more than 100 000 beds)
- ▣ Tourist attraction of European significance or strongly tourist oriented FUA
(50 000-100 000 beds or more than 100 beds per 1 000 inhabitants)
- ▣ Major tourist attraction
(15 000-50 000 beds)
- Tourist attraction of regional significance
(5 000-15 000 beds or between 25 and 100 beds per 1 000 inhabitants)
- Local significance
(less than 5 000 beds or less than 25 beds per 1 000 inhabitants)

Map 4.3 Tourism function based on number of beds

4.2.4 Manufacturing

In many countries the polycentric urban system is mainly the result of industrialisation. Manufacturing industrial nodes grew up in proximity to raw material deposits, energy sources and to a location from which their products could be delivered on most cost-efficiently. However, manufacturing industrial regions have been in decline for some time, and certainly since the emergence of structural change in the service industries. Nevertheless, they continue to act as strong backbones of the economy in many countries. Nowadays many industrial FUAs, even those with less than 50 000 inhabitants, can trade globally (their market area is the whole world). It is the density of these global relations that defines the internationality of urban systems. Regional data is however not available for Switzerland, France or the United Kingdom.

The manufacturing function of FUAs was measured through gross 'value added' in this sector. On the European scale the weight of this system leans heavily on the Pentagon. However, polycentric systems can also be found on the fringes of Europe. The gross 'value added' in the acceding countries is often relatively low, except in capital regions and in Poland.

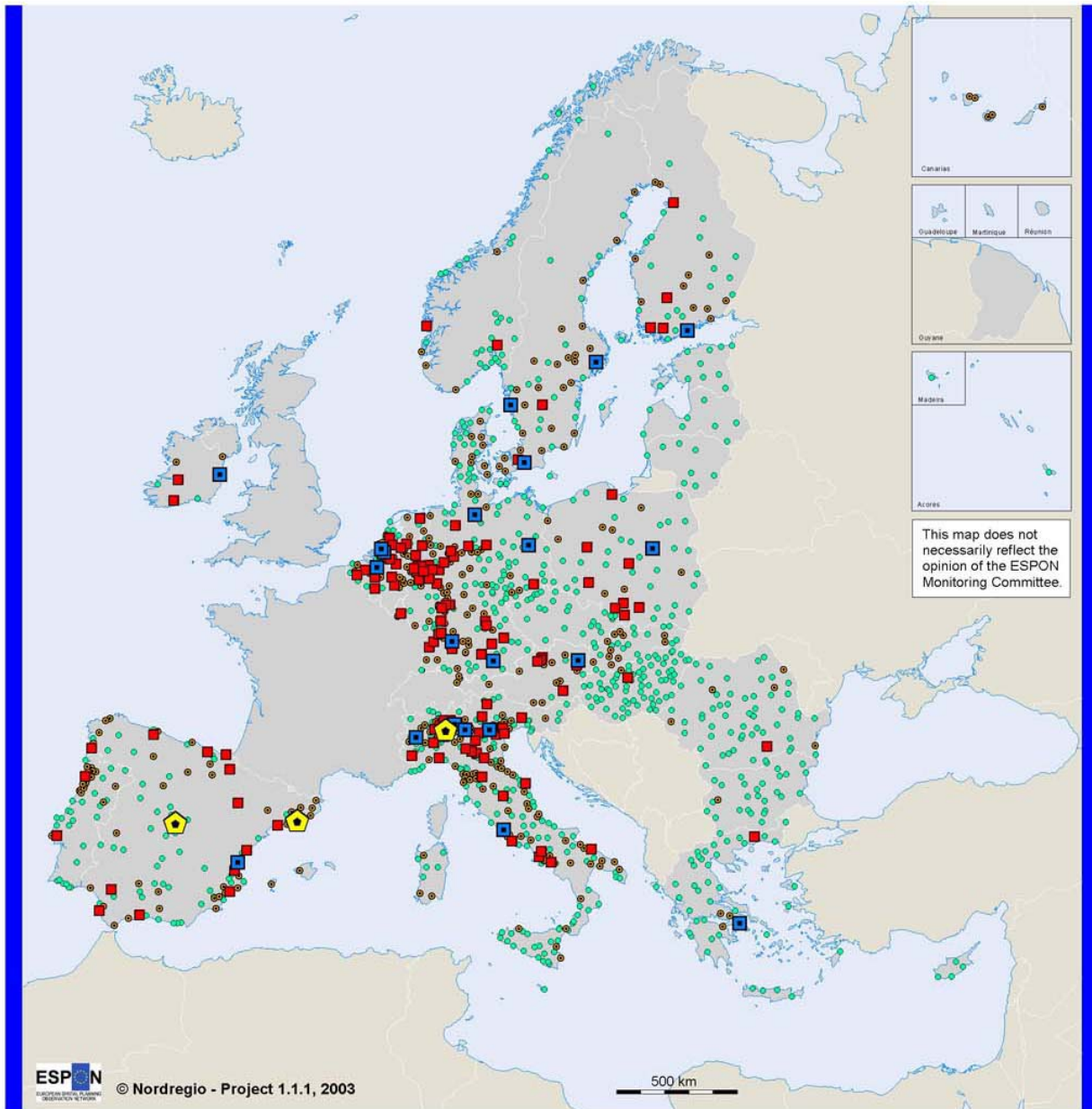
The manufacturing-based urban system favours polycentricity particularly in Austria, Germany, Finland, Italy, Luxembourg, the Netherlands, Portugal, Sweden and Slovakia. The manufacturing-based urban system is more monocentric than one would expect on the basis of the settlement structure in Bulgaria, Cyprus, the Czech Republic and Lithuania (map 4.4).

Table 4.6 Industrial function – country reports

Country	Observations
Austria	Manufacturing activities are organised in a more polycentric way than the settlement structure.
Belgium	Antwerp is the strongest industrial node, scoring on the European level. Six FUAs score on the national level, and seven on the regional level. Three FUAs are industrial in economic structure.
Bulgaria	Sofia is the largest manufacturing node in the country. The remaining FUAs have only minor manufacturing activities, or none at all. Sofia is the only FUA with a diversified production structure.
Switzerland	No data available
Cyprus	Four FUAs in Cyprus do not have any significant role as industrial nodes.
Czech Republic	Most of FUAs in the Czech Republic are industrially oriented. However, gross 'value added' in industries is low, and no FUA scores even on the regional level.
Germany	Germany is a highly industrialised country, with a very polycentric industrial network. It is in fact due to polycentricity that the country does not have one global node in manufacturing, even though neighbouring FUAs score highly, especially in the heavily industrialised west. Four FUAs have European significance (Berlin, Hamburg, Munich and Stuttgart). 36 FUAs have national, and 57 regional significance.
Denmark	The industrial structure is quite polycentric. Copenhagen is the main location for manufacturing, but 12 other FUAs have a gross 'value added' between 1 and 2.5 billion euros yearly (regional significance).
Estonia	As with all of the Baltic States, manufacturing in Estonia is rather weak. There is no FUA with more than 1 billion euros gross 'value added'.

Spain	The manufacturing activities are polycentric. Spain is the only country that has two global nodes in manufacturing (Madrid and Barcelona). Valencia has European significance in this regard. 13 FUAs have a national role and 43 other FUAs have a gross 'value added' between 1 and 2.5 billion euros yearly.
Finland	Helsinki is the main node in manufacturing. Four other FUAs score on the national level, and 11 have regional significance. The urban system is based on scattered industrial nodes.
France	No data available
Greece	Athens is the main node in manufacturing, and is of European significance. One FUA has national and three have regional significance. Manufacturing is thus quite concentrated to a few centres. Most of the FUAs in Greece rely on primary production.
Hungary	Budapest is the only significant node as regards manufacturing. Other FUAs do not score higher than the local level, even though some of these FUAs are strongly manufacturing oriented. In other words, manufacturing is also highly monocentric.
Ireland	Manufacturing is somewhat more polycentric than the settlement structure.
Italy	Milan is a global node in terms of manufacturing. Five other FUAs are of European, 30 national, and 88 of regional significance. About four fifths of these FUAs are located in northern Italy. This does not favour polycentricity at the national level, only at the regional level.
Lithuania	All eight FUAs have a gross 'value added' of less than 1 billion euros annually.
Luxembourg	Manufacturing is rather more polycentric than the settlement structure, i.e. Esch-sur-Alzette's position in terms of the industrial (manufacturing) function makes its position stronger in the urban network than that which its population mass would suggest.
Latvia	As with all the Baltic States, manufacturing in Latvia is still rather weak. No FUA that has more than 1 billion euros gross value added.
Malta	Manufacturing in the Valletta FUA has less than 1 billion euros gross value added, so it has only local significance.
Netherlands	Rotterdam and Dordrecht are the main industrial nodes (European significance). The Netherlands is genuinely polycentric, and has a developed division of labour between its cities, as different cities score highly in different functions. Nine FUAs have national significance and 14 FUAs regional significance.
Norway	No FUA scores on the global or European levels. Oslo and Bergen are the main nodes as regards manufacturing. Four other FUAs score on the regional level. The industrial function does not have an effect on polycentricity in Norway.
Poland	Warsaw has European significance as an industrial node, being the only FUA in the acceding countries at this level. Eight other FUAs have national significance, and a further eight FUAs score on the regional level. The industrial function does not affect polycentricity in Poland.
Portugal	Lisbon and Porto are the strongest industrial nodes, and there are 17 other FUAs of regional significance. The industrial structure is more polycentric than that which the settlement structure would suggest.
Romania	Bucharest is the strongest industrial node, scoring on the national significance level. Five other FUAs have a gross 'value added' of more than 1 billion euros annually. Overall, manufacturing does not affect polycentricity.
Sweden	The strongest FUAs are also the most important nodes as regards manufacturing, with three FUAs of European significance and 23 of regional significance. The urban system is based on scattered industrial nodes. However, most of these FUAs have a diversified economic structure, so that they are not only dependent on manufacturing.
Slovenia	Ljubljana is the strongest industrial node, but gross 'value added' in manufacturing has only regional significance. Three FUAs have an industrial orientation in economic structure but their manufacturing does not add value of more than 1 billion euros yearly.
Slovakia	Of all of the 27 FUAs in the country 12 have an economic base in manufacturing. However only five of these had a gross 'value added' above 1 billion euros in 2000. Manufacturing is however the function that makes Slovakia's urban structure more polycentric.
United Kingdom	No data available

Industrial function



Gross value added in manufacturing (industry) 2000

Geographical Base: Eurostat GISCO

- Global industrial node
(more than 20 billion Euro in GVA)
- Industrial node of European significance
(7.5-20 billion Euro in GVA)
- Transnational industrial significance or strongly industrially oriented FUA
(2.5-7.5 billion Euro in GVA)
- Major industrial FUA
(1-2.5 billion Euro in GVA)
- Minor industry or no industry
(less than 1 billion in GVA)

Origin of data: EUROSTAT, National Statistical Offices
Source: Nordregio

Map 4.4 Industrial function (the Statistical offices of France, Switzerland, and the UK do not produce any regionalised data on industrial GVA)

4.2.5 Knowledge

The knowledge function is measured as total the number of students in higher education institutes within each FUA. In all countries the capital city is also the most important node in this regard. It can be argued that knowledge makes strong poles even stronger, which is an important feature when identifying growth poles beyond the Pentagon. On the other hand, the university system in most of the countries favours polycentricity. Even though the main node is in a capital city, it is usually the case that many other large universities are located in other FUAs.

The general picture of knowledge-based Europe is very balanced. Important nodes are evenly distributed to all parts of Europe, and within most of the countries as well. The density of higher-level education institutes is naturally higher in more densely populated areas.

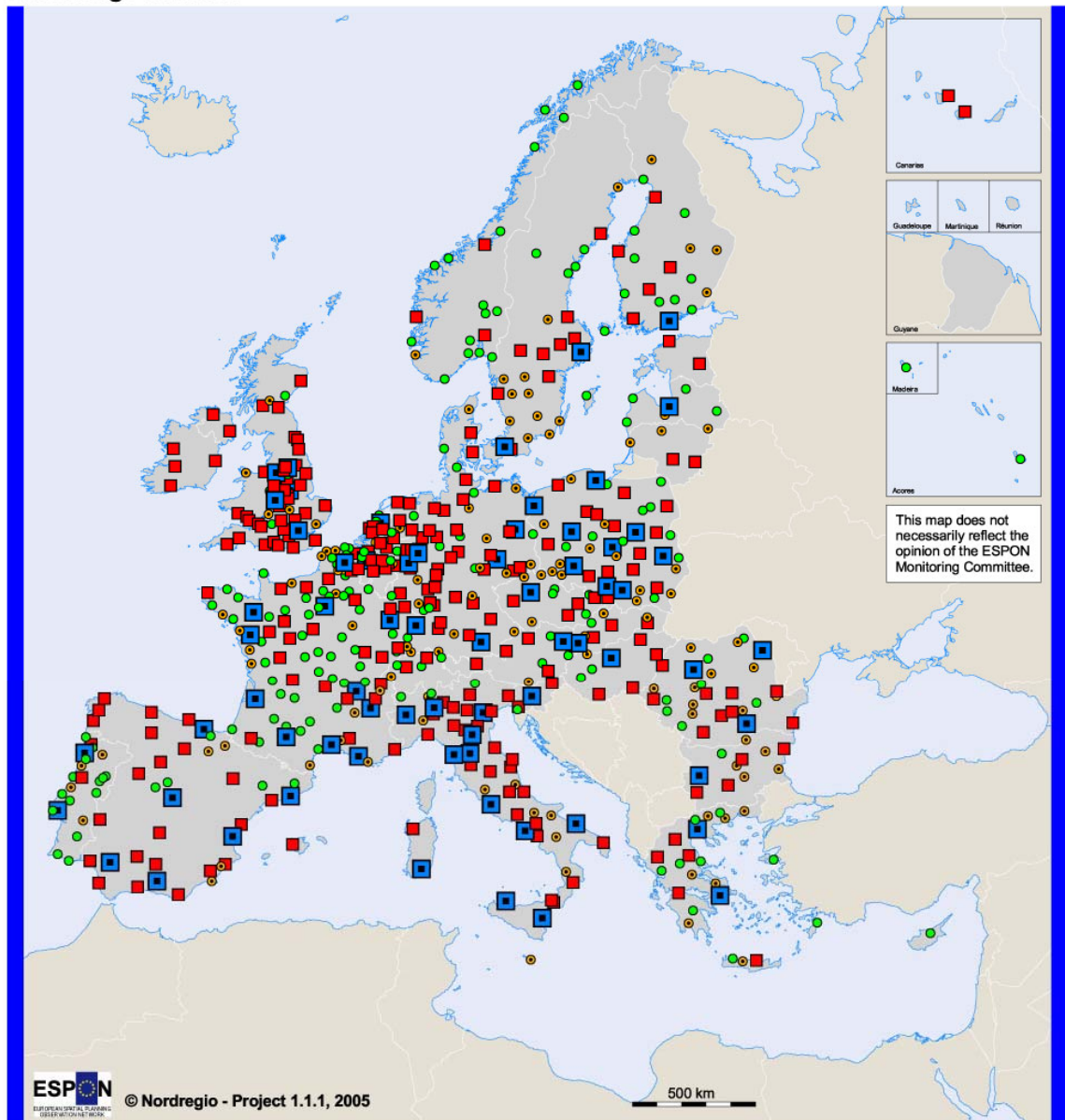
The knowledge-based urban system favours polycentricity particularly in Austria, Belgium, Finland, Greece, Ireland, Latvia, Lithuania, the Netherlands, Portugal, Romania, Sweden, Slovenia and the UK. The knowledge-based urban system is more monocentric than one would expect on the basis of settlement structures in Switzerland, Cyprus, Denmark, Hungary and Italy (map. 4.5).

Table 4.7 Knowledge function – country reports

Country	Observations
Austria	The knowledge structure is again more balanced (polycentric) than that of the settlement structure, though universities are concentrated in the larger FUAs. Vienna's universities have more than 50 000 students. Four other FUAs also have large universities. The total number of FUAs with higher education institutes is eight.
Belgium	The total number of FUAs with higher education institutes is 16. Brussels has most students, while seven other FUAs have more than 10 000 students.
Bulgaria	Sofia has more than 50 000 students in higher education institutes, which gives the city the status of being a significant knowledge node on the European level. Four other FUAs have large universities. The total number of FUAs with higher education institutes is 11. Three of these 11 FUAs have less than 100 000 inhabitants.
Switzerland	Three FUAs have more than 10 000 students, but there is no knowledge node of European significance. The total number of FUAs with higher education institutes is nine. The university system is concentrated in the larger FUAs, making the country more monocentric.
Cyprus	Nicosia is the only FUA with higher education institutes, but it only scores on the local level.
Czech Republic	Prague is the main node in the knowledge system. Four other FUAs have major universities. The total number of FUAs with higher education institutes is 12. The university system is as balanced as the settlement structure requires.
Germany	Five FUAs have more than 50 000 students in higher education institutes, and there are 37 other major university cities. The total number of FUAs with higher education institutes is 63. In a polycentric country this relatively scattered university system does not work to increase polycentricity.
Denmark	Copenhagen is a node in the European knowledge system. Two other FUAs have major universities. The total number of FUAs with higher education institutes is seven, in other words the university system is very monocentric.
Estonia	The knowledge system in Estonia is bipolar. Tallinn and Tartu are the two university FUAs in Estonia. Other FUAs have no higher education institutes.

Spain	Six FUAs have more than 50 000 university students. Furthermore there are 25 other university-FUAs. The total number of FUAs with higher education institutes is 40.
Finland	Helsinki has more than 50 000 students attending its universities. Five other FUAs also have large universities. The total number of FUAs with higher education institutes is 20. The university distribution makes the urban system more polycentric.
France	The university system is very polycentric. 12 FUAs have more than 50 000 university students, located in all parts of country. In addition there are 22 other important university-FUAs. The total number of FUAs with higher education institutes is 98.
Greece	Both Athens and Thessaloniki have universities of European significance. Seven other FUAs also have large universities. The total number of FUAs with higher education institutes is 23. The university system makes Greece more polycentric.
Hungary	Budapest is a node in the European knowledge system. Four other FUAs have major universities. The total number of FUAs with higher education institutes is nine. Compared to other measured functions, institutes providing higher education make the Hungarian system more monocentric.
Ireland	The total number of FUAs with higher education institutes is four, none of them having less than 50 000 students. Dublin is the strongest node; the other three are the next largest cities.
Italy	Italy has no FUA of European significance in terms of knowledge. 10 FUAs have national significance. The total number of FUAs with higher education institutes is 41. Higher education institutes are distributed evenly across all parts of the country, but the number of FUAs with these functions is rather small compared to the total number of FUAs in Italy.
Lithuania	The knowledge system is bipolar. In Vilnius and Kaunas the universities are large (more than 10 000 students). In total, Lithuania has four FUAs with higher education institutes.
Luxembourg	Only one of Luxembourg's two FUAs has a higher education institute, but it has only local significance.
Latvia	The knowledge system is rather polycentric. Riga higher education institutes have more than 50 000 students. In addition, there are two FUAs with medium-sized higher education institutes. The total number of FUAs with higher education institutes is seven.
Malta	Valletta has a higher education institute, and it has regional significance.
Netherlands	Amsterdam has most students (European significance). 12 other FUAs also have large universities. The total number of FUAs with higher education institutes is 24. The Netherlands is a polycentric country and this feature is supported by its scattered university system.
Norway	Oslo is the main node in the knowledge system, but it does not score on the European level. Two other FUAs also have national significance. Small universities dominate the university system. The total number of FUAs with higher education is 20.
Poland	The university system is the most polycentric in Europe. Nine FUAs have universities with more than 50 000 students. In addition, there are 14 large university-FUAs. The total number of FUAs with higher education institutes is 45.
Portugal	The two main FUAs (Lisbon and Porto) also have the main universities of European significance. These two FUAs have large universities. The total number of FUAs with higher education institutes is 24.
Romania	The knowledge system is polycentric. In addition to the capital, eleven FUAs have major universities, distributed over all parts of country. The total number of FUAs with higher education institutes is 29.
Sweden	Stockholm is the main node of the knowledge system. Nine other FUAs have large universities. The total number of FUAs with higher education institutes is 26. The university system makes the urban system more polycentric.
Slovenia	Ljubljana has more than 50 000 students in higher education institutes. Maribor also has a major university. Koper also has a role in the university system. The knowledge system makes the country more polycentric.
Slovakia	Bratislava has major higher education institutes and there are three other FUA universities with more than 10 000 students. The total number of FUAs with higher education institutes is eight.
United Kingdom	The university system in the UK is polycentric and balanced with the national urban structure. The total number of FUAs with higher education institutes is 54. Five universities have more than 50 000 students and 40 FUAs have a medium-sized education capacity.

Knowledge function



Number of university students in FUA (ISCED 5A and 6) 2000-2001

Geographical Base: Eurostat GISCO

- Knowledge node of European significance (50 000-500 000 students)
- Large higher education institute/s (10 000-50 000 students)
- Medium-sized higher education institute/s (5 000-10 000 students)
- Regional higher education institute/s (less than 5 000 students)

Origin of data: National experts
Source: Nordregio

Map 4.5 Knowledge function – total number of students in each FUA

4.2.6 Decision-making in the private sector

The capacity of influence of an urban system is not solely dependent upon its level of competitiveness and demographic weight, but also on its actual economic attractiveness to private investors. Other factors then, which are difficult to measure and compare, come into play in the individual choices made by firms. Owing to the complexity of any approach that consists of listing all of the conditions of attractiveness within a territory, for the purposes of this study we have chosen instead to examine its effects – in other words the distribution of the top European firms. In this regard, the degree of attractiveness of the urban systems included in the study should be read as an observation and not as a potentiality, since the factors governing the establishment of companies are by nature likely to change over time.

The location of the largest companies in Europe, and in each country, describes the locational behaviour of the private sector. Business headquarters locate to places with good accessibility and that are close to business services. Future growth is expected to take place particularly in private sector services.

Decision-making is highly concentrated to the Pentagon (Stockholm is the only FUA outside). Of the core areas Belgium, Germany and the Netherlands are polycentric countries, while in France and the UK the capital overshadows all other national FUAs. Germany, Italy and Switzerland are countries where business power is located in cities other than the capital. In general, national capitals are important in national decision-making, but in many small countries (Cyprus, Estonia, Greece, Latvia, Portugal) there are two important centres, and this is something that favours polycentricity.

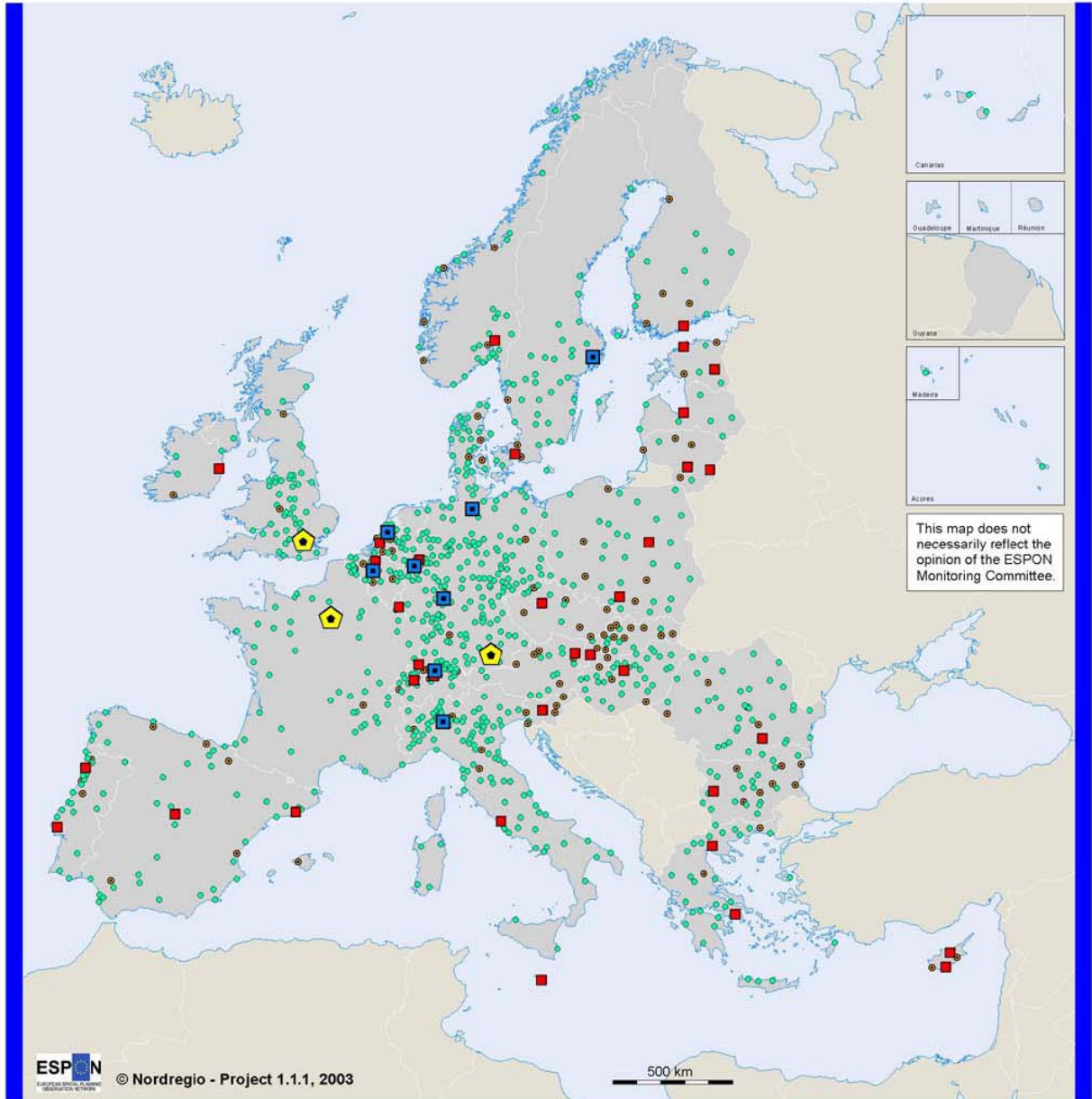
In general, the location of the top-500 companies favours polycentricity in Austria, Switzerland, Cyprus, Estonia, Ireland, Latvia, Luxembourg, Lithuania, Norway, Slovenia and Slovakia. Business structure is relatively monocentric (concentrated to one or few FUAs) in the Czech Republic, Spain, Finland, France, Hungary, Italy, Poland, Romania and the UK (map 4.6).

Table 4.8 Business decision-making centre – country reports

Country	Observations
Austria	Austria has no FUA with a significant role as a business decision-making centre at the global or European level. Vienna is a national node. Seven smaller FUAs have a role as business decision-making centres on the regional level, and 14 have some top 500 companies.
Belgium	Brussels has a significant role as a business decision-making centre on the European level. Antwerp is another important node. Four FUAs have regional significance. Another 15 FUAs have at least one top-500 company headquarters.
Bulgaria	Bulgaria has no FUA with a significant role as a business decision-making centre on the global or European levels. Sofia is a national decision-making centre. Seven other FUAs have 2 to 10 percent of top-500 companies, and 22 FUAs have at least one, but less than 10, top-500 companies.
Switzerland	Zurich has a significant role as a business decision-making centre on the European level. The business decision-making centre is not the same as the administrative centre however, which makes the country more polycentric. Bern, Basle and Zurich have more than 50 national top-500 company headquarters. Four other FUAs have a regional significance in business decision-making. The total number of FUAs with at least one company headquarters is 40, as such, decision-making is the function that most favours polycentricity in Switzerland.
Cyprus	Cyprus has no FUA with a significant role as a business decision-making centre on the global or European levels. Companies are mainly located in Nicosia and Limassol, though some are located in two other FUAs.
Czech Republic	The Czech Republic has no FUA with a significant role as a business decision-making centre on the global or European levels. Prague is a national decision-making centre. Five other FUAs have 10 to 50 top-500 company headquarters. Seven more FUAs have some headquarters.
Germany	The central business decision-making centre is not the same as the major administrative centre, which makes the country even more polycentric. Munich is the only FUA considered to be globally significant as a business decision-making centre. However, polycentricity does not do justice to the importance of cities located in e.g. Rhine -Ruhr area, where top companies are scattered to a number of FUAs.
Denmark	Denmark has no FUA with a significant role as a business decision-making centre on the global or European levels. Copenhagen is a national decision-making centre. Four FUAs have between 10 and 50 of headquarters of top-500 companies. Furthermore, 25 other FUAs have some business headquarters. The decision-making system is rather polycentric.
Estonia	Estonia has no FUA with a significant role as a business decision-making centre on the global or European levels. Top-500 companies are located mainly in Tallinn, though over 50 are also to be found in Tartu, which maintains its position in the national urban network. Two other FUAs have over 10 headquarters, and three have some companies.
Spain	Spain has no FUA with a significant role as a business decision-making centre on the global or European levels. As regards decision-making, the country is bipolar: both Madrid and Barcelona are important national roles. These two centres overshadow the smaller FUAs as decision-making centres. Only six other FUAs have a regional significance, with 41 having a local significance.
Finland	Finland has no FUA with a significant role as a business decision-making centre on the global or European levels. Helsinki is the national decision-making centre. Four other FUAs have regional significance, and 11 FUAs have some headquarters of top-500 companies.
France	Paris has a significant role as a business decision-making centre on the global level. At the same time it is (as with London in UK) dominant also in the national field, and there is only one other FUA with regional significance, and 46 FUAs with local significance as decision-making centres.
Greece	Greece has no FUA with a significant role as a business decision-making centre on the global or European levels. The headquarters of top-500 companies are located in Athens and in Thessaloniki. Komotini and Larisa are other two FUAs that boast regional significance.
Hungary	Hungary has no FUA with a significant role as a business decision-making centre on the global or European levels. Budapest is a national centre for business decision-making. Four other FUAs have 2 to 10 percent of large companies in Hungary. 31 other FUAs have some headquarters.
Ireland	Ireland has no FUA with a significant role as a business decision-making centre on the global or European levels. Dublin is the national decision-making centre. Cork has regional significance. Two FUAs in Ireland have no top-500 company headquarters.

Italy	In decision-making terms Italy is polycentric. Milan has a significant role as a business decision-making centre on the European level. The business decision-making centre is not same as the administrative centre, which makes the country more polycentric. Rome is the national decision-making centre.
Lithuania	Lithuania has no FUA with a significant role as a business decision-making centre on the global or European levels. Both Vilnius and Kaunas are important business decision-making centres in Lithuania. The remaining FUAs have some headquarters of main companies.
Luxembourg	Luxembourg has no FUA with a significant role as a business decision-making centre on the global or European levels. Most of the companies are located in Luxembourg FUA.
Latvia	Latvia has no FUA with a significant role as a business decision-making centre on the global or European levels. Riga is a national node for business activity, but some of the large companies are also scattered to other FUAs.
Malta	Malta has no FUA with a significant role as a business decision-making centre on the global or European levels. The Valletta urban area is naturally the location for headquarters operating in Malta.
Netherlands	Amsterdam has a significant role as a business decision-making centre on the European level. Rotterdam is the second-city in decision-making terms, functioning as national node. Four other FUAs have 2 to 10 percent of the top-500 company headquarters. In other words, business decision-making is rather more centralised to the large FUAs.
Norway	Norway has no FUA with a significant role as a business decision-making centre on the global or European levels. Oslo is the main location for major companies. Five other FUAs have 2 to 10 per cent of top-500 companies.
Poland	Poland has no FUA with a significant role as a business decision-making centre on the global or European levels. Warsaw and Katowice are national decision-making nodes. Five other FUAs have 2 to 10 percent of top-500 companies in the country. 30 other FUAs have some headquarters. Business decision-making is much more concentrated in Poland than the other functions.
Portugal	Portugal has no FUA with a significant role as a business decision-making centre on the global or European levels; moreover, business decision-making is divided between Lisbon and Porto. Three other FUAs have regional, and 23 local, significance.
Romania	Romania has no FUA with a significant role as a business decision-making centre on the global or European levels. Bucharest is the most important node in national decision -making and also in the private sector. Five other FUAs have regional significance in decision-making, while the top-500 companies are scattered across 32 other smaller FUAs.
Sweden	Stockholm has a role in business decision-making on the European level, being the only FUA outside the Pentagon that has attained this status. Three other FUAs have 2 to 10 percent of top 500 companies. Furthermore, 32 other FUAs have some major companies.
Slovenia	Slovenia has no FUA with a significant role as a business decision-making centre on the global or European levels. The capital city is also the most important decision-making centre in country. In terms of polycentricity it is important that all other FUAs have 2 to 10 percent of major companies in the country.
Slovakia	Slovakia has no FUA with a significant role as a business decision-making centre on the global or European levels. Bratislava is also a decision -making centre for the private sector. In terms of polycentricity it is also important that 21 other FUAs have some of the largest companies in the country.
United Kingdom	London is a global decision-making centre every fifth TOP500 company in Europe has their headquarters in London. The UK is monocentric in terms of decision-making. Other FUAs are shadowed by London - there is no other FUA that would be transnational/national decision-making centre.

Business decision-making centre



Location of headquarters of the top 500 companies in turnover 2001

- ▣ Global decision-making centre
(>5% of top 1500 companies in Europe)
- ▣ European decision-making centre
(2-5% of top 1500 companies in Europe)
- ▣ National decision-making centre
(>10% of top 500 companies in country, less than 2% of top 1500 companies in Europe)
- Regional decision-making centre
(2-10% of top 500 companies in country)
- Local decision-making centre
(<2% of top 500 companies in country)

Geographical Base: Eurostat GISCO

Origin of data: Ratings published by National financial magazines, Euroconfidential Belgium
Source: Nordregio

Map 4.6 Business decision-making function

4.2.7 Decision-making in the public sector

Administrative functions have a significant role to play in polycentricity. Administrative cities have a strong public sector service role. These services have to be available in all parts of the country, and regional capitals are evenly distributed in each country. The strong hierarchy of urban systems is often due to the development of administrative functions. However, a strong administrative role does not guarantee a good position in the urban network when competition between FUAs is tightening. The FUAs position has to be supported by other functions as well.

The current European picture is a result of different national systems. Capitals are the main nodes of the European administrative system. In federal states (e.g. Germany and Austria) provincial capitals as administrative centres have a strong position in the national systems.

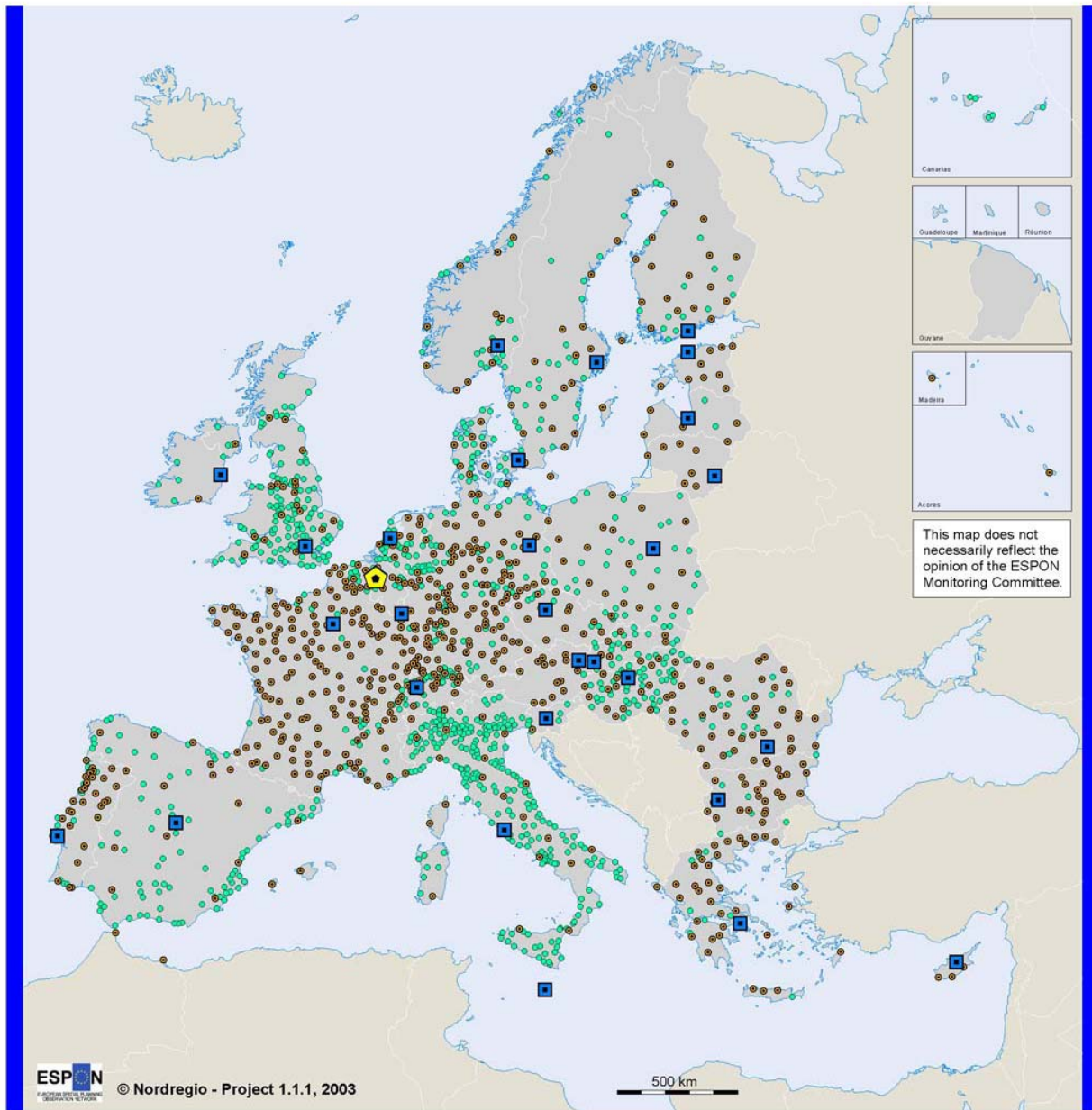
The administrative system is polycentric and favours polycentricity, in comparison to the mass function of FUAs, in Austria, Finland, France, Greece and Portugal. The administrative structure is monocentric, in comparison to mass function of FUAs, in the Czech Republic, Spain, Italy and Poland (map. 4.7).





Table 4.9 Administrative function – country reports – all figures on the number of regional capitals refer to FUAs only

Country	Observations
Austria	Vienna is the capital city. As a federal state, the administrative role of some FUAs is strengthening their position in the national urban network, compared to their position according to the mass criterion. There are 20 regional capitals.
Belgium	Brussels is an EU capital (global significance in administration). There are seven regional capitals. The remaining FUAs have only local service functions.
Bulgaria	Sofia is the capital city. The network of regional capitals is rather dense. There are 26 regional capitals, and only four FUAs do not have a significant role in administration.
Switzerland	Bern is the capital city. There are 18 regional capitals.
Cyprus	Nicosia is the capital city, the other three FUAs function as regional capitals.
Czech Republic	Prague is the capital city. There are 12 regional capitals, and 12 FUAs do not have any significant administrative role. The public administrative system is as balanced as the settlement structure requires, and does not favour polycentricity.
Germany	Berlin is the capital city. As a federal state, the administrative role of some FUAs strengthens their position in the national urban network, as compared to their position according to mass criterion. There are 112 FUAs that have some role in regional administration. Some of them are state capitals of the länder.
Denmark	Copenhagen is the capital city. There are nine regional capitals. 25 FUAs do not have any significant role in administration. The administrative system is quite centralised, but in a small country the service area of administrative centres cannot be any smaller.
Estonia	Tallinn is the capital city. The rest of the FUAs are regional capitals.
Spain	Madrid is the capital city. 18 FUAs are regional capitals, the rest have only local significance. The area and the number of people that these regional centres serve is rather large, making the urban system more monocentric.
Finland	Helsinki is the capital city. There are 18 regional capitals. 16 FUAs do not have a significant role in administration. Administrative functions balance the national urban network (favouring polycentricity).
France	Paris is the capital city. The administrative role of some FUAs is strengthening their position in the national urban network, particularly when compared to their position according to the mass criterion. Administration is very polycentric. 181 FUAs can be considered as regionally significant in administrative functions.

Greece	Athens is the capital city. The administrative role of some FUAs is strengthening their position in the national urban network, as compared to their position in accordance with the mass criterion. 35 FUAs have regional significance in administration.
Hungary	Budapest is the capital city. There are 19 regional capitals. The remaining FUAs have only a local service function.
Ireland	Dublin is the capital city. Administrative functions do not make Ireland more polycentric, only Waterford has regional significance in administrative terms.
Italy	Rome is the capital city. There are 19 regional capitals, the remaining FUAs have only local significance. The area and number of people that regional centres serve is rather large.
Lithuania	Vilnius is the capital city. The remaining FUAs are regional capitals.
Luxembourg	Luxemburg is the capital city. Esch-sur-Alzette has only local service functions.
Latvia	Riga is the capital city (European significance in administration). There are five regional capitals, though two FUAs have only a local service function.
Malta	Valletta is the capital city.
Netherlands	Amsterdam is the capital city. 11 FUAs have regional capital functions and 27 FUAs have only local service functions.
Norway	Oslo is the capital city. 13 FUAs are considered to be regional capitals, 22 FUAs have only regional local service functions (most of them located close to Oslo).
Poland	Warsaw is the capital city. There are 17 regional capitals. 30 FUAs have local service functions. The area and the number of people that regional centres serve is rather large.
Portugal	Lisbon is the capital city. The number of FUAs that are considered to have regional significance in administration is 33. Thus, the administrative role of some FUAs is strengthening their position in the national urban network, as compared to their position according to the mass criterion.
Romania	Bucharest is the capital city. 40 FUAs have regional administration functions. The network of regional capitals is rather dense.
Sweden	Stockholm is the capital city. There are 18 regional capitals and 28 FUAs that have only regional service functions.
Slovenia	Ljubljana is the capital city. The remaining FUAs are regional capitals. Administration maintains the polycentric structure, but does not increase polycentricity.
Slovakia	Bratislava is the capital city. There are seven regional capitals, 19 FUAs have only local service functions.
United Kingdom	London is the capital city. 19 FUAs are considered to have significance as regional administrative centres. The area and number of people that regional centres serve is rather large. As a result, administrative functions make the urban system more monocentric rather than more polycentric. 129 FUAs have only local service functions.

Administrative function



-  EU capital
-  National capital
-  Provincial / regional capital
-  Local administrative centre

Geographical Base: Eurostat GISCO

Origin of data: National experts
Source: Nordregio

Map 4.7 Administrative function

4.3 Morphological and functional polycentricity compared

In the description above, the FUAs positions were described both in a European and a national context.

At the national level, this analysis allows us to validate the analysis by comparing the results with the morphological polycentricity index presented in chapter 3.

The functional importance of a city may deviate from the mere morphological ranking of the city, but it may also be a result of functional specialisation. In table 4.10 the characteristics of FUAs as described in the national reports and in the tables above are aggregated in order to establish a comprehensive overview. In Austria, for example, all 6 functions favour polycentricity, which is a maximum. We could then expect the Austrian urban system to be polycentric also in its morphology. However, the polycentricity index of the Austrian urban system (55,9) is relatively low. The table shows several other examples of deviations between functional polycentricity and the morphological polycentricity index.

This illustrates that the national urban systems can be described in different ways, and that morphological polycentricity does not necessarily also imply a functional division of labour between urban nodes. On the other hand, functional polycentricity does not depend upon morphological polycentricity. Therefore, cities may become highly specialised and functionally influential, e.g. as centres of specialised production or as logistic gateways. Therefore, to develop functionally important centres rather than large powerful centres become a strategic issue for counterbalancing dominant national or international core areas. As we shall see in the next chapter, the lack of large urbanised regions outside the Pentagon makes it relevant to look for functional importance outside the core of Europe.

Table 4.10 Functional and morphological polycentricity compared

	Characteristics of FUA features and functions (Chapter 4)														Polycentricity Index (Chapter 3)
	Polycentricity							Monocentricity							
	Transport	Tourism	Industry	Knowledge	Decision	Administration	Total	Transport	Tourism	Industry	Knowledge	Decision	Administration	Total	
Austria	1	1	1	1	1	1	6								55,9
Belgium				1			1								68,8
Bulgaria									1	1				2	68,7
Switzerland					1		1						1	1	64,9
Cyprus		1			1		2			1	1			2	-
Czech Republic								1		1	1	1		4	61,6
Germany	1		1				2		1					1	69,7
Denmark											1			1	73,3
Estonia					1		1								61,6
Spain												1	1	2	53,6
Finland	1		1	1		1	4					1		1	47,7
France						1	1					1		1	66,7
Greece		1		1		1	3								68,4
Hungary								1			1	1		3	53,7
Ireland		1		1	1		3								77,9
Italy	1		1				2				1	1	1	3	64,9
Lithuania				1			1			1				1	58,4
Luxembourg			1		1		2								-
Latvia				1	1		2								61,4
Malta															-
Netherlands			1	1			2								70,7
Norway	1				1		2								44,9
Poland									1			1	1	3	74,2
Portugal				1		1	2								56,5
Romania				1			1		1			1		2	67,4
Sweden	1		1	1			3								58,1
Slovenia				1			1								79,3
Slovakia			1		1		2	1						1	65,8
United Kingdom		1		1			2					1		1	64,8

5 Polycentricity: enabling Cities to act on the European and Global scenes?

In chapter 3 the FUAs were introduced as the data bearing units (“building blocks”) for our calculations and examinations of polycentricity. The analysis of polycentricity in national urban systems (Chapter 4) was based on the FUAs.

Now, we shall take a further step forward to examine polycentricity at the European level. The analysis here is still based on the 1595 previously identified FUAs. However, since the concept of polycentricity at the European level is based on the existence and potentials of developing Metropolitan European Growth Areas (MEGAs) outside the Pentagon, we have to focus upon the strongest FUAs. At the European level it is only the strongest FUAs and *meso*-regions endowed with clusters or networks of strong FUAs that are the building blocks. Therefore, we will begin here by sorting out the strongest FUAs, i.e. the MEGAs, as the highest ranking in a typology of FUAs.

The concept of FUAs is generally based on nationally defined labour market areas. These definitions vary from country to country, creating a possible bias in the analysis. Furthermore, the nationally defined labour market area does not always correspond to the actual functional area. This is particularly so in densely populated polycentric areas, where interactions between neighbouring cities tend to transform multiple neighbouring cities into single functional regions. More generally, the overlaps between commuter catchment areas of neighbouring cities should be taken into account in a polycentric analysis. Finally, the current functional area may not correspond to the territory considered by each city when formulating its development strategy: the approach based on current labour markets is descriptive, rather than prospective.

For all of the above reasons, an alternative to the FUA approach was subsequently developed, based on the delimitation of areas which can be reached from the FUA centre by car within 45 minutes. They have been labelled *PUSH area*, as they correspond to the area within which each city will find most of the resources on which it can base its future development. Cities with overlapping *PUSH areas* can join forces by building clusters, identified as *Potential Polycentric Integration Areas (PIA)*.

5.1 FUAs of excellence – the MEGAs

5.1.1 Typology of Functional Urban Areas

The typology of FUAs is based on the average scores of the five out of the seven features and functions of the FUAs presented in chapter 4, i.e. population, transport, industry, knowledge and decision- making . Three concepts are used for the typology, (1) Metropolitan European Growth Areas (MEGAs), (2) Transnational / national FUAs and (3) Regional / Local FUAs.

The total number of functionally significant urban areas in Europe is 1595. 76 of these are MEGAs, 219 are transnational/national FUAs and 1312 are regional/local FUAs. The geographical distribution of the FUAs is shown in Map 5.1, while in the table below, the typology is enumerated country by country.

Table 5.1 Typology of Functional Urban Areas (FUAs) – country reports

Country	Number of			Total
	MEGAs	FUAs with transnational or national significance	FUAs with regional or local significance	
Austria	1	5	18	24
Belgium	2	8	11	21
Bulgaria	1	3	27	31
Switzerland	3	2	43	48
Cyprus	0	4	0	4
Czech Republic	1	4	20	25
Germany	8	35	143	186
Denmark	2	2	31	35
Estonia	1	1	8	10
Spain	6	26	78	110
Finland	2	8	25	35
France	8	40	163	211
Greece	1	7	37	45
Hungary	1	4	72	77
Ireland	2	2	3	7
Italy	6	19	228	253
Lithuania	1	2	5	8
Luxembourg	1	0	1	2
Latvia	1	0	7	8
Malta	1	0	0	1
Netherlands	2	14	23	39
Norway	2	4	30	36
Poland	8	11	29	48
Portugal	2	5	39	46
Romania	2	8	49	59
Sweden	3	12	32	47
Slovenia	1	1	4	6
Slovakia	1	6	20	27
United Kingdom	6	28	112	146
Total	76	261	1258	1595

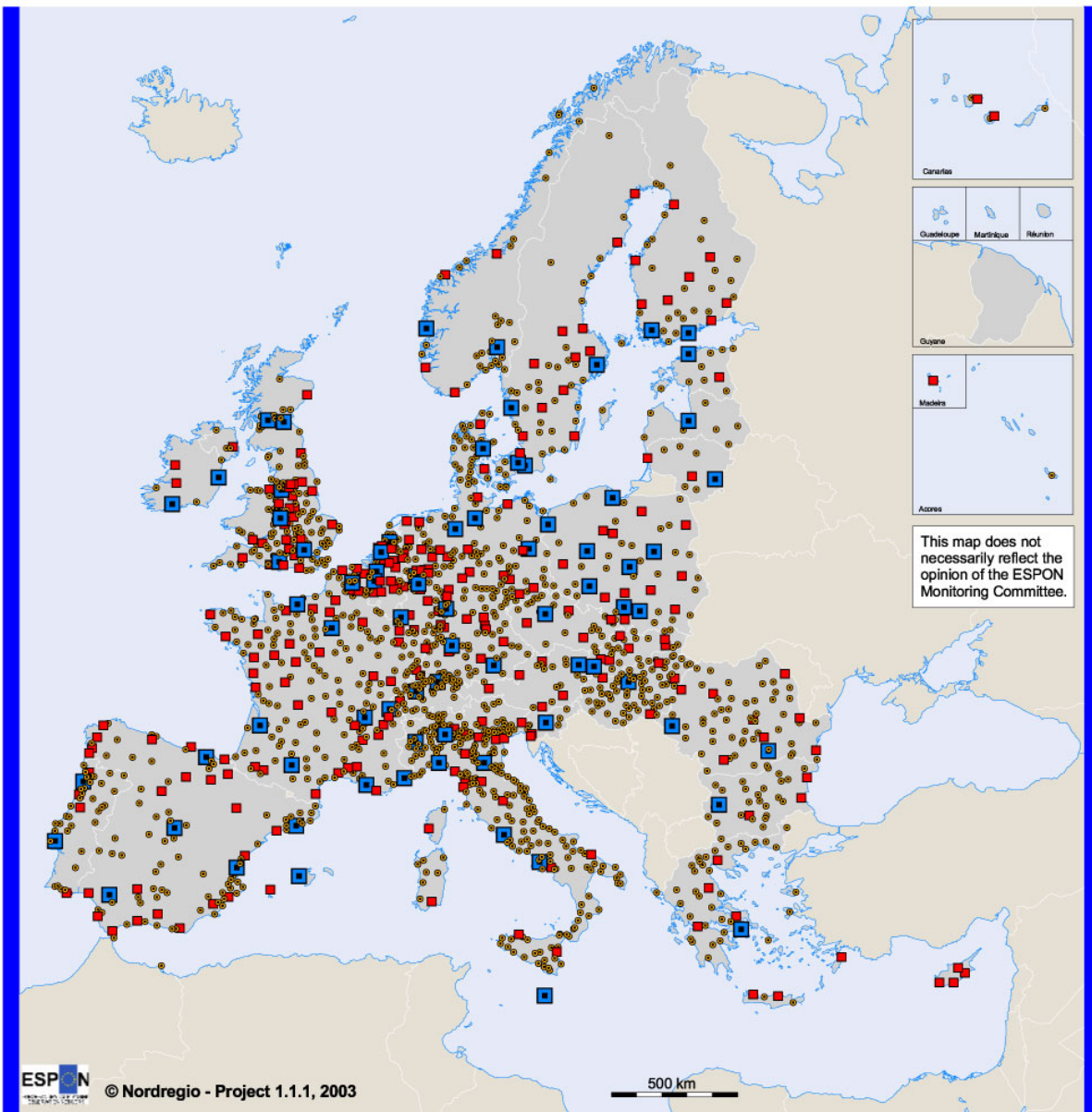
Table 5.2 list the average population of MEGAs in each country, on the one side, and the number of inhabitants in the national population per MEGA, on the other side. The lowest average MEGA populations are all found in smaller countries with only a few MEGAs, whose capital have been granted the status of MEGA. Other variations reflect both variations in FUA delimitation criteria, and structural differences in the urban systems; separating these two elements is often difficult.

Considering MEGAs as nodes in a polycentric development, it can be interesting to consider the number of inhabitants in the national population per MEGA. For the same reasons as previously, these figures are however difficult to interpret. The group of countries with the highest values is for example remarkably heterogeneous, as it comprises the Czech Republic, Germany, Greece, Hungary, Italy, Romania and the United Kingdom. At the other end of the scale, we find the Nordic countries and, as previously, Malta and Luxembourg. We may conclude from this that the cities listed as MEGAs have variable profiles, with regards both to their current functions in national urban systems, and their potentialities as European or Global nodes.

Table 5.2 Average MEGA population and number of inhabitants (national population) per MEGA for each country

Country	Number of MEGAs	Total MEGA population	Average MEGA population	Total national population (2004)	Number of inhabitants (national pop.) per MEGA
Austria	1	1 550 123	1 600 000	8 174 762	8 200 000
Belgium	2	1 895 972	900 000	10 348 276	5 200 000
Bulgaria	1	1 173 811	1 200 000	7 517 973	7 500 000
Switzerland	3	1 696 702	600 000	7 450 867	2 500 000
Cyprus	0			775 927	
Czech Republic	1	1 335 733	1 300 000	10 246 178	10 200 000
Germany	8	16 989 235	2 100 000	82 424 609	10 300 000
Denmark	2	2 310 998	1 200 000	5 413 392	2 700 000
Estonia	1	501 100	500 000	1 341 664	1 300 000
Spain	6	12 810 082	2 100 000	40 280 780	6 700 000
Finland	2	1 606 270	800 000	5 214 512	2 600 000
France	8	18 602 327	2 300 000	60 424 213	7 600 000
Greece	1	3 761 810	3 800 000	10 647 529	10 600 000
Hungary	1	1 775 203	1 800 000	10 032 375	10 000 000
Ireland	2	1 200 600	600 000	3 969 558	2 000 000
Italy	6	11 609 719	1 900 000	58 057 477	9 700 000
Lithuania	1	553 201	600 000	3 607 899	3 600 000
Luxembourg	1	125 055	100 000	462 690	500 000
Latvia	1	1 195 310	1 200 000	2 306 306	2 300 000
Malta	1	388 594	400 000	396 851	400 000
Netherlands	2	2 552 406	1 300 000	16 318 199	8 200 000
Norway	2	1 371 802	700 000	4 574 560	2 300 000
Poland	8	10 266 191	1 300 000	38 626 349	4 800 000
Portugal	2	3 822 230	1 900 000	10 524 145	5 300 000
Romania	2	2 239 402	1 100 000	22 355 551	11 200 000
Sweden	3	3 461 024	1 200 000	8 986 400	3 000 000
Slovenia	1	522 079	500 000	2 011 473	2 000 000
Slovakia	1	599 015	600 000	5 423 567	5 400 000
United Kingdom	6	12 961 520	2 200 000	60 270 708	10 000 000
Total	76	118 877 514	1 600 000	498 184 790	6 600 000

Typology of Functional Urban Areas (FUAs)



Geographical Base: Eurostat GISCO

- Metropolitan European Growth Areas (MEGAs)
- Transnational / national FUAs
- Regional / local FUAs

Origin of data: EUROSTAT, National Statistical Offices, National experts

Source: Nordregio

Map 5.1 Typology of Functional Urban Areas (FUAs)

5.1.2 MEGA analysis

The MEGA analysis seeks to identify those urban areas that may be seen as “counterweights” to the Pentagon in the future. There are four building blocks here, namely (1) mass criterion, (2) competitiveness, (3) connectivity and (4) knowledge basis (Table 5.3). Each of these building blocks consists of two variables or indicators. The typology of the MEGAs is based on indices of these four building blocks (cf. CPMR-study).

As in making of list of FUAs, the population of an urban system constitutes an important factor in the settlement of people and activities. For the economic mass indicator we have selected GDP in millions of euro, since it is the most comparable and relevant indicator. The economic weight of a conurbation or urban system measured in GDP expressed in millions of euro also provides a major indication of a FUAs attractiveness and the density of economic relations that it generates. The denser the economic environment, the more likely it is to present favourable conditions for its development, thereby exploiting the phenomena of economic complementarity and size effects. Moreover, certain sectors such as the higher tertiary sector only develop massively once a certain threshold of economic activity has been reached in the surrounding area, these being key factors in economic development and the innovation of regional productive fabrics.

The capacity of an urban system to play a structuring role within its territory depends to a large extent on its competitiveness. The stronger this is, the greater and more effective will be not only its capacity to spread its influence, but also its ability to establish relations with other urban systems. Proximity between highly competitive urban systems or between wide-ranging levels of competitiveness in a centre-periphery type relation would theoretically seem to provide the right conditions for making function-sharing easier.

The ‘capacity for influence’ of an urban system is not solely dependent on its level of demographic weight, but also on its actual economic attractiveness to private investors. Other factors then, which are difficult to measure and compare, come into play in the individual choices made by firms. Owing to the complexity of any approach that consists of listing all of the conditions of attractiveness within a territory, for the purposes of this study we have chosen instead to examine its effects – in other words the distribution of the top European firms. In this regard, the degree of attractiveness of the urban systems included in the study should be read as an observation and not a potentiality, as the factors governing the establishment of companies are by their very nature likely to change over time. The competitiveness of the FUAs is examined using GDP in Purchasing Power Parity (PPP) *per capita* and in the concentration of the company headquarters of the top 500 European companies.

The connectivity indicators are equivalent to those previously described in chapter 3.2.

The knowledge basis is analysed on the NUTS II level due to data restrictions. In other words, all MEGAs receive the value of the NUTS II region in which they are located, even though there are obviously major differences within each NUTS II area. Two variables are measured: the educational attainment level of the persons between the ages of 25-59 (as a % of the total) and R&D personnel (share of employed).

Table 5.3 MEGA analysis variables

Theme	Variable	Variable index	Total index
Mass criterion	Population	Index: average of MEGAs = 100	Mass criterion: average of two indices
	GDP	Index: average of MEGAs = 100	
Competitiveness	GDP per capita PPS	Index: average of MEGAs = 100	Competitiveness: average of two indices. Index weighted so that GDP per capita is 2/3, headquarter location 1/3)
	Location of TOP 500 companies in Europe	Index: 10 companies = 100	
Connectivity	Passengers at airports	Index: average of MEGAs = 100	Connectivity: average of two indices
	Multimodal accessibility indicator	Index: average of MEGAs = 100	
Knowledge basis	Education level	Index: average of MEGAs = 100	Knowledge: average of two indices
	R&D share of employment	Index: average of MEGAs = 100	

Global nodes

Of the total of 76 MEGA cities in Europe, two are considered by this study to be global nodes. Europe's two global nodes, the largest and most competitive urban systems with high connectivity levels, are Paris and London.

Category 1 MEGAs

Category 1 MEGAs are often large, highly competitive, and possess strong human capital and good accessibility. However, there are two reasons why all such FUAs do not ascend to the global node level. While all four building blocks are rated at a high European level, there is one building block that is definitively weaker than the other three. Most of these FUAs are located within the Pentagon, though a few are located outside. These FUAs play a key role in building a more polycentric economic growth pattern in Europe. MEGAs that belong to this category include Munich, Frankfurt, Madrid, Milan, Rome, Hamburg, Brussels, Copenhagen, Zurich, Amsterdam, Berlin, Barcelona, Stuttgart, Stockholm, Düsseldorf, Vienna and Cologne.

Category 2 MEGAs

Category 2 MEGAs comprise cities that are relatively large, competitive and often possess strong human capital. Most MEGAs in this category have an average of building block indices slightly below Category 1 MEGAs, or have one or two qualities that are notably weaker than the others. In most cases, it is the size (population), competitiveness or accessibility of FUAs that differentiates Category 2 MEGAs from those in Category 1. However, Category 2 MEGAs' human capital (knowledge basis) is often at the same level as that of Category 1 MEGAs. Category 2 MEGAs have a very important role to play as relays in

building polycentricity. MEGAs that belong to this category include Athens, Dublin, Geneva, Gothenburg, Helsinki, Manchester, Oslo and Torino.

Category 3 MEGAs

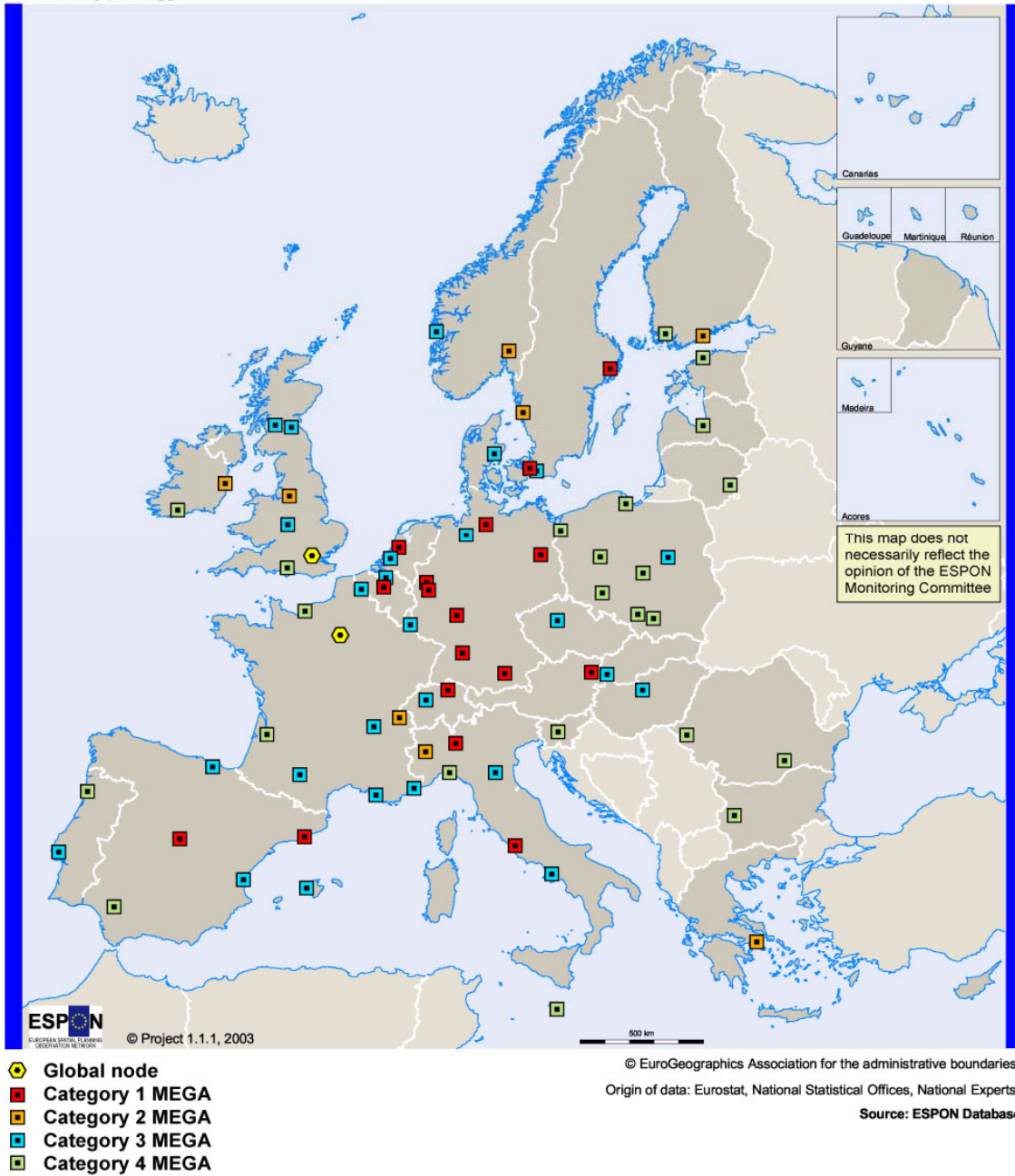
These MEGAs are smaller, have lower competitiveness are more peripheral and often have weaker human capital than Category 2 MEGAs. Category 3 MEGAs often have one quality that is well above the other measured building block qualities. In some cases, however, the overall average of all building block qualities are rather weak. Warsaw, Budapest and Bratislava are the only MEGAs from the acceding countries that score in this category. These cities are generally non-capital cities of their respective countries, except in the acceding countries, in Portugal and in Switzerland. Thus, these cities can also play an important role in building more polycentric structures within their respective countries. MEGAs that belong to this category include Prague, Warsaw, Budapest, Bratislava, Bern, Luxembourg, Lisbon, Lyon, Antwerp, Rotterdam, Aarhus, Malmö, Marseille, Nice, Bremen, Toulouse, Lille, Bergen, Edinburgh, Glasgow, Birmingham, Palma de Mallorca, Bologna, Bilbao, Valencia and Naples.

Category 4 MEGAs

These MEGAs are often smaller, less competitive, more peripheral, and have lower human capital figures than Category 3 MEGAs. There might be one quality that is stronger than others, but then all the other building block qualities are very weak. Another reason for their lower status can be that the MEGA scores are relatively weak in all qualities overall. The development of these Category 4 MEGAs will depend upon their capacity to overcome their weaknesses. MEGAs that belong to this category are located in the Mediterranean area, and in the acceding countries. In the acceding countries, these MEGAs are nodes to the European urban system. Their role is crucial in relaying a more balanced territorial development on the European scale. MEGAs that belong to this category include Bordeaux, Bucharest, Cork, Gdansk-Gdynia-Sopot, Genoa, Katowice, Krakow, le Havre, Ljubljana, Lodz, Porto, Poznan, Riga, Sevilla, Sofia, Southampton-Eastleigh, Szczecin, Tallin, Timisoara, Turku, Valletta. Vilnius and Wroclaw.

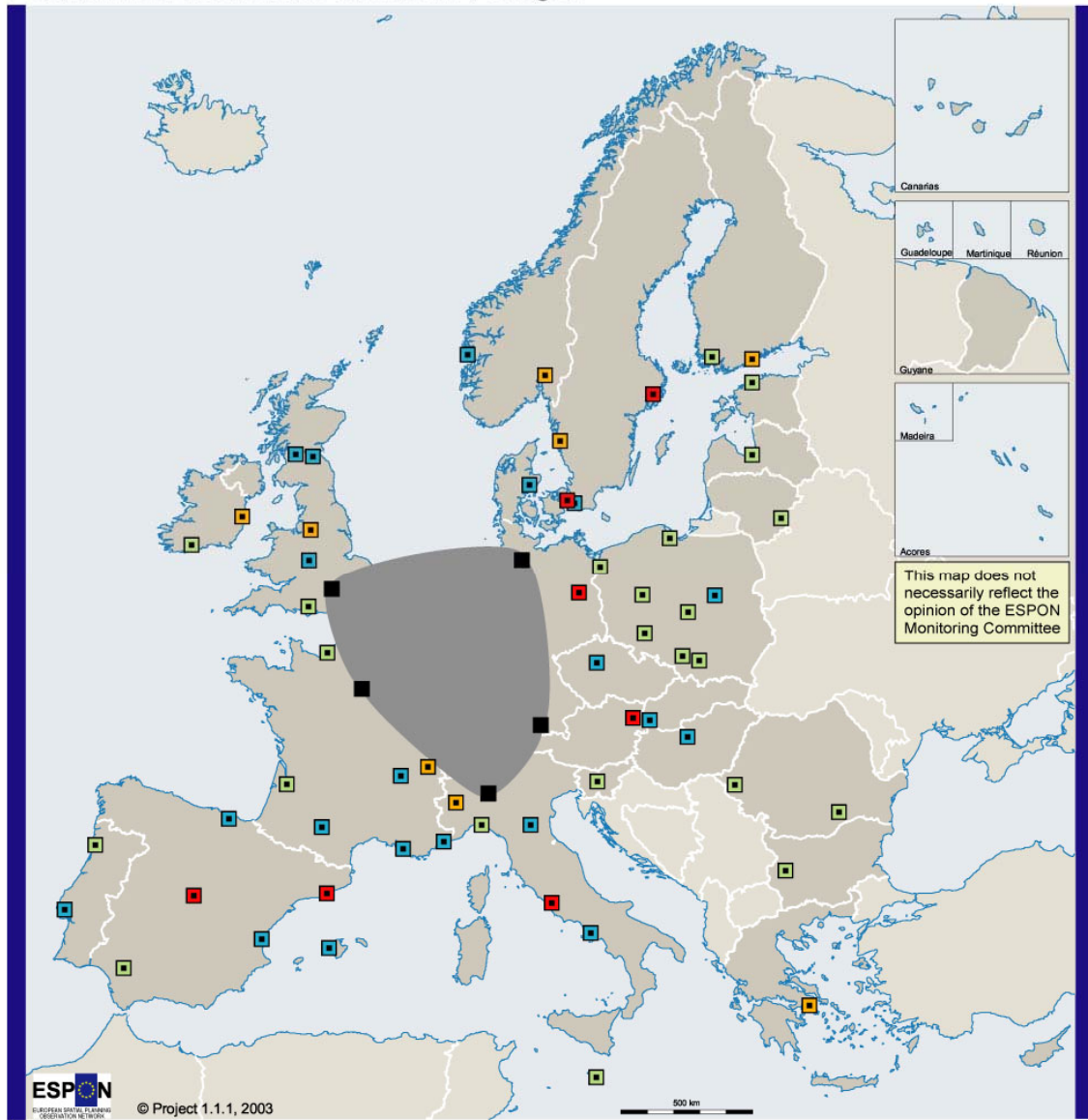
As shown by Map 5.3, the MEGA analysis identifies some strong poles outside the Pentagon. No basis for identifying the Global Integration Zones that could form an alternative to the Pentagon could however be identified, as no individual MEGA outside the Pentagon demonstrates a sufficient capacity to concentrate functions and mass. Such a potential may however arise by looking at groups of MEGAs (see chapter 5.2.7).

MEGA Typology



Map 5.2 MEGA typology

Potential main urban nodes outside the Pentagon



- Category 1 MEGA
 - Category 2 MEGA
 - Category 3 MEGA
 - Category 4 MEGA
 - Pentagon cornerstones
 - Pentagon area
- © EuroGeographics Association for the administrative boundaries
Origin of data: Eurostat, National Statistical Offices, National Experts
Source: ESPON Database

Map 5.3 MEGAs situated outside the Pentagon

5.2 Regional polycentric integration between cities

The previously described FUA typology exercise provides valuable information on the geographical spread of stronger and weaker cities across Europe. However, it neither takes into account the effects of each city's territorial context, nor whether it could increase its potentials by developing links with neighbouring cities or towns.

We have therefore sought to develop a prospective analysis of polycentrism, as a complement to the FUA typology, while also seeking to answer the following questions: How would increased cooperation and integration between neighbouring cities change the European urban hierarchy? Could any new nodes capable of counterbalancing the Pentagon emerge? To what extent are Europe's peripheries susceptible to drawing benefits from a more proactive regional policy, or trying to develop synergies between neighbouring cities?

5.2.1 The Territorial horizon of cities and the urban context of territories

Considering European urban areas as nodes of polycentric development implies two types of perspectives. On the one hand, one can look at the territory from the point of view of the nodes. Each city has a "territorial horizon" within which it can design its spatial development strategy. The "territorial horizons" of neighbouring cities overlap, thereby creating relations of competition and/or cooperation. In this type of perspective, territorial assets such as population, production facilities or available land areas can be taken into account multiple times, when they fall into the "territorial horizon" of multiple cities.

On the other hand, one can look at the main urban nodes from the point of view of the rest of the territory. For all parts of the European territory the development potentials largely depend upon the urban context, insofar as this determines the access to specialised services, the proximity to markets and the general accessibility of the considered region. In this type of perspective, each city is a component of the urban context for a number of different regions.

Within this dual approach, the questions "where is the city?" and "what is the city?" arise. Continuous settlement criteria are not operational from a spatial development point of view. Functional influence areas of cities usually overlap, and often include rural areas. Geographically speaking, the "city" is therefore a questionable category. Cities are however important points of reference in urban and regional governance, both as territorial actors with a degree of legitimacy and as spatial entities which structure the territorial perception of individual actors.

5.2.2 A "geography of possibilities"

An analytical perspectives based on the *Territorial horizon of cities* and the *Urban context of territories* creates a "geography of possibilities" detailing how the situation of each city and territory influences its development potentials. By looking at the assets situated within 45 minutes from each FUA centre, we identify the elements that could most easily contribute to its development. This however presupposes that the FUA considered manages to assert its

role as a regional node, towards which actors and flows converge. Different strategies may contradict each other, as neighbouring FUAs compete for the same assets.

Furthermore, we once again underline that the spatial context should not be considered as a deterministic constraint upon urban or territorial development. Networks of cooperation and partnership can compensate for physical distance. In other words, a “geography of possibilities” considering the “territorial horizons” of cities on the one hand, and the “urban contexts” of specific regions on the other, reflects development strategies suggested by the existing spatial structures. While these structures have historically proven to be a major determinant of territorial development trends, a number of other phenomena create ruptures (e.g. new transport and communications infrastructure, and the ongoing reorganisation of trade and commerce). Furthermore, one should keep in mind the fact that local deviations from general spatial trends always occur; their mere existence demonstrating the non-deterministic nature of spatial patterns.

5.2.3 The 45-minute Isochrones

The list of Functional Urban Areas (FUAs) established in chapter 3 constitutes the starting point for the present analysis. However, rather than considering national definitions for the delimitation of these Functional Urban Areas, we have sought to calculate the area that can be reached from their respective centre in 45 minutes, travelling by car (see Annex D). This threshold is based on the hypothesis that commuting mainly occurs within a 45-minute travel to work distance. Commuting however does not necessarily take place because of short distances – many other parameters intervene. For this reason, the delimited area corresponds to that of a *potential* commuter catchment area, within which commuting could be developed if the right economic and social conditions prevail.

Considering the potential commuter catchment areas as a proxy for each city’s influence area is another major hypothesis underpinning the present analysis. Many other types of influence areas exist. For example, the concept of Global integration zones implies that some urban areas have transcontinental influence areas. However, from a territorial perspective, we mainly consider the balance in the spatial organisation of dwellings, production facilities and service-providers. Considering time-distance is coherent with this research objective.

The isochrone methodology has been applied in a uniform manner across the European territory; it takes into account the quality and density of the road network, as well as speed limits (see Annex D). We have taken into consideration car travel only here, which creates a bias in all areas where a significant proportion of the population commute by train. One must furthermore keep in mind that commuting times above 45 minutes do occur, for example in the most peripheral parts of Europe. Finally, we have not taken into account traffic congestion. This compensates for the fact that time spent travelling to and from work is often considerably higher than 45 minutes in those major agglomerations where traffic congestion is most widespread.

Map 5.4 shows the Isochrone delimitation (i.e. the area which can be reached within 45 minutes from FUA centres by car), before approximation to municipal boundaries. The effect of the transportation network can easily be identified, as most Isochrones are “star-

shaped". This is however less obvious within a core area going from the UK Midlands to Northern Italy where the transportation network is sufficiently developed to allow for equally fast transportation in most directions. In this same area, the isochrones overlap, so as to form a continuous tissue of potential commuter catchment areas.

Figure 5.1 gives a more detailed picture of this delimitation, at a narrower scale. As illustrated by the example of Lahti (Finland), the isochrone areas are not necessarily continuous, as access points to the road network, water areas or other natural obstacles can create isolated areas which can access the FUA centre within the given time threshold.

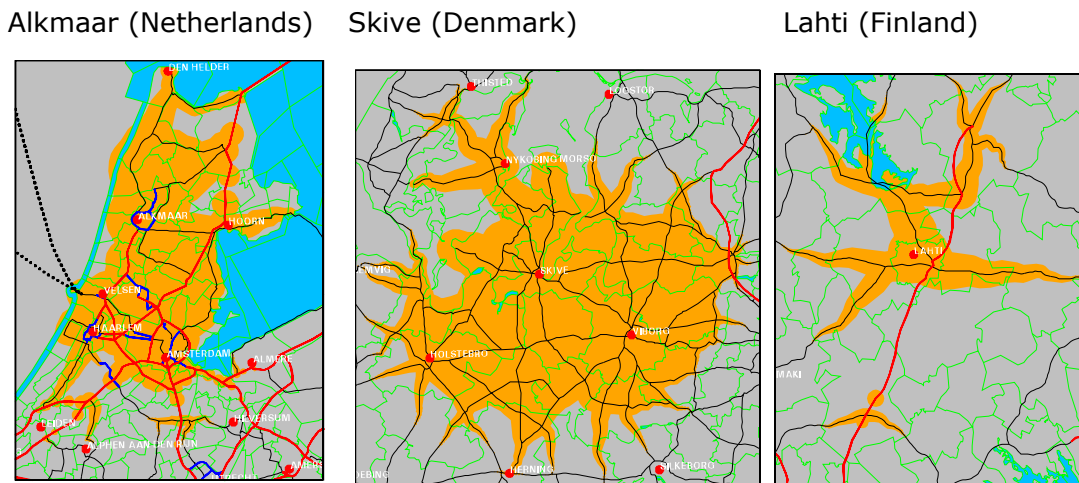
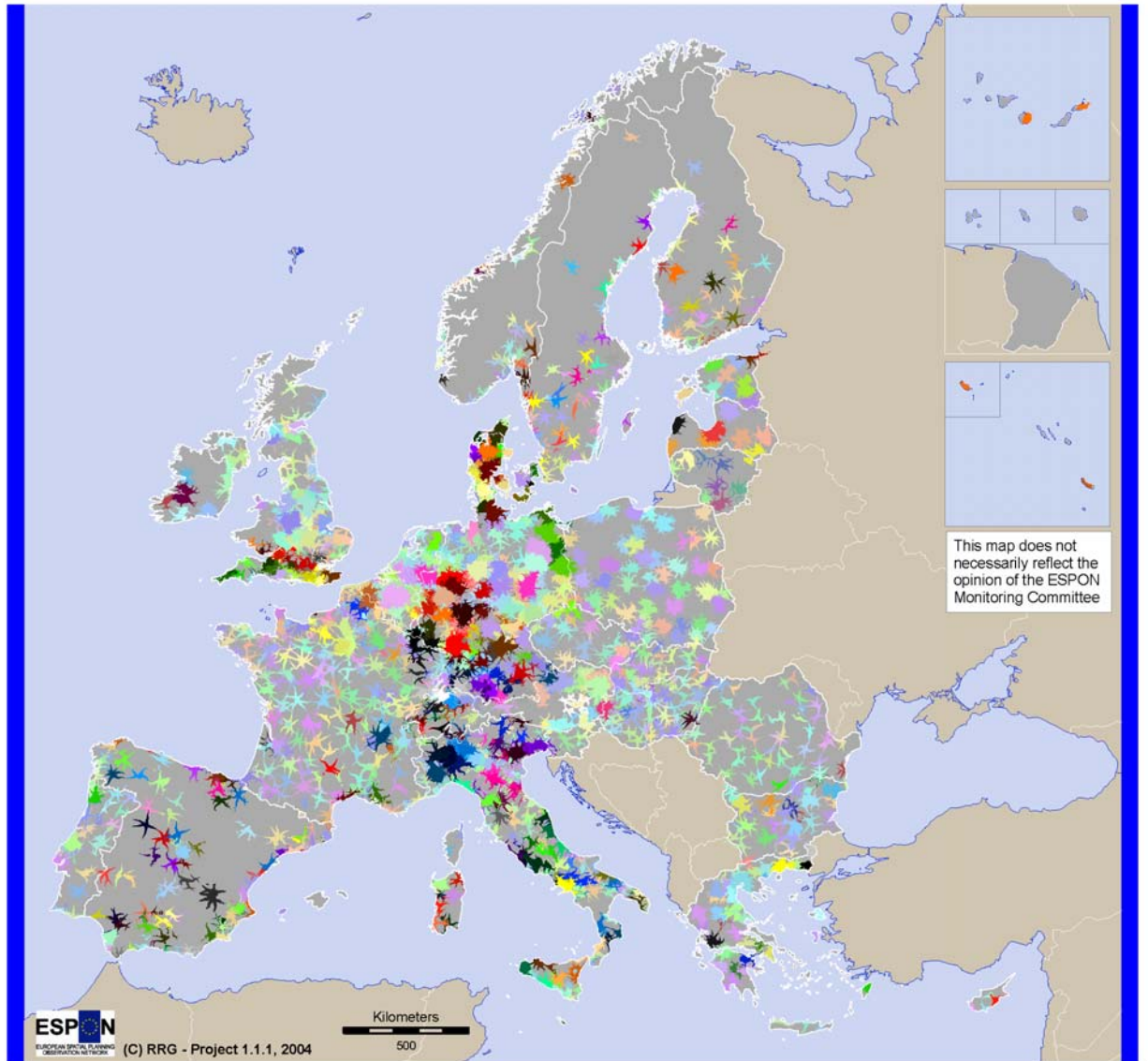


Figure 5.1 Examples of Isochrone delimitations

45 min isochrones around FUA centroids



Map 5.4 Delimitation of 45-minute isochrones around FUA centres

5.2.4 Approximating Isochrones to municipal boundaries: The PUSH areas

The space of European territorial governance is not continuous, but is instead made up of building blocks at different spatial scales. The smallest of these that can be considered by a European-wide study is the municipality. For this reason, Isochrone areas have been approximated to municipal boundaries, taking into account all municipalities of which at least 10% of the area can be reached within 45 minutes from each FUA. The resulting area has been labelled *Potential Urban Strategic Horizon* (PUSH): These areas are *potential* insofar as commuting can occur, but does not necessarily take place at present. They are *strategic* because the main factors of economic development that a node can mobilise for its growth strategy will be situated within them (e.g. population, expertise, industrial activity or resources). Finally, the notion of *Urban Horizon* implies that these areas correspond to the immediate territorial context of an urban node, where it should identify strengths and weaknesses, and based on which it should assert itself on the national, European and global scenes.

The approximation to municipal boundaries also allows us to characterise the PUSH area using data available at the municipal scale (NUTS 5 level). The 10% threshold was chosen here, as all municipalities where a significant part of the territory is within commuting distance from a city may develop of a policy seeking to take advantage of this situation. Furthermore, this relatively low threshold takes into account the fact that commuting is not only oriented towards the city core, but also towards secondary centres which may be closer to the municipality concerned.

The methodology used to approximate the Isochrone areas to those of actual municipal boundaries is illustrated in Figure 5.2. As previously noted, all municipalities with at least 10% of their area covered by the Isochrone were considered to be part of the potential commuter catchment area. The only exceptions to this rule being Kiruna in Sweden, where one cannot reach 10% of the municipality area in 45 minutes. In this case the whole municipality was nonetheless assigned as the city's PUSH area. Additionally, as illustrated by Municipality E in Figure 5.2, some enclaves may occur. These were considered to be part of the potential commuter catchment area. Isolated areas with higher accessibility to a FUA centre (for example due to a motorway exit) have on the other hand been maintained.

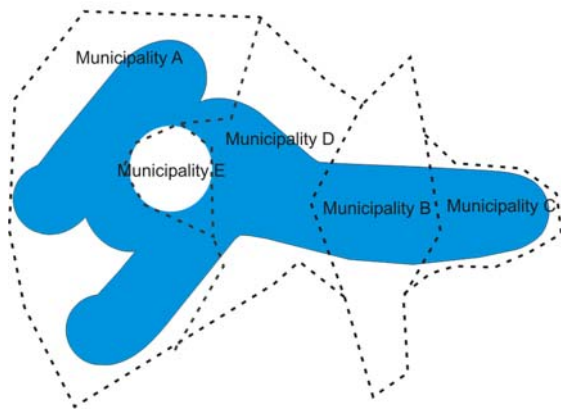


Figure 5.2 Approximation to municipal boundaries

As shown by Figure 5.3, because the approximation to municipal boundaries increases the area, the PUSH will in many cases be considerably larger than the Isochrone area. This concerns the Nordic countries in particular, where the size of municipalities leads to major discrepancies between the two delimitations. In the most extremes cases, however, the additional areas contain no settlements; their inclusion therefore does not affect the statistical results.

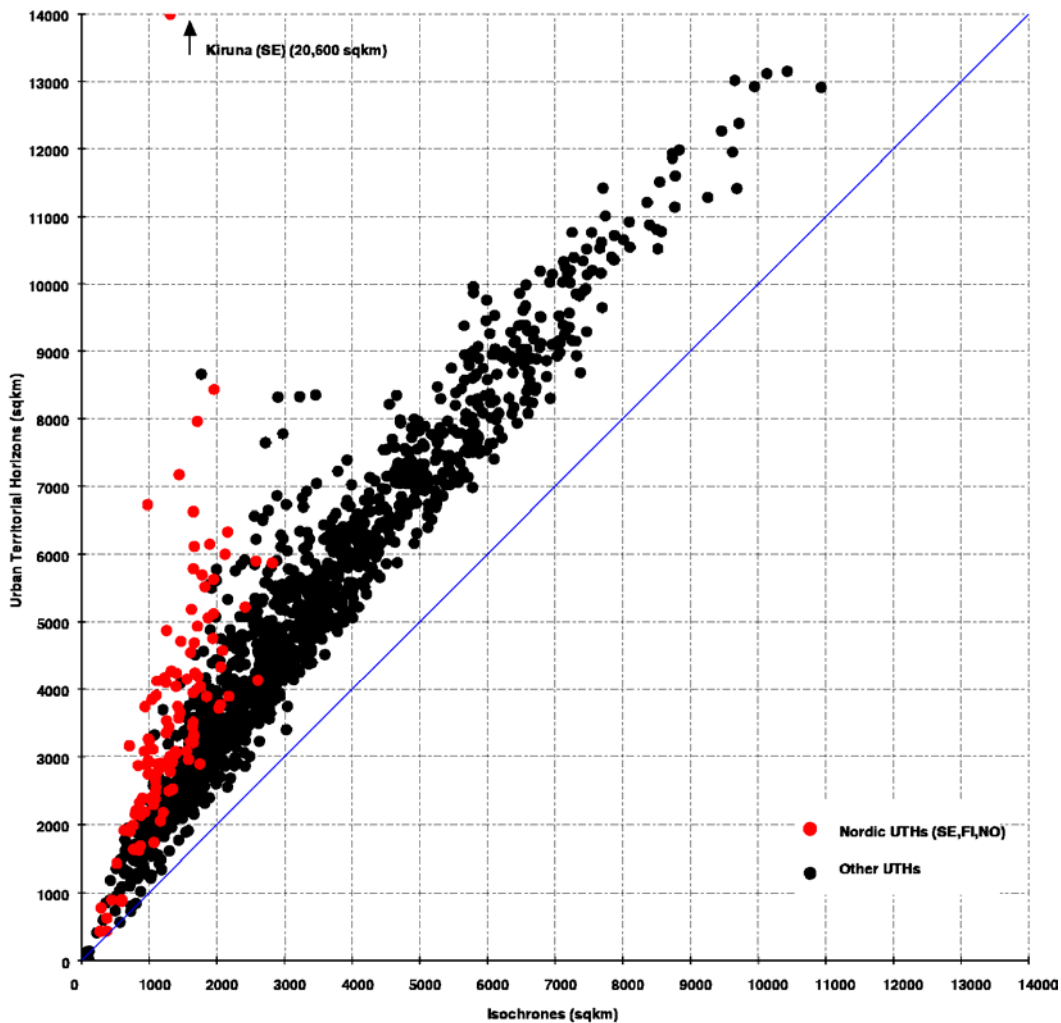
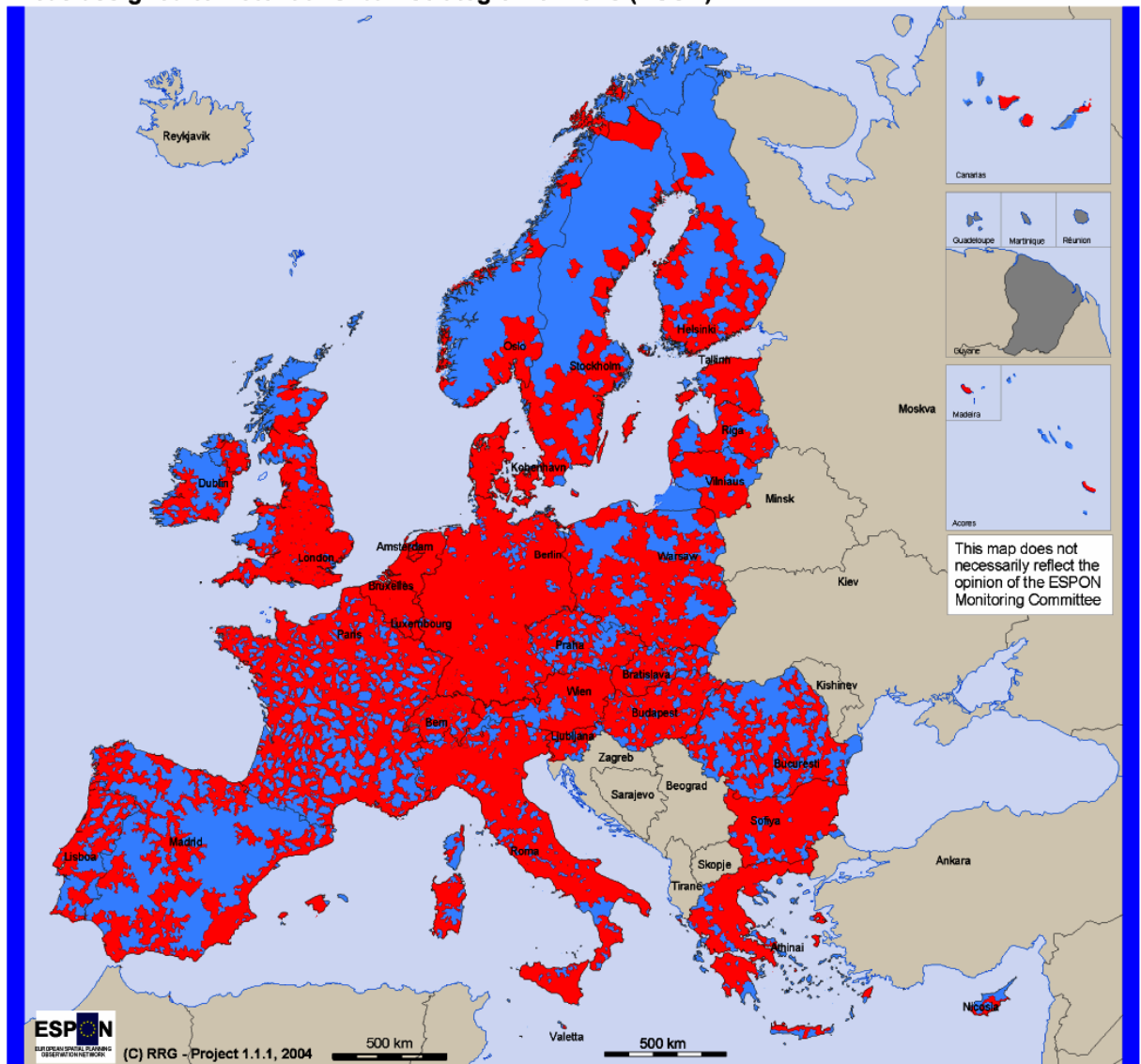


Figure 5.3 Comparison between the geographical extent of PUSH areas and Isochrones

Map 5.5 illustrates the final result of the PUSH area delimitation. This map illustrates different levels of urban endowment in Europe. While England, the Benelux countries, Germany and most of Italy are entirely covered by potential FUA commuter catchment areas, France is characterised by a remarkably regular succession of areas that are within and above this travel time threshold to the nearest FUA centre. Spain, Wales, Scotland, Ireland and Romania comprise wider areas, which belong to no PUSH area, while this is also the case of most of the territory of Norway, Sweden and Finland north of the capital regions. The map however also reflects differences in the national definitions of FUAs. In the cases of Poland, in particular, the relatively large areas lying outside any PUSH stem from an approach based on very wide FUA areas compared to other European countries. As a result of this, a low number of nodes were considered in the current analysis.

Areas assigned to Potential Urban Strategic Horizons (PUSH)



■ PUSH areas

Geographical Base: Eurostat GISCO
Eurogeographics

Map 5.5 Area assigned to Potential Urban Strategic Horizons (PUSH)

5.2.5 Statistical characterisation of the PUSH areas

The delimitation of PUSH areas allows for a comparative analysis of the previously applied national FUA definitions (Chapters 3, 4 and 5.1). This comparison is carried out by detailing the population figures for the FUA areas against those for the PUSH areas. These set of figures are often rather different, reflecting the fact that FUAs and PUSH areas correspond to fundamentally different approaches to the delimitation of urban areas. On the one hand, the FUA delimitation is made up out of non-overlapping areas often defined with a labour market management perspective in mind, while on the other, as was previously noted, the PUSH areas of neighbouring cities overlap.

PUSH areas: The territorial horizon of cities

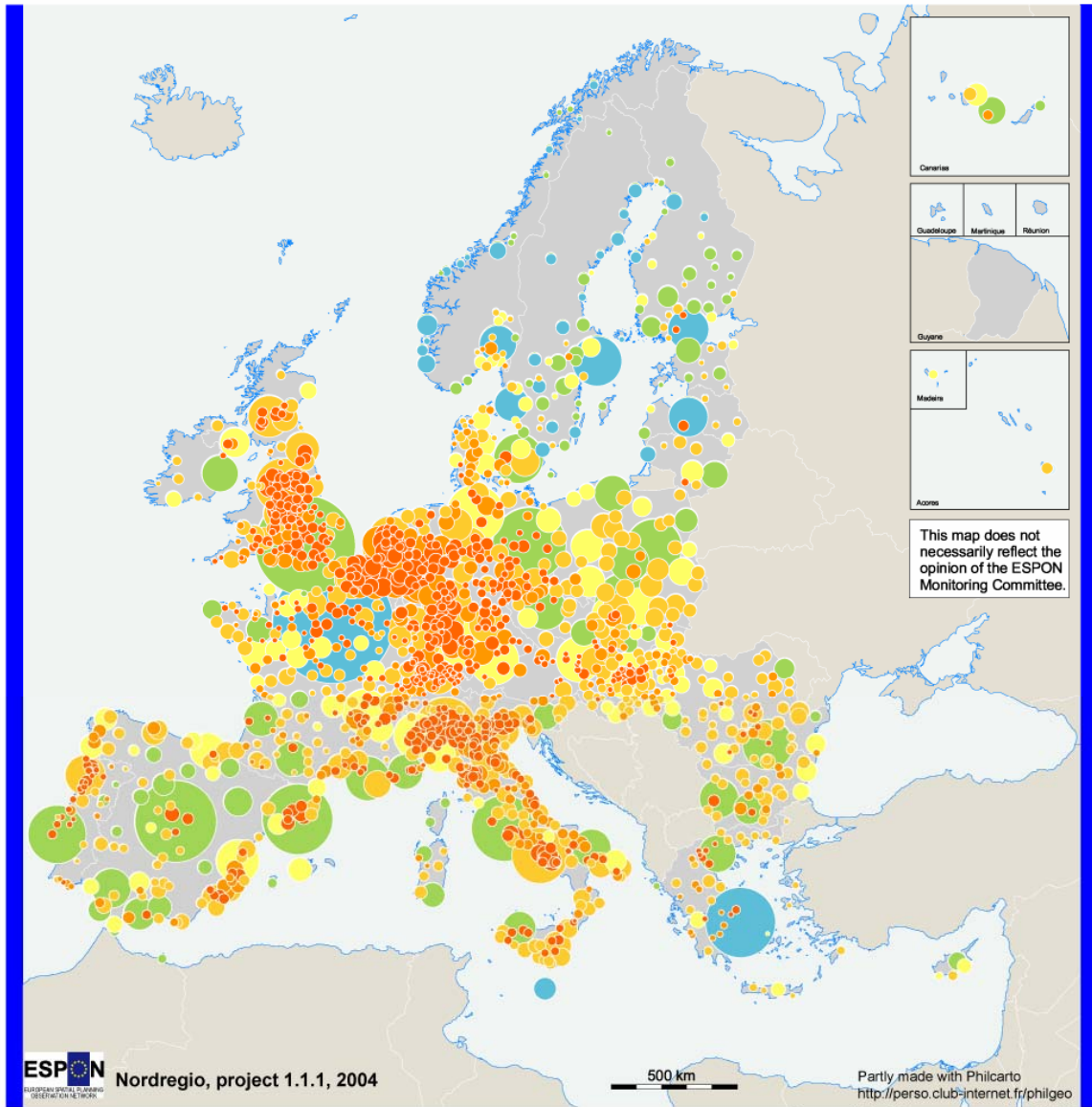
As shown by Map 5.6, the most extreme contrasts concern minor cities in the vicinity of major metropolitan areas, whose PUSH area includes parts of the neighbouring major cities. However, concentrations of small and medium-sized agglomerations can also lead to high contrasts between FUA and PUSH area populations. This is the case along an area stretching from the UK Midlands to Northern Italy and to Hungary, corresponding to an extended version of the "blue Banana". Throughout this area, the population that can be reached within 45 minutes of most cities is 6 to 10 times greater than that of the FUA itself.

A large number of national capitals such as Paris, Athens, Madrid, Rome, Lisbon, Warsaw, Riga and Oslo form monocentric urban areas, with populations which are basically equal in the FUA and in their PUSH area (the slightly lower values observed in the cases of Paris and Athens are not statistically significant). In the case of London, on the other hand, the population that can be reached in 45 minutes from the City (disregarding delays due to traffic congestion) is 40% higher than that of the FUA.

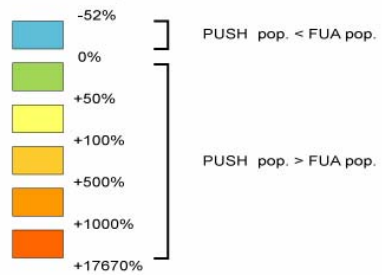
Finally, Map 5.6 illustrates the specificity of Norway, Sweden and Finland, which are the only countries where fewer people can reach most medium-sized cities in 45 minutes than those of the FUA. This expresses the relative isolation of these cities. The wide extent of nationally defined FUAs also reflects the fact that commuting actually takes place along longer time-distances in these areas than in the rest of Europe.

Three main types of situations can consequently be identified though this map: A monocentric type, with major agglomerations which have basically equal populations in the FUA and PUSH area, a polycentric type, with a concentration of medium sized cities with a significantly greater population in the PUSH area than in the FUA, and a peripheral type, with a significantly lower population in the PUSH area than in the FUA.

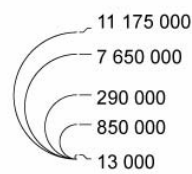
Comparison of population figures for nationally defined FUAs and PUSH areas defined according to 45-minute isochrones



Difference between Functional Urban Area (FUA) and Potential Urban Strategic Horizon (PUSH) area population figures.



FUA population according to national FUA definition



Geographical Base: Eurostat GISCO

Origin of data:
National Statistical Offices,
Eurostat, National experts

Data sources:
Nordregio, ESPON NUTS 5 database

PUSH delimitation: RRG

Map 5.6 Comparison of population figures for nationally defined FUAs and PUSH areas

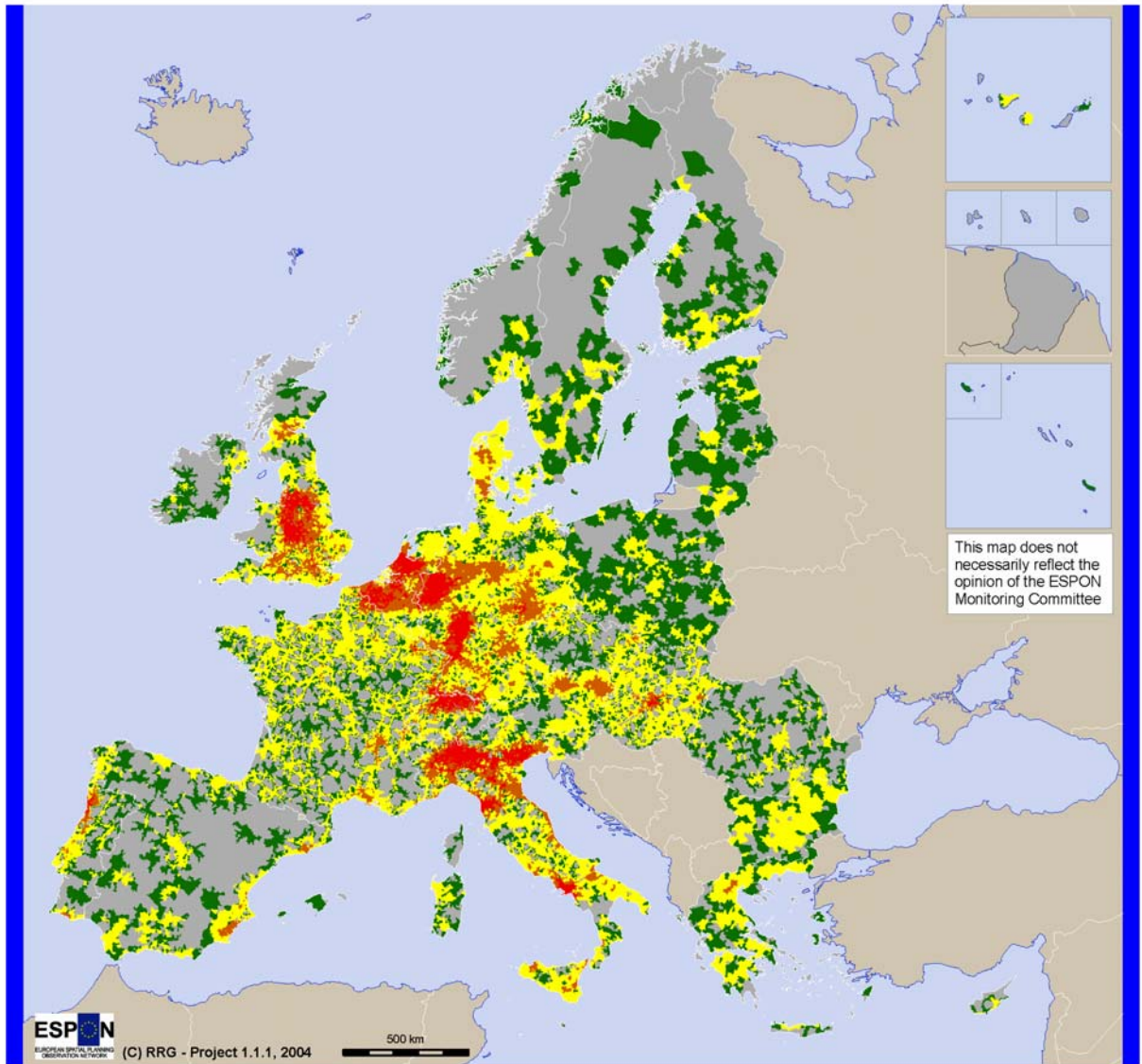
The urban context of Europe's territories

The other type of perspective presented in the introduction to this chapter considers the level of access to urban nodes from each municipality. Map 5.7 reflects the number of FUAs each municipality can access within 45 minutes. The geographical pattern is essentially the same as that observed in Map 5.6, with a polycentric area stretching from the UK Midlands to Northern Italy and to Hungary.

However, the previously identified monocentric national capital regions appear more polycentric in this representation, as there is always at least one secondary centre close to the capital. The difference in size between these two accessible FUAs however still makes the situation monocentric in practice. Furthermore, monocentric situations in more sparsely populated areas appear more clearly. These areas, which can only access one FUA within 45 minutes, shown in green on the map, are over-represented in all peripheral parts of Europe with the exception of Southern Italy. They are particularly numerous in the Northern peripheries, Ireland and Spain. The occurrence of such areas in Poland and Lithuania is to a large extent due to the FUA definitions in these countries.

This representation is particularly relevant from the perspective of local communities designing their strategies in relation to surrounding urban nodes. The access to two or more urban nodes of relevant size within a reasonable commuting distance creates a polycentric situation for the concerned local authorities. Rather than being merely a periphery of a major city, they can become potential linkage points between multiple main nodes, with the capacity to opt for different partnerships depending on their strategic aims.

Number of Potential Urban Strategic Horizons overlapping in each municipality



Geographical Base: Eurostat GISCO

- No PUSH
- 1 PUSH
- 2 - 5 PUSHs
- 6 - 10 PUSHs
- 11+ PUSHs

Map 5.7 Number of PUSH areas overlapping in each municipality

5.2.6 PUSH areas and the regional administrative context at NUTS 2 level

Discrepancies between functional urban areas and administrative borders can create difficulties when trying to achieve a balanced territorial development in and around a city. In many parts of Europe, local authorities call for innovative institutional arrangements, allowing for greater flexibility in creating spatial contexts for strategic planning and public intervention which corresponds to the scale at which the challenges need to be met. A major aim of polycentric policies at the regional level then is precisely to develop partnerships across administrative and institutional borders.

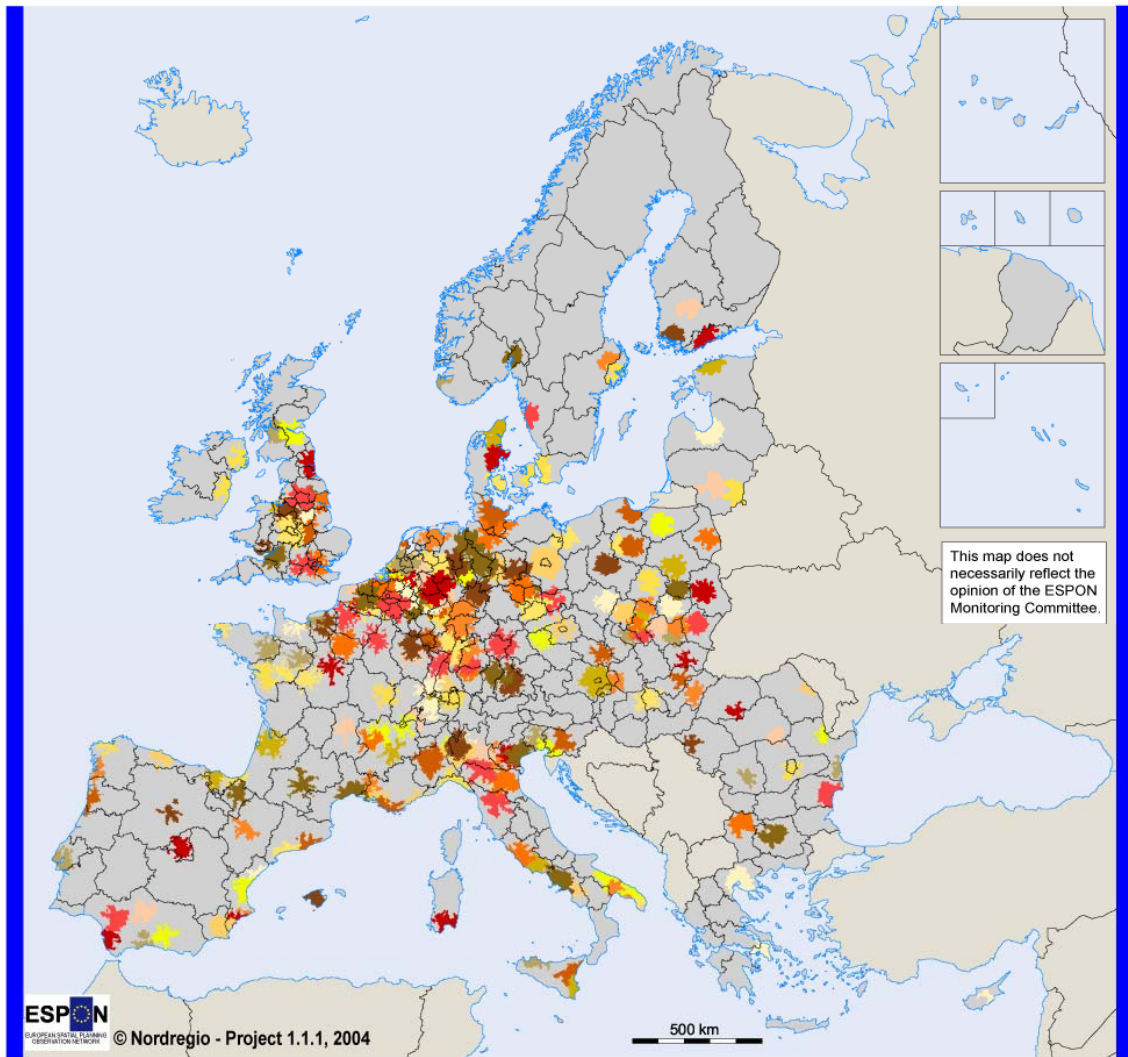
The PUSH areas provide a good picture of the area within which strategic challenges are likely to occur for an individual city. Indeed, a large majority of dwellings, jobs and commercial facilities will be situated within 45 minutes of the individual city core. Defining the spatial organisation of these different functions, while maintaining a high quality of life and ensuring efficient means of communication is undoubtedly a core objective of any urban policy.


When comparing these PUSH areas with regional boundaries for the larger Functional Urban Areas, with over 250 000 inhabitants, the NUTS 2 measure works for a large proportion of regional capitals beyond the pentagon. The national capital region is however considerably smaller than the corresponding functional area in a number of countries, including Romania, Hungary, the Czech Republic, Germany and the UK. Furthermore, in the European core areas (UK Midlands, Benelux, Rhine-Ruhr, Northern Italy) there is no correlation at all between NUTS 2 borders and the delimitation of potential functional areas.

The discrepancies are however much more frequent across Europe if one goes one step down in the urban hierarchy, and looks at urban nodes with a population comprised of between 100 000 and 250 000 inhabitants in the Functional Urban Area. This is particularly obvious in Spain, France and Italy, as well as in the New Member States and candidate countries, but less so in those of the Nordic countries where cities of this size will be regional capitals. It illustrates one of the challenges of multi-scalar polycentric integration: While the regional administrative context is relatively well adapted to the higher tier of cities in large parts of Europe, obstacles arise when one tries to integrate secondary nodes, whose strategic objectives may often differ from those of the region.

As illustrated by Map 5.10, 23% of European cities' PUSH areas cross a national border. These cities contain 23% of Europe's FUA population. These transnational FUAs are concentrated along border areas stretching from the Benelux countries to Northern Italy, but also those situated between Slovenia, Hungary, Slovakia and Poland. The relatively large proportion of such cross-border PUSH areas thus illustrates the need for transnational initiatives promoting a balanced territorial development.

Overlay of NUTS 2 boundaries and PUSH areas with over 250 000 inhabitants



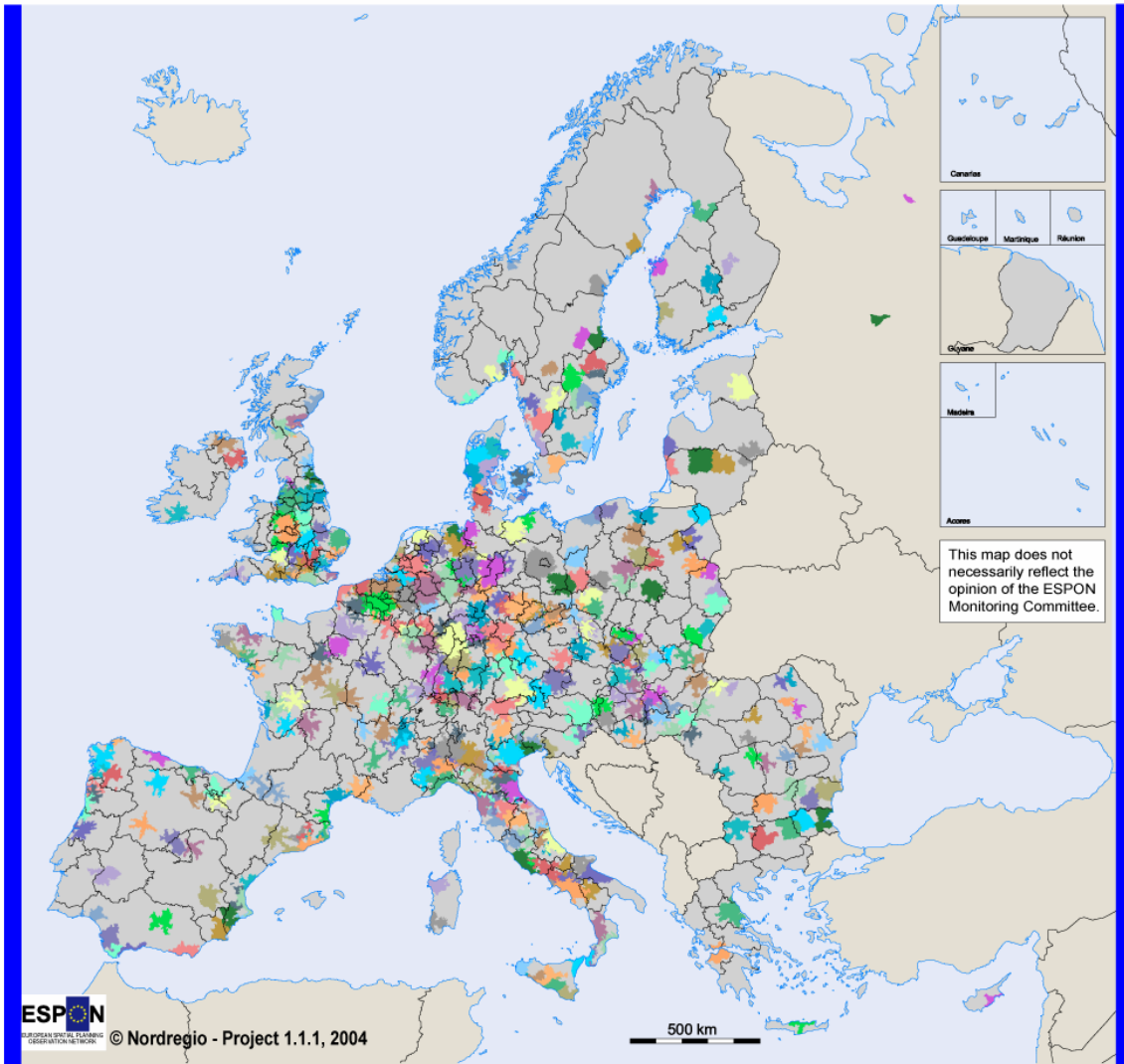
— NUTS 2 boundaries
 PUSH areas with over 250 000 inh.

Origin of data: EUROSTAT, National Statistical Offices
 National experts
 Data sources: Nordregio, ESPON NUTS 5 database
 PUSH delimitation: RRG

Geographical Base: Eurostat GISCO
 Eurogeographics

Map 5.8 Overlay of NUTS 2 boundaries and PUSH areas of cities with over 250 000 inhabitants

Overlay of NUTS 2 boundaries and PUSH areas with 100 000 to 250 000 inhabitants



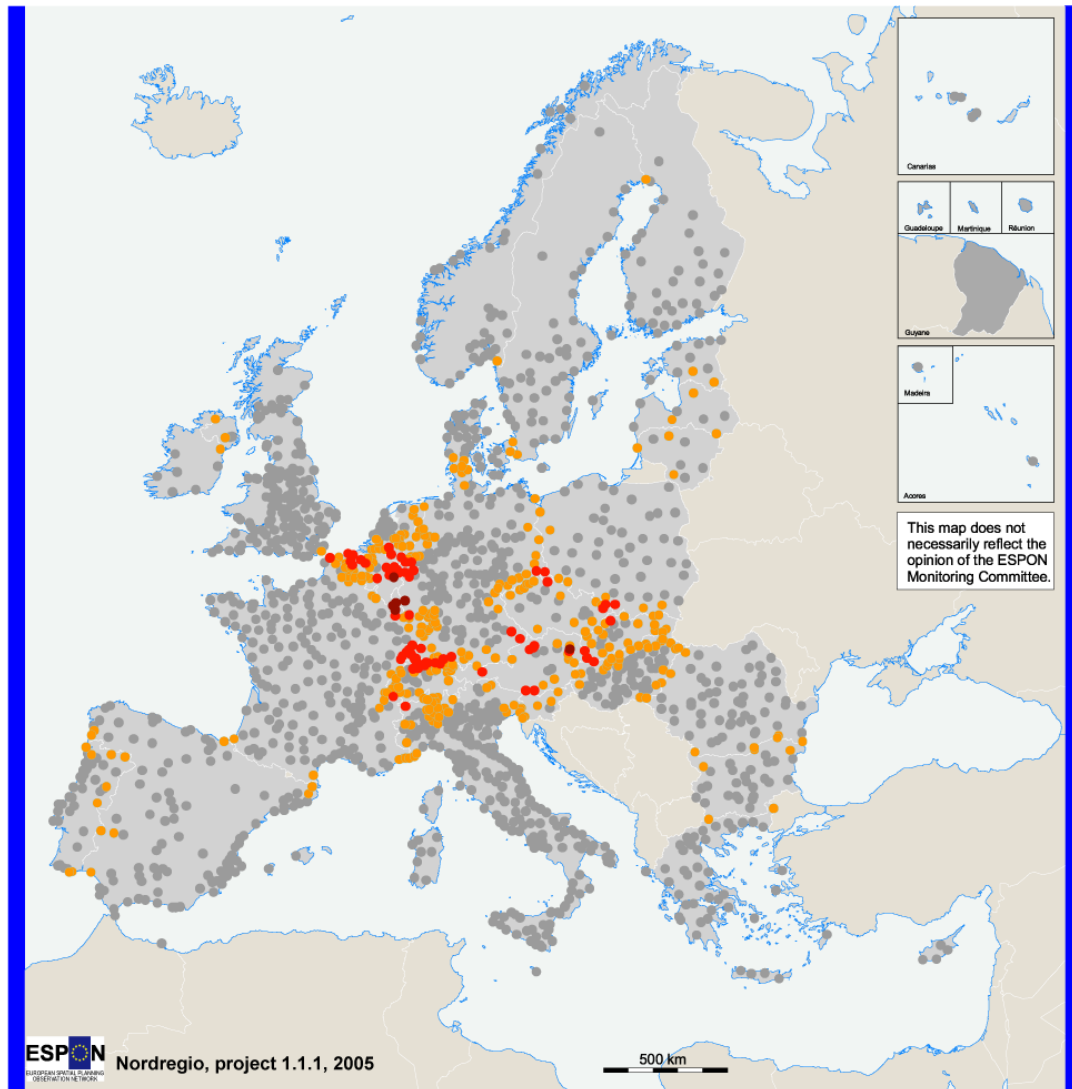
— NUTS 2 boundaries
 PUSH areas with 100 000 - 250 000 inh.

Origin of data: EUROSTAT, National Statistical Offices
 National experts
 Data sources: Nordregio, ESPON NUTS 5 database
 PUSH delimitation: RRG

Geographical Base: Eurostat GISCO
 Eurogeographics

Map 5.9 Overlay of NUTS 2 boundaries and PUSH areas of cities with between 100 000 and 250 000 inhabitants

Transnational Potential Urban Strategic Horizons (PUSH)



Number of ESPON countries represented within each Potential Urban Strategic Horizons (excluding the Vatican, San Marino, Monaco, Liechtenstein and Andorra):

- 1 country
 - 2 countries
 - 3 countries
 - 4 countries
- } Transnational PUSH

- ESPON countries
- ESPON areas not included in the analysis
- Other areas

Geographical Base: Eurostat GISCO Eurogeographics

Data sources: Nordregio, ESPON NUTS 5 database

PUSH delimitation: RRG

Map 5.10 Transnational PUSH areas (considering internal study area boundaries only)

5.2.7 Potential polycentric integration areas (PIA)

Based on the overlaps of neighbouring cities' PUSH areas, a list of Potential Polycentric Integration Areas (PIA) was established, based on the hypothesis that FUAs which share a significant proportion of their potential commuter catchment area could solve a number of their planning and spatial development challenges through integrated polycentric development policies. Furthermore, these neighbouring cities will have specific facilities to build a common entity, which through its greater mass and variety of functional specialisations could be a stronger actor in the global competition between cities.

The threshold value used to define these PIAs is 33,3%, implying that each FUA that shares at least 1/3 of its potential commuter catchment with another larger FUA is merged with it. If a FUA shares at least 1/3 of its potential commuter catchment area with multiple other FUAs, it is merged with the, in demographic terms, largest of these. The threshold chosen here is to a large extent arbitrary; the results should consequently be regarded as exploratory.

Levels of complexity in the PIAs

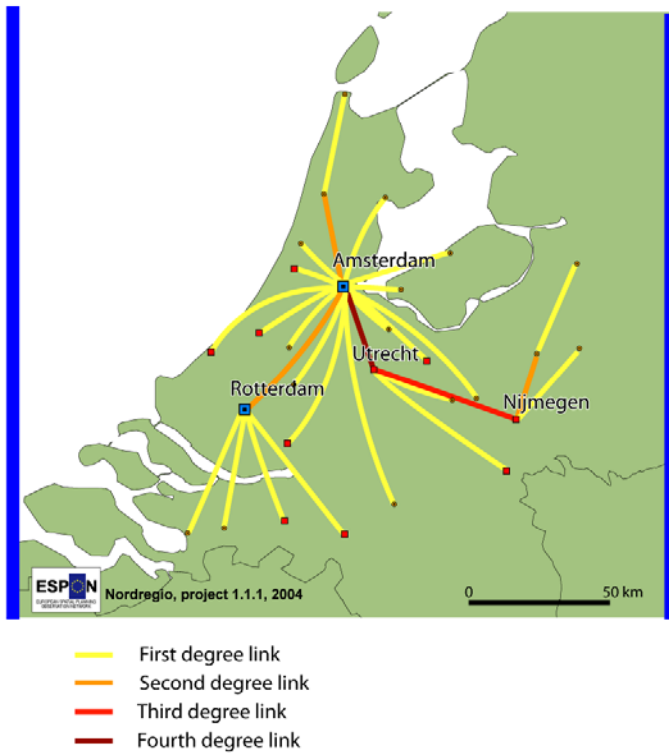
The methodology has been applied iteratively to all 1595 FUAs. At each iteration we identified the largest FUA with which each FUA shared over 1/3 of its potential commuter catchment area. These FUAs were then merged to form a preliminary PIA. In many cases, however, the largest FUA in this preliminary PIA may itself share over 1/3 of its commuter catchment area with yet another even larger FUA. As shown by Table 5.4, this procedure was repeated 4 times, in order to identify the definitive PIAs. The fourth iteration concerns only two FUAs; as these two FUAs are incorporated into PIAs already identified in the third iteration, the number of PIAs remains unchanged.

Table 5.4 Result of the iterative identification of PIA

	Number of separate groups of FUAs identified	Number of PIAs – integrated areas with at least two FUAs
First iteration	770	314
Second iteration	660	279
Third iteration	651	276
Fourth iteration	649	276

The number of iterations involved in each PIA to some extent functions as an indicator of its multiscale complexity. This is illustrated by Map 5.11, which shows the example of Amsterdam. A number of cities share at least 1/3 of their potential commuter catchment area (CCA) with Nijmegen; Nijmegen shares over 1/3 of its CCA with Utrecht, which in turn has been merged with Amsterdam. As a result of this, all these cities have been included in the Amsterdam PIA. The city of Dordrecht, to the South-East of Rotterdam, illustrates one of the effects of the methodology applied: Dordrecht has been merged directly with Amsterdam, despite its closeness to Rotterdam. This is because Dordrecht shares over 1/3 of its CCA both with Amsterdam and Rotterdam. As Amsterdam is the larger of these two

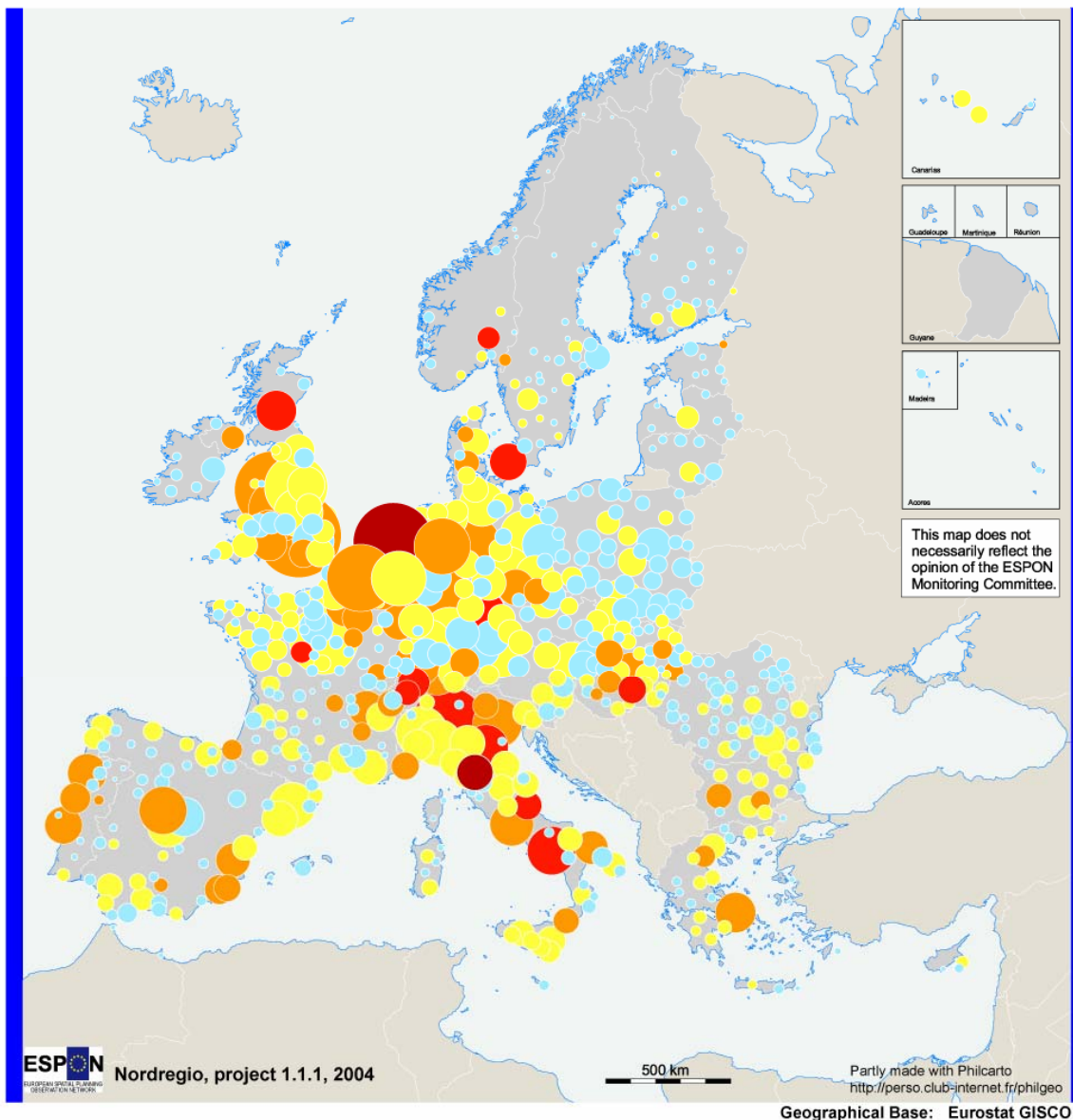
cities, this overlap has been considered more important. This however does not alter the final result, as Dordrecht would be included in the Amsterdam PIA.



Map 5.11 Multiple tiers of integration in PIA: the example of Amsterdam

Areas where the overlaps are organised according to complex multiscalar patterns have different preconditions for polycentric development. Indeed, rather than having a single cooperation body gathering a main city and the secondary centres surrounding it, these areas may envisage the creation of multiple tiers of cooperation, organised as “Chinese boxes”. This creates more complex, and potentially richer, modes of territorial governance. As shown by Map 5.12, these areas with complex overlap patterns are spread out across Europe, except in the Northern peripheries and Ireland. The apparent lack of such areas in Poland is, as was previously noted, largely due to the FUA definition used in this country. Complex PIA can be found outside the Pentagon, with three levels of integration around cities such as Glasgow, Oslo, Naples and Tours. The two PIAs with four levels of integration are Amsterdam and Florence. One must however keep in mind that these results depend to a large extent upon the initial list of FUAs, and on the thresholds used.

Level of multi-scalar complexity in PIAs



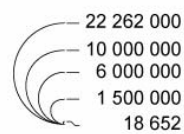
Number of hierarchical levels of integration in potential Polycentric Integration Areas.

Isolated Functional Urban Horizon

Number of levels of integration

- 1 level
- 2 levels
- 3 levels
- 4 levels

PIA population



Origin of data:

National Statistical Offices,
Eurostat, National experts

Data sources:

Nordregio, ESPON NUTS 5 database

PUSH delimitation: RRG

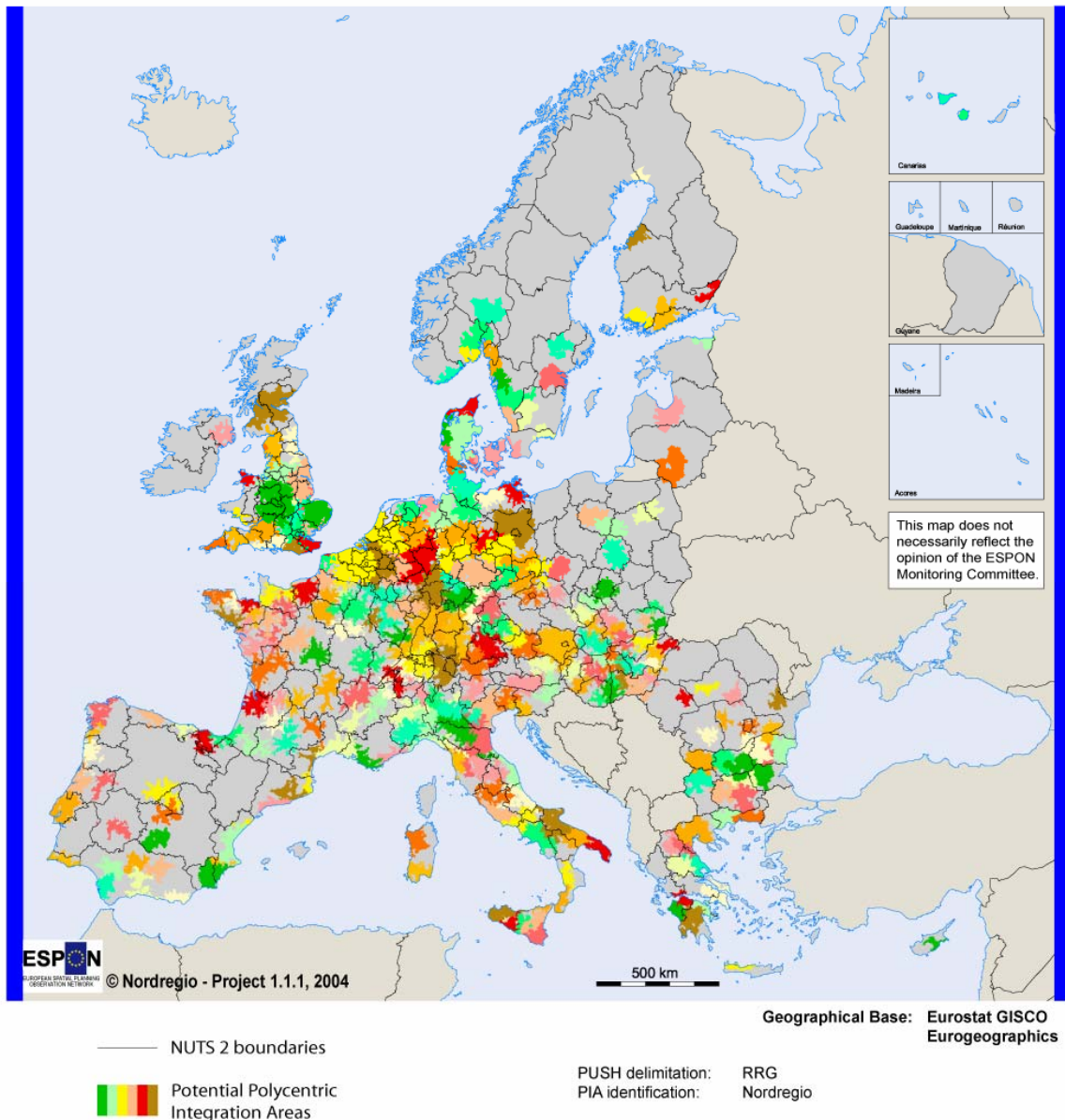
PIA identification: Nordregio

Map 5.12 Geographical spread and multi-scalar complexity of Europe's Polycentric Integration Areas

The geographical extent of Polycentric Integration Areas

Map 5.13 shows the geographical extent of these PIA, and illustrates how most of these cross NUTS 2 boundaries. This confirms our earlier findings, i.e. that integrating the lower tier of cities into a polycentric integration policy often implies crossing regional boundaries.

Overlay of NUTS 2 boundaries and Potential Polycentric Integration Areas (PIAs)



Map 5.13 PIA overlaid by NUTS 2 boundaries

Comparing the size of the FUAs within each PIA, one observes a great variety of situations. Table 5.5 lists the PIAs with highest and lowest proportions of the total FUA population living in the main FUA. These rates vary from under 20% for Amsterdam, Cologne and Venice to over 98% for Paris, Athens and Bucharest. The potential gain in demographic mass which the “core cities” can hope to obtain through a regional polycentric integration policy is consequently highly variable.

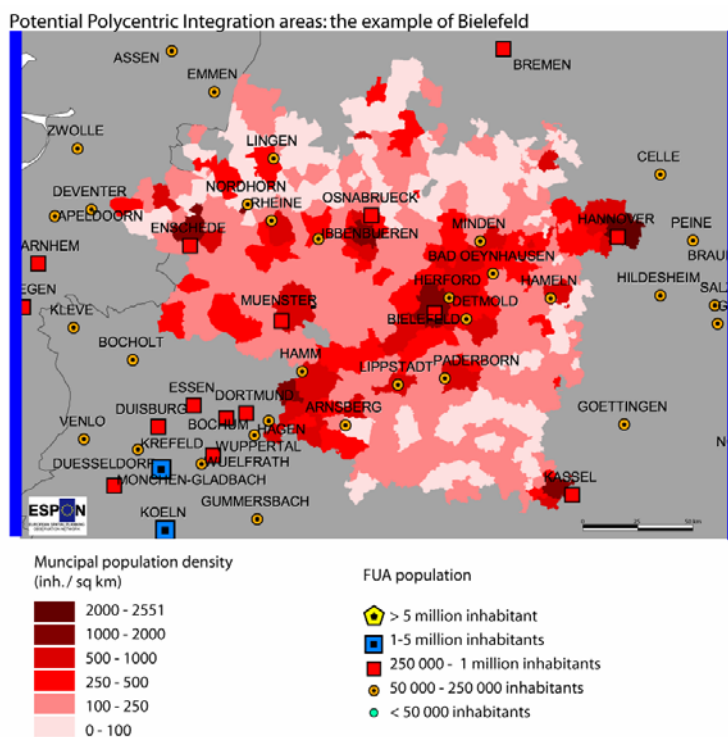
Table 5.5 Highest and lowest proportions of total population in FUAs living in the main node, for each Potential Polycentric Integration area (PIA)

Highest			Lowest		
Main node	Number of FUAs in PIA	Proportion of FUA population in main node	Main node	Number of FUA in PIA	Proportion of FUA population in main node
KAUNAS	2	88.6%	AMSTERDAM	27	17.6%
BRIT	2	89.4%	KOELN	21	19.1%
WIEN	7	89.6%	VENEZIA	19	19.9%
SOFIA	2	91.8%	FARO	6	21.7%
PLYMOUTH	2	91.9%	BRUXELLES	9	23.3%
RIGA	2	92.7%	PESCARA	9	24.3%
TOULOUSE	2	92.8%	FRANKFURT AM MAIN	25	25.0%
RENNES	2	92.9%	LILLE	15	26.2%
BERLIN	5	93.3%	DECIN	4	27.1%
CRAIOVA	2	93.5%	SOUTHAMPTON/EASTLEIG	6	27.9%
SEVILLA	2	93.5%	BOLZANO	6	28.8%
HELSINKI	3	93.8%	RACKEVE	5	29.7%
MADRID	4	94.5%	BASEL	11	30.2%
LISBOA	4	94.9%	BIELEFELD	10	31.3%
THESSALONIKI	3	95.0%	METZ	7	32.9%
PRAHA	2	95.0%	ANCONA	6	33.4%
BORDEAUX	2	96.7%	OLOMOUC	4	33.8%
ATHINAI	3	98.0%	RIMINI	4	34.5%
PARIS	3	98.2%	SZEKESFEHERVAR	7	34.8%

5.2.8 Regional polycentricity within PIAs: a threat or a contribution to European polycentricity?

The analysis of Potential Polycentric Integration Areas has given some indication of which areas in Europe could best develop a regional polycentric integration policy based on existing overlaps in the potential commuter catchment areas. In a second phase, we would like to explore what effect such a polycentric policy would have on the general spatial equilibrium of the urban network in Europe. Can such regional integration help promote the emergence of Global Integration Zones outside the Pentagon, or on the contrary, will it create a greater gap between the Pentagon and the rest of Europe?

Table 5.6 lists the top ranking PIAs, indicating their total population, the population of their main FUA, and the total population of all FUAs ("urban population") for each PIA. This ranking is quite different from that of the FUAs. The Cologne PIA being by far largest, as the main node of a regional system composed of 23 Potential Commuter Catchment Areas. The Paris PIA, on the other hand, is ranked 8th, and only comprises three FUAs. The Milan PIA gathers 31 FUAs, which is the largest figure in the study area. The case of Bielefeld, which ranks 10th in this list, is interesting as it comprises no city of continental importance in demographic terms, but nonetheless comprises 7,6 million persons within its PIA. Map 5.14 illustrates how a polycentric network of cities situated between major metropolitan areas could obtain such a demographic mass through regional integration.



Map 5.14 A major PIA not dominated by any single city: the example of Bielefeld

Table 5.6 Main Potential Polycentric Integration Areas (PIA) in Europe

Name of main FUA	PIA Population	Population of main FUA in PIA	Total Population of all FUAs in PIA	Number of FUAs in PIA	Ranks		
					PIA population	Main FUA population	Total pop. of all FUAs in PIA
KOELN	22 262 252	1 823 475	9 717 065	23	1	21	2
LONDON	17 223 087	7 651 634	9 299 617	14	2	2	3
AMSTERDAM	15 534 772	1 378 873	8 059 029	29	3	28	4
FRANKFURT AM MAIN	14 926 087	1 896 741	7 698 874	26	4	17	6
GREATER MANCHESTER	14 495 821	2 277 330	5 312 934	19	5	15	8
MILANO	12 861 094	2 890 384	7 716 987	31	6	8	5
BRUXELLES/BRUSSEL	11 868 661	964 405	4 648 200	11	7	49	10
PARIS	11 364 664	11 174 743	11 376 801	3	8	1	1
LILLE	10 863 278	1 143 125	4 493 184	16	9	38	11
BIRMINGHAM	9 630 529	965 928	2 723 459	15	10	47	23
SHEFFIELD	9 438 706	552 987	1 256 676	6	11	80	57
BIELEFELD	7 608 656	578 980	1 850 570	10	12	76	38
STUTTGART	7 201 472	2 593 087	3 649 179	5	13	9	16
LIEGE	7 172 112	584 398	1 473 333	5	14	75	43
VERONA	6 596 421	469 996	1 279 592	8	15	91	53
TORINO	6 302 253	1 545 202	2 371 920	9	16	25	27
HANNOVER	6 158 534	996 586	2 082 876	10	17	46	31
ZUERICH	5 909 402	940 180	2 044 511	20	18	52	33
VENEZIA	5 831 892	611 236	3 265 698	22	19	71	17
LEICESTER	5 698 705	318 518	647 933	6	20	140	101

Incentives to develop regional polycentric policies

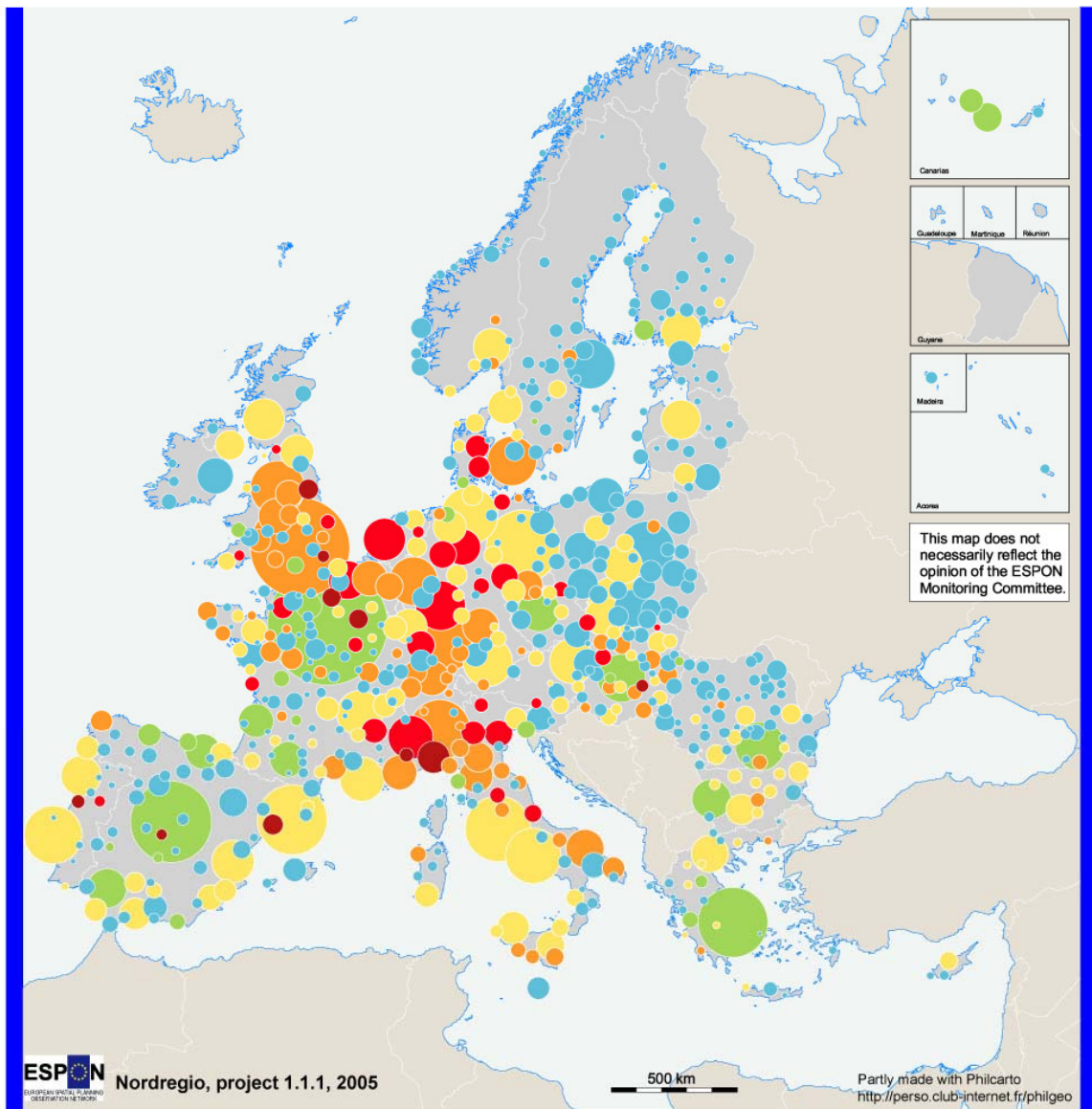
Population gain through integration of PIA cities

The demographic mass gained through polycentric integration varies greatly from PIA to PIA, creating variable incentives to develop polycentric policies. An individual city may assess this change in demographic mass from two different perspectives: on the one hand, it can look at the percentage change, comparing the population of its own PUSH area (i.e. the 45 minute isochrone approximated to municipal boundaries), and that of the entire PIA. On the other hand, the individual city may look at how this change affects its position in the European urban hierarchy: how much stronger would integrating with other cities in the PIA make it on the European scene?

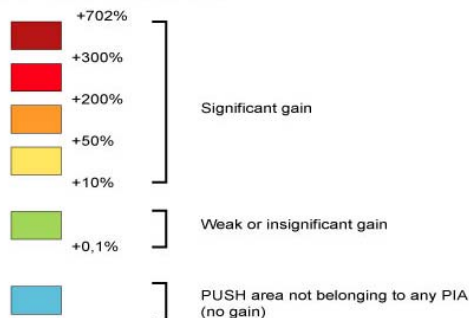
The difference in population between the PUSH area of individual cities, and that of the PIA of which they are the main node is illustrated by Map 5.15. Major gains are observed in PIAs close to major agglomerations. They can be observed in most parts of the Pentagon with the exception of Paris, but also in northwestern France, Denmark, Hungary and southern

Slovakia, as well as in most parts of Italy and England. The lowest gains are observed in monocentric capital regions.

Comparison of population figures for individual PUSH areas and PIAs (considering the main node of each PIA)



Demographic mass gained by the main node of each potential Polycentric Integration Area (PIA), when integrating with all other cities in this PIA (PIA population / PUSH area Population).



Geographical Base: Eurostat GISCO Eurogeographics

Origin of data: EUROSTAT, National Statistical Offices National experts

Data sources: Nordregio, ESPON NUTS 5 database

PUSH delimitation: RRG PIA identification: Nordregio

Map 5.15 Difference in population between the PUSH area of individual cities, and that of the PIA of which they are the main node.

Improvement of European rank through integration of PIA cities

Another fundamental question, from the perspective of an individual city, is the strength gained at the European level if it integrates with other cities in the PIA. To answer this question, we have considered each city's *PIA population*, and compared it with other cities' *PUSH area population*. The change of rank reflects the difference between a city's rank based on its PUSH area, and the rank it would occupy if we were to consider its PIA population instead, while taking into account only PUSH area populations for all other cities. This difference can be used as a proxy for a city's incentive to promote regional integration with other neighbouring cities.

These changes of ranks are presented in Table 5.7. They presume that no comparable initiatives are pursued in other PIAs. Only the main nodes of each PIA have been considered in these calculations; potential gains are obviously higher for secondary nodes within each PIA.

Glasgow for example, ranks 40th in Europe with 2,7 million inhabitants in the PUSH area. However, there are 3,9 million inhabitants in the PIA delimited around Glasgow, which includes Edinburgh as well as 10 other FUAs. If these 12 cities were to market themselves as an integrated entity in the European context, this new agglomeration would be larger than Hamburg, which currently ranks 19th with its 3,8 million inhabitants in the PUSH area. In other words, through polycentric integration, the Glasgow-Edinburgh PIA would rise from the 40th to the 19th position in the European urban hierarchy. The implicit hypothesis in these calculations is however that no other city develops the same type of strategies.

Due to the methodology applied, gains for the largest European cities appear low or insignificant compared to those of smaller cities. It can therefore be interesting to compare gains among the larger cities only. Table 5.7 lists the highest gains observed for cities whose PUSH area comprises over 1 million inhabitants. Outside the Pentagon, this list confirms the incentive for polycentric integration in Mediterranean cities (Montpellier, Nice, Genova, Rimini, Palermo), and of Porto. In Northern Europe, the two Nordic cities capitals Copenhagen and Oslo stand out, as well as Glasgow and Belfast on the British isles.

The PIAs constructed around Köln-Düsseldorf, Greater Manchester, Milano, Amsterdam, Brussels and Frankfurt have higher population figures than the PUSH areas of the two previously identified Global nodes Paris and London. All of these areas that could potentially surpass the global nodes in terms of demographic mass through regional polycentric integration are however inside or close to the Pentagon.

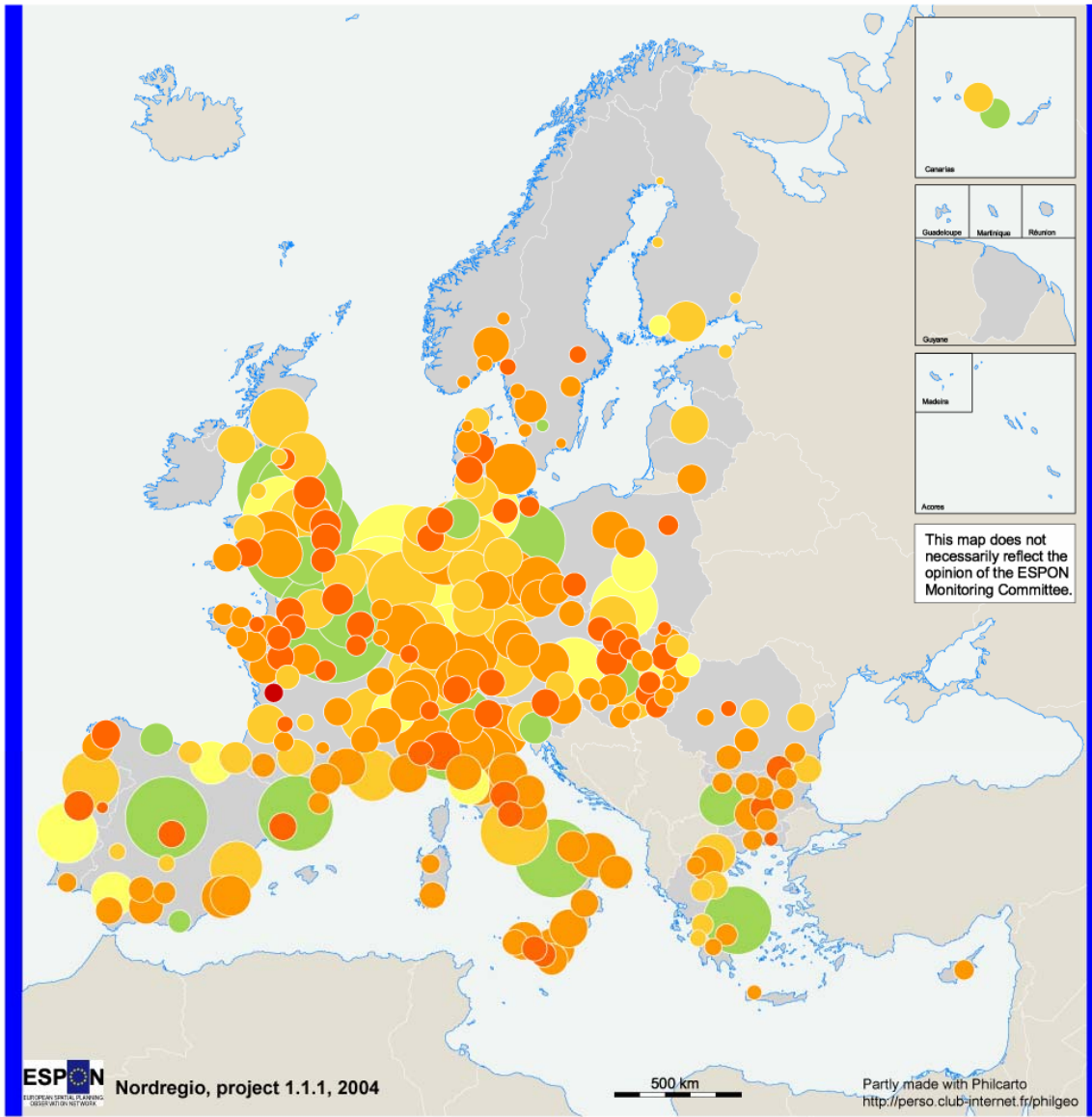
Map 5.16 compares the change in rank that can potentially be obtained by cities across Europe. The map only considers cities which are integrated in a PIA, which for example explains the absence of Stockholm. More generally, the strongest gains in rank concern medium-sized and small cities, and especially those near major agglomerations, such as Västerås near Stockholm, Toledo near Madrid, Tarragona near Barcelona and a whole range of cities around Paris (Troyes, Reims, Amiens, Bourges, Alençon and Caen). This type of cities could be potential driving forces of polycentrism, if they were given the opportunity to step out of the shadow of their neighbouring metropolis.

But there are also a certain number of other regions with strong incentives for polycentric integration. North Western France is one, with La Rochelle having the strongest gain in rank

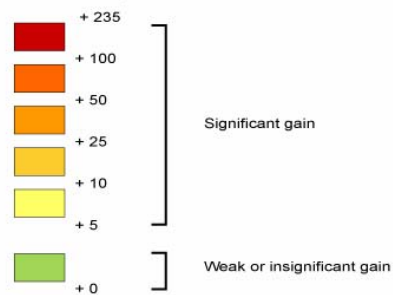
of all cities in Europe (+235), and with high gains in Laval (+146), Saint-Malo (+106), as well as further west in Brittany. On the border between the Czech Republic and Slovakia, very high gains are also observed in the area between Ostrava (+17) and Nitra (+116), with for example Olomouc (+187), Trencin (+138) and Banska Bystrica (+101). Likewise, the incentives for integration are high among some smaller cities of northern Greece (Kavalla (+91), Alexandroupolis (+100)) and southern Bulgaria (Stara Zagora (+133), Haskovo +83)).

Among the more isolated PIAs with strong incentives for Integration, we can mention Kristiansand on the southern coast of Norway (+64), Faro in Portugal (+69), Sassari in Sardinia (+94), Ostroleka in northeastern Poland (+108) and Medias in Romania (+112).

Incentive for polycentric integration in PIAs



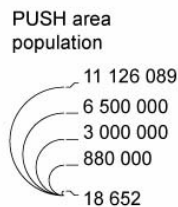
Ranks gained by each city, if it joins forces with the other cities in the PIA (presuming that no comparable initiatives are pursued in other PIAs, and showing the main node of each PIA only).



Origin of data: EUROSTAT, National Statistical Offices
National experts

Data sources: Nordregio, ESPON NUTS 5 database

PUSH delimitation: RRG
PIA identification: Nordregio



Geographical Base: Eurostat GISCO

Map 5.16

Incentive to develop polycentric integration policies, seen from the perspective of individual cities: Change of rank in the European urban hierarchy for each city that is the main node of a PIA.

Due to the methodology applied, considering numbers of ranks, gains for the largest European cities appear low or insignificant compared to those of smaller cities. It can therefore be interesting to compare gains among the larger cities only. Table 5.7 lists the highest gains observed for cities whose PUSH area comprises over 1 million inhabitants. Outside the Pentagon, this list confirms the incentive for polycentric integration in Mediterranean cities (Montpellier, Nice, Genova, Rimini, Palermo), and of Porto. In Northern Europe, the two Nordic capitals Copenhagen and Oslo stand out, as well as Glasgow and Belfast on the British isles. In the new member states, the Bydgoszcz-Torun area south of Gdansk the Decin-Teplice-Chomutov axis between Dresden and Prague appear to be potential integration zones.

The PIAs constructed around Köln-Düsseldorf, Greater Manchester, Milan, Amsterdam, Brussels and Frankfurt have higher population figures than the PUSH areas of the two previously identified Global nodes Paris and London. All of these areas that could potentially surpass the global nodes in terms of demographic mass through regional polycentric integration are however inside or close to the Pentagon.

Table 5.7: Most important incentive for polycentric integration, among cities with over 1 million inhabitants in their PUSH area

Country	Name	PUSH area population	PIA population	RANK according to PUSH area pop.	RANK according to PIA pop.	Potential rank in case of isolated PIA integration ¹	Change of rank in case of isolated PIA integration
IT	GENOVA	1 221 934	5 312 352	111	23	10	101
DE	ERFURT	1 171 344	2 866 464	121	62	36	85
FR	MONTPELLIER	1 147 290	2 067 364	124	86	63	61
CZ	DECIN	1 105 265	1 676 298	130	112	76	54
IT	RIMINI	1 186 487	1 983 460	117	93	68	49
IT	PALERMO	1 146 239	1 647 327	125	114	76	49
FR	STRASBOURG	1 724 736	3 504 173	74	45	26	48
FR	NICE	1 173 512	1 814 061	119	101	71	48
UK	PETERBOROUGH	1 142 472	1 553 059	126	123	80	46
IT	MESSINA	1 158 320	1 590 828	122	120	79	43
IT	VENEZIA	2 419 457	5 831 892	48	19	9	39
DE	NURNBERG	2 186 388	4 184 642	55	33	16	39
DE	ULM	2 155 798	3 887 679	58	40	19	39
DE	DRESDEN	2 022 188	3 541 847	65	44	26	39
UK	BRISTOL	2 132 089	3 700 980	60	41	22	38
IT	BOLOGNA	2 400 571	4 766 087	49	30	13	36
DK	KOEBENHAVN	2 058 002	3 297 924	63	50	27	36
IT	PARMA	1 796 476	2 949 842	71	61	35	36
UK	SOUTHAMPTON/	1 787 490	2 846 389	72	63	36	36
IT	VERONA	2 678 279	6 596 421	42	15	7	35
DE	LEIPZIG	2 443 473	5 160 613	47	27	12	35
IT	FIRENZE	2 037 409	3 136 211	64	52	29	35
IT	BARI	1 599 206	2 670 421	78	70	43	35
DE	RAVENSBURG	1 325 424	2 052 274	99	87	64	35
PL	BYDGOSZCZ	1 089 721	1 336 218	134	143	99	35
IT	TORINO	2 778 541	6 302 253	39	16	8	31
FR	METZ	2 020 701	2 961 841	66	59	35	31
CH	BERN	1 525 465	2 383 602	81	75	50	31
AT	LINZ	1 262 024	1 703 842	107	110	76	31
CH	ST. GALLEN	1 583 645	2 416 961	79	73	49	30

¹ European Rank of urban node if PUSH area population is substituted by PIA population - all other nodes being assessed according to their PUSH area population.

Country	Name	PUSH area population	PIA population	RANK according to PUSH area pop.	RANK according to PIA pop.	Potential rank in case of isolated PIA integration ¹	Change of rank in case of isolated PIA integration
ES	ALICANTE	1 292 866	1 752 823	103	105	73	30
IT	CATANIA	1 351 285	1 974 315	96	95	68	28
ES	MURCIA	1 442 844	2 118 483	89	84	62	27
DE	BIELEFELD	3 105 324	7 608 656	31	12	5	26
CH	LAUSANNE	1 227 810	1 517 588	109	126	83	26
DE	REGENSBURG	1 208 552	1 478 095	114	129	88	26
NO	OSLO	1 030 600	1 219 962	138	160	112	26
DE	HANNOVER	3 026 240	6 158 534	32	17	8	24
UK	BELFAST	1 120 661	1 277 548	128	153	105	23
CH	ZUERICH	3 114 942	5 909 402	30	18	8	22
PT	PORTO	2 597 465	3 655 200	45	43	23	22
UK	GLASGOW	2 729 065	3 938 569	40	38	19	21
ES	VALENCIA	2 142 183	2 785 688	59	65	38	21
UK	TYNESIDE	1 931 639	2 439 350	69	72	48	21
GR	THESSALONIKI	1 293 870	1 538 694	102	125	81	21
FR	DUNKERQUE	1 511 815	2 027 499	85	88	65	20
DE	KASSEL	1 425 717	1 909 215	90	97	70	20
FR	MARSEILLE-AIX	2 188 851	2 997 757	54	58	35	19
DE	BREMEN	2 085 562	2 677 494	62	69	43	19
DE	AMBERG IN DER	1 420 923	1 777 364	92	103	73	19
DE	WUERZBURG	1 367 088	1 739 687	93	106	74	19
LV	RIGA	1 137 593	1 261 723	127	156	108	19
UK	LEICESTER	3 202 426	5 698 705	27	20	9	18
CH	BASEL	3 117 760	5 242 058	29	25	11	18
DE	SAARBRUECKEN	2 204 118	2 951 543	53	60	35	18
NL	ENSCHEDÉ	2 173 400	2 782 886	56	66	38	18
HU	RACKEVE	1 470 171	1 899 054	88	100	70	18
DE	KIEL	1 351 867	1 618 342	95	116	77	18
IT	UDINE	1 237 811	1 440 577	108	134	90	18
CZ	OSTRAVA	1 742 952	2 183 731	73	81	56	17
NL	GRONINGEN	1 262 646	1 464 851	106	130	89	17
DE	CHEMNITZ	2 569 893	3 115 600	46	54	30	16
FR	LILLE	4 073 971	10 863 278	18	9	3	15
BE	LIEGE	3 713 499	7 172 112	21	14	6	15
FR	TOULOUSE	1 091 475	1 182 042	133	165	118	15
FR	ROUEN	1 217 243	1 326 856	113	144	99	14
DE	MAGDEBURG	1 177 425	1 290 614	118	149	104	14
DE	MUENCHEN	3 636 136	5 031 251	24	28	12	12
FR	LYON	2 607 250	3 100 068	44	55	32	12
FI	HELSINKI	1 306 760	1 452 805	100	132	89	11
FR	BORDEAUX	1 203 940	1 284 456	115	151	104	11
IT	ROMA	3 599 144	4 575 848	25	31	15	10
AT	WIEN	2 930 963	3 424 971	35	46	26	9
PT	LISBOA	2 837 095	3 368 545	36	47	27	9
CH	GENEVE	1 516 049	1 718 834	84	107	75	9
DE	FRANKFURT AM MAIN	5 456 553	14 926 087	9	4	1	8
DE	STUTTGART	4 588 211	7 201 472	14	13	6	8
PL	KATOWICE	3 422 807	4 083 848	26	37	18	8
UK	BIRMINGHAM	5 168 308	9 630 529	11	10	4	7
DE	HAMBURG	3 845 206	4 883 155	19	29	12	7
ES	BILBAO	1 517 569	1 636 334	83	115	76	7
ES	SEVILLA	1 503 273	1 560 938	87	121	80	7
BE	BRUXELLES/BRUSSE	6 489 124	11 868 661	7	7	1	6
HU	BUDAPEST	3 013 587	3 298 193	33	49	27	6
PL	LODZ	1 623 230	1 900 922	76	99	70	6
IT	LIVORNO	1 282 495	1 347 537	104	141	98	6
NL	AMSTERDAM	6 790 617	15 534 772	6	3	1	5

Increasing territorial imbalances in a polycentric Europe?

Map 5.16 has shown that a wide range of cities could significantly increase their demographic mass, and thus also their position in the European urban hierarchy through polycentric integration. These cities are situated both inside and outside the Pentagon.

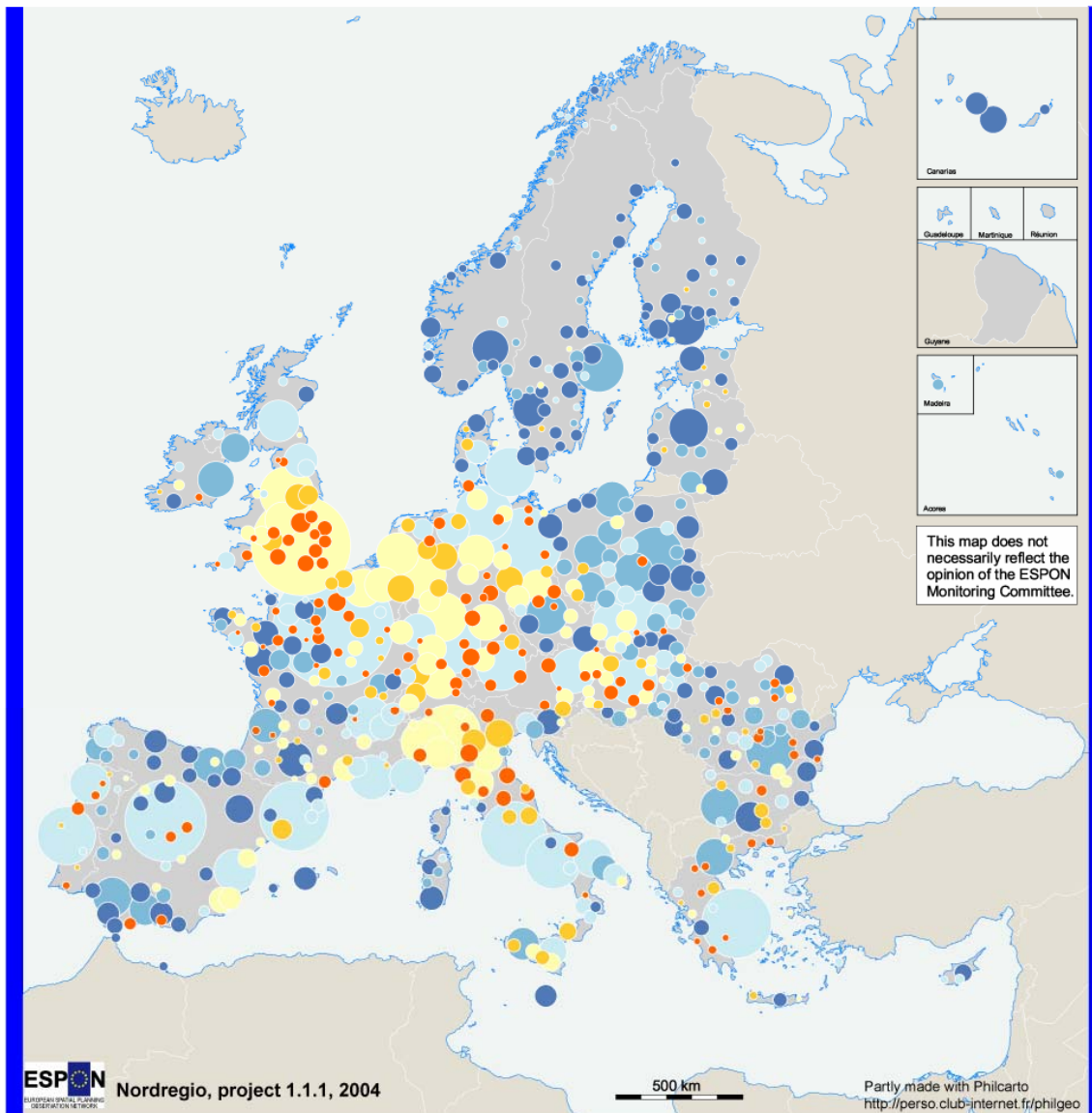
This raises the question of how the European urban network would look if all of the cities that are included in a potential Polycentric Integration Area (PIA) developed polycentric integration policies. We have therefore compared the rank of each individual city (according to the population of its FUA), with that of the PIA of which it is the main node. The result, illustrated by Map 5.17, shows that the vast majority of cities that would gain in relative importance are those situated along an area similar to the "Blue Banana", with some extensions into Hungary, the Czech Republic and Slovakia. The only other cities gaining from polycentric integration outside the Pentagon, are smaller cities, which in most cases are close to large agglomeration. Even if regional polycentric integration were to occur around these cities, they do not have a sufficient mass to become a major European node.

This increase in territorial confirms a basic intuitive result, according to which cities in the densest parts of in Europe will have the most to gain from gathering forces with their neighbours. It shows that a general policy promoting regional polycentric integration can lead to greater contrasts between core and the periphery at the European scale.

The possible effects of polycentric integration in absolute terms are illustrated by Map 5.18, which shows the demographic mass of Potential Polycentric Integration Areas, using the same threshold values as in Map 4.1 of the FUA typology. Admittedly, these levels of demographic mass cannot be obtained simultaneously by all PIAs, as their delimitations overlap. However, the map illustrates the potential mass each PIA can aim for.

Here again, the concentration of PIAs with an exceptionally high population potential from the UK Midlands to Northern Italy and over most of Germany is apparent. However, Naples, Barcelona, Leipzig and Berlin also appear in the first category, as the only additional areas outside the Pentagon compared to Map 4.1. Outside the Pentagon, a number of regions concentrate nodes with high demographic potentials: the Ostrava-Katovice area, the areas around Dresden-Prague-Wroclaw and Vienna-Nitra-Budapest, the Mediterranean axis from Valencia to Naples and the Atlantic coastline from Lisbon to La Coruna. At a more narrow scale, potentials can for example be identified in the Glasgow-Edinburgh region, as well as around Lyon and Nantes in France. At the other end of the scale, the relative isolation of cities in the Northern Peripheries, in central Spain outside Madrid, as well as in peripheral parts of Greece, Bulgaria, Romania and the Baltic countries appears even more clearly.

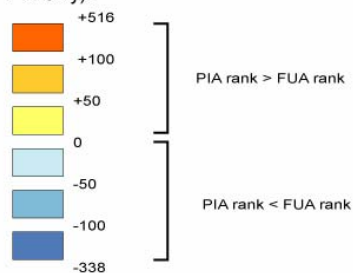
**The effect of regional polycentrism applied across Europe:
Comparing the European rank of individual cities and that of their respective PIA**



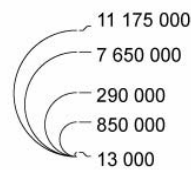
ESPON Nordregio, project 1.1.1, 2004

Partly made with Philcarto <http://perso.club-internet.fr/philgeo>

Difference between the European rank of individual cities (according to their FUA population), and that of corresponding PIA (considering the main node of each PIA only).



FUA population according to national FUA definition



Geographical Base: Eurostat GISCO

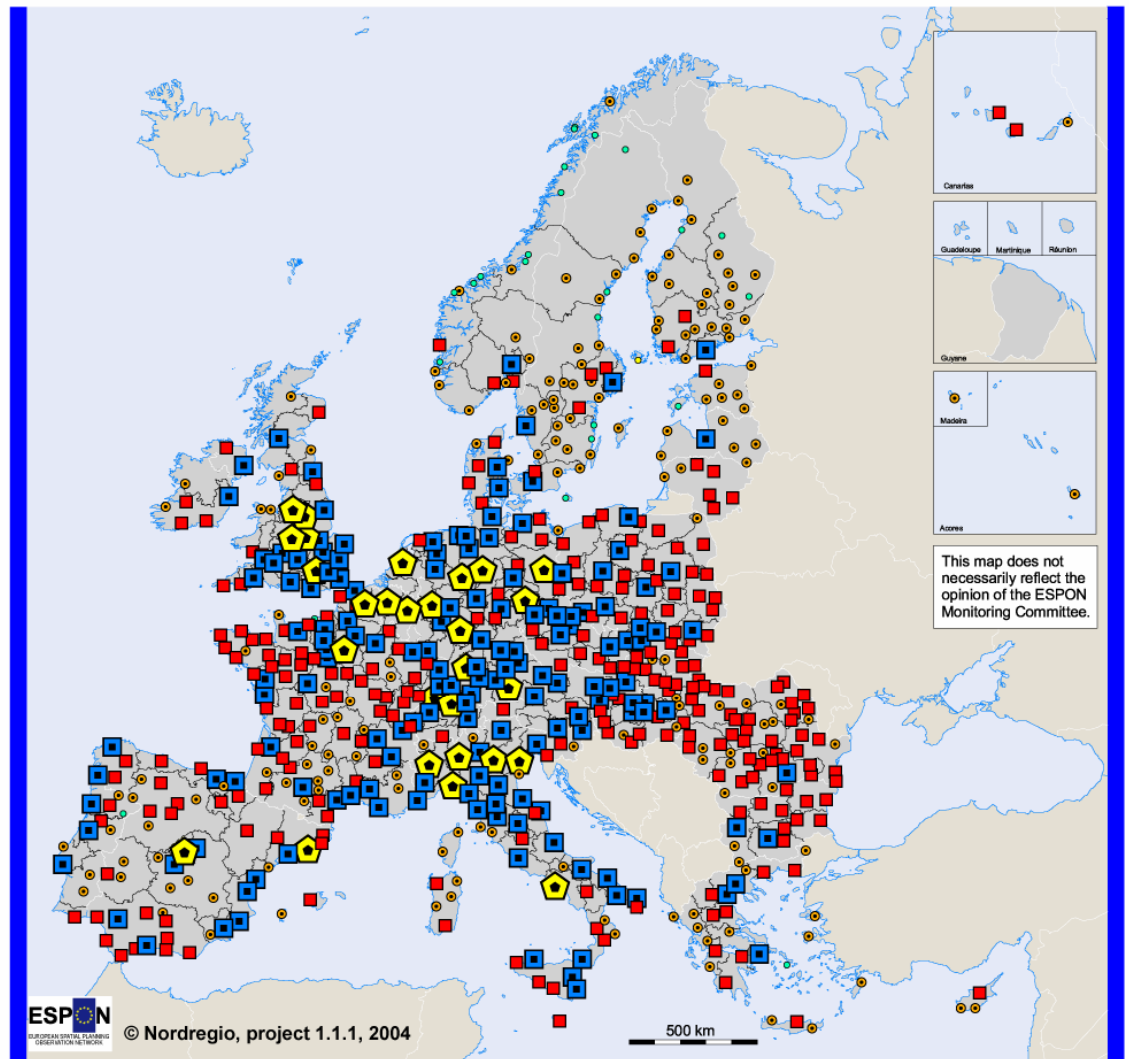
Origin of data: EUROSTAT, National Statistical Offices, National experts

Data sources: Nordregio, ESPON NUTS 5 database

UTH delimitation: RRG
PIA identification: Nordregio

Map 5.17 Uniform polycentric scenario: Change of rank in the European urban hierarchy if all cities integrate with the PIA defined around them

Classification of potential Polycentric Integration Areas according to total population



Number of inhabitants in Potential polycentric integration Area

- ⬠ > 5 million inhabitants
- ⬠ 1-5 million inhabitants
- ⬠ 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

Origin of data:
National Statistical Offices

Data sources:
ESPON NUTS 5 database

PUSH delimitation: RRG
PIA identification: Nordregio

Map 5.18 Classification of PIAs according to their total population

5.3 Polycentricity at the intra-urban scale

Previous chapters have envisaged polycentrism at the European, Regional and National scales. In order to further explore the relationships between the different scales of polycentrism further this chapter focuses on the intra-urban scale. The objective here is to assess the degree of monocentricity or polycentricity within each PUSH area by looking at its settlement structure. In other words, the shape, extent and number of settlements within a PUSH are used as a basis for measuring the degree of polycentricity, considering morphological aspects only.

This type of analysis is based on the assumption that there are four main types of urban structures:

- sprawl is characterised by continuous settlements without particular groupings
- a monocentric settlement structure is characterised by a grouped settlement dominated by a large settlement area with no secondary groupings
- a polycentric settlement structure is characterised by the presence of several larger groups of settlements, which are clearly distinct from each other and spread out across the considered area,
- finally, the sparsely populated settlement structure characterises cities in peripheral parts of Europe, with only few relatively small settlements scattered within the PUSH area and separated by long distances.

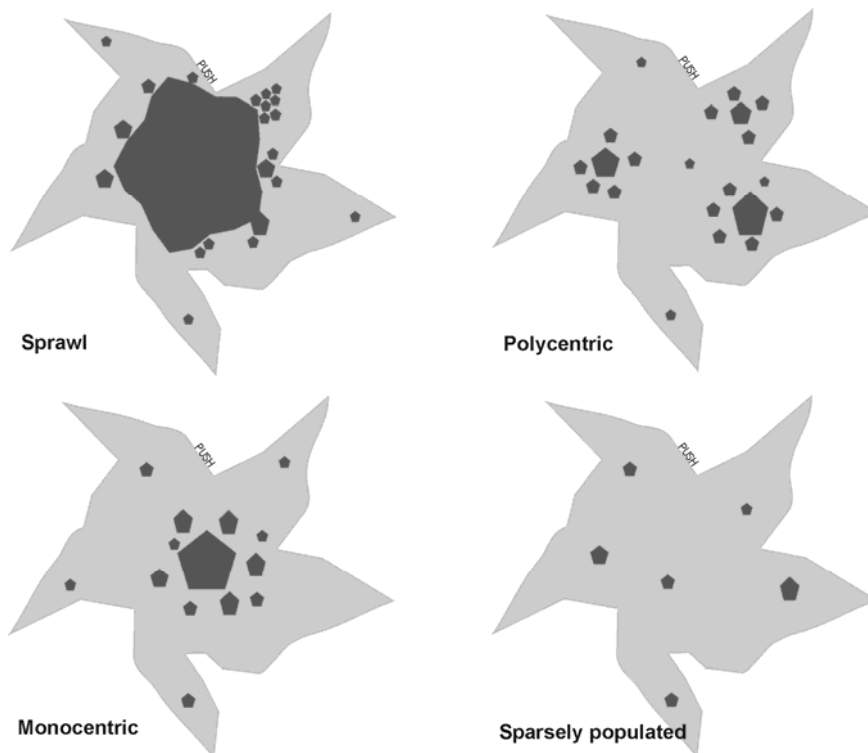


Figure 5.4 Different types of settlement structures (schematic representation).

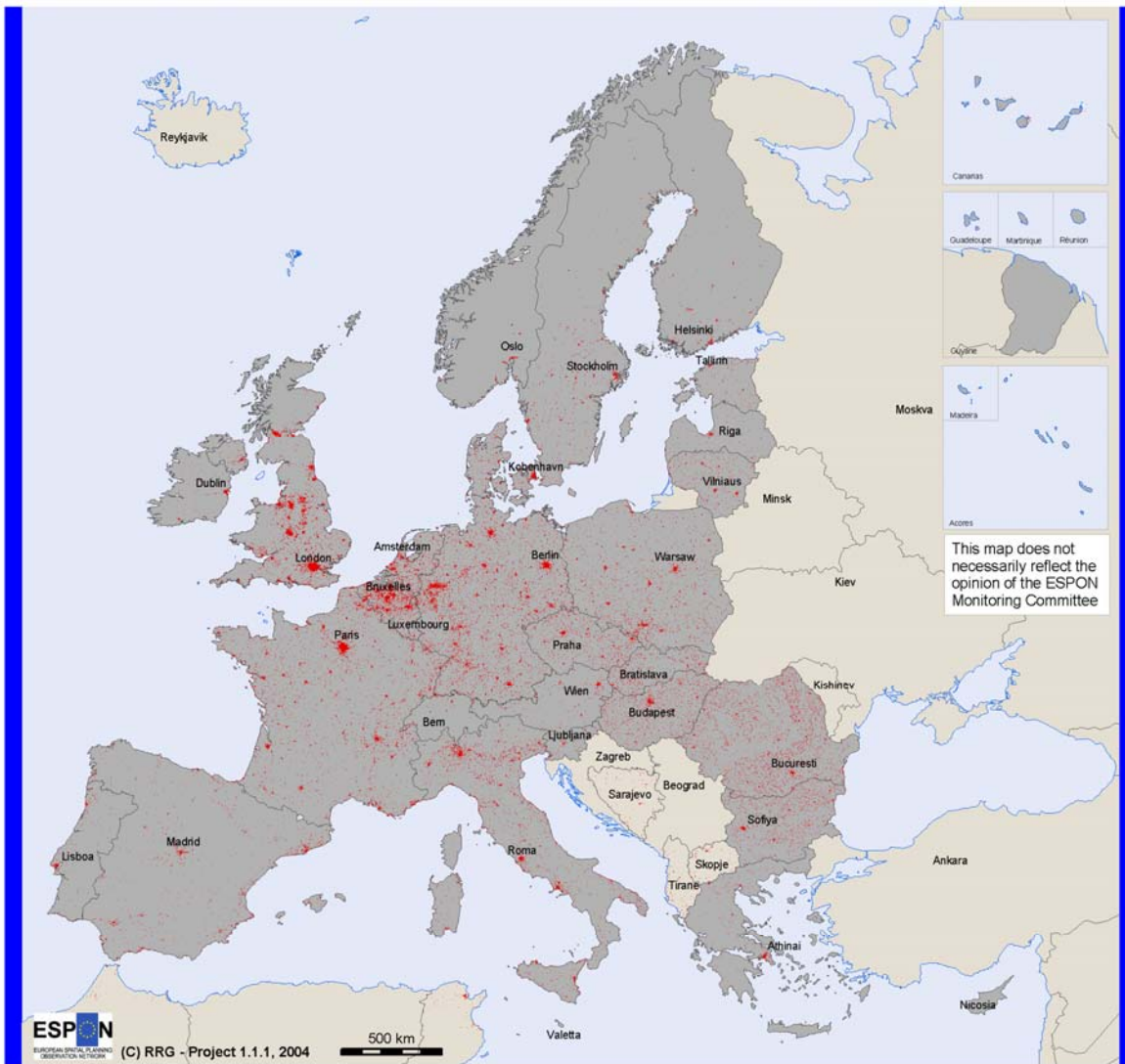
The main land cover data used stems from CORINE Land Cover, with 100x100 m resolution. CORINE Land Cover differentiates 44 classes: 11 of these have been considered to correspond to settlement areas (see table 5.8). As data for Sweden, Norway and Switzerland was missing, the PELCOM land cover layer was used in addition to CORINE in these three countries. PELCOM contains one settlement land use class only which consequently was extracted for the three countries of Norway, Switzerland and Sweden. Due to the poorer spatial resolution of the PELCOM layer however, data for some urban areas in Norway is however missing. Furthermore, no Land Cover data was available for Cyprus and Malta. A total of 1574 PUSH AREAs have therefore been taken into account in this analysis.

Table 5.8 CORINE land use classes representing settlement areas.

Class	Description
1	Continuous urban fabric
2	Discontinuous urban fabric
3	Industrial or commercial units
4	Road and rail network and associated land
5	Port areas
6	Airports
9	Construction sites
10	Green urban areas
11	Sport and leisure facilities

The proportion of the settlement areas in the PUSH areas is shown in Figure 5.16. Percentages range from some 1 % (around most Nordic cities) up to some 40 % in the urban areas of the Benelux countries, as well as the London and Paris metropolitan areas. High proportions can also be found in the Copenhagen/Malmö area, around Budapest, Naples, Lyon, Liverpool/Manchester, Birmingham and some Swiss cities. The average proportion over all PUSH areas is 7.3 %.

Settlement areas in Europe

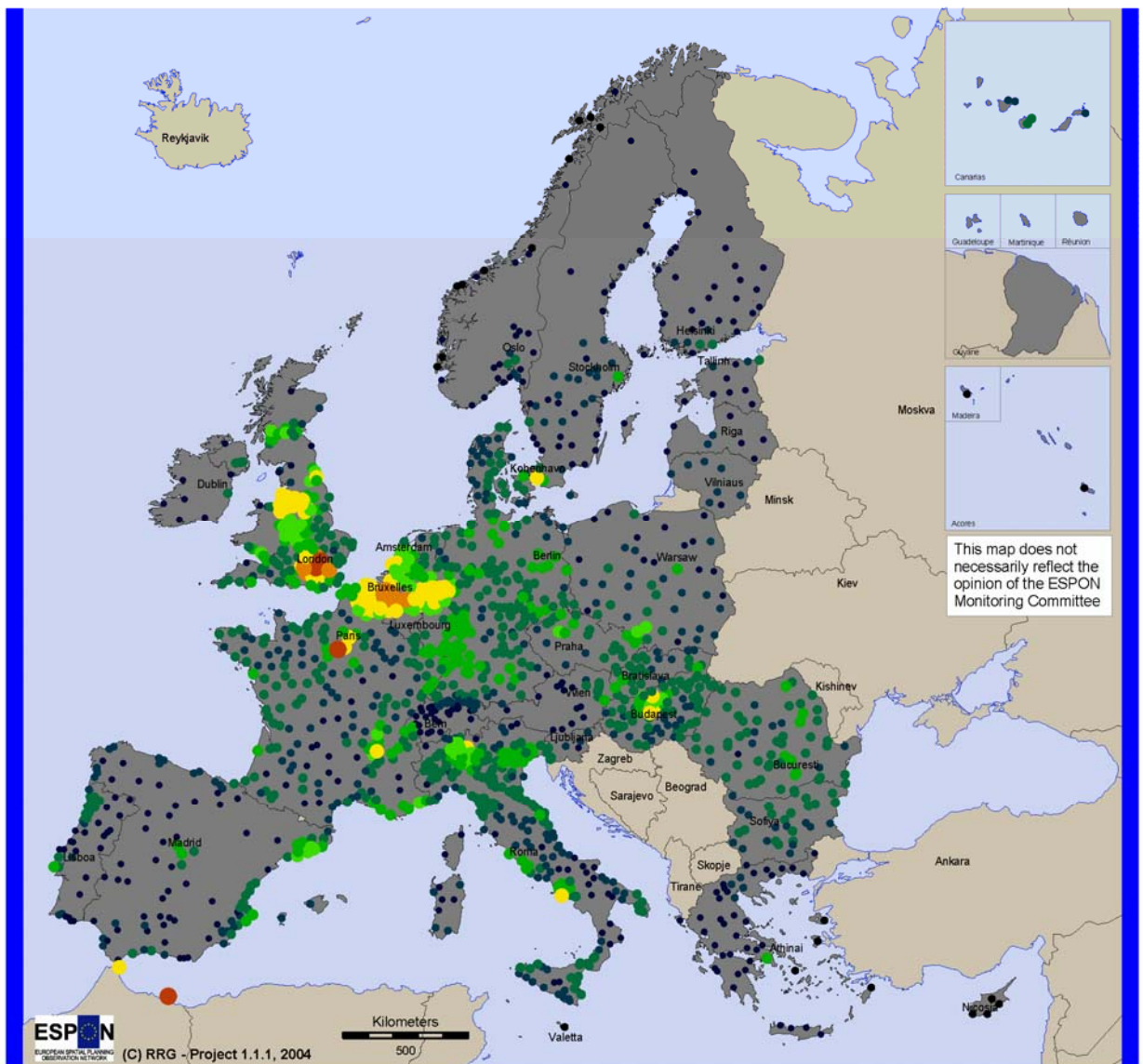


■ Settlement areas

Geographical Base: Eurostat GISCO
 Land use: CORINE,
 PELCOME for NO, SE and CH

Map 5.19 Settlement areas in Europe

Proportion of settlement areas in each Potential Urban Strategic Horizon (in %)



- 0.0 - 2.5
- 2.5 - 5.0
- 5.0 - 10.0
- 10.0 - 15.0
- 15.0 - 20.0
- 20.0 - 25.0
- 25.0 - 30.0
- 30.0 - 35.0
- 35.0 < ...
- n.a.

Geographical Base: Eurostat GISCO
Land use: CORINE, PELCOM for Norway, Sweden, and Switzerland

Map 5.20 Proportion of settlement areas in each PUSH area

Differentiating settlement structures quantitatively

Each continuous zone classified as a built-up area by Corine Land Cover or PELCOM has been identified as a settlement unit.

An *area concentration index* was then calculated for each settlement unit, taking into account both the actual size of each settlement unit and their relative location (i.e. the distances between them). For each settlement unit j the area concentration index C_j is calculated as follows

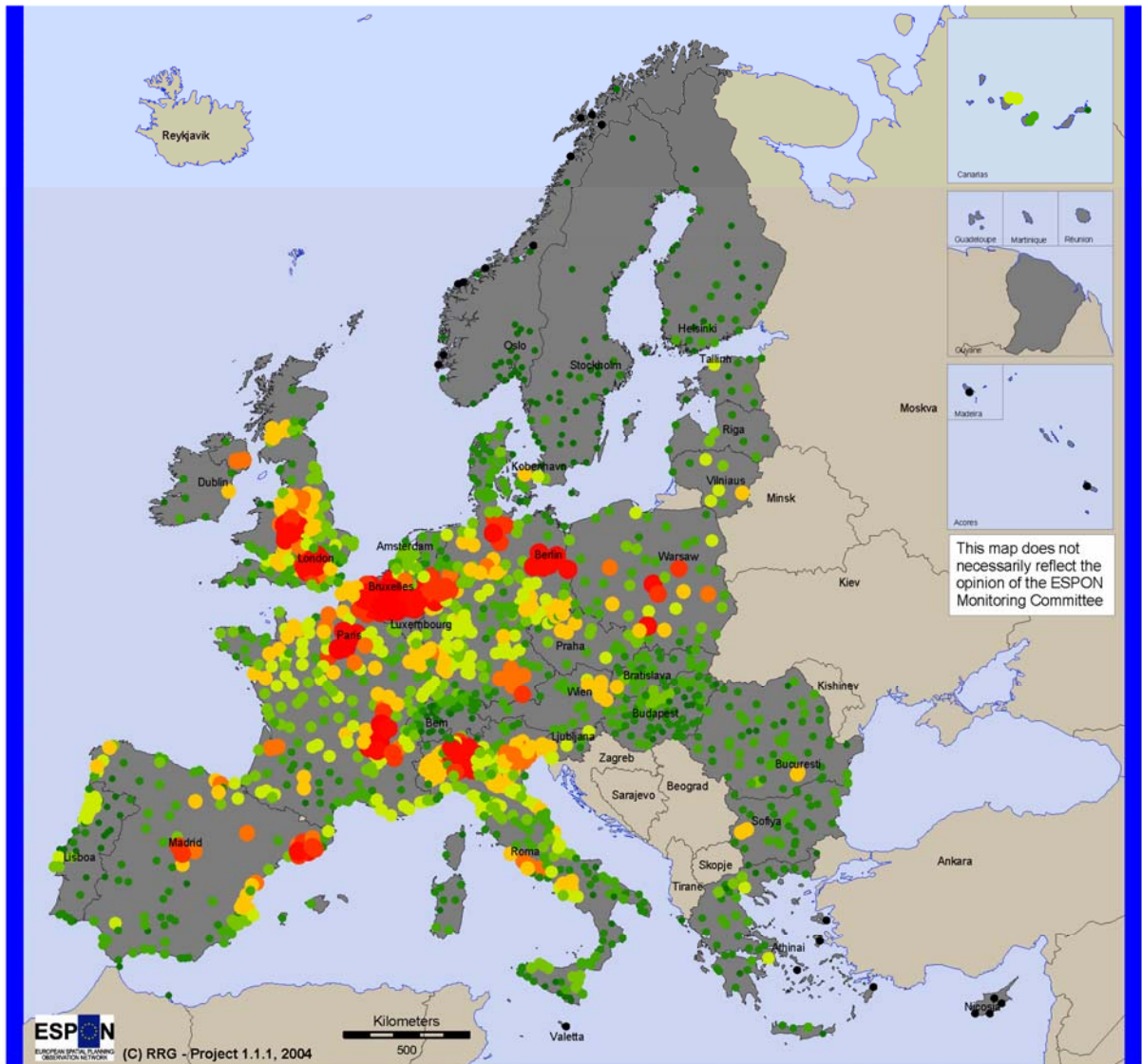
$$C_j = \frac{\sum_k A_k f(d_{jk})}{\sum_j \sum_k A_k f(d_{jk})} \quad (1) \quad \text{with} \quad f(d_{jk}) = \frac{1}{d_{jk}} \quad (2)$$

where A_k is the area of settlement unit k (in km^2) and $f(d_{jk})$ is a function of the distance between settlement units j and k and d_{jk} measured in km.

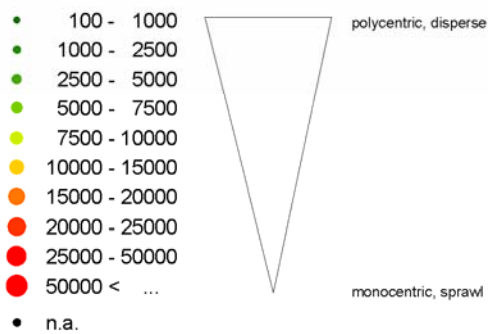
There are as many concentration indices for each city as there are settlement units within its PUSH area. Furthermore, the range of values depends on the total number of settlement units. In order to obtain comparable values for the entire study area, all indices were standardised according to the average index within each city's PUSH area. The ratios between the maximum and minimum values in each PUSH area and the average value were then calculated.

Map 5.21 shows the standardised maximum *area concentration indices* for each PUSH area. As per definition the maximum standardised index is always greater than the average, all index values are above 100. Indices close to 100 indicate polycentric, dispersed or sparsely populated (rural) settlement structures, i.e. a rather even distribution. The higher the index value, the more indications are given for a monocentric settlement structure or even for sprawl.

Maximum area concentration index (PUSH=100)



Geographical Base: Eurostat GISCO



Map 5.21 Standardised maximum concentration index (average value within each PUSH area = 100)

Using the concentration index, one cannot however differentiate between sprawl and monocentric settlements structures on the one hand, or between polycentric and dispersed settlement structures on the other. Therefore, two other indicators have been added to the analysis to determine the degree of polycentricity of PUSH areas, namely the proportion of the total settlement area on the overall PUSH area (to differentiate between monocentric and sprawl and between rural and non-rural), and the ratio between the size of the second greatest and the greatest settlement area (to differentiate between monocentric and polycentric), as explained further below.

Altogether, three types of indicators were combined to assess the degree of polycentricity:

- the standardised maximum area concentration index,
- the proportion of the settlement area on the total PUSH area,
- the ratio between the size of the second greatest and the greatest settlement area.

Using this indicator composition, the four types of settlement structures can be distinguished as described in Table 5.9.

Table 5.9 Criteria for the classification of PUSH areas

Category	Criteria
Sprawl	Maximum standardised area concentration index > 45,000 and Proportion of settlement area > 20 %
Rural	Maximum standardised area concentration index <500
Monocentric	Maximum standardised area concentration index >500 and < 45,000 Ratio area second greatest/greatest unit < 0.5
Polycentric	Maximum standardised area concentration index >500 and < 45,000 Ratio area second greatest/greatest unit > 0.5

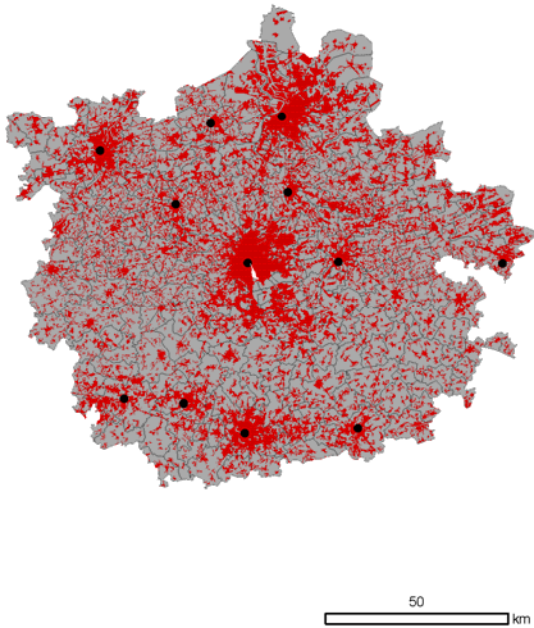
A classification in four categories

Sample maps of PUSH AREAs representing sprawl (e.g. Brussels), monocentric settlement structures (e.g. Hamburg), polycentric settlement structures (e.g. Rotterdam) and rural settlement structures (e.g. Gjøvik) are provided in Map 5.22 that overlays the Functional Urban Areas with the relevant settlement areas.

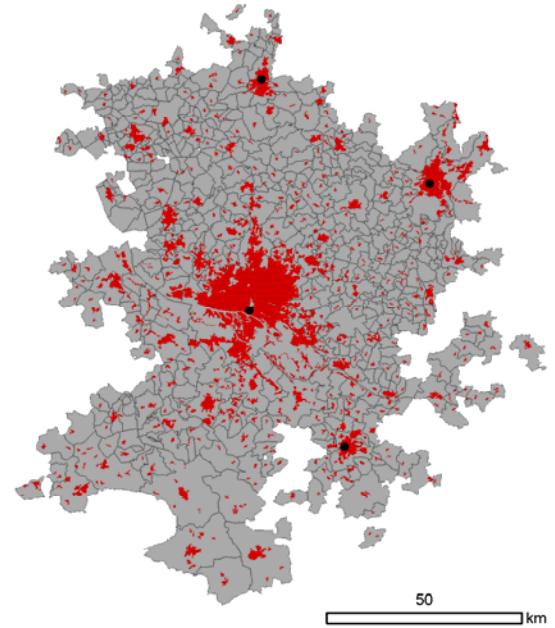
When comparing the four sample maps it is obvious that in case of the Brussels PUSH area there is comparatively little space left between the settlements; although Brussels itself shows the greatest proportions of continuous settlements, there are other cities close by (such as Antwerp) which contribute to urban sprawl. In the case of the Hamburg PUSH area it becomes clear that this is a rather monocentric one dominated by Hamburg; the settlements of the cities of Kiel and Lübeck (the next greatest cities in the Hamburg PUSH area) are significantly smaller than that of Hamburg itself. In contrast, the Rotterdam PUSH area must be considered polycentric, as it is comprised of several equally sized continuous settlement areas (Rotterdam, the Hague, Amsterdam, Utrecht etc.). Finally, the Gjøvik

PUSH area represents the “sparsely populated” category areas with only few small settlement areas.

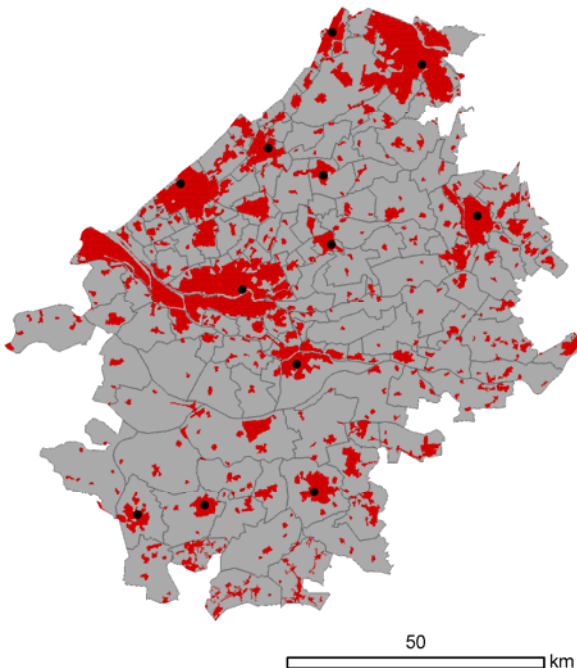
Sprawl: The Brussels PUSH



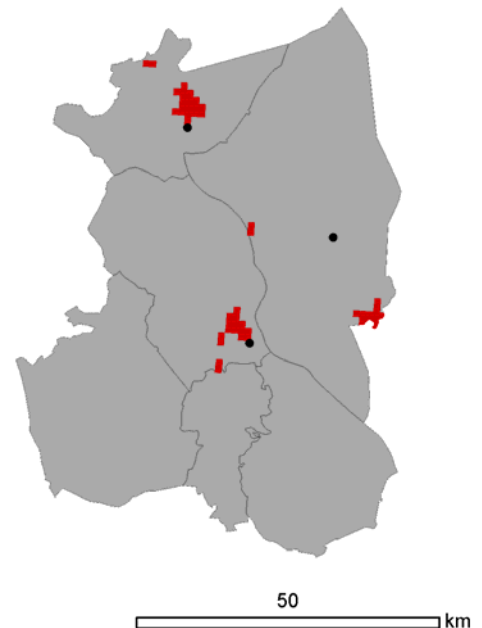
Monocentric: The Hamburg PUSH



Polycentric: The Rotterdam PUSH



Sparsely populated: The Gjovik PUSH

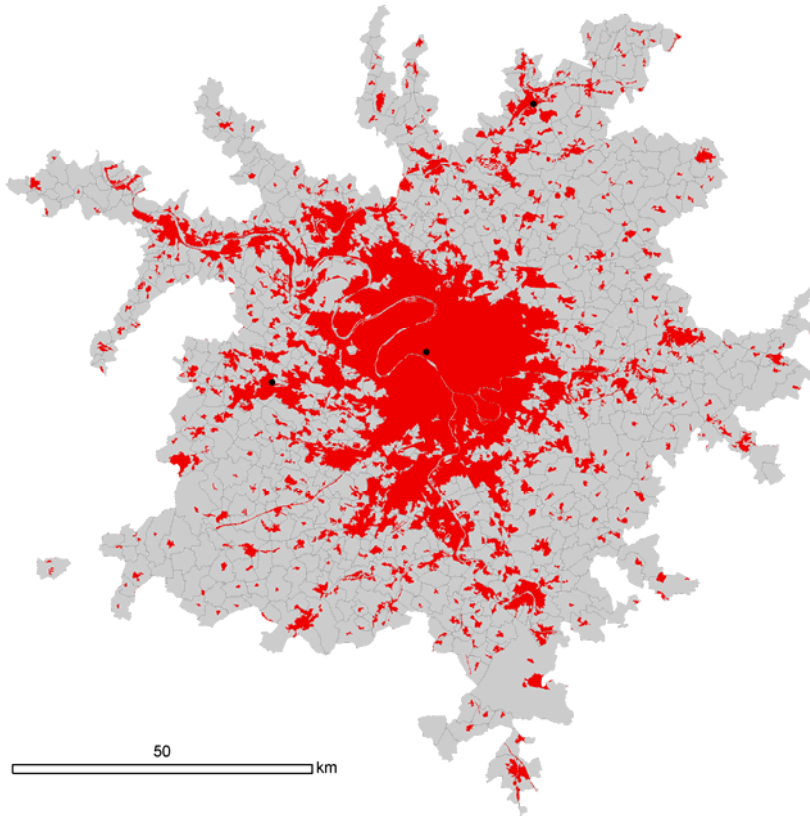


Map 5.22 Representative cases for each class in the typology

However, beyond these easily identifiable cases for each category, a number of methodological challenges need to be mentioned here. Firstly, the spatial resolution and accuracy of both the CORINE and PELCOM land use layer lead to some the distortions (particularly for Norway, Sweden and Switzerland, where PELCOM data is used). Both layers do not include small settlement units that fall under a certain accuracy threshold of the

original satellite and aerial images used to derive these layers. Thus, there is a tendency to underestimate the total settlement area within a particular PUSH area.

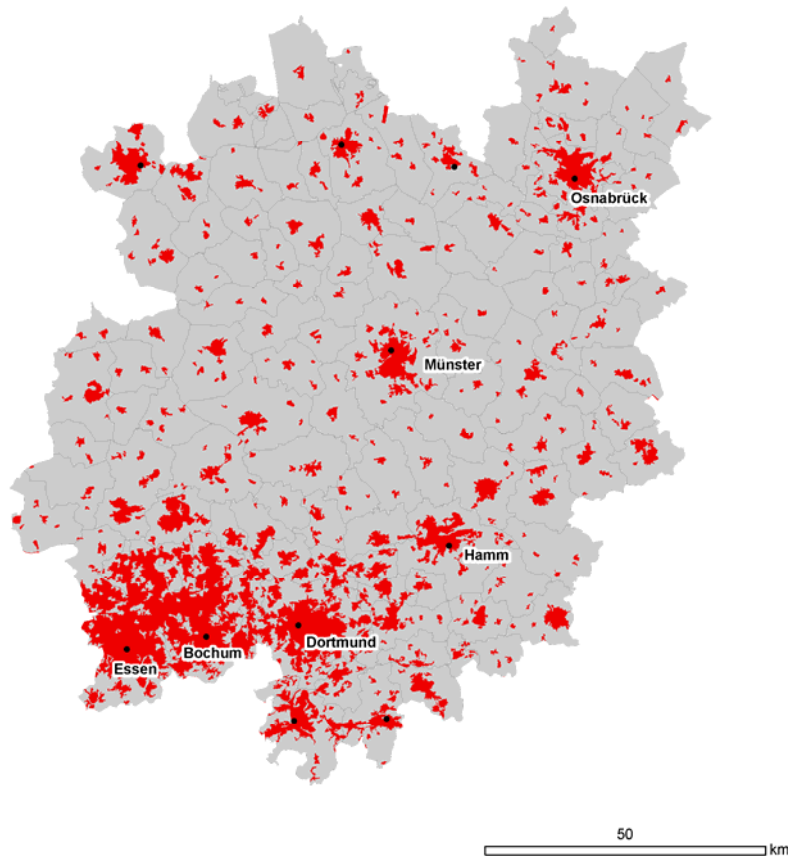
Secondly, some of the settlement boundaries in both layers seem counter-intuitive. For example, according to the methodology applied, the Seine River subdivides Paris into several individual settlement units, which significantly reduces the value of the maximum standardised area concentration index (see Map 5.23). More generally, differentiating spatial objects which link two settlement units, on the one hand, and those that separate them from each other, on the other, is a difficult task, especially when satellite imagery is the only available source of information, with the separation of spatial entities often being a matter of perception rather than relating to the physical layout of the city.



Map 5.23 Settlement areas within the Paris PUSH area

Thirdly, the study area for each city was delineated using a 45-minute commuting distance as the delimitation criterion. This can be problematic in some cases, particularly with regard to medium-sized cities close to polycentric agglomerations. Münster offers a good example of this: The city of Münster is the central agglomeration for the area called 'Münsterland' which is basically a rural area dominated by agriculture. From the point of view of the 'Münsterland', the city of Münster would be considered monocentric, yielding strong functional linkages to the surrounding smaller municipalities. However, as shown by Map 5.24, the Münster PUSH area encompasses major Ruhr-Area cities such as Essen, Bochum, Dortmund and Ham. The PUSH area of Münster will therefore be classified as polycentric according to the above mentioned methodology. This is not necessarily problematic, as it corresponds to a geographic reality. One should however keep in mind the fact that the

classifications do not necessarily reflect the spatial pattern of the urban hinterland or the area of influence as it is perceived in each city.



Map 5.24 Settlement areas within the Münster PUSH area

Finally, in more peripheral areas, settlement areas hardly function as a proxy for their importance. Indeed, even major regional centres, listed as PUSH areas in this report may have a geographical extent that is equal to that of minor surrounding towns. This makes it difficult to differentiate between polycentric and monocentric situations in these areas, and this then is the main reason for the introduction of the “sparsely populated” category.

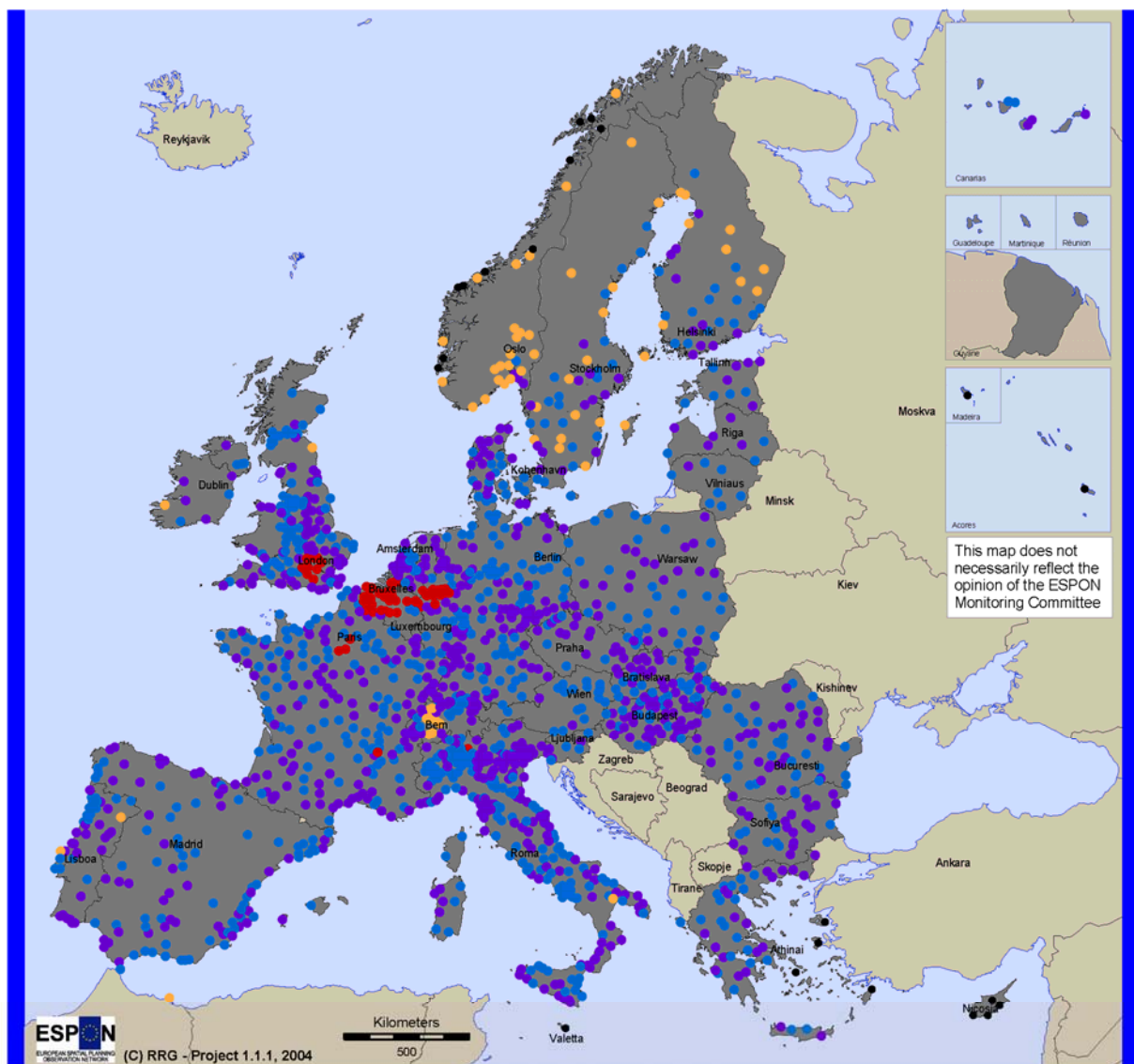
These points must be taken into account when interpreting the classification of urban settlement patterns based on available satellite imagery. While the results concerning the ‘sprawl’ category can be considered reliable, the differentiation of monocentric and polycentric situations can be problematic.

Classification results

The classification results are shown in Map 5.25. Urban settlements patterns around 58 FUAs are characterised as ‘sprawl’ (located in Belgium, the Rhine-Ruhr area in Germany, around Paris and Lyon in France, as well as London), while 61 PUSH areas are considered sparsely populated (rural) (mostly located in the Nordic countries and Switzerland, and to a lesser extent in Ireland, the UK, and southern Italy). We find monocentric settlements in 716 cases, and polycentric ones in 739 cases. The latter two categories are more or less evenly scattered across Europe.

Notwithstanding the previously described reservations concerning these results, the lack of correlation between polycentric and monocentric urban settlement patterns at the intra-urban scale, and previously described polycentric and monocentric patterns at the regional or national scale is striking. This suggests that intra-urban settlement patterns do not determine the capacity of a city to participate in wider-scale polycentric integration.

Classification of PUSHs according to their settlement structure



Geographical Base: Eurostat GISCO

- Sprawl
- Monocentric
- Polycentric
- Sparsely populated
- n.a.

Map 5.25 Classification of PUSH areas according to their settlement structure

5.4 Conclusion

The approach based on PUSH areas demonstrates that, from a polycentric perspective, the importance of urban areas as nodes for territorial development stems not so much from their internal mass, structure or functions, as from the way in which they position themselves in relation to their context. The urban node is thereby not so much a spatial concept, to be differentiated from a hypothetical rural context, as an organisational point of reference around which a variety of partners can gather to form the basis for a balanced territorial development in a wider perspective.

Unsurprisingly, a regional polycentric integration policy applied in a uniform way would increase the contrasts between the core and the periphery at the European scale. Nonetheless, a number of cities and urban regions outside the Pentagon have a clear potential for regional polycentric integration. Other areas, and especially those with the lowest degree of urban endowment, must focus more specifically on smaller cities, towns and other types of settlements in their polycentric policies.

The identification of the European core area, which would benefit most from regional polycentric integration, does not usually correspond to the Pentagon. In most maps, the core area identified comprises all of the Midlands in the North, and most of Northern Italy in the South. In the New Member States, extensions of the core area are identified along two main axes, from Leipzig to Ostrava-Katowice, and from Vienna to Bratislava and Budapest.

Polycentric integration initiatives are more likely to develop inside this "extended Pentagon area" than outside it, creating even greater contrasts between the European core and the rest of the European territory. Furthermore, if polycentric integration based on spatial proximity were to be successfully implemented in the more peripheral regions, this would create a further contrast between these areas and the rest of the peripheries.

6 Examples of European Network Dynamics

6.1 Main objectives

The objective of this chapter is to illustrate how exchange and co-operation networks between urban areas in Europe shape the way that society relates to space and their role in reorganising territorial structures. The aim then is to understand whether these re-organisational trends support or counteract polycentric structures at the European and national levels.

The vast majority of the existing body of research in this general area seeks to reproduce knowledge on the cities themselves, to evaluate their strengths and weaknesses, and to estimate their growth rates. Consequently, a large majority of studies analysing European cities basically set out to produce and/or reproduce urban typologies.

Polycentricity however cannot be reduced to this single, morphological, dimension. One should always be aware of the need to take into account the second complementary dimension of polycentricity, namely, the networking aspect.

Consequently, in this chapter, we place our study in the context of the relational logic of territories. Taking Castells' (1998) expression in hand, we would rather privilege the "space of flows" than the "space of places". As such, polycentricity is analysed through the capacity of cities to network, i.e. their capacity to be included in multiple networks of relations.

Until now, the analysis of city networks in Europe and of their organisation remains incomplete. As such, it is perhaps better to focus on a few networking expressions that act in favour of the emergence of a polycentric integration of urban areas in Europe. Our work is thus directed towards *some examples* of specialized and thematic networks and cooperation, and is directed by the following two questions:

- How can specialized and thematic networks in Europe contribute to the emergence, or to the reinforcement, of new functional models of organisation?
- How can these types of networking contribute to the outcomes of polycentric organisation at the European and national levels?

We do not claim that these examples give a representative picture of how European urban networks function. They are simply meant to illustrate the

limitations of the morphological approach thus providing a necessary backdrop to the analyses presented above in the present chapter.

6.2 Urban networking through air traffic

Our first example of network dynamics is air traffic. Air traffic is a synthetic indicator of different societal trends. Consequently, it is an important vector of spatial integration that could occur at the European, as well as at the world level. Many internal differentiations in the European space are related to the flows between Europe and the rest of the world.

6.2.1 European space

Over the last decade we can plot a trend towards increasing polarization flows around London and Paris. The primary lesson provided by the evolution of the number of passengers between 1990 and 2000 on the main European networks (map 6.1) is however that the European centre-peripheries model cannot alone describe the complexity of the organization of European urban networks. Of course, the density of connections is still maximal between the cities of the European axis, but one should notice that the relations between the "peripheral" capitals –political and economic - are also important. The highest growth in numbers of passengers can be observed between the "peripheral" capitals and the "central" capitals.

Consequently, the evolution of air traffic shows that many capitals such as Lisbon, Madrid, Barcelona, Prague, Munich, Berlin and Warsaw are increasing their traffic more quickly than are the "central" capitals. This means that those cities are not only growing faster but that they are also becoming dynamic vectors of European integration.

These results suggest then that the integration of urban networks in Europe, through air connections, is increasing, even if this integration is carried out in part in accordance with a pyramidal mode.

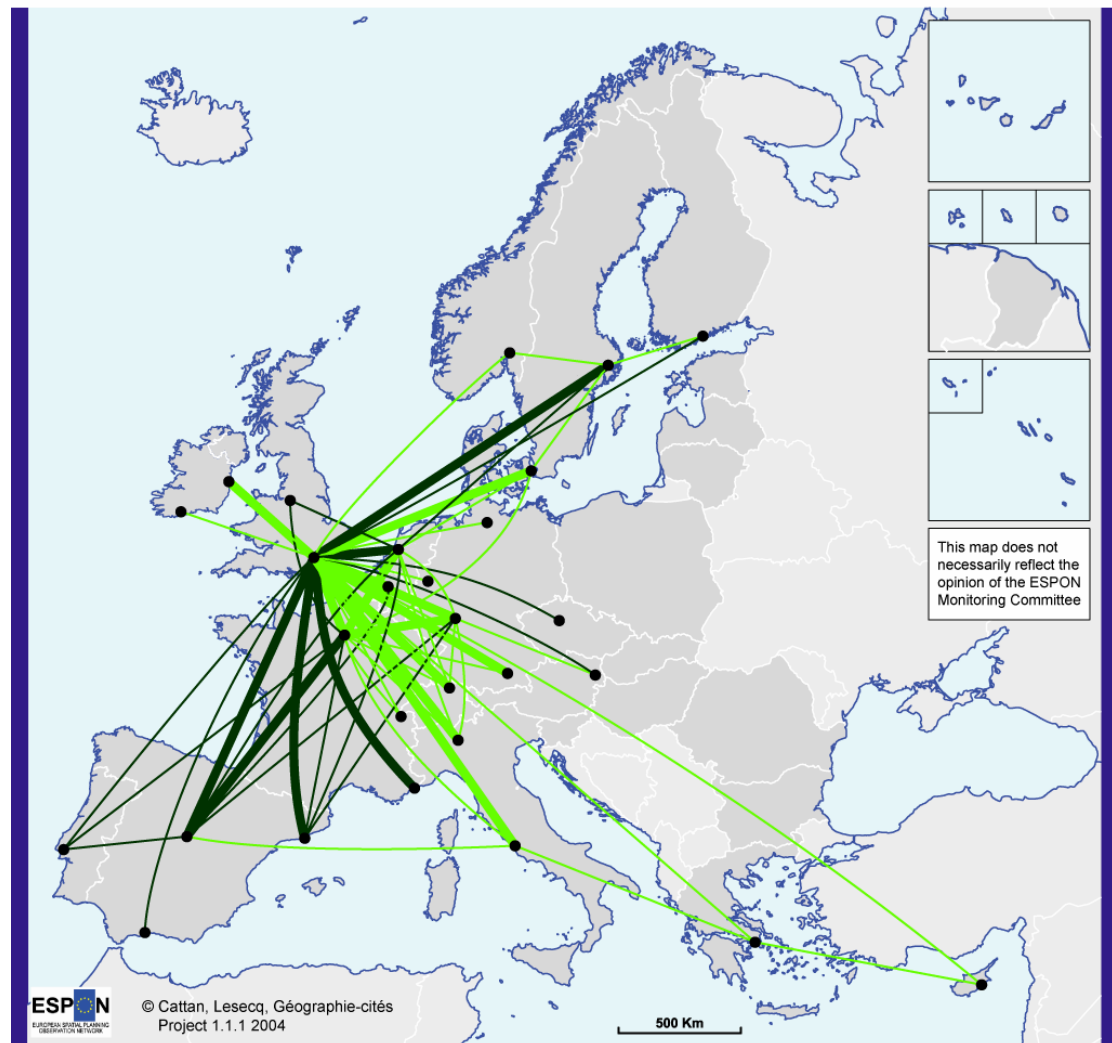
6.2.2 Europe in the world system

The most significant flows link European cities to Northern American and South Eastern cities. The position of London as the most important gateway between Europe and the rest of the world is manifest. London concentrates more than half of the 20 most significant flows that link Europe to the rest of the world (map 6.2).

However, two other important gateways can be identified, namely Paris and Frankfurt. One should also note that Madrid plays a significant role here also, as

the only European hub that can exhibit significant links with “southern” cities such as Havana and Buenos Aires. This is due to historical, cultural and linguistic factors, and thus qualifies Madrid as an alternative European gateway.

Evolution of main air flows

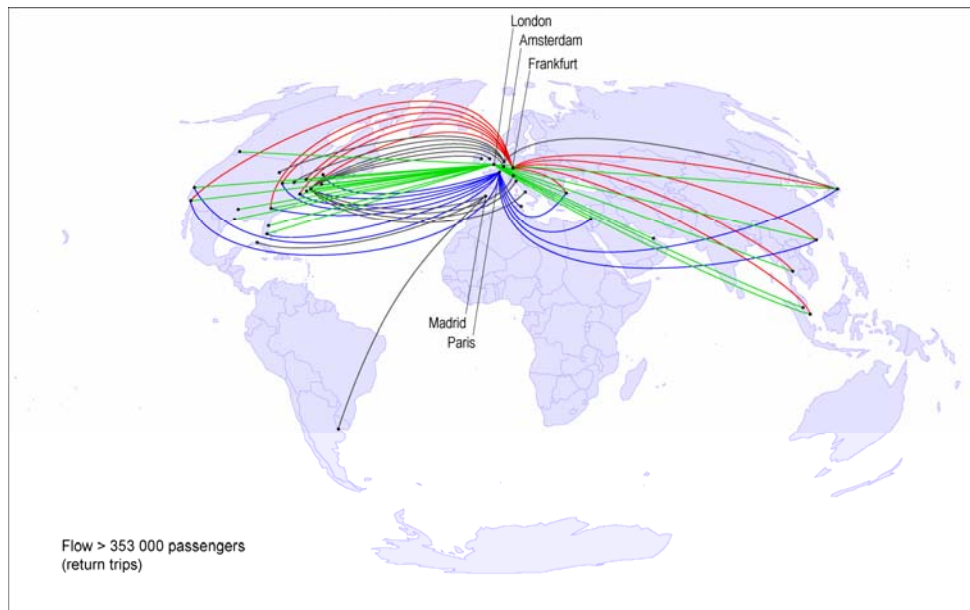


Passengers 2000
(thousands, return trips)
█ > 1000
█ < 1000

Evolution 1990-2000 (%)
█ > +100
█ < +100

© EuroGeographics association for the administrative boundaries
 Origin of data: ICAO

Map 6.1 Evolution of main airflows



Map 6.2 Most important international-European air routes in 2000

European urban network models of Integration and Air Traffic

The first European urban network pattern of integration through air traffic is that of the "North-Western" capitals, which can be termed *integrated polycentricity*. Capitals can be political, such as Paris and London, or economic such as Frankfurt.

The second pattern concerns the networks that link the Southern, Western and Northern capitals to the North-Western ones (for example: Madrid to London and Paris, or Stockholm to London) as well as the flows that link the "peripheral" capitals to each other (such as the flows between Lisbon, Madrid, Barcelona, Rome, and Athens on the one hand and Stockholm, Oslo, Copenhagen, and Helsinki on the other). These two models combine and provide a type of integration that we can call *metropolitan polycentricity*.

The third pattern of urban networking through air traffic corresponds to the exchanges that link the cities from the new accession countries to established EU cities. These connections are done according to a model of integration that corresponds to the concept of *monocentric integration in a polycentric system*. What is interesting here is that some accession cities connect directly to the central capitals, while others first connect to the closest EU capital, drawing a regional model of integration (as for example do the Baltic cities towards Stockholm).

Consequently, we have to underline that various types of polycentricity are occurring across Europe. One cannot understand the processes of territorial

integration without taking into account the complexity of each of these various types.

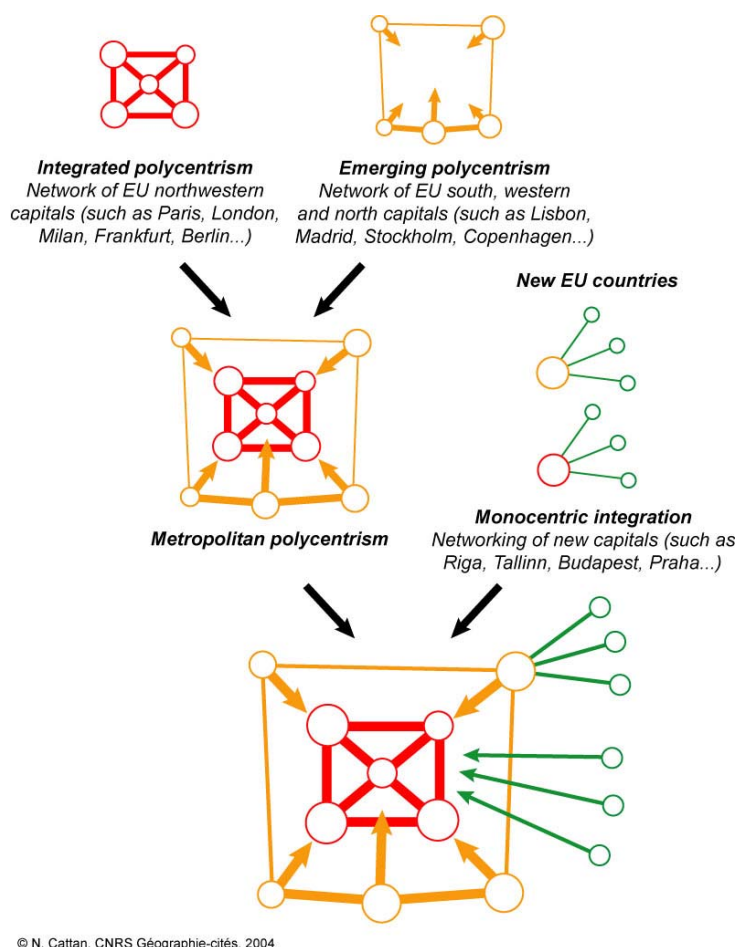


Figure 6.1 European urban network models of integration and air traffic

6.3 Urban networking linked to university cooperation

Our second example of network dynamics is based on an analysis of exchanges between universities established within the ERASMUS programme. As we did previously, we again stress that this analysis is not claimed to be representative of European urban networks; is it simply meant to illustrate some aspects of how such networks work.

The emergence of the knowledge-based society demonstrates the importance of having access to information and to knowledge. Thus, for regional development and spatial planning, access to knowledge becomes as vital as access to transport infrastructures. "It has become mainstream thinking that universities have to be responsive to local needs of learning and production and to take an active part in

forming the *institutional milieu* of so-called *learning regions*" (Groth and Alvheim, 2000). In this context, the challenge of cooperation between universities is becoming a priority with regard to urban and regional development strategies.

6.3.1 European scale

Our results on university networking on the European scale concern the exchanges of students in the context of the ERASMUS programme. The majority of studies that have already analysed student flows in Europe have paid attention to the national scale. Thus far, no study has undertaken to cover all of Europe, by analysing the whole matrix of exchanges between universities at sub-national scales.

Analysing the main flows of student exchanges, the main results show (map 6.3 and 6.4)

- A polycentric structure at the Western European level that corresponds to the network of capitals.
- A very significant attraction towards Madrid, Barcelona and Valencia that could be partly explained by heliotropism and partly by the image those cities provide.
- A very important attraction towards Paris and London

It is important to underline that although the major domination and dependence structure is strongly polarized, one can also observe significant transversal links. Therefore, the dynamic of student exchange patterns can be considered to support the emergence of a polycentric structure of urban networking at the European level.

6.3.2 National scale

The spatial pattern of the university distribution in the national urban system is illustrated by figures 6.2 and 6.3. Both graphs obviously show that in small European countries university exchanges are concentrated to one city - often the capital of the country. However there are several relevant exceptions.

By and large, a significant proportion of ERASMUS students welcomed in countries such as Bulgaria, Slovakia, Latvia and Luxembourg cluster in a single city, indicating that the university spatial distribution is strongly concentrated and thus revealing a monocentric spatial university pattern. The position of the Czech Republic and Hungary, with more than 70% of their received students concentrated in Prague and Budapest is interesting here to underline. At the opposite side of graph 1, less than 25% of ERASMUS students are concentrated in the capitals of large European countries such as Germany, the UK, and Spain. However one should also underline that in Sweden and in The Netherlands

concentration is again weak, indicating that several other cities have a competitive and attractive potential that competes with university courses offered in the capital. In these countries, the spatial pattern of universities can thus be qualified as polycentric.

Combining this first piece of information with the analysis of the weight of the 5 most attractive cities of each country for ERASMUS students, one can distinguish three categories of in the national university spatial structure:

- Monocentric: dominated by one large university town such as Paris in France and Vienna in Austria;
- Intermediate: concentrated in a few cities such as Madrid and Barcelona in Spain;
- Polycentric: distributed throughout a dense network of university towns, for example in United Kingdom and in Germany.

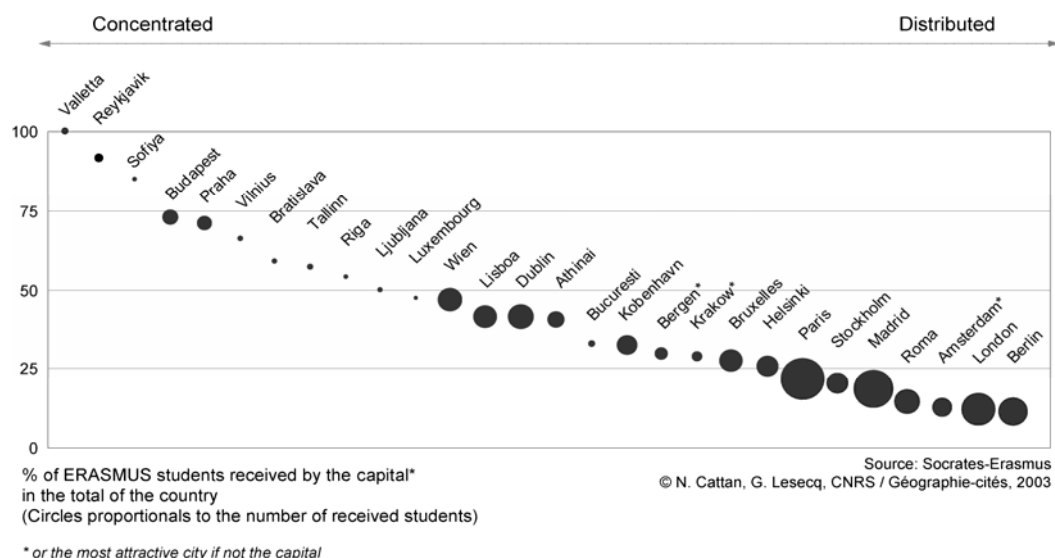


Figure 6.2 The weight of the capitals* in the national university system

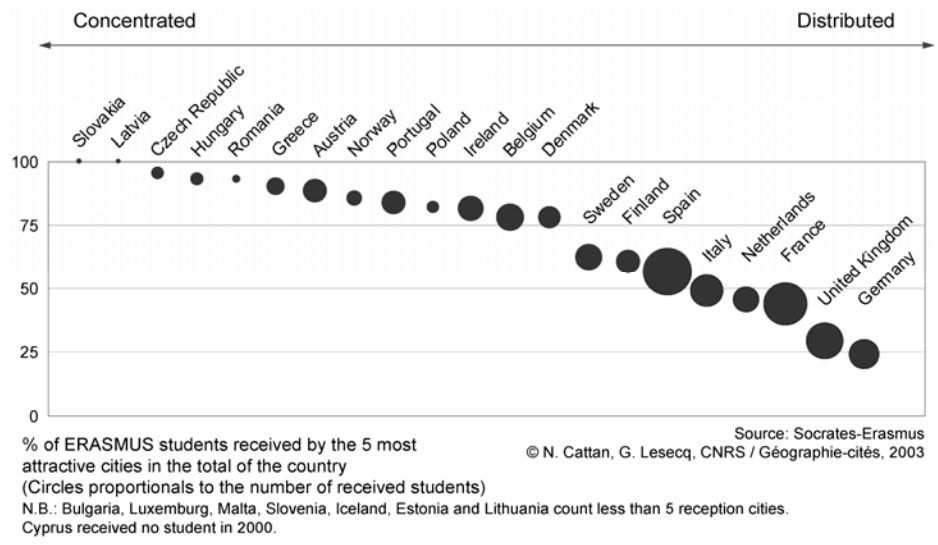


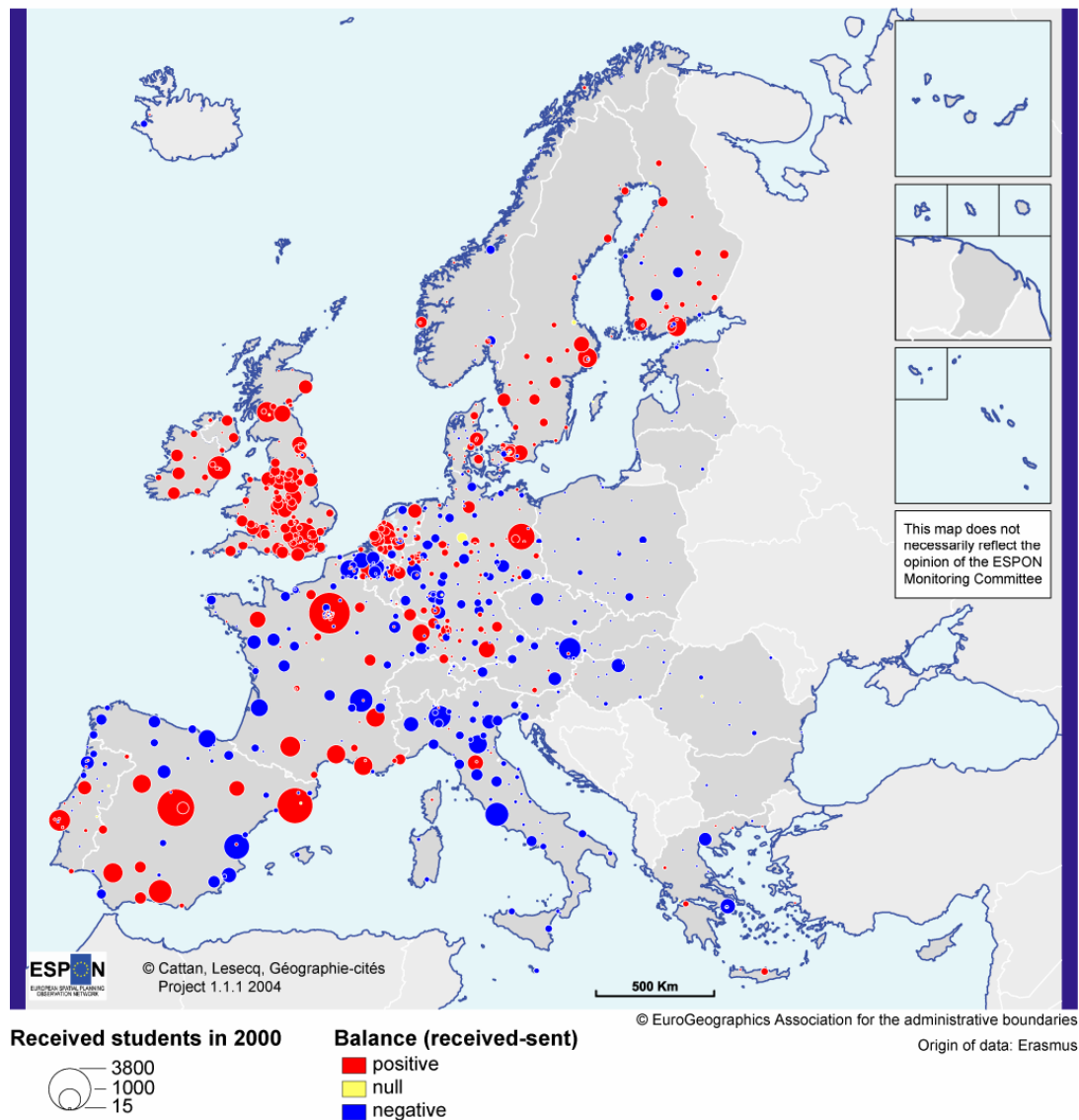
Figure 6.3 The weight of major cities in the national university system

Main Erasmus networks



Map 6.3 The main Erasmus networks

The attractiveness of cities for Erasmus students



Map 6.4 Attractiveness of cities for Erasmus students

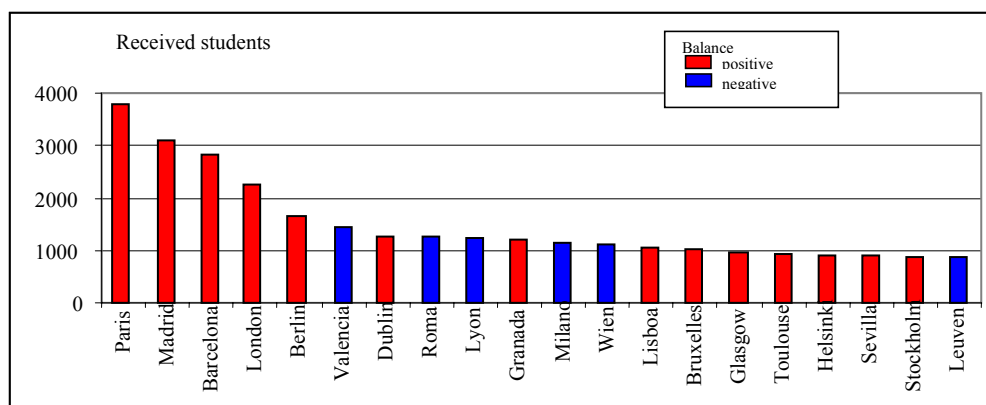


Figure 6.4 The 20 most attractive cities for Erasmus students

6.4 Urban networking furthered by Interreg cross border and transnational cooperation

6.4.1 Examples of cross border networks

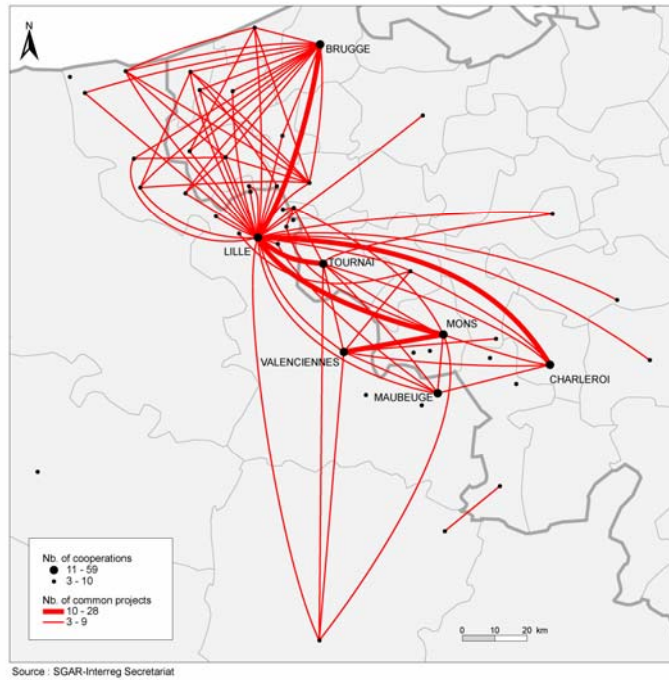
New relations between EU cities separated by borders have emerged in recent years in the context of ongoing European integration. It is however not that easy to undertake an overview of these relations because of questions over the availability of data. Relations take different shapes among cities and countries. Moreover, such attempts at cooperative relations are often led by different partners (e.g. local municipalities, administrations, civil society, associations, firms). Based on the INTERREG IIA programmes (1994-1999), two cross-border zones have been taken into consideration:

- Franco-Belgian (215 projects)
- Franco-German-Swiss (mainly Saar-Moselle, PAMINA and the Rhin Supérieur Centre Sud area: 94 projects)

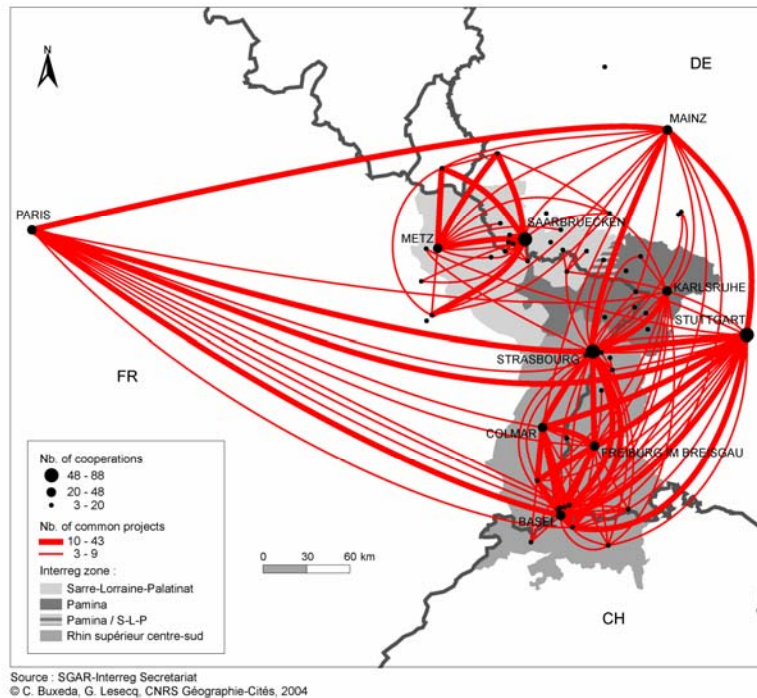
An overview of the number of projects per town shows that for both borders, major cities are the ones that attract the majority of projects. For the Franco-Belgian cross-border area, one can identify Lille (F), Valenciennes (F), Mons (B) and Charleroi (B). Each of these towns is involved in more than 24 projects. For the Franco-German-Swiss border region we can see that, Freiburg-in-Breisgau (G), Strasbourg (F), Mulhouse (F) and Basle (S) attract the highest number of projects.

However, although the major cities attract an important number of projects, medium and small cities are also very active in setting up cooperative projects in the context of the INTERREG programme. Indeed, what is interesting to notice here is that if both cross-border zones taken into account, a large number of INTERREG cooperative associations emerge between medium and small towns (map 6.5 and map 6.6).

One can also highlight here the role of medium and small sized towns in the emergence of a polycentric urban structure and in networking at the local and regional levels.



Map 6.5 Main French-Belgian instances of cooperation in Interreg IIa (1994-1999)



Map 6.6 Main French-German instances of cooperation in Interreg IIa (1994-1999)

6.4.2 Models of Cross-border urban cooperation

To clarify the types of polycentricity produced by INTERREG cross-border cooperation, one can identify three kinds of cross border networks. According to the size of the different cities involved in the cross-border cooperation, their administrative and economic functions, and also their distance to the border, three main types of networking are highlighted.

- The first type corresponds to an *integrated polycentricity* where proximity does not matter. The main cities in terms of population size or administrative function are in contact via a large number of projects. Their physical proximity to the border or to each other has no major influence on their relations.
- The second type is that of an *emerging polycentricity*. Small and medium-size towns located close to the border are increasingly involved in Interreg IIA projects. The closer they are to the border, the more they enter into some form of relations with each other.
- The third type of networking through trans border cooperation is related to an *intra-urban polycentricity*. When a large city is located close to the border, there are often strong relations between it and the small towns on the other side of the border. This is the case with the French city of Lille, and also with the Swiss city of Basel.

These types of urban networks are the most typical in the France-Belgium and France-Germany contexts. There are numerous other kinds of relations that do not fit into this model, but in the majority of cases the links were established along one of these three strands.

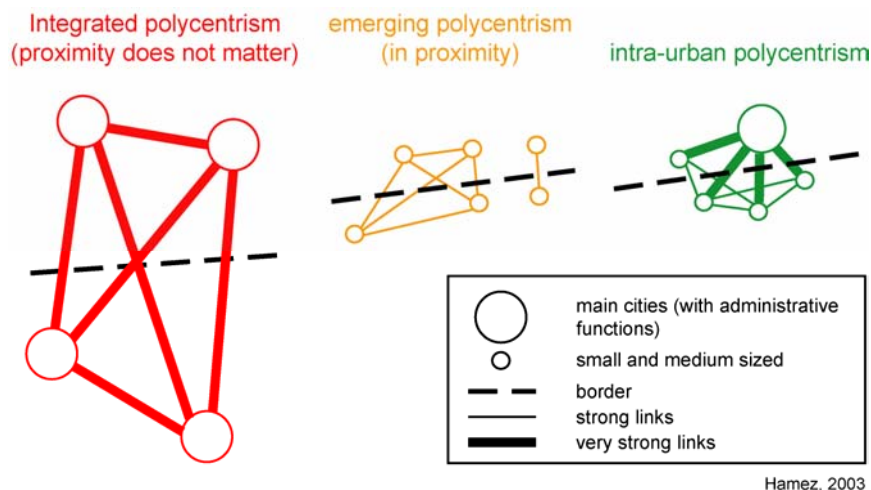


Figure 6.5 Models of cross-border urban cooperation

6.4.3 Examples of transnational networks

Urban networking occurs through other kinds of relations between cities: cooperation between specific actors, the exchange of best practices etc. Since the end of the 1990s, the EU Commission and the Member States have sought to encourage such transnational cooperation links through Interreg IIC and Interreg IIIB. These relations occur at the scale of the Interreg programming zones; they promote a pattern of urban networking organised in accordance with the concept of “*Little Europes*”.

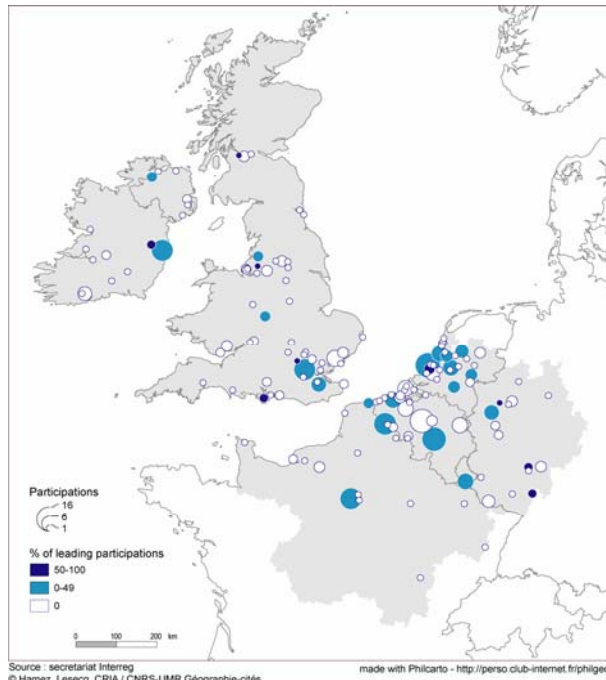
In order to improve our understanding of how Interreg cooperation networks function, we have analysed two transnational areas between 1997 and 2001: the first, the North West Metropolitan Area (NWMA), lies at the heart of Europe, and is characterized by a high density and a large number of cities of different sizes, while the second, the Central European, Adriatic, Danubian and South-East Space (CADSES), illustrates the issue of cooperation in the context of an enlarging Europe.

As regards the involvement of cities in the cooperation process, NWMA illustrates the existence of important disparities following the countries, related less to the actual distribution of cities than to some national administrative features. In the United Kingdom, the Netherlands and the North of Belgium (Flanders), there is a dense network of cities involved in such cooperation. On the other hand, in France only two poles emerge (Paris and Lille), displaying a monocentric pattern; the same structure can be found in the South of Belgium, with Namur as the main node (Walloon region). In the Western part of Germany, the distribution is more polycentric but the cities are less intensely involved in cooperation than in the neighbouring countries.

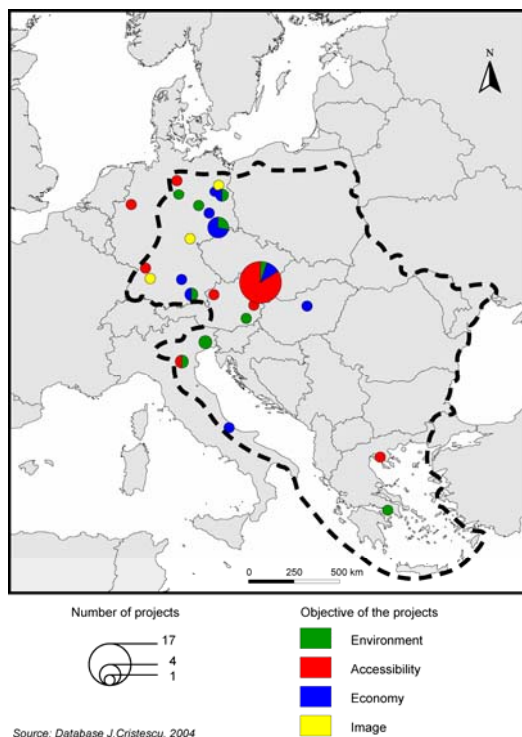
We can then infer from these elements some basic preconditions in the success of transnational urban networking: an administrative factor (the cooperation is easier in flexible and federal national systems): a politico-cultural factor (the role of lobbying habits at the local and regional level): a linguistic factor (differences in the use and knowledge of English). This result is significant in the political purpose of furthering the integration.

In the CADSES case, two additional parameters were taken into account, namely the topic of the project, and the location of the lead partners. The lead partners are mostly located in Member States, for eligibility reasons. However, patterns differ in respect of Austria and Germany. While Vienna seems to be a monocentric gateway in the CADSES area (17 projects), lead partner roles are shared with a larger number of German cities (with less than 4 projects per city as a result). As Italian and Greek cities are now well represented the linguistic factor should also

be highlighted at this point; in this case, knowledge of German seems to be a determining factor, rather than English.



Map 6.7 Participation in Interreg IIc, NWMA (North-west Metropolitan area) by city



Map 6.8 Interreg IIc CADSES cooperation. The localisation of lead partners by project objective

6.5 Operational findings from the study on urban networking processes

Why does the focus on urban networking processes make it possible to answer requests raised by spatial planners, and how is allowance made for advising and proposing development strategies that reinforce the cohesion and the integration of the European space in the context, and with the objective, of achieving a polycentric and sustainable development?

Based on these examples, we may draw two conclusions:

- Firstly, when trying to identify urban areas as nodes of polycentric development, size should not be considered as a comprehensive indicator. Admittedly, size remains relevant when it comes to attracting e.g. industrial activities or commercial functions. However, the size threshold alone does not reflect the potential emergence of nodes of spatial development, especially when urban planning is envisaged at the international scale.
- Secondly, transnational networks between universities, private companies and other urban functions are especially important for the development of polycentricity if networking is established between 2nd order cities thus contributing to the stabilisation of the position of these cities in their national urban hierarchies. The transnational networking within meso-regions such as e.g. the Interreg regions also contributes to the development of polycentricity if regional integration and competitiveness results from such co-operation. Given the projects space and time limits only examples of transnational networking are shown. More comprehensive studies should however be undertaken in future.

7 Polycentricity, territorial policies and governance

7.1 From government to governance

7.1.1 The challenge of governance

The transformation from *government* into what has come to be called *governance* has found a central place in social science debate. *Government* refers to the dominance of state power organised through the formal and hierarchical public sector agencies and bureaucratic procedures. *Governance*, on the other hand, refers to the emergence of overlapping and complex relationships. In its *descriptive* sense, governance directs attention to the proliferation of agencies, interests, service delivery and regulatory systems (Healey et al, 2002). In its *normative* sense, governance is defined as an alternative model for managing collective affairs. It is seen as "horizontal self-organisation among mutually interdependent actors" (Jessop, 2000, p.15), of whom government is only one and with only 'imperfect control' (Rhodes, 1997, p.8).

Today, modern urban systems are characterised by complex patterns of interdependencies between actors, institutions, functional activities and spatial organisations. Controlling, managing or even steering the complex, fragmented and often competing societal interests is beyond the capacity of the state as an agent of authority. City governments are no longer the key locus for the integration of urban relationships, but merely one of many actors competing for access to resources and control of the policy agenda (Davoudi, 1995). In this context, urban governance is defined as "the actions and institutions within an urban region that regulate or impose conditions for its political economy" (Sellers, 2002, p.9). The move to governance has led to the fragmentation of local government and to the disruption of the established channels and networks. As such, the new challenge of governance is how to create new forms of integration out of this fragmentation, and new forms of coherence out of inconsistency (Stoker, 2000). It is about how collective actors emerge from a diverse group of interests (Le Gales, 1998). Today, the capacity to govern depends on the "effective co-ordination of interdependent forces within and beyond the state" (Jessop, 1997, p.96).

In the context of a polycentric urban region, which is made up of a number of towns and cities that are historically and politically independent, actors are not only drawn from beyond the boundaries of formal institutions of government, and spread among public, private and voluntary sectors, they are also spread across the boundaries of different political and administrative jurisdictions, which traditionally do not share a place-based identity. Moreover, the policy objective

with which they are preoccupied, i.e. the development of a spatial planning strategy, which enables and enhances polycentric development is highly complex, demanding and dependent on the actions of a wide range of actors outside the public sector. All this leads to a higher degree of fragmentation and poses an even greater challenge for effective governance. In other words, in the context of polycentric urban areas, creating a favourable condition to meet the challenge of collective action is even more problematic.

7.1.2 Relational qualities

The discussion above has established that the key challenge of governance is to create the conditions which best allow collective action to take place. Hence, the critical question for evaluation is: what are the key factors in creating such conditions? What are the key ingredients to creating a favourable climate in which collective action can emerge? What relational qualities are required for creating the capacity to govern (i.e. to get things done) in the midst of diversity?

Many commentators have tried to identify specific sets of relationships for assessing the performance of governance and its capacity to act collectively. For example, Amin and Thrift (1995) coined the concept of 'institutional thickness' and argued that the nature of institutional relations is a significant factor in the economic and social health of localities. Institutional thickness refers to five main factors: a plethora of civic associations; a high level of inter-institutional interaction; a culture of collective representation which cross individual interests; a strong sense of common purpose; and, a shared set of cultural norms and values. Innes et al (1994), argue that "consensus building achieves its coordination effects in great part by creating or amplifying three types of capital: social, intellectual, and political capital" (p.46). Drawing on this perspectives and adding a forth form of capital, i.e. material capital, it can be concluded that the following set of capitals are key to the success of a self-organised voluntary coalition in terms of its ability to act collectively and to develop the capacity to achieve its goals and objectives:

- Intellectual capital: socially constructed knowledge resources
- Social capital: the nature of relations between the actors
- Political capital: power relations and the capacity to mobilise and take action
- Material capital: financial and other tangible resources

Creating and enhancing new forms of governance and developing the strategic capacity to capture new opportunities require progress towards all four forms of capital (see Davoudi, 2004). This is particularly important in relation to spatial planning aimed at promoting a polycentric Europe. Given the new condition of governance, the capacity of institutions to create new relationships for engaging in purposeful, collective action is central to the success or failure of cities and

regions in taking advantage of the globalised economy. However, the conditions affecting capacity varies between different localities (Healey, 1998). In some governance relations the four forms of capitals are well developed, whilst in others they are either non-existence or pre-mature. The question that then arises is whether and how policy intervention by the EU and the Member States can help to develop such capacities?

7.1.3 The role of policy intervention

Across Europe, governments have attempted to actively steer processes of coordination and collective action across public, private and voluntary sector boundaries (Stoker, 2000:98). The emphasis here has been less on government's authority to make decisions and more on creating the conditions for positive-sum partnerships. It is therefore possible for governments to establish a framework for effective collective action.

At the micro level, local and regional governments have important roles to play in promoting new forms of governance and enhancing local institutional capacities given that they are situated at the crossing point between the traditional vertical axis of power and public administration and the new horizontal axis of partnership between government and the private and civil sectors.

At the macro level, research on the impact of the governance structure and institutional performance on delivery of the Structural Funds concluded that an important factor influencing the degree to which EU policies can be implemented is based on the institutional capacity of the localities (Batterbury, 2002). Such capacity can be enhanced by EU action aimed at enabling local institutions to operate effectively. Most EU policies are embedded in a system of multi-level governance, where European, national and regional governments all play a role, and where each is able to mediate policy implementation through local governance structures. In many EU countries, the Structural Funds have effectively become a mechanism for regional capacity building, a role as important as the delivery of regional assistance itself (Grote, 1996). However, some regions have been more successful in adapting themselves to the requirements of policy, while others, for a number of reasons continue to face difficult if not insurmountable challenges. Such problems are exacerbated when institutions are faced with the need to achieve new policy goals. The concept of polycentric development, simple as it may look, is a complex one with potential for being interpreted in different ways. The key to the successful application of this policy framework is the existence of effective governance relations and a capacity to capture the opportunities offered by polycentricity.

As such, it is important that part of the available EU resources are explicitly allocated to enhancing governance relations at a variety of scales and to

bolstering institutional capacity by, for example, focusing on the four capitals mentioned above. Another key issue here is the need for flexibility and differentiation in policy delivery in a way that enables a better 'fit' between policy goals, local conditions and institutional performance. This means that the Structural Funds, or indeed any other EU funding regime, needs to be better adapted to suit different institutional cultures and capacities across the EU.

Recent attempts by the Commission to open up the policy-making process at the EU level in order to get more stakeholders involved in shaping and delivering policy is a step in the right direction here. Similarly, the EU White Paper on European Governance (CEC, 2001), which identified the reform of European governance as one of its four strategic objectives, is another important step towards the recognition of the significance of governance relations. The White Paper identifies the five principles that underpin good governance. These are: openness, participation, accountability, effectiveness and coherence. Each principle is important in establishing more democratic governance. They underpin democracy and the rule of law in the Member States, but they also apply to all levels of government from the European to national, and to polycentric urban systems.

While a high degree of consensus on the principles of good governance exists, it is notoriously difficult to measure good governance (BSFH, 2002). Attempts to develop proxy indicators to help identifying current practice and opportunities for improvement have generally met with mixed success. Given that governance is an evolving process, it is also difficult to set up permanent indicators. As such, indicators should be used cautiously and circumspectly and evaluation should be undertaken over a sufficiently long period of time.

7.2 Models of cooperation and partnership

7.2.1 Rationales for cooperation and partnership

The concept of partnership has come to occupy a central place in the political economy of the redevelopment of urban areas and regions. Partnerships between the public and private sectors are now commonplace as vehicles for the development and implementation of strategies for local economic regeneration. Since the mid-1980s, there has been a steady growth in the number of formal and informal organisations, committees, bodies and forums that have a collaborative approach embedded into their structures. Such bodies have emerged in the field of spatial planning and territorial development. Policy-makers now talk in terms of a 'partnership economy', and the need for

collaboration, co-operation and programmes of joint action between the public and private sectors.

Partnerships in the field of urban and regional development and spatial planning have come to occupy a prominent position on the agenda of urban and regional policy because of a specific political and ideological response to the regeneration of previously industrialised areas. Across Europe, a broadly neo-liberal economic and political agenda has given rise to a form of urban and regional policy that although often *ad hoc*, uncoordinated, and pragmatic, has sought to combine state and market actors in the management of urban economic and social change.

The ubiquity of partnership working implies that collaborative co-operation between state and market will generate benefits that a non-pooling of resources would not otherwise produce. The benefits of partnership working have been variously described by a range of commentators as, building local consensus and capacity, unlocking land and development potential, place promotion and marketing and creating synergy (Bailey, 1995; Pierre, 1998). The table below summarises some of these points.

Table 7.1 The Benefits of Partnership

Synergy creation	The 'pooling of resources' and the belief that more can be achieved working in partnership than working independently – the creation of internal synergy. The ability of the partnership to attract resources from the external political-economic environment – the creation of external synergy.
Transformation and consensus construction	The development of trust and mutual understanding and interdependence. Working methods and objectives are modified and agreed through co-operation – the 'mutual struggle for transformation'.
Budget enlargement	Partnership as a way to enlarge limited public resources available to a local authority and as a way to allow the private sector to reduce the economic risk of civic activity, or to receive elements of public subsidy.
Land and development potential	Public-private sector partnerships as a means to unlock complex land ownership patterns, particularly in large-scale development projects.
Place promotion	Partnerships as symbols of economic and social regeneration. Inter-sectoral consensus construction as a mechanism for image-building and local identity construction. The promotion of place and cultural capital to niche markets.
Co-ordination	The co-ordination of services, functions and infrastructures of previously extant authorities. Or, the co-ordination of new areas of activity either at the level of implementation or strategy development.
Confidence-building and risk minimisation, and the legitimisation of pro-growth politics	The development of pro-growth strategies as a mechanism to provide local political and economic stability to secure both private and public investment.

7.2.2 Partnership as an institutional resource for collective action

Different types of partnerships vary across territory, reflecting the heterogeneous political systems, economic conditions, social composition and cultural heritage of the places involved. As Savage (1998, 178) argues, "strong states with weak voluntary traditions produce partnerships dominated by the public sector...limited states with a tradition of vigorous voluntary action, produce partnerships dominated by the private sector. Between these two points, hybrid types of partnership are likely to arise."

At a very general level, European partnerships are likely to be either managed or dominated by the state, where public officials 'orchestrate action' and 'apply resources'. In contrast, in the USA an approach to public-private sector co-operation has emerged where business is dominant, reflecting a local government system that is more permeable to private sector influence (Savage, 1998).

Clearly, despite this range of activity and partnership style and format, we need to be aware that forms of collective actions that aim to work within a partnership framework have input from more than one agency. This is not merely to make the semantic point that partnerships involve more than one partner, but rather that partnerships come in different forms. This is then to acknowledge that it is still possible to devise a crude classification of the organisational forms of partnership and of state-market interaction. Table 7.2 provides a typology of partnerships focusing on type, the process of mobilisation, territorial coverage, partners, and purpose.

Table 7.2 A Typology of Partnerships

Type	Site of Mobilisation	Territorial Coverage	Partners	Purpose
Development	Local	Single site or small area	Private developer Local authority Public agency	Joint development
Development Trust	Local	Neighbourhood	Community organisations Local authority	Community regeneration
Joint Agreement Company	Local, but may be response to national policy	Defined area of regeneration	Public, Private and Voluntary sectors	Strategy preparation – implementation through third party
Promotional	Local	Urban, Region	All sectors, but often private sector-led	Place marketing and promotion
Agency	National, Regional	Urban, Regional, sub-regional	Public sector-led with private sector, voluntary sector representation	Various – depends on lead agency terms of reference and objectives
Strategic	Regional, Local	Sub-regional, metropolitan	All sectors	Broad strategy development, accessing funding, agenda setting, consensus construction

Source: Adapted from Bailey et al, (1995, 30)

Partnerships are seen to be either deliberative/strategic or operational/instrumental in purpose. The former relates to partnership working that operates in a strategic or agenda setting level of policy development, while the latter focuses on partnership activity that is designed around the implementation or delivery of specific programmes of action.

The dimensions of partnership should be seen as lying at either end of a partnership continuum, with the potential for movement and transition through various dimensions as the partnership develops. So, for example, a partnership may begin as a form of cooperation between state and market actors but move to incorporate community elements within its structure (Balloch and Taylor, 2001). As its composition changes so its purpose may also change from strategic-agenda setting to localised implementation for instance, or some combination of each. Equally, partnerships may be seen as residing on a spectrum of working arrangements that stretch from competition to co-ordination, and co-ordination to co-evolution (Pratt et al, 1998).



Figure 7.1 The continuum of partnership

The form of its origin or inception further complicates the issue of the purpose or rationale of the partnership. There are essentially two variations on the theme of partnership. The first can be termed *imposed* partnership. The characteristic form here is the 'parachuting' of a development agency, QUANGO, or institution of central government into a particular locality. In the UK, Urban Development Corporations in the field of economic regeneration and property and land development, and Training and Enterprise Councils and Compacts in the field of education, training and economic development are the prime examples here. In contrast, the second approach has revolved around the construction of *organic* partnerships that draw on a range of institutions and individual actors. Such partnerships have variously been established to carry out specific physical development projects, undertake promotional or marketing campaigns, to promote business and enterprise growth, or to develop long-term strategies for local economic regeneration.

In practice, the distinction between the 'imposed' and 'locally inspired' forms of partnership is more blurred than has been suggested. Centrally imposed modes of partnership can intermingle with locally based initiatives, whilst local partnerships are rarely composed of local individuals, organisations and resources.

7.2.3 Structure and process in partnership working

Politically, partnerships are about the management of change in the face of widespread structural economic transformation. On an ideological level, they represent an attempt to change the nature of local collective action in the formation and implementation of policy. What is important here is not just that partnerships have an ideological as well as political dimension, but that these dimensions converge within partnerships so that they become indistinguishable from each other.

Partnerships can be seen as operating on two levels - structure and process (Moore and Pierre, 1988). The structure is the organisational entity of the partnership such as a committee, local enterprise agency, or development company. In contrast, the process refers to the development of formal and informal linkages and networks between the individuals and organisations involved. Both the structure and process may vary between partnerships, but some combination of each is required for a partnership to be able to formulate and implement its policy objectives. The necessity for both an organisational structure and a developed network of contacts leads to the notion of the 'realisation' that no one partner has the ability to achieve more on their own than they can in collaboration. *Mutual dependence* in its turn implies the recognition of the need for, and existence of, consensus, and ultimately, partnerships need a level of consensus to be effective - consensus around the identification of a problem, and consensus around the ability to do something to remedy that problem. It is the movement towards a state of mutual dependence, and the development of a consensus approach to policy generation, that obscures the political and ideological dimensions of partnerships. In this way, partnerships can appear as the natural outcome of unmediated events, rather than the product of political and ideological conflict and choice. Thus, there is a tendency to lose sight of the fact that partnerships represent different things to different partners. Once a partnership has been formed there is a tendency for differences to be minimised, while all efforts are directed towards areas where there is a degree of common ground. Hence, what is seen to be of primary importance is what partnerships do, rather than how they achieve particular outcomes, or act as mediators of economic change.

At their core, partnerships represent a political and ideological response to economic change. Whether partnerships are developed locally or are developed

as a result of central government imposition, they are the product of a climate conducive to combining both state and market resources in the wake of economic and social transformation and political fragmentation. The political, economic and social outcomes of partnership ventures will be influenced by this factor; however, this does not mean that they will necessarily be determined by it. Partnerships may well represent a neo-liberalised form of urban and regional policy instrument, but a neo-liberalised deregulated market driven policy outcome is not an inevitable. What is of equal importance in shaping outcomes is who has the power to determine consensus, and where and how that consensus is achieved. The politics of partnership is about how the partners manage this process, how they seek to resolve their differences, and how they present their strategies to their wider communities as consensus policies for spatial and territorial development.

7.2.4 Governance of polycentricity

The key to the promotion of polycentricity in Europe is the existence or development of effective institutional co-ordination and co-operation, as effective political polycentricity is a significant part of effective functional polycentricity. A review of the literature has shown that many European cities and regions have developed a variety of horizontal and vertical co-operative ventures around either single issues of mutual interest or wider strategic issues. This is illustrated by the proliferation of institutional networks, partnership arrangements and governance interrelations.

One of the key objectives of this project was to examine the level and nature of this political polycentricity in different European countries. The aim is to provide a review of the scale and scope of partnership arrangements that cut across administrative and sectoral boundaries and include governmental and non-governmental bodies. Our focus was on those partnerships and networks that have a wider place-based strategic remit. To achieve this objective, a series of questionnaire surveys of a sample of existing partnerships has been undertaken focusing on recent and current institutional networking and partnership arrangements around spatial strategic issues, at two main spatial scales: the inter-municipal on the one hand and the Inter-regional and trans-national on the other.

7.3 Inter-municipal co-operation

In many countries the notion of functional urban regions (FURs) is used to examine and monitor socio-economic trends and territorial disparities as well as to identify the regions most in need of regional aid. However, official recognition of FURs as a unit of policy implementation varies markedly from one country to

another. With the exception of countries such as Austria, Denmark and Germany (who use FURs in connection with their labour policies) in most other European countries functional regions have no power over, or responsibilities for, making strategies or implementing policies. Similarly, no funding is provided for policies at the level of FURs, apart from some examples in countries such as Austria, Denmark, Finland, the Czech Republic and Hungary (OECD, 2002).

Although the survey undertaken by the OECD does not include all European countries, it provides a clear indication that in most countries in Europe (as well as in Canada and the USA) there is no formal structure of governance operating at the level of FUAs. However, as mentioned above, we have seen in recent years a proliferation of inter-municipal co-operation particularly among the constituent members of functional urban areas across Europe.

In order to examine the extent and nature of such co-operations, a questionnaire survey of a sample of current inter-municipal partnerships was undertaken. Project partners and some of the members of the ESPON monitoring committee were asked to provide at least two examples of inter-municipal co-operation. In total 30 completed questionnaires from 21 EU countries were returned. The remaining parts of this section provide the key analyses and findings of the survey in relation to inter-municipal co-operation at the level of functional urban areas.

7.3.1 Partnership formation

Our research revealed a wealth of data on the formation of partnerships at the inter-municipal level. Addressing common issues and challenges as well as building co-operation and capacity between local partners were seen as the key reasons for the establishment of partnerships for a large number of respondents. Of less importance was the objective of securing external funding sources for specific projects. This finding is perhaps not surprising given that the majority of responding partnerships were focused on achieving strategic spatial development objectives, rather than on localised place-specific projects or programmes of action. It also represents the widely acknowledged view that building partnerships (at least in the initial stages of development) requires common (often uncontested) policy goals and objectives. What is equally clear however is that the motivation for continuing to participate in partnership work are often open to change. As partnerships develop and new challenges arrive, as policy goals are achieved, and as the economic and political climate changes, so motivations are reassessed and evaluated in the light of new circumstances.

The high level of 'bottom-up' partnerships provides a clear indication of the growing demand for inter-municipal co-operation between neighbouring authorities for developing integrated and territorially based strategies. It also

indicates that although the concept and boundaries of FURs may not have been firmly established, the need for cross-boundary and multi-level governance relationships has already been acknowledged by local governments across Europe.

It is clear from the survey results that the late 1980s and early 1990s marked the beginning of a growing number of inter-municipal partnerships across Europe. Some partnerships have been in place for more than a decade, such as the Greater Manchester Strategic Planning Officers Group, which was set up to fill the gap left by the abolition of a formal government structure, namely the Metropolitan County Councils. Others were established more recently, such as Western Lithuania 2020, which was established in 2002 to consolidate municipal and other resources and raise the profile of the area as a whole.

The size and composition of the partnerships range from small, single-sector networks (such as the National Centre Midt-Vest in Denmark and the Association of Municipalities of the Lima River Valley in Portugal, each with only four partners from the municipal sector) to large, multi-sector networks (such as Patto Territoriale del Sangone in Italy with 108 partners from the municipalities, the private sector and other agencies). The multi-sector partnerships, with partners from local government (municipalities), the private and voluntary sectors and other public and private agencies, made up the majority of networks. However, given that the focus of the survey was on partnerships that involve municipalities, the returns include cases where municipalities are the sole partners, some of which have as many as 53 municipalities (Kommunalverband Ruhrgebiet in Germany).

Another key difference in the nature of partnerships analysed was the extent to which they were open to new members/partners. Many partnerships (43%) have a porous boundary and are open to new partners. This means that the size and composition of the networks can change over time, while others (53%) have hard edges in terms of both membership numbers and composition. It is thus interesting to note here that all single-sector partnerships, which consist of municipalities, have fixed memberships, an indication of a more formal structure of networking. However, the opposite is not true, i.e. not all multi-sector partnerships have adopted an open membership approach.

7.3.2 Partnership powers and resources

The second part of our analysis explored the issue of the power and resources of the partnerships. Power is understood not in terms of 'power over the actions of others' but in terms simply of 'the power to act', to be able to mobilise available resources to implement the objectives of the partnership. Similarly, resources not

only include financial resources but also human resources and access to other forms of support including management and administrative support.

Most partnerships do not have the executive power to implement their objectives. However, it was often noted that they can influence the policy-making processes and that they often seek implementation by making recommendations to the decision-making bodies. Furthermore, some seek to implement their strategies by lobbying, through undertaking studies and specific programmes, or through conducting a specific responsibility. Some have a mixture of these approaches in their attempts to create shared agendas and strategies for their areas.

In terms of resources, the sources of partnership funding include member subscriptions, higher tier governmental support (regional, national and EU structural funds) and local/municipal investment. What is evident here is that the overwhelming majority of partnerships (80%) are financially supported by the public sector across the various spatial scales of the state. With regard to human resources, 67% employ a full-time staff paid jointly by all partners. A smaller number (27%) adopt a rotation system whereby staff are seconded from partner organisations and work for the partnership on a part-time basis.

The majority (63%) of partnerships are accountable to a statutory authority, which is either a national government department (as in Latgale Region Development Council, which is accountable to Ministry of Finance in Latvia), or a regional government. This even includes those partnerships that have been established through the partners' own initiatives (such as Metropolis Vilnius Kaunas which is accountable to Latvia's national government). However, there are a number of partnerships (37%) that represent a degree of self-governance and are not accountable to any higher tier authorities (such as South Yorkshire Forum in the UK).

7.3.3 Objectives and achievements of the Partnership

The research revealed that there is a range of objectives that partnerships have been set, or have set for themselves. We have consolidated these objectives into the following (not mutually exclusive) categories:

- Strategic development
- Project orientation
- Networking
- Advocacy

Most of the partnerships appear to be working towards the establishment of clearly identified *strategic objectives*. These range from attempts to better integrate regional and municipal development strategies, to fostering balanced

development within regions, to the development of more co-ordinated inter and intra-municipal development strategies. In contrast, partnerships that are only focussed on *specific (often time-limited) projects* are less heavily represented.

As far as *networking* and *advocacy* is concerned, most partnerships have an implied objective to region-build and promote the partnership and its area of activity, or to establish more integrated relationships between institutions and organisations internal and external to the partnership. In relation to networking for example, Valdres Industrial Development Limited (VID) in Norway has as an objective to constitute itself as a link and/or a contact point between different levels of government, the private sector, and regional development funding regimes. In contrast the advocacy role performed by MIIAT in France is more about creating the conditions for more effective regional development, with its objective to development better co-operation between national government and regional government.

Table 7.3 Objectives of the Partnership

Objectives	Comment	Partnership
Strategic Development	To find the most effective spatial arrangements for achieving the economic transformation of South Yorkshire To address the decline of the region and develop the potential of SME networks	SYF (UK) PTS (Italy)
Project Orientation	Collaboration between private and public sectors in the creation of a waste separating plant	SINA (Estonia)
Networking	To co-ordinate planning policy across the region To join the potential of cities and encourage Co-operation between business, education and Administration	GMSG (UK)
Advocacy	Renew co-operation between the national government and the regions Development and promotion of regional initiatives	MIAT (France) KVR (Germany)

While only 36% of partnerships claimed that the cooperative working in which they were engaged was common practice, nearly all reported varying levels and types of achievement attributable to that cooperation. These achievements can be organised around the following categorisations:

- Formation of a strategic framework
- Project implementation
- Capacity building
- Knowledge transfer
- Place marketing and promotion

A number of partnerships claim to have been successful in developing wider *strategic frameworks* for development. For example, in the UK, the GMSG has created a strategic planning framework for the ten local authorities in Greater Manchester. This has had a major influence on the development of regional

planning policy for the North West of England. Similarly, the Latgale Region Development Council in Latvia has produced and adopted a regional development strategy and is working on the development of the Latgale Spatial Plan.

Project implementation is less well represented in the list of achievements, and this is not surprising given the limited number of partnerships that claim to be 'project oriented' in terms of their objectives. However, some partnerships claim project based successes and these include, the Kommunalverband Ruhrgebiet in Germany (preservation of natural areas and improvements in waste management), and SINA in Estonia (the construction of a waste separating plant in Narva).

Capacity building achievements are better represented, with many partnerships claiming to have improved 'mutual support and understanding', established foundations for 'well informed decision-making', developed a 'common sense of belonging', created 'new forms of city and regional networking' and 'formalised co-operation'.

Perhaps more interesting than this however is the extent to which some partnerships claim to have engaged in *knowledge transfer*, revealing the extent to which partnership working provides an opportunity for individual as well as collective knowledge enhancement. Even those partnerships that reported little in the way of 'concrete' outcomes commented on the significance of the existence of the partnership as a mechanism for sharing information and knowledge.

What is equally clear from the responses of the partnerships is that the majority claim some form of *promotional* success for their partnership. This is apparent either in terms of awareness of the partnership within the region, or of the region externally by the activities of the partnership.

Table 7.4 Achievements of the Partnership

Achievements	Comment	Partnership
Formation of strategic framework	The development of a an adopted regional strategy	LRD (Latvia)
Project implementation	Delivery of technical support and training programmes	ANDIP (Greece)
Capacity building	Developing a 'common sense of belonging'	SPNM (Italy)
	The building of a coalition of different actors	VDM (Netherlands)
Knowledge transfer	Better knowledge about regional conditions between partners	CSM (Sweden)
	Production of common strategy documents, Public information office opened	PTS (Italy)
	Greater external awareness outside the region of the activities of the partners and the region	SMA (Poland)

The research also focused on the perceived strengths and weaknesses of cooperative working. Tables 7.5 and 7.6 provide a summary of these responses.

Table 7.5 Strengths of Partnerships

Strengths	Comment	Partnership
Networking and Co-ordination	The creation of a stable co-ordination agency Co-ordination of resources, goals and objectives	PTS (Italy) VID (Norway)
Knowledge Transfer	Building up access to knowledge and expertise Developing knowledge of the environment and values associated with the environment	ANDIP (Greece) SMA (Poland)
Interdependence	Mutual dependence and shared understandings of common challenges Professional values, desire to work together and the development of strong district interdependency	OSLO (Norway) GMSG (UK)

Table 7.6 Weaknesses of Partnerships

Weaknesses	Comment	Partnership
Lack of Resources	Difficulty in financing projects No specific resources available – work requires ‘good will’ of partners	BSW (Germany) GMSG (UK)
Lack of Political Will/Commitment	Political instability in the area The struggle for political power between different levels of the state	PTS (Italy) HAMAR (Norway)
Limited Partner Experience	Lack of participation of private sector Little experience of joint working	LRD (Latvia) SINA (Estonia)

7.3.4 Examples of inter-municipal cooperation

The four cases below: Kommunalverband Ruhrgebiet (Germany), Latgale Planning Region Development Council (Latvia), Snieznik Municipalities Association (Poland) and Association of the Municipalities of the Lima River Valley (Portugal) represent the range of partnerships that were investigated.

Germany: Kommunalverband Ruhrgebiet (KVR)

Nature and composition

The KVR (as it is currently constituted) was formed in 1997 but has a history that dates to the 1920s. The KVR covers 53 municipalities in total and is a fixed partnership.

Why a partnership/ joint strategy?

The partnership has its roots in the desire to co-ordinate the growth of the mining industry in the region. It has since evolved into an organisation that has competencies in planning, urban development, industrial development and infrastructural development.

Working practices

The KVR has three meeting platforms – the Verbandssammlung ('parliament'), the Verbandsausschu (board of association), and the Verbandsdirektor (director). The Verbandssammlung meets four times a year and the Verbandsausschu meets four times a year.

Powers and resources

The KVR is responsible to the Ministry of the Interior of the land Nordrhein Westphalia. The KVR has its own executive powers over issues such as nature conservation, environmental protection and waste management. The KVR is funded by partner contributions. Each member of KVR pays a yearly subscription. Staff are employed by KVR, and paid for by partner contributions.

Aims and objectives

The purpose of KVR is to develop and promote regional initiatives and engage in planning for leisure, landscape, transport, waste management, regional marketing and tourism promotion.

Concrete achievements

The most concrete achievements have been in the fields of nature and environmental conservation and in improved waste management.

Areas of success

KVR has been most successful in building mutual trust among partners, working across political boundaries, developing joint projects and delivering on its objectives.

Strengths of the partnership and promoters of success

A key strength of the partnership has been its ability to bring planning and operational activities into one organisation, and to secure funding from a range of sources. The key to this success has been through access to expertise, partner pro-activity, a history of joint working, and support from higher tiers of government

Weaknesses of the partnership and barriers to success

A key weakness of the KVR is that some delegates from the municipalities do not support its regional level agenda. This has not been helped by the parochial attitude of some of its partners and some weak political leadership in KVR.

Recommendations

More effective regional work requires KVR to have a regional planning competency as well as access to more funding tied to regional development.

Latvia: Latgale Planning Region Development Council (LRD)

Nature and composition

LRD was first established in 1998 as a voluntary organisation consisting of the district councils of Balvi, Daugavpils, Ludza, Preili, Rezekne, Kraslava and Jekabpils; city municipalities of Daugavpils and Rezekne; and the Union of Latgales regional towns. At that time, it was open to other partners. Following new legislation on regional development in 2002, it was re-organised and given legal status, thus becoming one of the five similar planning regions in Latvia. In its current form its membership is fixed and includes only the municipalities and the district councils.

Why a partnership/ joint strategy?

The partnership was formed mainly to bid for EU funding but also to create a critical mass by joining resources and efforts and becoming an influential player at the national and EU level. The complementarity of urban functions between the cities was not a key driver for cooperation partly because of the limited number of cities in the region.

Working practices

The partners are at the senior management level and meet monthly. The structure of the partnership consists of its political arm in the form of a Council (LPRDC) represented by the politicians, 5 thematic committees working on issues such as economic development and infrastructure, and its executive arm in the form of the Latgale Regional Development Agency (LRDA), comprising of employed staff.

Powers and resources

The Council is partly accountable to the Ministry of Finance and other funding providers. The LRDA as a non-profit limited company has executive powers and is responsible for implementing the Council's decisions. The Council also seeks to implement its decisions by making recommendations to respective municipalities and other organisations. The partnership has regular financial resources funded through membership fees and state funding. The secretariat for the Council rotates among the partners with support provided from the Agency.

Aims and objectives

LRD aims to develop long terms development plans and strategies, represent the region on the national political scenes and make decisions about the future development of the region.

Concrete achievements

LRD has produced a number of strategies and programmes including Latgale Regional Development Strategy in 2000, Latgale Urban Development Strategy in 2001, Rural Partnership Programme, and Latgale Spatial Plan (within the framework of an international project) as well as improving the partnership capacity for working with pre-accession funds.

Areas of success

LRD has been most successful in achieving shared ownership of their strategies, building mutual trust, developing common understanding of key regional issues, delivering their objectives, securing political and external financial support and extending the life of the partnership beyond what was initially expected. However, it has not yet succeeded in working across political boundaries.

Strengths of the partnership and promoters of success

The strengths of the partnership are in its understanding of the interdependence of Latgale municipalities, 'regional thinking' and close relationships to its executive body (LRDA). The key factors that have helped the success of the partnership are: availability of resources in terms of staff time and funding, access to knowledge and expertise, pro-activity of the partners, a sense mutual trust, and motivated individuals.

Weaknesses of the partnership and barriers to success

The major weakness of LRD is the non-participation of the private sector. This is to be overcome by the enlargement of the regional partnership. The key factors that have hindered the success of the partnership are the lack of a clear national and regional policy context as well as the problems with the legal and taxation system, and the lack of resources for development.

Recommendations

To make the partnership work more effectively, there is a need for further commitment from national government with regard to regional issues, the involvement of the private sector and other relevant regional bodies as well as that of the representatives from national government.

Further information: www.latgale.lv/en/index.php

Poland: Snieznik Municipalities Association (SMA)

Nature and composition

SMA was established in 1998 as a long-term partnership by four urban-rural municipalities of Bystrzyca Kłodzka, Ladek Zdrój (urban), Miedzylesie and Stronie Śląskie through the partners' own initiative. Its membership is exclusive to municipalities in the Snieznik Massif (a mountain range in the Sudetes).

Why a partnership/ joint strategy?

The partnership was formed mainly to strengthen internal cooperation between the partners and to bid for EU funding. Creating a critical mass of resources and effort and addressing common threats and opportunities were also major triggers for the formation of the Association.

Working practices

The partners are at a senior management level and meet four times a year. There are no working groups, while one member of staff runs the Association's office.

Powers and resources

SMA is accountable to the national government through its representatives in Voivodship offices. It has no executive power and seeks to implement its decisions via recommendations to respective municipalities and other organisations. The Association's long term funding is provided through membership fees and its secretariat is paid for by the representative members.

Aims and objectives

SMA's objective is to develop an integrated development strategy for the area with a particular focus on tourism. It also aims to collect and analyse data, and commission studies for the benefit of all member municipalities.

Concrete achievements

SMA has been able to secure funding from PHARE to produce the Masyw Śnieżnika / Kralický Sněžník Spatial Development Concept in 2000. It has also established Tourist Information Centres and created a positive image of the SMA.

Areas of success

SMA has been most successful in developing joint projects but also partially successful in achieving shared ownership of the strategy, building mutual trust and developing common understanding of key regional issues. However, it has not been successful in working across political boundaries or securing sufficient external financial and political support. "Compared to other associations in Poland, this one is not very successful".

Strengths of the partnership and promoters of success

The strengths of the partnership relate to its connected functional space which enhances the motivation of the municipalities to cooperate; its shared objectives; and its location within Glacensis Euroregion which provides it with the opportunity to bid for Phare-CBC funding as well as with valuable environmental assets. The key factor of the relative success of the partnership is the existence of motivated individuals.

Weaknesses of the partnership and barriers to success

The weaknesses of the partnership relate to limited financial and staff resources and the restrictive legal framework that inhibits the expansion of the association beyond the municipalities. The location of the area within Poland's peripheral border area is also seen as a weakness. The key factors inhibiting the success of the partnership are: limited resources particularly given the small budget of the member municipalities. "Only one person is employed ... this does not enable the undertaking new tasks effectively".

Recommendations

To make SMA work more effectively significant changes are needed in respect of the legal framework of the association to enable its expansion, and to increase its resources, as well as better enabling the transfer of 'know-how' from other similar associations /partnerships thus increasing its chance of external funding.

Further information: www.zqs.ta.pl

Portugal: Association of Municipalities of the Lima River Valley (LIMA)

Nature and composition

LIMA was established in 1994 as a long term partnership by four City Councils: Arcos de Valdevez, Ponte da Barca, Ponte de Lima and Viana do Castelo, through the partners' own initiative. Its membership is exclusive to municipalities. However, following the drawing up of a new set of rules for metropolitan areas, the membership of neighbouring municipalities may now be considered.

Why a partnership/ joint strategy?

The partnership was formed mainly to create a critical mass of resources and efforts and to address common threats and opportunities. Bidding for EU funding was also a consideration. A key driver for cooperation and funding of the Lima, given its diversity, is the search for complementarities between the inland and coastal areas, mountain and valley areas and different urban functions.

Working practices

The member partners are at a different level of seniority and include politicians as well as local government officials. They meet every two weeks. LIMA deals with functions that are seen as suitable for inter-municipal cooperation as identified by its members. Working groups are formed as and when needed on specific subjects such as culture and leisure, libraries and intervention in mountain areas.

Powers and resources

LIMA is accountable to its members. It has no executive power and its recommendations, on for example the harmonisation of taxation, are non-binding. However, it plays a role in the application phase and management of projects such as infrastructure provisions but the final implementation is the responsibility of the City Councils, who, along with EU, are also the main sources of funding for LIMA.

Aims and objectives

LIMA's general aim is to contribute to the development of the area as a whole through inter-municipal cooperation, with a particular focus on accessibility and infrastructure development, tourism and environment and economic growth.

Concrete achievements

One of LIMA's key successes is its ability to extend the partnership beyond inter-municipal co-operation and develop successful informal links with other institutions such as: Lima Valley Entrepreneurial Council (representing businesses) and Viana de Castelo Polytechnic Institute. LIMA has also been successful in securing funding from Community initiative SAVE to establish a wider network: Regional Energy and Environment Agency of the Lima Valley. LIMA has also succeeded in addressing issues that affect the area as a whole such as waste management, water treatment, accessibility and the development of a network of business parks.

Areas of success

LIMA has been most successful in achieving the shared ownership of the strategy, building mutual trust, developing common understanding of key regional issues, working across political boundaries, and securing external financial and political support. It has also been partially successful in developing joint projects, delivering the objectives of the partnership and extending the life of the partnership.

Strengths of the partnership and promoters of success

The strengths of the partnership are its solidarity and support from political leaders, its technical capacity and its positive image both internally and externally. The key positive factors are: the availability of resources, access to knowledge and expertise, pro-activity of the partners, effective leadership, motivated individuals and a shared agenda.

Weaknesses of the partnership and barriers to success

The weaknesses of the partnership are: the reluctance of the central administration to facilitate inter-municipal cooperation and to delegate the responsibility for management of Community funds to them; a lack of direct financial transfer from the centre which would have made the associative structure more robust; the negative effect of these on job opportunities which may lead to the 'brain drain' from the partnership. Factors hindering the success of the partnership are therefore the lack of a national and regional policy context and the central government's continuing parochial attitude.

Recommendations

To make LIMA work more effectively, there is a need for the recognition of inter-municipal cooperation by the Central Administration and adequate financial support. "Although the dominant discourse has for some time defended this position, the practice has been very different".

Further Information: www.valima.pt

7.4 Inter-regional and trans-national co-operation

Our initial findings on the degree and nature of cooperation between neighbouring FUAs are based on responses to a questionnaire survey received in April from the following seven potentially polycentric transnational areas; Vienna/Bratislava/Győr Area (VBGA), Copenhagen/Malmö Area & the Øresund region (CMA/O), Krakow/Katowice/Ostrava Area (KKOA), Lyon/Grenoble/Geneva/Lausanne Area (LGGLA), Bologna/Parma Area (BPA), Dresden/ Chemnitz/ Leipzig/Halle Area (DCLHA) and the Edinburgh/Glasgow Area (EGA). We have also integrated recent findings from an eighth area straddling Slovenia and Italy; Gorizia/Nova Gorica (G/NGA) and added the findings from four existing transnational partnerships which we had surveyed during our study of inter-municipal co-operation. We did not receive responses from the Portuguese and Spanish regions that we were investigating.

This is a new though vital area of research; 'cross-border comparative research is essential ... so far, this kind of international research on polycentric urban regions has been relatively thin on the ground' (Harris, 1997). Furthermore, while polycentricity has been examined from a spatial, planning, economic and demographic point of view, very little has emerged in relation to governance, 'research (is needed) to investigate types of governance and functional relationships between the elements of the PUR and its identity and representation' (Kloosterman and Musterd, 2001). This work then sets out with these objectives in mind.

Results indicate that cross-border regions find it easier to co-operate on economic issues than on spatial development or, surprisingly on transport. Indeed we found only one example of an operational joint strategy that concerned transportation, although there are developments that indicate the beginning of some such forms of co-operation, (see below). The picture may change over the next few years however, as almost all joint plans had only been developed in the last couple of years.

7.4.1 Fields of cooperation

Economic Strategy

Economic and commercial development was the most common field in which emerging polycentricity was evident. The rationale for preparing joint strategies focused on the need to develop complementarities and to exploit the broader marketing potential of two or more centres. The latter was certainly the case in the development, in 2003, of the establishment of CENTROPE, a unified

investment region covering the Vienna Bratislava Győr Area. Fostering the 'international attractiveness' of the region is an explicit objective, as is the promotion of sustainable development. Improving functional complementarity and enhancing economic co-operation was the stated aim of the Strategic Development Plan for the Gorizia/Nova Gorica Area and growth enhancement for the strategy for the Øresund Region. These are all recently established formal political plans, the Copenhagen/Malmö area related one being a recognised "governance without government" arrangement, also recognised by the OECD. However the possibility of fragmentation has emerged in relation to the number of informal bilateral consultations on various issues. CENTROPE has also encountered some resistance, explained in this case as the perceived priority given to the self-conception and identification of a new nation. There are indications that it may be easier to get support for co-operation on specific projects, which seem less threatening and less of a challenge to local control. The specific *Øresund Science Region* for instance has been a relatively uncontroversial and productive platform in terms of the future competitiveness of the region.

In addition there is evidence of less formal forms of economic co-operation emerging. In the Krakow/Katowice/Ostrava Area this has developed with a view to compensating for the relative peripheral and marginal character of the area and in the Italian case to rationalising economic activity where 'development has overstressed the local environment'. It appears then that the district model of organisation that characterises Italian political life is ideally suited to the development of polycentricity.

Spatial strategy

Spatial development, together with transport, found least evidence of activity in terms of joint strategic planning. Where there were plans emerging this tended to have been in response to a specific problem, such as the environment, or in conjunction with another programme, such as the Interreg initiative.

In the case of the Dresden/Chemnitz/Leipzig/Halle Area the motivation was largely economic though its expression has been in the form of a joint spatial development strategy, the Landesentwicklungsplan Sachsen for the 'Saxony triangle'. It was initiated in 1995 by the MinisterKonferenz für Raumordnung and has achieved official status (Halle is excluded). The idea was based on a desire to create German Metropolitan regions of European importance. The aims of the strategy include marketing and promoting complementarity between the cities. The Landesentwicklungsplan has been perceived as successful and reflects the view that rather than seeing the three cities as separate, a single metropolitan area should be formed.

The formation of a future 'joint city' is also the ultimate aspiration of the spatial strategy for G/NGA, inspired initially by the growth in the (former) national border area between the cities and by differential rates of growth. Prior to the instigation of the strategy, the spatial development process of two cities has been informally coordinated, providing a good grounding for future collaboration.

In 2003, a Joint Regional Development Strategy (JORDES+) was developed for the Vienna/Bratislava/Győr Area within the framework of an Interreg IIIA project. This has involved the establishment of regional administrative bodies for the advancement of the region covering substantial substantive issues which include planning, economic development, transport, education/science/research, settlement, nature, the environment, tourism and cultural inheritance.

In the case of the Copenhagen/Malmö Area, there is no formal joint spatial development strategy between the cities of Copenhagen and Malmö or in the wider Øresund region, but there are a broad range of co-operative ventures with regard to spatial planning. When the Bridge was planned in the early 1990s it became relevant to enhance the co-operation on environment and planning. Most significantly, in 1994 the Danish and Swedish governments decided on a joint "environment programme" for the Øresund Region of which environmentally focused physical planning was a central element. The long-term goal according to this agreement is that the region should develop as one of the cleanest metropolitan regions in Europe; it focuses on land-use, transportation and recreation/biological diversity. In addition, planners responsible for the overall planning in the municipalities of Copenhagen and Malmö meet to discuss their main interests every six months. However significant barriers remain in respect of further co-operation on spatial planning, most notably, many authorities are involved in the field, the national and regional levels have different competencies on the two sides of the Strait, and different environmental regulations have created problems concerning the implementation of the "environment programme".

Although there is no special arrangement for the Bologna/Parma Area, there is a joint spatial development strategy of a type for the Region as a whole and for the individual Provinces (NUTS 3). However, the economic competition among the main local systems of Emilia, the political autonomy of the individual Provinces and the rising sprawl of the urban outskirts, which weaken the leadership of urban cores, are the main reasons of a general lack of co-operation in spatial planning policies.

The Region has tried to balance this local individualism by its comprehensive strategy for the entire territory, namely through the Regional Territorial Plan.

Transport Strategy

The relative underdevelopment of joint planning in the field of transport was quite surprising, given that this would seem to be a natural arena for inter-regional or cross-border co-operation. Some collaboration in relation to the Øresund Bridge is reported below, as are generalised systems for joint ventures in Italy and the single example of a fully operational plan in the Gorizia/Nova Gorica area.

Examples of transport strategies

Gorizia/Nova Gorica – Building on TEN

The joint strategy here covers the municipalities of Gorizia on Italian side and Nova Gorica and Šempeter/Vrtojba on the Slovenian side of the border. There is also a regional development plan that should result in the formation of a new cross-border European region. Broadly speaking, the aims of the strategy are the enhancement of already strong transport activities in the region, especially in connection with the 5th TEN transport corridor and the planning of a joint transport terminal on the premises of the current border crossing in connection with the nearby train station.

Bologna/ Parma Area - Provincial plans

In the metropolitan area of Bologna and the Region as a whole (the same occurring in every province) there are established forms of collaboration. The Metropolitan Rail System was designed jointly by the Province and the Municipality of Bologna, while the Region has published a Regional Transport Plan (PRIT 98-2010), with reference to the entire regional territory (Palma is however excluded). This organisation began in 1998 and is to be reviewed every 10 years. The objectives of the co-operation are broad; economically to reinforce the competitiveness of the local economic systems, by sustaining the internationalisation of regional firms; in terms of settlement to concentrate new residential and productive activities in the main corridors (multimodal and intermodal corridors) and nodes of the regional structure (Bologna, intermodal platforms, rail stations) and with regard to infrastructure to build up a multi-level infrastructural platform, served by a secondary network of routes directly entering industrial districts, urban areas and peripheral areas of the mountain.

CMA - evidence of emergent joint plans

The beginning of collaboration here was a concrete political project, the two Governments in 1991 signing an agreement on building what was to be a combined railway and motorway bridge across Øresund, which opened on July 1st, 2000. As a consequence of the opening of the bridge the city of Copenhagen integrated the new railway line with the existing transport network and the new metro-system, Malmö too is revising its transportation network. The establishment of a permanent link across Øresund is a core element of the successful integration and development of the Øresund region and symbolises the idea of it as one region. Indeed the number of people commuting between Sweden and Denmark has grown significantly since the opening of the Øresund Bridge.

7.4.2 Overall strategic plans

Overriding formalised governance structures designed to encompass and encourage polycentricity across the board in the regions selected are still in the early stages of development. Where generalised collaboration was reported, the motivation was either economic or specific to development issues in the area. However in Krakow/Katowice/Ostrava Area and Gorizia/Nova Gorica Area the potential for the polycentric development of the area was a key factor in the formation of the partnership.

Although a strategic level organisation that oversees the development of joint strategies for all of the aforementioned sectors is not in evidence for the whole KKO, there is such a partnership between Katowice and Ostrava. It constitutes

an agreement on collaboration between the Province of Silesia (Republic of Poland) and the Moravian-Silesian Land (Czech Republic), signed in 2001 in parallel by the representatives of the central authorities (province governors) and of the self-governmental bodies. The potential for the polycentric development of the area was a key factor in the establishment of the partnership.

The main aims and objectives of the strategy are very broad and include the following domains: economy, environmental protection, transport and communication, the restructuring of heavy industry, self-governmental administration, culture, science and education, tourism, and sports and recreation, as well as joint activities undertaken in these sectors. The perceived strengths of having this arrangement have focused on the envisaged possibility of common actions (promotion, acquisition of means) within the framework of the extended European Union and the opportunity of broadening the initiatives appearing in the border areas over a more extensive spatial reach. However the agreements are of a general character and it is difficult to determine their concrete role in terms of polycentricity.

In 1996 a joint office was established which oversees and coordinates collaborative actions and projects for the Gorizia/Nova Gorica Area. In the future it should develop into a common administrative authority of the prospective cross-border European region. The polycentric development of the area was a factor in the establishment of the partnership as well as the obvious need for complementary development of both cities and their hinterlands due to their physical proximity.

The PHARE (cross-border) programmes that Slovenia, Italy, Austria and Hungary have been participating in have been an important factor in the continuation of collaboration. In 1998 a Regional Office was opened in Štanjel, a small town located just a few kilometres from the border (on the Slovenian side) to enhance cross-border contacts, links, cooperation, networks and projects between the partners in Italy and Slovenia. In the 2000-2006 period, cross-border regions/municipalities in Slovenia and Italy are participating in INTERREG III A-PHARE CBC, also and INTERREG III B (Alpine Space, CADSES) and INTERREG IIIC programmes. The shift from environment/transport/cultural projects to 'sustainable spatial development, economic development and human resources and the harmonisation of legal systems' is visible in programming documents and project proposals. The cooperation between two cross-border towns Gorizia (Italy)/Nova Gorica (Slovenia) is taken as an example of new 'European cross-border regions in-making'. The other priority is to establish joint cross-border territorial planning mechanisms and to promote specificities of this cross-border area after accession of Slovenia to EU (May 2004).

In the case of the BPA, there is a strategic level organisation that oversees the development of joint strategies for several sectors, though it is particularly focussed on the business system, while the joint management of fair and exhibition areas in Bologna, Modena and Ferrara and Reggio has developed over the last decade. In addition, an agreement has been signed by Parma and Piacenza for the common provision of fair services. The actors here are the local governments – the most important municipalities and the Provinces – the Chambers of Commerce and the employers’ associations. In transport planning, the choice of Bologna as the main high-speed train node was originated by the main institutional and business actors. Functional polycentricity could be said to be the base for the establishment of the partnership, even if the historical rivalry among the different cities still remains in many fields. This case indicates that the political organisation of Italy is well suited to politically grounded polycentric development.

7.4.3 Other policy areas

Responses to the questionnaire revealed that there were several cases of polycentric relations operating in diverse fields of activity, which are summarized below. While some of these may seem peripheral in policy terms, they may be standard setting for political collaboration in other areas.

Joint strategies in different policy areas

Copenhagen Malmø Area – Education

The long-term informal co-operation among the regions universities were formalised in 1997 with the creation of the *Øresund University*, a voluntary co-operation between universities on both sides of the Øresund. It is based on the idea of utilising network technologies to create research and learning centres across geographical and institutional barriers. Working in collaboration with researchers, business leaders and policy-makers throughout the region, the University has helped in identifying critical driving growth clusters and facilitating the development of networking associations in each of those clusters.

The Øresund Labour Market Council was created to promote the active integration of the labour market in the region and *Øresund Networks* seeks to co-ordinate the marketing of the Øresund region regionally, nationally and internationally. It is responsible for the region’s brand and co-ordinates activity when it comes to marketing and communicating the values and the general development of the region.

There are other examples of educational co-operation in other European areas, for instance Modena and Reggio have realised a ‘joint university pole’, with premises in each city but with common services and administration.

Edinburgh/ Glasgow Area – Canal and culture

Joint strategies in this region have been confined to specific projects and initiatives. The Millennium Link project to re-open the G-E canal route, involves a wide range of agencies in both cities and £180 million of joint capital investment. Although there is at present no other formal working relationship between Glasgow and Edinburgh, work is underway to develop a joint protocol between the two cities. In May 2004 the two Lord Provosts met to discuss areas where there could be closer working/joint initiatives. It was agreed that the following areas would benefit from this, sporting events, cultural events, and the Edinburgh International and the Glasgow Celtic Festivals. Finally there is work on two joint initiatives currently underway; Tartan Week in New York – the 2 Lord Provosts are going together and holding joint exhibitions in New York to promote both cities and it was agreed to work jointly on the celebrations of the 10th Anniversary of democracy in South Africa, with a joint service.

Gorizia/Nova Gorica – Higher Education and Hospitals

There has been a strong initiative with regard to complementing medical services on both sides of the border. Another strong common project is the initiative to establish a common University for both cities; at present there are several departments in Gorizia from Universities in Udine in Trieste and a new but growing Polytechnic faculty in Nova Gorica.

Lyon, Geneva, Grenoble, Lausanne Area – Health and Science

The alpine diamond is the major reference point for scientific and hospital co-operation between the cities of Rhône-Alpes, northern Italy and Switzerland. There are also existent cultural connections.

Krakov Katowice Ostrava Area – Tourism

In 1999 a Joint Strategy of Development of Tourism in the Silesian and Silesian-Moravian Beskidy Mts. 'INTERTOURISM' was unveiled. This strategy was set up by the Association for Regional Development and Co-operation - "Olza" and the Euroregion "Cieszyn Silesia". Work on the strategy was financed from the PHARE fund.

7.4.4 Transnational Partnerships

Earlier research into active inter-regional transnational partnerships covered the following organisations: Joint Regional Development Strategy for the Vienna, Bratislava and Gyor Regions (JORDES) (Austria, Hungary and Slovakia), Rhine-Scheldt Delta (RSD) (Netherlands and Belgium), Saar-Lor-Lux (SLL) (Netherlands, Belgium, Germany and France) and the Braganca/Zamora Co-operation Work Community (B/Z) (Portugal and Spain).

There were certain similarities in the characteristics of these partnerships with the emergent ones we described above. The rationale for instigating the partnership was explicitly economic in half of them, while encouraging a common growth process at the cross border regional level was a factor in the others. 'Mitigating the border effect' was also mentioned here, and calls were made for a 'legal cross-border entity' for one of the organisations. An appeal for more national government commitment to regional development issues was also made, and in the B/Z case the peripheral situation of the body relative to the Central Administrations of both countries was identified as a significant problem.

One organisation listed achievements that had been made in settlement policy, while two others shared environmental concerns. Co-operation rather than joint decision-making was the norm, and powers were generally limited to making recommendations, but the pro-activity of partners and a sense of shared ownership of the strategy was common to all in recording the successes to date. Our findings here bode well for the notion of a 'Europe of regions'.

Key factors here which help in the instigation of joint strategies include previous informal co-operation and the operation of European projects, such as the TENS programme and various Interreg initiatives. Although polycentric forms of co-operation appear still to be limited, judging by our case studies they are now increasingly emerging, and as Meijers and Romein concluded 'the best start (is) a small start'.

7.5 Conclusions

7.5.1 Inter-municipal cooperation

There are four general observations that can be drawn from this variety of responses. Firstly, it is clear that partnerships require more *robust political and policy frameworks* if they are to operate successfully. A significant number of partnerships argued for greater political commitment from higher tiers of government and that this should be further supported by a programme of directed resources. As one partnership commented: "*We need [...] a new legal framework by the national government, orientated to facilitate the inter-municipal co-operation with direct or indirect incentives*". The issue of *resources* (funding) was also seen as critical to continued and improved partnership working. Indeed, many partnerships commented on the lack of financial investment in their work, particularly from higher tiers of government: "*New legislation and more money would help*". Another key issue is the ability of a partnership to integrate its programme of action with existing *EU funding* regimes. As one partnership commented: "*the harmonisation of INTERREG, PHARE and TACIS programme procedures is an essential part that will help run the project in a more effective way*". A final point to note here is that improvements in the *co-ordination* of partnerships, by the partners themselves and from interests outside of the partnerships who may have an impact on its activities, are considered essential to successful partnership working.

7.5.2 Inter-regional cooperation

In several cases suspicions about commitment to formalized forms of inter-regional partnership were in evidence. Perhaps beginning with specific projects that can gain general acceptance or with informal forms of co-operation may thus be the best approach at the outset, such co-operation may also lead to more established polycentric practices later. Where established practices are prohibitive, less formal forms of collaboration may be appropriate and where long-standing rivalries are an issue, building up relationships between newer, or younger, individuals may help overcome barriers.

In some instances it seemed that transnational partnerships were easier to establish than partnerships within the national context, thus perhaps where the latter have caused difficulties the former can be tried. Finally it was suggested that polycentricity might simply failed to emerge in some situations because 'it had not been thought of'. If this is the case, then visits from areas that have successfully developed partnerships to areas where polycentricity is not yet operative may be a constructive idea.

8 The application of polycentricity to national policies

The European Union can contribute through its own policy measures and policy programmes to a polycentric development of the European territory, especially through its structural policies. Nevertheless the effectiveness of European policies aiming at such a polycentric development is highly dependent on national policies and the (potential) synergy between European and national policies. This chapter will therefore discuss the use or *application* of the concept of polycentricity in the countries forming the study area of the ESPON 2006 programme.

A central concept here is that of *application*. The assumption is that the function of strategic planning lies in the provision of discussion contexts for more operational decision-making and not in the programming of these decisions. In relation to European spatial policy frameworks (in particular the ESDP), *application* is indeed spoken of in this context. The concern here is for spatial policy documents drawn up in a discourse that is not incorporated in the legislation. Spatial policy is not identified in the EC Treaty as a formal competence of a European institution. The use of a strategic 'plan' such as the ESDP as an appraisal framework is accordingly not self-evident. *Application* can then be described as the influencing of future policy actions without their content being dictated.

The empirical bases of this chapter is mainly formed by the results of a questionnaire, which we sent out to key persons in all of the countries forming the ESPON 2006 Programme area. The rationale for this was the following, firstly, policies in general are extremely dynamic as, for instance, is shown by the EU Compendium on national spatial planning systems (CEC, 1997). Desk research is simply not good enough in these circumstances. For instance basing the research on published (academic) literature will result in a highly distorted picture as in the literature only a few European countries can be studied in any great detail. This then is the second reason. And thirdly, a questionnaire makes it possible to follow the same research format throughout the process.

8.1 The objectives of national polycentric policies

Two main clusters of objectives linked with national (or regional) polycentric development policies can be identified (see table 8.1). The first relates to cohesion and the diminishing of urban disparities in terms of population development, economic development, employment, GDP, and service provision within national urban systems. The second cluster of objectives, more common than the first, is to enhance urban competitiveness.

Table 8.1 Main objectives of current polycentric policies in ESPON countries

Cluster of objectives	Country
Diminishing urban disparities (cohesion)	Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Norway, Poland, Portugal, Slovenia
Enhancing urban competitiveness	Austria, Belgium, Denmark, Estonia, Finland, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, Sweden, Switzerland, United Kingdom

The goal of diminishing urban disparities is related to a political understanding within a given country that certain differences between cities or urban regions are undesirable. Such disparities are often coined in terms of population development, economic growth, productivity, average income development, accessibility to public and private services (education, medical facilities, cultural facilities etc.) and/or the number and diversity of jobs available. In other words: there are gaps in the (national) urban system that national polycentric policies try to bridge. In relation to this there are types of cities that these policies try to strengthen. This is summarised in table 8.2

Table 8.2 Type of gaps in national urban systems and privileged groups of cities

Country	Type of urban disparities the policy addresses	Type of cities the policy focuses on
Denmark	Gap between the capital Copenhagen and other major cities or urban regions in terms of economic development opportunities	'National centres'
Estonia	Gap between the capital Tallinn and other major cities in terms of socio-economic development	Smaller country centres
Finland	Gap between five most urbanized regions of Finland and other cities or regional centres in terms of population development, employment and GDP.	Regional centres (medium and small towns)
France	Gap between the capital Paris and cities in the rest of the country	Urban areas except for Paris
Germany	Gap between cities in former West Germany and cities in former East Germany	Cities in former East Germany
Greece	Gap between the two largest cities, the capital Athens and Thessalonica on the one side and the next group of cities in the hierarchy on the other, as well as the establishment of currently lacking rural centres	Major cities outside Athens and Thessalonica as well as rural centres
Ireland	Gap between the capital Dublin and cities in lagging regions	'Gateway cities'
Italy	Gap between cities in the North and cities in the South, in particular addressing medium-sized cities	Cities in the south of Italy, in particular medium-sized cities
Latvia	Gap between the capital Riga and the rest of the urban system	Not specified
Norway	Gap between the capital Oslo and other cities in the south on the one hand and other regional centres on the other, in terms of population development, employment and GDP as well as service provision	A selection of regional centres
Poland	Gap between the capital Warsaw and more diversified cities (mainly in the west) on the one hand and less diversified, lagging or peripheral cities on the other in terms of economic development	Less diversified lagging and peripheral cities (east Poland)
Portugal	Gap between the capital Lisbon and Porto on the one hand and the next group of cities in the hierarchy (the level of medium-sized cities is lacking)	Medium-sized cities
Slovenia	Gap between advanced western and central part of Slovenia vis-à-vis eastern part. Gap between Ljubljana and other cities.	National (regional) centres, urban regions and cross-border regions

8.1.1 Cohesion: overcoming disparities in the urban system

Table 8.1 illustrates that even though the countries mentioned share the same overall objective of diminishing disparities in the urban system, a large variety still exists in types of urban disparities and cities on which the policy focuses. The most common type of urban disparities addressed is the gap between the top-level cities (most often only the capital) and the next cities in the urban hierarchy. This applies mainly to countries in which a relatively monocentric urban system is present. Another gap addressed by these policies is the lack of a certain category of cities within the urban hierarchy or the limited representation of cities in that category. Finally, a third kind of gap in the national urban system is more of a geographical nature, following from differences between regions in terms of economic development. Consequently, the focus is often on the level of cities immediately below the top-level city or cities (often medium-sized cities), a more or less lacking level of cities (medium-sized cities or rural centres) or on cities in a certain region.

The political rationale behind the objective of reducing such gaps as mentioned above varies. These rationales explain why a certain objective is being pursued. The analysis revealed three main rationales behind such a policy:

- political norms - referring to principles of economic and social cohesion and solidarity;
- counterbalance - a situation of (over)concentration in one place and the under-utilization of resources and potentials in another;
- the prevention of a rural exodus.

All in all, the first cluster of objectives related to cohesion could be considered a more recent version of traditional regional policy. It deviates from older interpretations of regional policy in that it focuses on cities rather than on industrial locations or lagging regions. Cities and groups of cities are now considered to be the engines of growth in regions. Obviously, different policy objectives are based on different economic theories on how economic growth can be fostered. For instance, the focus on medium-sized cities in Italy is linked to the paradigm of industrial districts. Similarly, growth pole theories formed a basis for more traditional regional policies. Likewise, there is a whole set of theories, assumptions and arguments providing the theoretical underpinning for the current search for cohesion and competitiveness. Further research is thus needed here to unravel this theoretical underpinning for polycentric development.

8.1.2 Competitiveness: cities as the key to wealth

A policy that addresses the distribution of economic development over the national urban system may also be based on objectives relating to competitiveness rather than, or next to, cohesion. In fact, a polycentric development of the urban system is more often linked with competitiveness than with norms relating to cohesion, solidarity, over-concentration or underutilization of resources or the prevention of a rural exodus (see table 8.1).

A very common elaboration of polycentric policy links the size and importance of cities to different spatial domains of competition. This then results in a classification of the national urban system based on the principle of hierarchy. This means that different classes of cities are identified, e.g. major centres that have to compete internationally; national and regional centres having to compete nationally or regionally; and local centres. Often this classification is based on a desired future situation rather than on the current situation, thus indicating the desired development. In many cases appealing metaphors are developed for the centres that have to compete internationally, for instance 'European Metropolitan Regions' (Germany), 'Europols' (Poland), 'gateways' or 'gate-cities' (Greece, Ireland), 'Centres de Développement et d'attraction' (Luxembourg), and 'anchor cities' (Portugal).

In another elaboration, emphasis can be put on the endogenous potential of cities or for instance, spatial quality as a means to enhance competitiveness. Though most national governments focus their attention on the major urban centres and their international position, some countries, most notably Italy, pay more attention to the strengthening of the position of medium-sized cities. In this case there is a link with the notion of industrial districts and their competitive advantages.

In some countries, national governments do not identify a type or list of cities to be promoted. Instead, they try to promote urban competitiveness by increasing local or regional organizing capacity by fostering inter-municipal co-operation. Examples here include France, Italy, Germany, and the Netherlands. Sometimes another route is taken: enhancing the competencies and enlarging the territory of regions and cities through administrative reform. Examples here include Latvia, Greece, Spain and France.

Lastly, increasingly popular is the designation of so-called 'urban networks'. In many countries the concept of urban networks is explicitly referred to in policies. Again, as with the concept of polycentricity itself, this does not necessarily mean that the concept of urban networks is understood in the same way throughout Europe. Such a policy does however stimulate the creation of a critical mass in letting two or more cities located relatively close together form a more coherent

functional entity and by fostering co-operation between them. This may for instance be a good way to improve the international status of such an urban region (together they can be placed in a higher category, for which the individual cities lack mass), though 'classic' urbanization and planning goals may also apply here.

8.1.3 The challenge of polycentric policies: combining cohesion and competitiveness

Both clusters of objectives differ according to the initial perspective taken: a cohesion oriented polycentric development is inward looking, seen from the perspective of central government policy-makers: it focuses on the urban system within a country or region. Contrary to this, the second cluster of objectives is outward looking: it takes an international, European or global perspective resulting in the perceived need for international competitiveness.

The ESDP's main objective is to achieve a balanced and sustainable development of the territory it addresses, which is elaborated in three fundamental goals of policy: economic and social cohesion, the conservation of natural resources and the cultural heritage, and, a more balanced competitiveness. Polycentric development can be considered the key substantive planning concept in achieving these goals. Interestingly, polycentric development policies in the ESPON countries are linked to two of these three goals (cohesion and competitiveness), but not explicitly to the overarching objective of sustainable development.

These objectives of cohesion and competitiveness are often perceived as contradicting each other. Enhancing the competitiveness of a certain part of the urban system – for instance the handful of major cities in a country – may lead to increased urban disparities on a level below the national level. In some countries, such as Poland and Ireland, both objectives have been pursued, though at different times. The creation of an integrated strategy promoting both cohesion and competitiveness remains the challenge of polycentricity.

8.2 The instruments and tools

Three types of instruments can be related to polycentric development policies. As table 8.3 shows, we distinguish between: (1) spatial implementation instruments; (2) non-spatial instruments and (3) strategic planning instruments. The three categories can be distinguished from each other in terms of focus, which is directed at spatial development in the case of spatial implementation and strategic planning instruments, and they can be distinguished as regards their type of application, which is direct impact in the case of the first two types of instruments and secondary decision making in the case of strategic planning instruments.

Clearly, in this research the term 'instruments' has been given a broad interpretation. Apart from the traditional instruments it also refers to agencies (policy subjects in terms of this project) and co-ordination mechanisms and therefore to concrete policy measures and as well as to the policy system that applies them.

Table 8.3 Categories of instruments

Spatial implementation Instruments	<ul style="list-style-type: none"> - Investment programmes - Land use restrictions (zoning) - Location based taxes - Re-locating (national) administrative agencies - Covenants, contracts, agreements - Infrastructure development - Creating co-operation and partnerships - Project based approach - Territorial action plans - Providing minimum services of general economic interest - Territorial development monitoring system
Non-spatial Instruments	<ul style="list-style-type: none"> - Administrative reform - Budget equalisation - EU funding
Strategic planning Instruments	<ul style="list-style-type: none"> - Spatial vision - Regional economic development strategy - Planning guidelines - Policy subject - Horizontal co-ordination mechanisms - Vertical co-ordination mechanisms

8.2.1 Spatial implementation instruments: easy to control but isolated?

The most straightforward type of instruments are the so-called 'spatial implementation instruments'. Spatial implementation instruments come mostly in the form of regulations, programmes or budgets. They aim to generate a direct impact on the spatial and/or economic development of a specified area. Often such an instrument is the responsibility of just one government organisation (agency, department or ministry), which operates in relative isolation from other government actors. The agency therefore has relatively firm control over the application of the instrument. The successful application of such instruments may nevertheless be highly dependent on the extent to which the responsible actor can identify and contact the direct addressees (not necessarily public actors) of the policy. Also this may be a reason why polycentricity implies a need to add a territorial dimension to European sectoral policies. Examples of such instruments include investment programmes, contracts, the relocation of (national) administrative agencies and programmes aiming at the creation of partnerships.

Most of these spatial implementation instruments were rarely mentioned by the respondents and were in general not exclusively linked to polycentric development objectives. In only a few cases moreover did respondents themselves mention spatial implementation instruments as an example of a polycentric policy, for instance in the Austrian case on the relocation of the Länder government from Vienna to St. Pölten. However, such examples are the exceptions rather the rule. In most cases there is not much to say about the use of these instruments in terms of polycentric development. The instruments themselves do not result in polycentric development by nature. However, they can be helpful as part of a larger policy framework that explicitly aims at polycentric development.

It seems possible to link spatial implementation instruments to the two major about objectives of polycentricity in Europe: competitiveness and cohesion. Some explicitly aim at cohesion, such as for instance the regional policy investment programmes, location based taxes and regulations concerning the minimal provision of services of general interest. With regard to competitiveness, the creation of co-operation and partnerships, see as crucial in the strategic projects and territorial action plans approach, are frequently used examples. Both types of instruments seek to create institutional capacity by bringing public and private actors together in order to develop joint problem perceptions and policy strategies. Other instruments such as contracts, covenants and agreements, the re-location of administrative agencies and the development of infrastructure can be in the interest of both objectives depending on their implementation. Territorial monitoring systems and land-use restrictions issued by national or regional governments, being pure spatial planning instruments, cannot easily be related to cohesion or competitiveness objectives.

8.2.2 Non-spatial instruments: important but out of reach?

The second category of instrument are what we have termed above, the 'Non-spatial instruments'. The most well known example here being administrative reform, for instance the creation of a third government layer as is happening in Central and East European countries. In general, these instruments can be highly relevant for polycentric development as they may stimulate institutional capacity. There are however a few considerations to be made here concerning the potential effectiveness of such instruments. The first relates to their real life impact on spatial-economic development. In fact, this remains to be seen as the instruments were designed for different purposes in the first place. A second, more practical consideration relates to the fact that the competency to decide on such issues falls outside the realm of planners or regional development circles, which normally feel most acquainted with polycentric development. The final decisions on these instruments are thus often prepared in the depths of the

Ministries of Finance or Interior, not to mention the Prime Ministers' office. This makes 'non-spatial instruments', although probably extremely relevant for polycentric development, a difficult instrument to actually apply by those actors who really try to promote polycentric development. Because of their often rather limited powers they can only hope that those who have the power make the 'right' decisions.

8.2.3 Strategic planning instruments: the key to polycentric policies?

Strategic planning instruments, finally, are the most relevant instruments for polycentric development. The spatial visions and regional economic development strategies in particular play major roles in the pursuit of polycentric development. The main differences between spatial visions and regional development strategies are firstly their scope, which is often much broader in the case of spatial visions that take all kinds of spatially relevant issues into consideration, whereas regional economic development strategies predominantly focus on economic development, and secondly their status, which is often low in the case of non-binding spatial visions that for their application primarily rely on their communicative powers and as such can be seen as 'soft instruments', whereas regional economic development strategies are often formal policies that have command over, or are based on, a range of policy instruments and as such have the character of a more powerful or strong instrument. Planning guidelines appear to be somewhat less relevant. From the total of 18 countries that claimed to pursue polycentric development as a major objective (see table 8.4 and table 8.5), 17 make use of spatial visions. Only Norway does not have a spatial vision, working instead with a regional economic development strategy. Often both spatial visions and regional economic development strategies are used. The wide use of spatial visions does not automatically mean that spatial visions are in all cases the primary instrument for polycentric development, as other public policies may have a far greater impact on the national spatial structures. In most cases, however, spatial visions are the only policy instrument that explicitly voices the promotion of polycentric development. As such, through their communicative powers, spatial visions may be extremely important for polycentric development as they influence the decisions of others.

One of the key indicators expressing the role and the communicative power of spatial visions is the extent to which they include a spatial conceptualisation of the territory. It should not be taken for granted that a spatial vision includes a conceptualisation of the territory either in maps or words. This applies in particular to countries that do not have a long spatial planning tradition. In addition, we have also seen that the ESDP itself barely contains a conceptualisation of the European territory. After all, it does not come much

further than the 'pentagon'. A spatial conceptualisation is an interpretation - be it in maps or words - of the structure of the territory. With regard to polycentric development it is important to understand how regions and cities contribute to the economic performance of a country, as well as the identification of, among others, economic development axes, and gateways. The main considerations in this regard may be whether cities are fully integrated into the national economic system or whether they operate in relative isolation, and whether their local economy is diversified or whether it depends upon niche markets. It is also interesting to analyse whether these characteristics can be explained by the geographical location of the territory, and whether institutional or socio-economic factors play a role. Notwithstanding this, conceptualisations can at least be found in spatial visions of Belgium (Flanders as well as the Walloon Region), Denmark, Estonia, France, Germany, Ireland, Luxembourg, The Netherlands, Poland, Switzerland and the UK regions, discussed in Part B of this report. Generally this kind of policy expression seems more common in northern than in southern European countries.

In this research project the concept of spatial vision has been given a broad definition. Spatial visions are non-binding, or have an informal status, such as the ESDP, and are thus considered 'soft' instruments. They aim at generating secondary decision-making processes by a wide variety of actors. What matters in the application of these instruments then is the policy process rather than the policy document itself.

8.3 Status, actors and co-ordination mechanisms

The status of the institution in charge of formulating and promoting spatial visions is extremely important. Often this status is however rather weak. This is why such institutions, mostly spatial planning agencies, have an important role to play as a mediator between different interests with a spatial impact and as an ambassador as the actual application of the policy usually depends upon other, more powerful actors.

It is in this context that we have looked to co-ordination mechanisms, which facilitate these processes of convincing and co-ordinating collective action. Horizontal and vertical co-ordination mechanisms, which seem to be crucial for the implementation of polycentric development policies, can be found in most countries in various forms. For horizontal co-ordination interdepartmental mechanisms are probably crucial at the official level. As regards vertical co-ordination mechanisms we see a dominance of those with a traditional a 'top-down' character. There is, however, in many countries increasing interest in policy implementation strategies focussing on the creation of partnerships and 'bottom-up' initiatives. This may create institutional capacity at the regional level.

Currently, most policies that claim to pursue polycentric development do not actually articulate a specific programme or strategy that explicitly indicates political choices about where, what, how and why certain developments should be stimulated. From this, we have to conclude that the concept of 'polycentric policy' in practice has a very broad, or perhaps not yet crystallised definition. Until now, the concept of polycentricity has been used across Europe to characterise almost any policy which is included in the range from regional economic development policies to policies dealing with the location of very specific investments in urban areas.

On the whole there is at present across Europe no single definition of what actually constitutes a polycentric development policy, with various policies being connected to polycentric development by different experts from various different countries. However, in many countries polycentric development policies can be said to be in the process of maturing. Because polycentric policies, where they do exist, are often still only in a preliminary stage of development, it remains difficult to gather information regarding the instruments and processes of polycentric development policies *per se*. In most countries it is difficult to describe concrete polycentric policies, as most of the policies that could potentially be interpreted as contributing to polycentric development are not actually coined 'polycentric'. The planning expert therefore needs to reinterpret the policies based on their own understanding of what polycentricity entails.

Table 8.4 The use of strategic planning instruments

	National level		Regional level	
	Polycentricity Major aim	Popolycentricity Non-major aim	Polycentricity major aim	Popolycentricity Non-major aim
Spatial vision	Bulgaria (draft), Denmark (National Planning Perspective), Estonia, Finland (Finland 2017), France, Germany (non-binding), Greece, Hungary, Ireland, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Switzerland	Austria (non-binding), Latvia, Malta (land use management), Romania, Sweden (national vision Sweden 2009)	Belgium	Austria (binding), Germany (binding), Italy, Spain, United Kingdom (most regions)
Regional economic development strategy	France (Schema Directeur – Economic development plan), Lithuania (long term economic development strategy), Netherlands (regional policy), Norway (regional policy), Slovenia	Slovak Republic (regional policy), Sweden (co-ordinating regional development policy)		
Planning guidelines	Denmark (National Planning Report), Finland (national land use planning guidelines), Norway (national planning directives), Slovenia, United Kingdom			

Table 8.5 Polycentric development policies in Europe according to priority, status and scale

Country	Polycentric policy at national level				No polycentric policy at national level	
	Formal policy		Informal policy (vision by a working group etc.)		Polycentric policy at regional level (some cases)	No national, no regional polycentric policy
	Polycentricity major aim*	Polycentricity subsidiary or minor aim	Polycentricity major aim	Polycentricity subsidiary aim		
Austria				X	X	
Belgium					X	
Bulgaria	X					
Cyprus						X
Czech Republic						X
Denmark	X					
Estonia	X					
Finland	X					
France	X					
Germany			X		X	
Greece	X					
Hungary	X					
Ireland	X					
Italy		X			X	
Latvia		X				
Lithuania	X					
Luxembourg	X					
Malta						X
Netherlands	X					
Norway	X					
Poland	X					
Portugal	X					
Romania		X				
Slovak Republic		X				
Slovenia	X					
Spain					X	
Sweden		X		X		
Switzerland	X					
UK					X	

* Polycentricity major aim: explicitly mentioned or interpretation by authors.

8.4 Examples of national strategies

In the boxes below, five examples of national spatial planning are presented, examples where polycentricity is one of the aims. These are from Switzerland, Ireland, Portugal, Poland and Italy.

Switzerland

Like Norway, Switzerland is not a member of the EU, though it is tightly integrated, if not in terms of policies then at least in economic terms. Given its central position on the European continent moreover Switzerland has a number of strong spatial relationships with its EU neighbours, all of which makes Switzerland an important country to look at in the context of a possible EU wide polycentric development strategy.

Basically one could say that Switzerland consists of two different parts. One is the Middleland, stretching from Geneva in the south-west to St. Gallen in the north-east. This part is relatively flat and contains densely populated areas within a tightly knit urban network consisting of middle sized and smaller cities. The other part of Switzerland, located south-east of the Middleland, is dominated by the Alps. This has led to a totally different kind of urban system consisting of relatively isolated cities that have a predominantly regional function (with the exception of Lugano).

Polycentricity plays a dominant role in spatial planning policy at the federal level. It also plays a role in transport and infrastructure policy, but in large these policies follow the same discourse as spatial planning. At the cantonal level support can also be found for polycentric development.

The northern half of Switzerland has a polycentric settlement structure consisting of medium-sized cities. This *vernetztes Städtensystem* or since the Agglomeration Policy of 2001 this *polyzentrische system* as it is called now, forms the fundamental principle upon which Swiss federal spatial planning guidelines are developed. In the federal planning system, which is based on vertical co-ordination and a cross-sectoral approach, this means that all spatial activities should take this urban network and its future development into consideration. Via horizontal and vertical co-ordination the broadly defined planning guidelines are applied in all fields and administrative layers that have a spatial impact. We are dealing here with a kind of *framework control*.

The main objective of the Swiss federal spatial planning policy is sustainable development and a further strengthening and development of the polycentric urban pattern is assumed to contribute to that. Although Switzerland did not take part in the development of the ESDP, the ESDP shows remarkable similarities in terms of discourse with the previously developed Swiss policy, the latter of course being the more elaborated and concrete of the two.

Basically the Swiss federal policy, which comes in an overall policy providing guidelines and an elaboration specifically focussing on agglomeration development, elaborates policy measures at two levels of scale. The first scale being that of the agglomeration at which a decentralised concentration policy is proposed in order to avoid urban sprawl and the costs that come with it. The second scale concerns the whole country, but because of the morphological constraints and the present day settlement structure it basically comes down to the northern half of the country, the Middleland, where most of the cities are located forming an urban network. At this level the focus is primarily on (further) integration in the European urban network and on achieving a competitive position in this network.



Figure 8.1 Swiss city network (Bundesrat, 1996)

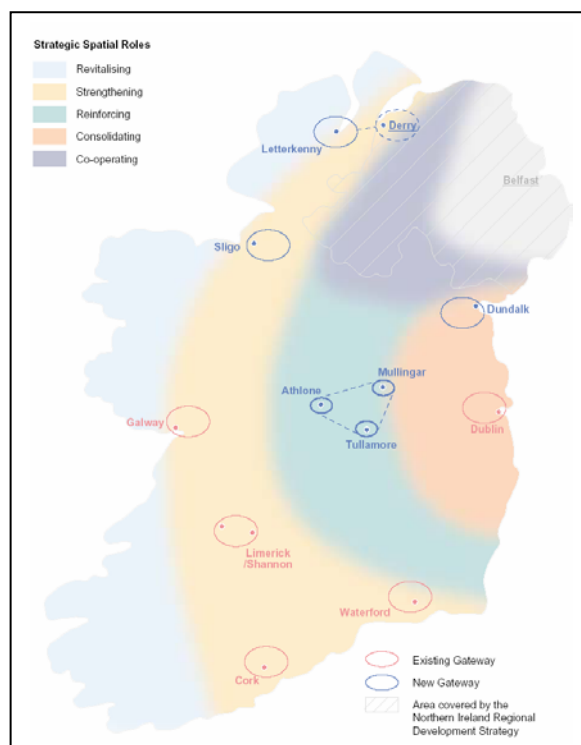


Figure 8.2 Existing and new centres in the desired polycentric spatial structure for Ireland

Ireland

In the past ten years the Republic of Ireland has experienced an unprecedented phase of growth, development and economic opportunity. The population and in particular the number of employed people grew considerably. Economic progress has however given rise to new challenges for spatial planning relating to quality of life issues, national economic competitiveness and the physical environment. Against this background the national government of Ireland issued a National Spatial Strategy in 2002. This document provides a strategic framework for spatial development up to 2020. Other policy-domains such as transport and infrastructure are supposed to build on it.

Having established a strong economic performance as a nation, the attention of policy-makers turned to how that performance could be maintained and more equitably geographically distributed across the country in a balanced and sustainable manner. A major aim here was the attempt to counteract further concentration in the capital region, i.e. in the Greater Dublin Area. Consequently, polycentricity became the fundamental principle in the Irish National Spatial Strategy, though it is referred to in different terms: balanced regional development. Nevertheless, polycentricity was, in effect, present as a key element in the National Development Plan 2000-2006.

The policy encourages polycentric development by attempting to support the development of urban centres other than Dublin, and encouraging their interaction. The idea is that these urban centres, which are coined 'gateways' in the strategy, function as 'strategically placed engines of growth' by drawing together people, business activity, services, infrastructure and amenities. Next to five existing gateway-cities (Dublin, Cork, Limerick/Shannon, Galway, Waterford), four new national level gateways are identified: These include Dundalk and Sligo, as well as Letterkenny/Derry and Athlone/Tullamore/Mullingar. The latter two can be considered as examples of the application of polycentricity on the scale of urban regions, as they form so-called urban networks or polycentric urban regions.

Despite the focus on these gateways and hubs, the document also makes clear that achieving a better balanced regional development does not mean that Dublin's growth should stop, as this would risk Ireland's development as a whole, but rather the strategy is designed to help other areas emulate its economic role by increasing the drawing power of other urban regions.

Polycentricity is a fundamental principle in the Irish spatial planning system, and as such it should help give direction to investment in both the public and private sectors. The actual concept used is translated as 'balanced regional development'. Though the policy is rich in being bold, wide-ranging and ambitious – for instance claiming that the policy will be firmly rooted in 2006 –, specifically targeted to different kinds of regions, and rich in ideas, it is weak in terms of firm and feasible operational policy. Its implementation depends upon its (communicative) power to influence other policy domains to adopt its principles. Moreover, it appears to be rather 'top-down' in telling regional authorities what they may and may not consider in planning terms.

Portugal

The Portuguese Republic has slightly more than 10 million inhabitants on 92391 km². Population density is, however, not equally distributed over the country. There are strong contrasts between the densely populated north and the south (excluding the Algarve), as well as a contrast between the coastal areas and inland regions along the border with Spain. Portugal is to a large extent bipolar, as the Lisbon and Porto metropolitan areas dominate the urban system in economic and cultural terms. About half of all Portuguese live in these areas, with Lisbon having 2.9 million inhabitants and Porto 2.4 million.

The administrative system is essentially two-tiered, with the national government and a local government. The regional tier of government is absent. However, for planning purposes, regional planning is performed by central government agencies operating at the regional level. Planning in Portugal has traditionally been dominated by a restrictive stance based on zoning principles. However, strategic development is increasingly seen as crucial for strengthening the urban system across the national territory.

Though policies addressing regional disparities have not played a major role thus far, they do exist. The community support framework 1994-1999 contained a programme to promote 'regional development potentials'. The main aim of this programme was to strengthen the economic basis of less-favoured areas (80% of Portuguese territory) with specific schemes supporting economic initiatives of a diverse nature. Other support schemes include the Regional Incentives Scheme and special projects.

In the same period, increasing concern was raised over the weaknesses in the urban system. The two main cities of Lisbon and Porto dominate the country, but in an international context, despite their considerable mass, they play a rather modest role. Next to this the lack of medium-sized cities received increasing attention. In addition to the two metropolitan regions, several medium-sized cities/urban axes/urban constellations are fundamental in structuring a polycentric urban network: Anchor cities (Brangança; Vila Real; Chaves); Urban Axes and Urban constellations.

Similar to other cohesion-countries such as Ireland, Portugal has now passed through the initial stage of economic transition. This means that issues such as those related to regional disparities now receive increasing attention. In Portugal, the main concern is for the perceived weaknesses of the urban system: the modest role the cities of Lisbon and Porto play in an international context and, in particular, the lack of medium-sized cities playing a significant role. Strategic planning is still in its infancy, though it now receives increasing attention, which means that cities increasingly think about their position in the (inter)national urban system. Efforts are currently being made to widen the use of the polycentricity concept, (which thus far has been very limited), by means of a series of regional debates planned for 2004. This may lead to a further dissemination of the polycentricity terminology.

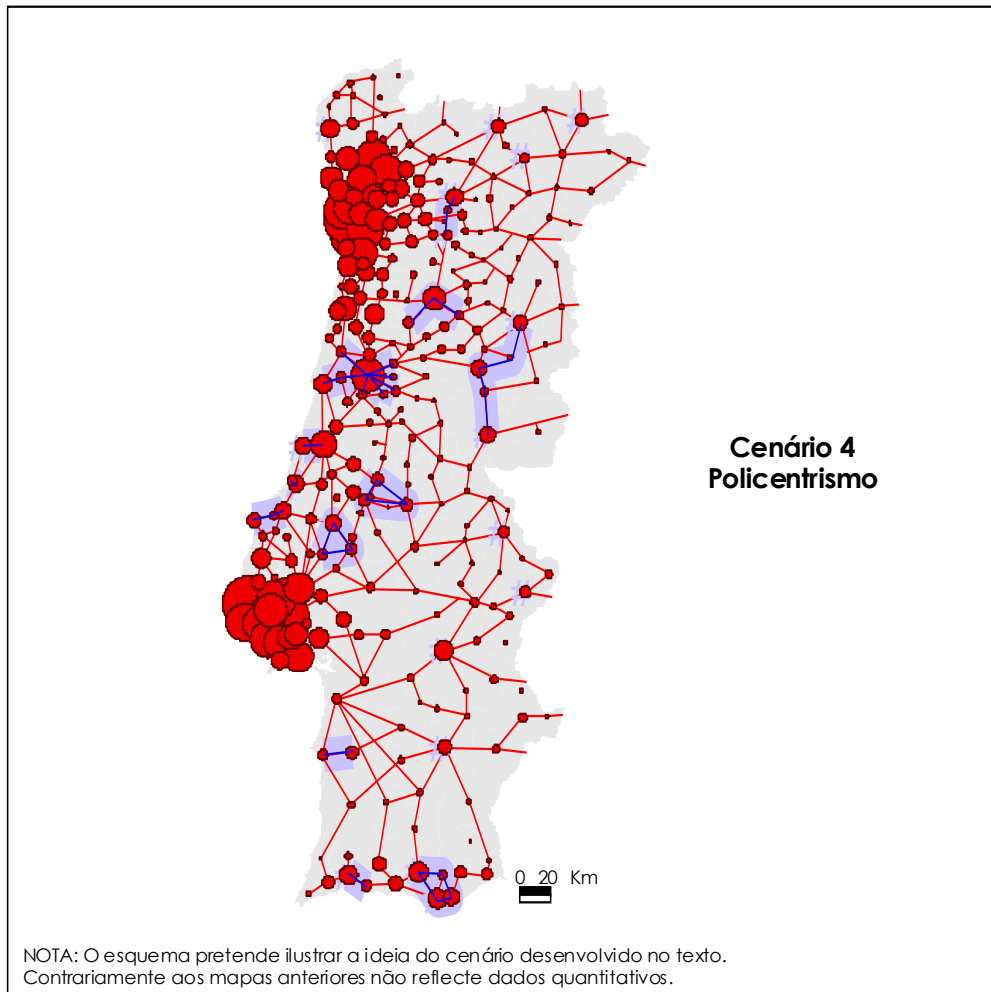


Figure 8.3 Elements for structuring a polycentric urban network in Portugal.

Poland

With a population of 39 million inhabitants Poland is almost as large as Spain, but with 125 inh/km² it has a higher population density. With 62 percent of the population living in urbanised areas Poland however still has a rather rural character, with no one region being particularly dominant. The highest population densities can be found in the central range of the country from the south to the north. The eastern and western parts show lower densities.

In terms of GDP, three regions (Mazowieckie including the capital Warsaw, Slaskie including Katowice, and Wielkopolskie) stand out, and together accounted for 43 percent of the total GDP generated in 1997. The distribution *per capita* GDP over the population show a clear division between the richer West and the poorer East. Only the Mazowieckie region, the richest in the country, disturbs this symmetry. The east-west divide is also visible in terms of foreign investments in Poland, although the main part goes to large urban areas. In the early 1990s, investment tended to concentrate in the western regions. Now, however, there is a clear tendency to invest in the large urban centres thus quickly integrating them into Europe's economy (Domanski, 2003; Gorzelak, 2001).

Polycentric development strategies have a long tradition in Poland. So, without using the present day (ESDP) terminology, goals resembling the polycentricity principle have been pursued for some time. All previous regional development policies have been directed at sustaining and further developing the polycentric development of the country (both during the period of the socialist economy and before World War II). The various policy stages differed only by the number of the key centres and the functions assigned to them. As such, Polish' policy-makers have always regarded the relatively polycentric structure (compared with the spatial structure of some of the other Central and Eastern European countries) of their country as beneficial.

This view on the benefits of polycentricity has not changed in the present transition phase. On the contrary, the 'National Spatial Arrangement Policy' of Poland, which came into force in November 2000, takes polycentric development on board as one of its main objectives. The policy combines two main objectives focusing on balanced regional development and providing an equal quality of life to all the inhabitants on the one hand, and increasing the international competitiveness of its larger urban areas on the other. In reality these objectives often contradict each other. The policy therefore developed both a short term and a long-term strategy, respectively focusing on the acceptance of increased polarization between the various regions and its fading away in the long-term through upward equalization. The historically rooted polycentric pattern plays a major role in this strategy.

The policy demonstrates an awareness of the fact that increasing disparities between regions seem to be intrinsic to being in a transition phase, as western regions and metropolitan areas in general perform better in Eastern European countries (Downes, 1996, Petrakos, 2001). Allowing for a certain degree of polarization between the respective regions in terms of growth and development in the short-term can therefore be interpreted as a pragmatic choice, as one tend to be happy to have competitive regions at all. Nevertheless, the long-term strategy is concerned with encouraging greater balance and equity across the regions as a whole.

Italy

Italy is to some extent a divided country. The North is more prosperous in terms of GDP and employment rates, while the South is historically underdeveloped. The main urban regions are Rome and Naples in the South, and Milan and Genoa in the North. As a whole, the Italian urban system is characterized by polycentricity in terms of the existence of multiple large centres. However, in terms of development, it is rather unbalanced as the northern cities historically developed much more fully in economic and social terms than the southern ones.

The Italian government structure has four different levels: central government, the regions (20), the provinces (103) and the municipalities (8102). In general the central government has programming power. Its main policy instruments are sectoral policies, the distribution of funds to the regions, the location of works of national interest and the formulation of framework legislation. The Regions were formed in 1970 and have full competence for programming and planning in their territory.

The polycentric urban structure in Italy represents both the historical and cultural specificity of the country. It is roughly based on the historical urban identities and 'vocations', the good internal road structure and the capability of many medium-sized cities to position themselves internationally (culture, tourism, entrepreneurial capabilities). The urban structure was one of the main elements supporting the development phase of the country during the period 1965-1990 when development was concentrated in specialized industrial districts (often linked to a medium or small-size city).

Polycentricity is an implicit though clear target in many national sectoral policies, for instance on education (the distribution of universities), the economy (support to district development) and transportation. The central government tries to enforce inter-municipal co-operation on territorial projects (PRUSST: urban restructuring and sustainable development programmes) through the provision of incentives and other forms of support. The main cities (Turin, Milan and Rome) have also sought to develop their own initiatives in respect of creating competitive economic integration zones. In relatively polycentric regions, the Regional government, through Regional Development Plans, takes such initiatives. The regional development plans of, for instance, Emilia-Romagna and Veneto foster the development of city-networks (polycentricity at the regional scale). The *Mezzogiorno* region (south) has thus far failed to exploit the potentials of the urban system.

Despite the lack of designated national strategic planning instruments, the national level is involved in polycentric development through many sectoral policies (for instance with respect to education, economic districts and transportation), even though polycentricity is only implicitly referred to. Several policies are pursued to diminish the North-South divide and special attention is therefore paid to economic districts and medium-sized cities. As part of the complex urban programmes (PRUSST), recent attempts to foster 'bottom-up' inter-municipal co-operation are another example. In addition polycentric urban systems are identified at the regional level, which retains competence over spatial planning. The Emilia-Romagna and Veneto regions are the most well known examples. For these regions, explicit polycentric policies have already been designed.

9 Policy recommendations

9.1 Policy recommendations in the ESDP

9.1.1 ESDP as a vision

The ESDP conveys the goals and principles to be operationalised via EU programmes and national planning, and it communicates a vision of Europe, that may in itself encourage decision-makers to take part in that vision. Non-binding as it is, we cannot ascribe to the ESDP much in the way of implementationary power. However, if one takes into account the increasing importance of symbols and visions in policy and marketing, the ESDP might in future have an influence as a vision attracting a broad number of agents dealing with policies related to spatial development.

The ESDP represents a new way of planning. Formerly, planning focused on the goals to be achieved by the means of the planning agent. During the growth of the industrial society there was room for large-scale planning and public interventions. Now, the restructuring of industrial society dominates the agenda. The planning agenda has thus changed from one of modernisation and industrial growth to that of economic restructuring and global competitiveness.

All cities and regions have to deal with the challenges of economic, social and environmental change in a global context. Economic development and restructuring are the goals for most cities and regions, and many are looking for new means and new development models to achieve them. One instrument here is to build partnerships and hence to broaden the "ownership" of plans and policies, since restructuring involves a large number of actors at different spatial levels. In this situation, visions and development perspectives are used as a means to invite a broader number of agents to take part in spatial development. This is why concepts such as "stakeholders", "partnerships" and "governance" have entered and widened the scene of spatial planning.

This is also considered by the ESDP in §21: "The ESDP conveys a vision of the future territory of the EU. In its aims and guidelines it provides a general source of reference for actions with a spatial impact, taken by public and private decisions-makers. Beyond that, it should act as a positive signal for broad public participation in the political debate on decisions at the European level and their impact on cities and regions in the EU" (emphasis added).

The ESDP is here described as a soft planning instrument, as "a general source of reference" for actions taken by a non-specified broad number of public as well as private decision makers. The aim is to generate secondary decision-making processes by a wide variety of actors through the persuasiveness of visions. The concept of polycentricity is one such vision,

and is, in the context of the ESDP, made more attractive through visionary arguments and attractive scenarios.

9.1.2 ESDP as a guideline for policies

In addition to this "soft" vision, the ESDP also contains several specific ideas and guiding principles more specifically addressing EU and national policies. This can be illustrated by the terms of reference for the current project (ToR 111):

"With a focus on imbalances at the European level, polycentricity is recommended especially in economically weaker regions. It is recommended that the Structural Funds "particularly in the current Objective 1 areas" should be oriented towards the polycentric development model (ESDP § 72), and that "policy measures should address all relevant community and national policies" (ToR 111).

The goals and principles of the ESDP should be implemented via recommendations specifically oriented to sectoral policies that are causing impacts on the spatial development - such as the Structural Funds policies and policies on agriculture, transport, telecommunication, environment and R&D (ToR 1.1.1). Recommendations should be prepared for "spatial planners on how an integrated polycentric urban model of the European Space could be elaborated and supported by EU policies".

Networking and governance is connected with polycentric arrangements between cities and urban located actors. Governance, networking and co-operation have however also become aims in themselves. Thus, it is stated that in the effort to derive policy recommendations, the study should "not focus only on policies with impacts on polycentricity but also on the influence of territorial governance and institutional aspects, revealing the mechanism of power partitioning, decision making and co-operation processes (ToR 1.1.1).

The policy recommendations in the ESDP regarding different aspects of polycentricity are summarised in Table 9.1.

Table 9.1 Policy recommendations of the ESDP

ESDP §	Aspect of polycentricity	Policy Recommendation
<i>Spatial impact recommendations</i>		
§79.1	Zones of global economic integration	Transnational spatial development perspectives
§79.2	Polycentric system of metropolitan regions, city clusters and city networks	co-operation between Structural policy and the policy of the TENs Improvement of the links between international / national and regional / local transport networks
<i>Spatial impact and territorial governance recommendation</i>		
§73 §76	Enhancing complementarities	City networks and city co-operation
<i>Territorial governance recommendations</i>		
§79,4	Co-operation on special topics	Cross border and transnational networks
§75	Rural-urban partnership	Co-operation: local transport, waste-management designation of shared residential or industrial areas

9.2 Policy-making in different contexts

The meaning of polycentricity depends upon the context and territorial level within which it is applied - the macro, the meso or the micro level. In the next sections we shall elaborate policy recommendations relating to the different levels of spatial planning and policies. Where possible we refer to "soft" as well as "hard" measures. Soft policy measures are strategic measures, revealing broad consensus about the visions for the future. They are supposed to appeal to a broad circle of stakeholders and to broaden the ownership of policymaking. Hard policy measures are allocative measures usually dealing with legislation, regulations or the specific spatial implications of investments, and they are normally part of sector policies and programmes. Unlike the soft planning instruments, where the key policy subject usually depends on other actors for its application, spatial implementation instruments are usually to be found in the hands of a key policy subject who maintains relatively firm control.

The levels dealt with in this report are specified in the table below, i.e. the region, the meso-region and the EU. The intra-urban level has only been dealt with in chapter 5.3, and the results suggest that intra-urban settlement structures do not affect the capacity of cities to integrate in polycentric networks of cooperation at wider scales.

Table 9.2 Concepts and policies on polycentricity at different spatial levels

Concept			Policy		
Spatial level	Polycentricity	Constituting elements	Policy issue	Agents	Development models
Micro	Intra-regional and inter-urban	Functional Urban Areas	Regional competitiveness Regional restructuring Endogenous development	Regional stakeholders	Urban networking
Meso	Inter-metropolitan / inter-regional	Metropolitan regions and urban clusters	Closing the gap between national core and second order cities Fostering regional development and cohesion across borders	National governments with possible support from EU structural funding Interreg programmes and regional and local stakeholders	Spatial policies for cohesion and competitiveness Regional and transnational integration
Macro	European Europe 27+2	Global economic integration zones	Balancing core-periphery	EU	Growth pole strategies

9.3 Intra-regional polycentricity (micro level)

At the regional level, polycentricity is termed intra-regional or inter-urban, as constituted by two, three or more cities that can together be integrated as a functional urban area.

9.3.1 Policy issues

Polycentric structures within large urban regions

The challenge at this level is to enhance regional strengths in order to stimulate welfare and economic development. As a general rule, large city regions have a wider set of economic activities than do smaller regions, especially as regards services. They also have larger labour markets. Therefore, they offer better services for businesses and families as well as more job opportunities.

On the other hand, large city regions also face a number of challenges in respect of welfare issues, such as traffic congestion and crime. A city region's physical structure may be important for pollution levels and for the availability of recreation areas. The challenge is therefore to combine the advantages of size without having too many of the disadvantages. Polycentricity may be a part of the answer here, as a polycentric structure with an internal functional division within the larger urban region is often regarded as better than urban sprawl.

Strategic co-operation and investments in infrastructure

One set of measures at the micro level is that of investments in infrastructure. Physical infrastructure (road, rail) improves links and reduces travel time between the centres within the region. Investments in transport infrastructure can also connect new cities to the larger urban area and increase integration over a larger area ("regional enlargement"). Soft infrastructure (culture, education, etc.) can contribute to the functional specialisation of cities within the urban region and stimulate the division of labour between them.

Strategic planning and co-operation between cities are then the key issues at this level. The mental distance between neighbouring cities may in some cases be more important to overcome than the actual physical distance. The integration of larger city regions demands co-operation from a large number of stakeholders in the public as well as the private sector, i.e. good governance.

9.3.2 Recommendations

Responsibilities for polycentric policies at the micro level rest with the national planning authorities and the cities and regions themselves. European regional polices may however also be used to support national and regional authorities in several ways.

Better and more strategic inter-city co-operation

There is a growing interest for inter-municipal co-operation between neighbouring authorities and for the development of integrated and territorially based strategies. Polycentricity as a model for regional development was not however an overt issue in the examples studied in this report, as economic development in general was the key issue. Nevertheless the partners involved in co-operation appreciated achievements such as the formation of the local network in itself, implementation of joint projects, capacity building, the transfer of knowledge between partners and joint place marketing. Polycentricity is not usually an explicit strategy for inter-city co-operation, and as such, the potential is not documented. Thus, to fully understand the concrete synergies of polycentricity and to learn from current experiences, we recommend the need to:

- Document concrete examples on the synergies of polycentricity obtained by neighbouring cities due to co-operation on functional urban complementary functions.
- Document the bottlenecks on inter-city co-operation across municipal borders as well as national borders.

The general argument, that cities by co-operating on complementary urban functions may increase their joint competitiveness and ranking in the national urban system, needs to be tested. The list of Potential Polycentric Integration Areas, PIAs, identifies areas endowing morphological potentials for polycentric integration. However, still it has to be tested whether

the morphological potentials are accompanied by functional and political potentials as seen from the perspective of the cities in question. Therefore we recommend the need to:

- Take the list of potential polycentric integration areas (PIAs) as a frame of reference for locally based considerations on the options for forming new functional and political inter-municipal co-operations aiming at jointly increasing the competitiveness and ranking in the national urban system.

Special attention must be given to cities in weaker regions. Thus we recommend the need to:

- Encourage cities in weaker regions to co-operate on the provision or maintenance of minimum thresholds for urban functions and services.

At the EU level, the importance of urban co-operation and urban relations should be emphasised. Hence, we recommend that:

- Whenever optional, EU policies dealing with urban issues should turn funding to the development of *linkages between cities* rather than development of the cities themselves. Hard infrastructure as well as soft institutional and functional linkages should be considered.

Governance is the challenge

Urban co-operation has to be dealt with within the framework of governance, as city governments cannot integrate urban relationships on their own. Local governments are merely one of many actors. Further diversification of decision-making is influenced by the fact that partnerships between public bodies, as well as those between public and market actors, are increasingly necessary for urban and regional regeneration and the transition of the industrial society.

The key challenge of governance is then to create the conditions that allow collective action to take place. New opportunities are opened up, as are new challenges, due to the diversification of local government. Even though most governance partnerships do not hold executive power, they may become influential due to their ability to communicate their goals and strategies to a wider public, and thus to influence decision-making processes.

In order to further develop governance processes in urban networking, there is a need to:

- Encourage national governments to improve the framework for local governance, to create more robust policy frameworks and greater political commitments from higher tiers of government.

Further, the variety of organisations, methods and achievements of governance show a great potential for learning. Accordingly, we recommend the need to:

- Facilitate the exchange of methods and achievements of local governance.

An important factor influencing the quality of the implementation of EU policies is the institutional capacity of the localities. Local institutional capacities and capabilities do not

always match the policy goals and administrative requests of EU programmes. This situation is most likely to occur in weaker regions where the level of institutional capacity may in fact be a bottleneck to development.

In order to improve the ability to form the local partnerships capable of matching EU policy programmes, we recommend the need to:

- Explicitly allocate part of the EU resources to enhancing governance relations at a variety of scales, and to the building up of institutional capacity at the local level.

Strategic planning

The formation of strategic policy documents has been shown to be a key instrument of inter-city governance and co-operation. Although strategic policy documents are "soft" they are thought to be quite influential as instruments for transforming governance policies into formal decision-making processes. Regional urban co-operation should therefore be encouraged to deal with strategic planning and to make polycentricity a key issue. As such, we recommend national governments and the EU to:

- Encourage the development of regional spatial development strategies by inter-city co-operations, explicitly considering the potentials of enhancing urban functional complementarity. For this to be effective, a set of guidelines for the understanding of polycentricity at regional level is necessary.

The options for enhancing functional polycentricity at the regional level should be facilitated by structural fund regulations. This can be achieved in two ways, both through the zoning of programme areas and through requirements for programming. Several examples of separate programmes for urban and rural parts of regions are currently available, as are those of programme areas where the urban core is left out while the rest of the functional region is included. Thus far, discussions of the urban structures or the functionality of an integrated urban region are rare in economic development programmes. Accordingly, we recommend the need to:

- Encourage a geographical zoning of programme regions that covers economically functional regions. The PIAs should be considered as building blocks for identifying programme regions.
- Include in the regulations for programming a paragraph that encourages regions within the framework of PIAs to describe potentials and weakness of functional and structural urban relations, e.g. as a part of the SWOT analysis.

9.4 National and transnational polycentricity (meso level)

Polycentricity in the national context is about the balance within the urban system. Governments are key actors here, and act *vis-à-vis* regional and local authorities. At the transnational level, regional and local governments are usually the key actors, often encouraged by EU-funding.

9.4.1 Policy Issues

More balanced national urban systems

We have seen that countries with a morphologically more polycentric urban structure also score better on GDP and energy consumption. The correlation is weak and we cannot claim with certainty that the urban structure is the *reason* for better scores. However, current trends are moving in the direction of more monocentricity. Since the 1990s many European countries have experienced increasing regional polarisation between centrally located city regions on the one hand, and peripherally located regions and regions undergoing structural change on the other. Particularly in small peripheral countries, and in countries with rapid economic growth, we have seen the development of a tendency for the largest cities to have the strongest growth.

At the national level, the challenge is therefore to make higher-order services available for all parts of the countries in order to stimulate economic competitiveness and improve territorial cohesion. The urban system does have an impact here, as it organises important parts of economic life.

Functional specialisation and strengthening the second tier of cities

Policies at the meso level should focus on the division of labour between the various national nodes, and the balance between the economically strongest regions within a country and the rest of the urban structure. In monocentric countries, this implies a focus on the second tiers of cities.

This is of particular relevance for countries facing rapid structural change and urbanisation. In this context, polycentricity means that investments should be directed towards urban regions other than the strongest ones in order to develop alternative nodes, as this will produce more even access to services throughout the country and contribute to the integration of these regions with the rest of Europe.

9.4.2 Policy recommendations

EU policies are relevant for national polycentricity

Several EU policies are important for the development of national urban systems. Investments in Trans-European Networks have obvious impacts on the relative position of city regions, while the Framework Programmes for research contributes to the strengthening of city regions with good research facilities.

The Structural Funds are however the main policy instruments for territorial cohesion. The EU can influence national and regional programming directly in countries where large parts of the territory are eligible for structural support. This is particularly the case for the cohesion countries, where investments in transport and environmental infrastructure are co-funded by the Structural Funds.

The EU can contribute to a more polycentric national urban structure by:

- Agenda setting, i.e. to encourage national spatial planning and regional policy agencies to elaborate spatial development strategies. Such strategies should explicitly address the world outside the country or trans-national region. Thus, the spatial development strategies should be elaborated within trans-national and trans-regional horizons, respectively.
- Co-funding of investments in productive infrastructure that contributes to the functional strengths of the second tier of cities, as well as to the strengthening of the links between these urban regions and the European core.

Potential Polycentric Integration Areas

The Potential Polycentric Integration Areas (PIAs) identified in this project offers national governments and meso-regional co-operations points of reference for further investigation of regional arenas for co-operation.

However, the PIAs are identified through their morphological endowments only. The potentials for developing urban functional relations need to be considered and so do the political potentials for inter-city co-operation and partnership building. Initiatives for identifying such potentials and hence for developing the Potential Polycentric Integration Areas should involve local governments and stakeholders from relevant PIAs. Accordingly, we recommend the need to:

- Arrange a number of conferences at national and transnational level in order to further identify the options for enhancing regional development based upon the Potential Polycentric Integration Areas. Listed in table 5.7 are nodes of the Potential Polycentric Integration Areas. PIAs showing the largest potentials for increasing their ranking in the European urban system are emphasised.

Spatial development perspectives

Thus far, spatial strategies have been concerned with economic development and urban competitiveness. The urban structure and the degree of polycentrism are considered only in a limited number of countries and regions.

Our studies of national as well as transnational policies do however reveal several references to polycentricity. Notwithstanding this however, the meanings attached to these are often different, as are the tools applied. Therefore, it is difficult to extract concrete common recommendations from them. Several of the case studies do however emphasise the importance of strategic planning documents as a means for conceptualising territories, facilitating a broader debate about development issues, and subsequently influencing planning and decision processes.

Accordingly, in order to promote the body of professional knowledge and skills with regard to national and transnational planning, we recommend the need to:

- Initiate a systematic examination of the professional standards, methods and paradigms of strategies related to spatial development at the national and trans-national levels. Attention should be given here to how the goals of competitiveness and cohesion are handled, how territories are conceptualised, the role given to polycentricity and the importance of co-operation and partnerships in implementation.

The need for further comparative data

The degree of morphological polycentricity varies significantly between the member states. Thus simply to recommend the need for more polycentricity to countries showing the lowest degrees of polycentricity is however not as straightforward as it seems. There is no obvious correlation between the functional specialisation of FUAs and the degree of morphological polycentricity. More knowledge of the interrelationship between morphological and functional polycentricity is therefore needed, and we recommend the need to:

- Conduct further studies on the interrelationships between functional and morphological polycentricity.

The observations of morphological polycentricity of national urban systems were to some extent hampered by the differences in national definitions on functional urban areas. Throughout the report such differences are highlighted continually. The difference between countries makes comparative studies more difficult, and more could be done here to produce a better tool for pan-European analysis. Such comparative data would also make it possible to compare national concepts and structures with each other in order to understand the national specificities better. In order to improve the validity of comparative studies on polycentricity, we recommend the need to:

- Develop a pan-European definition of Functional Urban Areas and to collect data at this territorial level.

Functional polycentricity and sectoral strategies

Sector policies are the main instruments of policy implementation, both at the national and EU level. However, the use of sector policies in the interests of spatial development is only possible if it has been proved that sector goals will also be met. There are normally national policies for the construction of roads, rail-links, airports and harbours, and there are national policies for the location of universities and other higher-order services. Sector policies must admit their shared responsibilities with spatial development if they are to play in concert at the territorial level. It is easy to ask for such a responsibility, but it is difficult to achieve.

We have not studied the possible interaction between sectoral and territorial strategies. Nevertheless, we recommend the need to:

- Encourage sector policies with measures of particular relevance for polycentricity to take part in integrated territorial planning at the national and trans-national level. Special attention should be given to the enhancing the second tier of cities.
- Encourage neighbouring city regions to co-operate with the aim of increasing their functional polycentricity within the larger region by building up a critical mass of local urban administrative, service and cultural functions.
- Focus efforts on communication investments towards enhancing accessibility within and between the hubs of polycentric development.

The challenges of current trends towards mono-centrism

Usually, we give priority to operational tools such as special funding programmes and planning and governance methods. However, the focus on operational tools must be supplemented by a search for broader strategies dealing with the structural trends of spatial development in Europe, which seem to enhance mono-centrism rather than polycentricity. This has to do with growth in the accessibility, economy and population of the larger metropolitan areas. All transport policy scenarios examined in ESPON, with the exception of the scenario on transport pricing, are likely to accelerate this monocentric development.

The urban systems in the accession countries are, on average, still more polycentric than those of the old EU member states, however, the tendency towards increased monocentricity is more pronounced in the new member states, and is likely to continue in the future.

For economic forces to bring about a more polycentric outcome the main alternatives are probably to increase transport costs or to encourage regional specialisation. Thus, we recommended the need to:

- Analyse the trends in the national urban system towards monocentricity or polycentricity in each country. Both functional and morphological aspects should be considered, as well as the forces behind the trends and the possibility of influencing them through public policies.

Is there a need for alternative strategies?

Differences between the old and the new member states may necessitate further study on the appropriateness of following the same strategies across the European territory. There is a general tendency (often implicit) to claim that new member states should attempt to 'catch up' with the standards of the old member states, the impact of which is that qualities achieved since the Second World War in e.g. spatial planning and transport systems are ignored. This phenomenon has not been investigated in this project. However, we recommend the need to:

- Further investigate the extent to which the regional and urban endowments of the new member states may form the basis for alternative spatial strategies.

9.5 European polycentricity (macro level)

9.5.1 Policy issues

At the European level, the main issue is to stimulate the development of *zones of economic global integration* beyond the Pentagon. A more polycentric structure, with several strong urban regions of European and global significance, can contribute to the competitiveness of Europe as well as to cohesion between different territories.

The empirical data reveals a situation with significant differences between the core and the periphery regarding the urban tissue. There are large variations regarding income levels and development endowments between centrally located regions and peripherally located regions, as well as significant variations within each of the groups.

This observation is even more valid at the EU 27+2 level than for the EU 15 level. After enlargement, are now several new EU Member States with dense urban systems, located relatively close to the Pentagon, while also increasing the core-periphery differences.

Policies at this level should focus on the regions with the largest potentials for establishing polycentric structures. The strongest candidates for polycentric policies are however located within, or in close proximity to, the Pentagon.

The challenge is therefore to identify and strengthen polycentric regions in other parts of Europe that can supplement the Pentagon functionally. Our analysis has revealed that, based on population mass and proximity between urban centres, this will be difficult. Therefore, a more polycentric Europe must be based on a functional division of labour, where it is not only the largest conurbations in Europe that can specialise and host functions and services of European importance.

9.5.2 Policy recommendations

The contribution of EU policies

Several EU policies influence the urban system at the European level. Investments in Trans-European networks are important for the functions of city regions. A conscious localisation of European institutions will potentially impact significantly on the functional specialisation of city regions. The common R&D policy and the system of European research institutions are also important for functional specialisation.

EU regional policies can also play an important role in the development of polycentric structures at the European level. Historically, a substantial part of the Structural Funds has been spent in urban regions. This will remain the case in future, especially since there are several strong urban regions located in the enlarged Objective 1 area. If programmes are to have an impact on city structures, measures should go beyond the issues of urban decay and reconstruction, and allow support for actions promoting the specialisation of the larger polycentric city regions. Thus we recommend the need to:

- Strategically use the opportunity to locate EU institutions in cities outside the Pentagon, and to consider the possibility of supporting functional specialisation when making these decisions.
- Encourage the analysis of urban structures as a part of the programming processes for Objective 1 as well as Objective 2 programmes, and to make polycentricity a thematic issue eligible for structural fund support under Objective 2.
- Encourage cohesion countries and Objective 1 regions, where structural fund interventions have the largest impact, to develop strategies for their urban systems.
- Allow support for functional specialisation of larger polycentric regions as part of the structural fund programmes
- Use instruments such as Interreg and Interact in the promotion of networking, the development of common strategies covering several cities (also cross-border) and for the dissemination of 'good practice' themes between the city regions that are in the forefront of polycentric thinking.

Beyond the Pentagon

The aim of the ESDP is to develop *zones of global economic integration* beyond the Pentagon. These are supposed to contribute to European polycentricity as mere growth poles. They are not supposed to build upon complementary relations between themselves. Internally these Global Economic Integration Zones may be constituted (but not necessarily) by a polycentric urban system.

The potential for building strong centres beyond the Pentagon was examined by means of two concepts, Metropolitan Economic Growth Areas (MEGAs) and Potential Polycentric Integration Areas (PIAs).

The MEGA analysis showed that most of the strongest MEGAs are located within the Pentagon or in close proximity to it. Only five (Copenhagen, Berlin, Rome, Madrid and Barcelona) are situated outside the Pentagon however in solitary positions. Even if these five MEGAs were successfully developed as zones of global economic integration, they would only to a limited degree contribute to the enhancement of European polycentricity, due to their relative proximity to the Pentagon.

The PIA analysis confirms this conclusion. In order to achieve a more balanced urban structure, special attention must be given to developing the potentials of the PIAs located in the periphery. Even if the preconditions there are often more difficult than in the Pentagon or in regions located close to the Pentagon, the motivation may be stronger. The study also shows that a whole range of cities beyond an extended Pentagon (from the UK Midlands via Berlin to Northern Italy) could achieve significant gains in their position in the European urban hierarchy if neighbouring urban areas were better integrated: Genova, Montpellier, Decin, Rimini, Palermo, Messina, Copenhagen, Bari, Alicante, Oslo, Belfast, Porto, Glasgow, Valencia. It is clear, however, that these cities cannot balance the European core area through polycentric integration.

To enhance these potentials would not be sufficient to counter parallel initiatives in the Pentagon, however, as a regional polycentric integration policy applied in a uniform way across Europe would probably increase the contrasts between the core and the periphery.

Least favoured regions

The long-term goal of finding counterweights to the Pentagon is a challenging one. It is even more challenging however to simply avoid further exacerbating the contrast between the successfully polycentric regions and other regions where polycentricity is less of an option, as development trends are most worrying in sparsely populated regions without strong cities. Accordingly, the search for competitiveness and polycentric integration calls for special initiatives to cushion the potential conflicts and problems of peripheral areas. These issues have not been dealt with in this project. However, it is recommended that there is a need to:

- Identify complementary policy instruments for those areas and regions not favoured by polycentricity policies through, for instance, policies directed at the improvement of urban-rural partnerships and thematic networking.

9.6 Can polycentricity be achieved simultaneously at all levels?

The ESDP recommends the adoption of polycentric policies at all spatial levels, i.e. from the *micro* to the *macro* level. And indeed as we have seen, potential policies can be identified at each level. This then begs the inevitable question, is it possible to achieve polycentricity simultaneously at all levels?

The ESDP scenario in Figure 9.1 illustrates the ideal situation, where increased polycentricity at the intra-urban level (*micro*) makes city regions stronger and therefore produces a more polycentric national or trans-national urban system (*meso*). In the next step, stronger functional areas at the *meso* level can work together to produce strongholds for a more balanced Europe, heralding the eventual emergence of several Global Integration Zones in addition to Pentagon (*macro*).

We must however recognise here that there are inherent difficulties embedded in this model, as contradictions manifestly exist between the policies at different geographical levels:

At the European scale (*macro*-level), our calculations of PIAs show that regional polycentric integration will tend to increase the contrast between core and periphery if implemented across the board. It is possible for urban regions beyond the Pentagon to enhance their status compared with other regions through the development of a polycentric structure with better functional integration. But the potentials for such policies are clearly best realised in the already strongest regions (i.e. within the previously identified core area, which is somewhat larger than the current Pentagon). A peripheral region can gain from polycentric policies then only if few other regions succeed in implementing such policies. If polycentricity is successfully implemented across Europe, regions located within, and in proximity to, the Pentagon will inevitably gain most. Consequently, a European level polycentricity must build upon functional specialisation, not population size.

At the national and trans-national scales (*meso*-level), a policy for increased polycentricity and spatial balance at the European level will strengthen the strongest urban regions. Investment will have to be concentrated in these regions, though this is likely to be at the expense of other more peripheral regions. As a result, the urban systems of the countries in question may actually then become more monocentric. The same discussion can also be applied at the sub-national level, where the strengthening of secondary cities with the aim of balancing the capital region may increase the difference between them and smaller cities. Such contradictions have the potential to create political tensions that can ultimately only be dealt with on a case-by-case basis.

Finally, at the scale of functional urban regions (*micro* and city scale), there is no observable correlation between the levels of polycentricity or monocentricity of cities, and their capacity to integrate in potential Polycentric Integration Areas or polycentric networks at the *meso* or *macro* scales. While polycentricity within urban regions may still be a more favourable option from an urban planning perspective, its relevance for European and national spatial planning remains to be established.

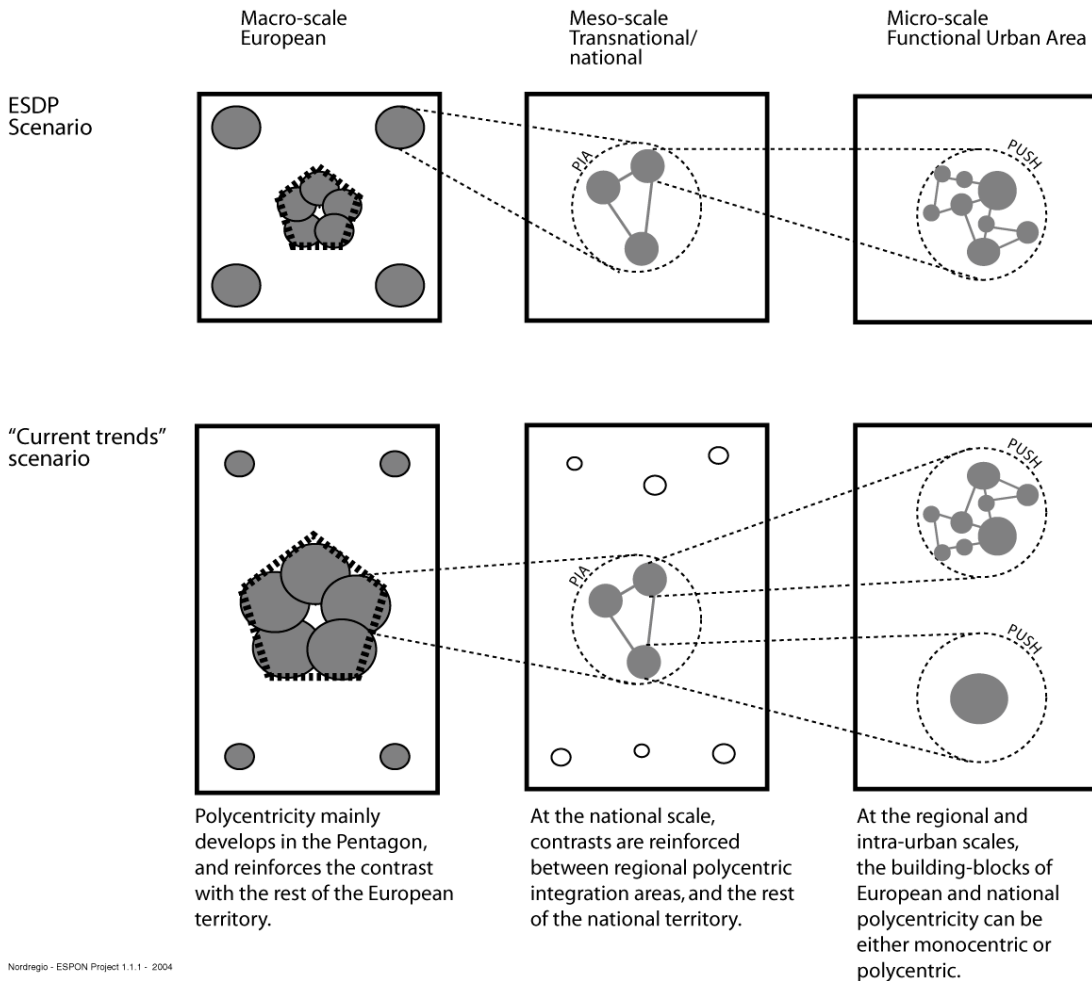


Figure 9.1: Challenges in the implementation of polycentricity at all spatial scales

Part 3

Annex

1 List of indicators developed and datasheets provided to the ESPON database

Geographical layers:

- FUA centroids
- PUSH area delimitations
- PIA delimitations
- Geographical position (city) of the top 500 European companies identified by Forbes

Statistical indicators at NUTS 0 and NUTS 1 levels:

- Number of FUAs
- Slope of rank-size distribution of population
- Primacy of rank-size distribution of population
- Slope of rank-size distribution of GDP
- Primacy of rank-size distribution of GDP
- Gini-coefficient of service areas sizes
- Slope of the regression line between the accessibility and the population of FUAs
- Gini coefficient of the accessibility of FUAs

Statistical indicators at FUA level

- FUA population
 - Population: Number of inhabitants per FUA, and classification in four categories.
 - Transport, with two sub-indicators (classification in four categories).
 - Presence of airports with more than 50 000 passengers.
 - Presence of port with more than 20 000 TEU.
 - Manufacturing (classification in four categories).
 - Knowledge/Higher education institutions: Presence of university and number of university students (classification in four categories).
 - Decision Making: Presence of headquarters of the top 500 companies in each country, rated by turnover (classification in four categories).
 - Tourism: Number of bed places in hotels or similar establishments (classification in four categories).
 - Administrative status (classification in four categories).
 - Average population in FUAs in each country.
 - Average population in MEGAs in each country.
 - Number of inhabitants (national population) per MEGA in each country.

Statistical indicators at PUSH area level

- Extent of 45-minute Isochrones;
- Area of / number of municipalities assigned to the PUSH using the 100 % criterion
- Area of / number of municipalities assigned to the PUSH using the 50 % criterion
- Area of / number of municipalities assigned to the PUSH using the 10 % criterion (threshold adopted for the rest of the analysis)
- Area of / number of municipalities assigned to the PUSH using the 5 % criterion
- Proportion of each country's area covered by PUSH areas;
- Ratio between PUSH Area and Isochrone area;
- Population of each PUSH area;
- Ratio between PUSH area population and FUA population;
- Number of FUA centres included in each PUSH area;
- Number of countries covered by each PUSH area (identification of trans-national PUSH areas);
- Proportion of PUSH area overlapping with other PUSH areas;
- Number of countries concerned (1-4)
- Number of other FUA centroids located within particular PUSH
- Proportion of PUSH area overlaid by other PUSHs
- Total settlement area (in km²)
- Number of settlement units within the PUSH
- Proportion of settlement area on total PUSH area (in %)
- Smallest settlement area in PUSH (in km²)
- Area of the 2nd greatest settlement area in PUSH (in km²)
- Largest settlement area in PUSH (in km²)
- Average settlement area in PUSH (in km²)
- Standard deviation of settlement areas in PUSH (in km²)
- Gini coefficient of settlement areas
- Average distance between all settlement areas within a PUSH (in km)
- Distance between the largest and 2nd largest settlement unit (in km)
- Maximum standardised area concentration index (PUSH=100)
- 2nd highest standardised area concentration index (PUSH =100)
- Minimum standardised area concentration index (PUSH =100)
- Average standardised area concentration index (PUSH =100)
- Range between maximum & minimum standardised area concentration index
- Difference between highest & 2nd highest standardised area concentration index
- Difference between highest & average standardised area concentration index
- Difference between 2nd highest & average standardised area concentration index
- Ratio between 2nd highest and highest standardised area concentration index
- Ratio between average and highest standardised area concentration index

- Ratio between minimum and highest standardised area concentration index
- Settlement structure assignment1 = Sprawl2 = sparsely populated/rural3 = monocentric4 = polycentric
- Settlement structure assignment (alternative)1 = Sprawl3 = monocentric4 = polycentric

Statistical indicators at NUTS 5 level

- Assignment to PUSHs
- Total number of assignments
- Number of assignments to PUSHs with less than 100,000 inhabitants
- Number of assignments to PUSHs with > 100,000 and < 250,000 inhabitants
- Number of assignments to PUSHs with > 250,000 and < 500,000 inhabitants
- Number of assignments to PUSHs with > 500,000 and < 1 million inhabitants.
- Number of assignments to PUSHs with more than 1 million inhabitants
- Level of assignment (1 to 25) to PUSH areas (1 = first order assignment2 = second order assignment3 = third order assignment)

2 List of missing data

Main missing data sets, which would have allowed for a more comprehensive analysis of urban areas as nodes in a polycentric development:

- Socio-economic data at municipal scale;
- Coherent time series at municipal scale;
- Data on flows between urban areas.

3 List of abbreviations and glossary

AC12	New Member States, Romania and Bulgaria
ANDIP	Development Society of the Piraeus Region Municipalities
BPA	Bologna Parma Area
BSW	Bergisches Statedreieck Remscheid – Solingen – Wuppertal
BTA	Barcelona Tarrogonia Area
B/Z	Braganca-Zamora Cooperation Work Community
CADSES	Central European, Adriatic, Danubian and South-East Space
CCA	Commuter Catchment Area
CMA/O	Copenhagen Malmö Area and the Oresund Region
CSM	Council of the Stockholm-Malar region
DCLHA	Dresden Chemnitz Leipzig Halle Area
EGA	Edinburgh Glasgow Area
ESDP	European Spatial Development Perspective
ESPON	European Spatial Planning Observatory Network
FUA	Functional Urban Area
GMPG	Greater Manchester Strategic Planning Officers Group
G/NGA	Gorizia-Nova Gorica Area
HAMAR	The Regional Council for the Hamar Region
JORDES	Joint Regional Development Strategy for the Viennea, Bratislava, Győr Regions
KKOA	Krakow Katowice Ostrava Area
KVR	Kommunalverband Ruhrgebiet
LGGLA	Lyon Grenoble Geneva Lausanne Area
LIMA	Association of Municipalities of the Lima River Valley
LRD	Latgale Region Development Council
MEGA	Metropolitan European Growth Area
NUTS	Nomenclature of Territorial Units for Statistics
NWMA	North West Metropolitan Area
OSLO	Action programme for regional development in Oslo city and Akershus County
PBCA	Porto Braga Coimbra Area
PIA	Potential Integration Area
PTS	Patto Territoriale del Sangone
PUSH	Potential Urban Strategic Horizon
RSD	Rhine-Scheldt Delta
SINA	SINA project
SLL	Saar Lor Lux
SMA	Snieznik Municipalities Association
SPNM	Strategic Plan North Milan Development
SYF	South Yorkshire Forum
VBGA	Vienna Bratislava Győr Area
VDM	Vereniging Deltametropool
VID	Valdres Industrial Development Ltd.
WL	Western Lithuania 2020

4 References

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5 Indication of performance indicators achieved

Number of spatial indicators developed: - In total Covering - The EU territory - More than the EU territory	43 indicators and 19 subindicators 43 indicators and 19 subindicators
Number of spatial indicators applied: - In total Covering - The EU territory - More than the EU territory	43 indicators and 19 subindicators 43 indicators and 19 subindicators
Number of spatial concepts defined	Functional Urban Areas (FUA) Metropolitan European Growth Area (MEGA) Potential Urban Strategic Horizon (PUSH) Potential Polycentric Integration Areas (PIA)
Number of spatial typologies tested	FUAs MEGAs Intra-urban Settlement structure
Number of EU maps produced	35 EU maps
Number of ESDP policy options addressed	Policy options no: 1, 2, 3, 4, 5, 28, 30

6 List of Functional Urban Areas

List of FUAs, sorted according to countries and FUA populations, and indicating the status of the city with regards to PIAs, as well as the population in the corresponding PUSH area and PIA.

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
AT	WIEN	1	1 550 123	2 930 963	3 424 971
AT	GRAZ	3	226 244	1 147 871	1 147 871
AT	LINZ	1	183 504	1 262 024	1 703 842
AT	SALZBURG	3	142 662	1 096 964	1 096 964
AT	INNSBRUCK	1	113 392	564 229	999 720
AT	KLAGENFURT	1	90 141	630 065	1 267 729
AT	VILLACH	2	57 497	615 801	1 267 729
AT	WELS	2	56 478	1 328 900	1 703 842
AT	SANKT POELTEN	2	49 121	2 437 363	3 424 971
AT	DORNBIRN	2	42 301	1 387 291	2 416 961
AT	STEYR	2	39 340	1 126 070	1 703 842
AT	WIENER NEUSTADT	2	37 627	2 577 068	3 424 971
AT	FELDKIRCH-RANKWEIL	2	28 607	1 188 185	2 416 961
AT	BREGENZ	2	26 752	1 636 331	2 416 961
AT	LEOBEN	1	25 804	641 878	707 402
AT	WOLFSBERG	2	25 301	832 174	1 267 729
AT	KLOSTERNEUBURG	2	24 797	2 581 934	3 424 971
AT	BADEN-TRAIKIRCHEN	2	24 502	2 648 580	3 424 971
AT	KREMS AN DER DONAU	2	23 713	2 215 726	3 424 971
AT	TRAUN	2	23 470	1 231 993	1 703 842
AT	AMSTETTEN	2	22 595	1 068 928	1 703 842
AT	BRUCK/MUR-KAPFENBERG	2	22 234	627 558	707 402
AT	LEONDING	2	22 203	1 234 862	1 703 842
AT	MOEDLING	2	20 405	2 721 970	3 424 971
BE	BRUXELLES/BRUSSEL	1	964 405	6 489 124	11 868 661
BE	ANTWERPEN	2	931 567	6 397 817	11 868 661
BE	LIEGE	1	584 398	3 713 499	7 172 112
BE	GENT	2	496 608	5 907 594	10 863 278
BE	LEUVEN	2	458 265	6 254 910	11 868 661
BE	CHARLEROI	2	420 214	3 822 325	11 868 661
BE	HASSELT	2	384 503	5 479 786	11 868 661
BE	MECHELEN	2	306 413	5 744 479	11 868 661
BE	NAMUR	2	283 793	4 226 528	11 868 661
BE	KORTRIJK	2	277 786	4 872 204	10 863 278
BE	BRUGGE	2	271 437	3 219 959	10 863 278
BE	VERVIERS	2	266 334	3 344 020	7 172 112
BE	AALST	2	262 337	6 104 048	10 863 278

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
BE	MONS	2	249 153	4 839 901	10 863 278
BE	SINT NIKLAAS	2	224 356	5 674 402	11 868 661
BE	LA LOUVIERE	2	174 124	4 309 585	11 868 661
BE	OOSTENDE	2	142 946	2 096 601	10 863 278
BE	ROESELARE	2	140 684	3 689 328	10 863 278
BE	TOURNAI	2	140 673	5 348 063	10 863 278
BE	IEPER	2	104 320	3 136 592	10 863 278
BE	MOUSCRON	2	70 016	4 175 333	10 863 278
BG	SOFIA	1	1 173 811	1 519 028	1 604 674
BG	PLOVDIV	1	721 905	874 153	1 094 300
BG	VARNA	1	320 464	615 078	675 424
BG	BURGAS	3	209 417	366 366	366 366
BG	RUSE	1	178 379	523 151	846 739
BG	STARA ZAGORA	1	167 661	483 826	917 657
BG	PLEVEN	1	149 142	402 420	497 630
BG	SLIVEN	1	136 148	372 835	439 069
BG	PAZARDZHIK	2	127 900	812 915	1 094 300
BG	DOBRICH	2	125 721	616 795	675 424
BG	PERNIK	2	104 625	1 510 003	1 604 674
BG	SHUMEN	1	104 456	340 663	440 165
BG	HASKOVO	1	99 181	370 284	535 823
BG	YAMBOL	2	95 000	355 717	439 069
BG	VELIKO TARNOVO	1	90 432	404 206	577 924
BG	VRACA	1	85 215	335 461	444 497
BG	KAZANLAK	2	81 533	460 522	917 657
BG	BLAGOEVGRAD	3	78 133	205 984	205 984
BG	VIDIN	3	77 480	231 363	231 363
BG	GABROVO	2	74 930	464 298	577 924
BG	KYUSTENDIL	2	70 573	176 658	1 604 674
BG	KARLOVO	2	70 278	623 466	917 657
BG	KARDZHALI	2	69 830	411 472	535 823
BG	DIMITROVGRAD	2	64 852	555 222	917 657
BG	LOVECH	2	62 165	357 682	497 630
BG	SILISTRA	2	61 942	298 499	420 720
BG	MONTANA	2	61 422	351 988	444 497
BG	TARGOVISHTTE	2	60 890	400 699	440 165
BG	RAZGRAD	2	58 874	621 645	846 739
BG	PETRICH	3	57 689	198 201	198 201
BG	ASENOVGRAD	2	52 116	876 792	1 094 300
CH	ZUERICH	1	940 180	3 114 942	5 909 402
CH	GENEVE	1	424 028	1 516 049	1 718 834
CH	BASEL	1	406 391	3 117 760	5 242 058
CH	BERN	1	332 494	1 525 465	2 383 602
CH	LAUSANNE	1	294 604	1 227 810	1 517 588
CH	LUZERN	2	177 734	1 845 763	5 909 402
CH	ST. GALLEN	1	134 606	1 583 645	2 416 961
CH	WINTERTHUR	2	114 669	2 954 427	5 909 402
CH	LUGANO	2	104 547	4 612 990	12 861 094

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
CH	BIEL (BE)	2	87 683	1 280 732	2 383 602
CH	THUN	2	84 436	886 758	2 383 602
CH	BADEN	2	80 617	3 502 920	5 909 402
CH	FRIBOURG	2	80 006	783 293	2 383 602
CH	AARAU	2	73 731	3 345 754	5 909 402
CH	ZUG	2	71 173	2 402 335	5 909 402
CH	VEVEY	2	70 797	709 239	1 517 588
CH	NEUCHATEL	2	70 709	912 586	2 383 602
CH	SOLOTHURN	2	68 272	2 256 317	5 242 058
CH	SCHAFFHAUSEN	2	59 819	2 701 251	5 909 402
CH	CHUR	1	57 611	618 088	1 163 287
CH	OLTEN	2	50 839	3 255 504	5 909 402
CH	WETZIKON-PFAFFIKON (	2	48 366	2 289 584	5 909 402
CH	LA CHAUX-DE-FONDS	2	48 207	462 025	2 383 602
CH	SION	2	47 864	304 203	1 517 588
CH	LOCARNO	2	44 900	558 161	12 861 094
CH	CHIASSO-MENDRISIO	2	42 550	6 339 088	12 861 094
CH	ARBON RORSCHACH	2	42 494	1 541 372	2 416 961
CH	BELLINZONA	2	40 767	1 058 793	12 861 094
CH	ZOFINGEN	2	38 969	2 897 144	5 909 402
CH	LIESTAL	2	37 914	2 035 012	5 242 058
CH	PFAEFFIKON-LACHEN	2	36 023	1 968 286	5 909 402
CH	HEERBRUGG- ALTSTATTEN	2	34 825	1 553 854	2 416 961
CH	BRIG	2	28 684	329 286	537 660
CH	YVERDON	2	27 437	717 236	1 517 588
CH	BURGDORF	2	26 530	1 714 027	2 383 602
CH	BRUGG	2	25 255	3 136 987	5 909 402
CH	GRENCHEN	2	24 934	1 278 928	2 383 602
CH	FRAUENFELD	2	24 792	2 362 040	5 909 402
CH	LENZBURG	2	24 495	3 111 876	5 909 402
CH	WIL	2	24 482	2 548 758	5 909 402
CH	KREUZLINGEN	2	23 804	2 186 415	5 909 402
CH	RAPPERSWIL-JONA	2	22 727	2 471 492	5 909 402
CH	ROMANSHORN- AMRISWIL	2	22 701	1 469 006	2 416 961
CH	SIERRE	2	22 626	230 895	1 517 588
CH	MONTHY	2	22 462	654 618	1 517 588
CH	STANS	2	22 075	1 619 629	5 909 402
CH	INTERLAKEN	2	20 189	521 925	2 383 602
CH	BUCHS	2	19 083	1 121 087	1 163 287
CY	NICOSIA	1	250 633	329 378	382 693
CY	LARNACA	2	160 733	256 319	382 693
CY	LIMASSOL	3	71 740	203 885	203 885
CY	PAPHOS	3	47 198	71 611	71 611
CZ	PRAHA	1	1 335 733	1 952 721	1 990 120
CZ	OSTRAVA	1	1 157 918	1 742 952	2 183 731
CZ	BRNO	3	531 122	806 928	806 928

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
CZ	PLZEN	3	305 518	569 703	569 703
CZ	FRYDEK-MISTEK	2	226 497	1 465 131	2 183 731
CZ	OLOMOUC	1	224 106	476 233	1 268 570
CZ	ZLIN	2	194 462	786 595	1 268 570
CZ	OPAVA	2	180 916	1 002 410	2 183 731
CZ	CESKE BUDEJOVICE	3	178 088	434 470	434 470
CZ	PARDUBICE	1	160 618	517 361	748 455
CZ	HRADEC KRALOVE	2	159 357	687 937	748 455
CZ	LIBEREC	1	157 853	750 765	1 105 966
CZ	PREROV	2	135 025	783 233	1 268 570
CZ	DECIN	1	133 601	1 105 265	1 676 298
CZ	TEPLICE	2	126 274	1 284 977	1 676 298
CZ	CHOMUTOV	2	124 506	1 058 324	1 676 298
CZ	KARLOVY VARY	3	121 581	446 003	446 003
CZ	USTI NAD LABEM	2	117 324	807 214	1 676 298
CZ	MOST	2	116 655	879 640	1 676 298
CZ	PROSTEJOV	2	109 502	741 431	1 268 570
CZ	JIHLAVA	3	108 060	451 459	451 459
CZ	HAVIROV	2	85 502	1 447 410	2 183 731
CZ	KLADNO	2	70 702	1 542 517	1 990 120
CZ	KARVINA	2	64 653	1 502 935	2 183 731
CZ	MLADA BOLES LAV	3	43 841	1 709 298	1 709 298
DE	BERLIN	1	4 101 213	4 709 288	5 254 106
DE	STUTT GART	1	2 593 087	4 588 211	7 201 472
DE	HAMBURG	1	2 515 468	3 845 206	4 883 155
DE	FRANKFURT AM MAIN	1	1 896 741	5 456 553	14 926 087
DE	MUENCHEN	1	1 893 715	3 636 136	5 031 251
DE	KOELN	1	1 823 475	11 269 089	22 262 252
DE	MANNHEIM	2	1 568 679	5 871 833	14 926 087
DE	DUESSELDORF	2	1 315 736	12 475 385	22 262 252
DE	NURNBERG	1	1 018 211	2 186 388	4 184 642
DE	HANNOVER	1	996 586	3 026 240	6 158 534
DE	SAARBRUECKEN	1	959 084	2 204 118	2 951 543
DE	BONN	2	878 742	6 752 211	22 262 252
DE	BREMEN	1	849 800	2 085 562	2 677 494
DE	WUPPERTAL	2	846 815	11 943 160	22 262 252
DE	WIESBADEN	2	780 190	5 379 877	14 926 087
DE	DRESDEN	1	681 953	2 022 188	3 541 847
DE	ESSEN	2	591 889	11 290 198	22 262 252
DE	KARLSRUHE	2	590 718	5 027 176	14 926 087
DE	DORTMUND	2	589 240	9 357 662	22 262 252
DE	AACHEN	2	584 342	6 790 763	22 262 252
DE	BIELEFELD	1	578 980	3 105 324	7 608 656
DE	LEIPZIG	1	568 200	2 443 473	5 160 613
DE	DARMSTADT	2	525 046	5 847 314	14 926 087
DE	DUISBURG	2	512 030	11 688 116	22 262 252
DE	MONCHEN-GLADBACH	2	476 306	9 760 937	22 262 252
DE	CHEMNITZ	1	432 445	2 569 893	3 115 600

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
DE	AUGSBURG	3	430 308	3 199 499	3 199 499
DE	BOCHUM	2	390 087	11 456 998	22 262 252
DE	MAINZ	2	377 026	5 527 955	14 926 087
DE	FREIBURG IM BREISGAU	3	373 124	2 263 724	2 263 724
DE	REUTLINGEN	2	358 010	3 490 789	7 201 472
DE	KOBLENZ	3	349 136	2 120 279	2 120 279
DE	BRAUNSCHWEIG	2	346 815	2 754 613	6 158 534
DE	KASSEL	1	330 290	1 425 717	1 909 215
DE	KIEL	1	328 553	1 351 867	1 618 342
DE	HEILBRONN	2	319 899	3 990 177	7 201 472
DE	HALLE	2	313 609	2 146 577	5 160 613
DE	OSNABRUECK	2	309 878	3 304 198	7 608 656
DE	GIESSEN	2	308 727	3 533 733	14 926 087
DE	LUEBECK	2	289 373	3 136 087	4 883 155
DE	MUENSTER	2	286 567	6 039 038	22 262 252
DE	SIEGEN	3	256 520	2 013 157	2 013 157
DE	MAGDEBURG	1	256 041	1 177 425	1 290 614
DE	ULM	1	243 372	2 155 798	3 887 679
DE	KREFELD	2	239 559	11 084 777	22 262 252
DE	ZWICKAU	2	230 376	2 116 076	3 115 600
DE	ERLANGEN	2	229 717	2 096 355	4 184 642
DE	ROSTOCK	1	211 964	503 757	1 038 602
DE	TUEBINGEN	2	208 535	3 598 234	7 201 472
DE	ERFURT	1	204 510	1 171 344	2 866 464
DE	WUERZBURG	1	204 185	1 367 088	1 739 687
DE	HAGEN	2	202 060	10 855 167	22 262 252
DE	BREMERHAVEN	1	195 863	1 265 379	1 287 295
DE	REGENSBURG	1	192 683	1 208 552	1 478 095
DE	OLDENBURG	2	191 538	2 054 740	2 677 494
DE	HAMM	2	183 505	7 144 188	22 262 252
DE	PADERBORN	2	177 706	2 614 436	7 608 656
DE	BAD OEYNHAUSEN	2	173 585	3 269 946	7 608 656
DE	PFORZHEIM	2	169 648	4 846 259	7 201 472
DE	ASCHAFFENBURG	2	168 369	4 387 082	14 926 087
DE	LOERRACH	2	164 439	2 468 100	5 242 058
DE	LUDWIGSHAFEN AM RHEI	2	162 458	6 021 139	14 926 087
DE	INGOLSTADT	3	150 505	3 005 370	3 005 370
DE	GOETTINGEN	2	148 858	1 521 515	1 909 215
DE	HILDESHEIM	2	147 177	3 094 393	6 158 534
DE	MINDEN	2	145 822	2 330 907	7 608 656
DE	BADEN BADEN	2	145 671	2 490 240	3 504 173
DE	HEIDELBERG	2	141 509	4 610 521	14 926 087
DE	ROSENHEIM	2	140 882	2 653 877	5 031 251
DE	TRIER	2	140 624	1 384 888	2 961 841
DE	DUEREN	2	134 756	6 562 773	22 262 252
DE	GERA	2	132 098	2 803 414	5 160 613
DE	POTSDAM	2	130 435	4 625 242	5 254 106

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
DE	KAISERSLAUTERN	2	130 051	3 943 085	14 926 087
DE	WOLFSBURG	2	127 609	1 468 896	6 158 534
DE	SALZGITTER	2	124 131	2 703 910	6 158 534
DE	COTTBUS	3	121 861	637 834	637 834
DE	HERFORD	2	120 185	3 129 525	7 608 656
DE	OFFENBACH AM MAIN	2	118 429	5 443 827	14 926 087
DE	WILHELMSHAVEN	1	115 788	547 315	1 042 798
DE	FLENSBURG	1	114 462	740 216	790 143
DE	FUERTH	2	111 257	2 155 692	4 184 642
DE	ARNSBERG	2	110 041	3 796 543	22 262 252
DE	DETMOLD	2	109 928	2 509 957	7 608 656
DE	SCHWERIN	3	109 454	822 063	822 063
DE	BAD KREUZNACH	2	106 354	2 643 802	14 926 087
DE	BAMBERG	2	104 927	2 153 296	4 184 642
DE	FULDA	1	104 041	780 628	918 947
DE	JENA	2	102 909	1 725 322	2 866 464
DE	VILLINGEN- SCHWENNING	3	102 541	1 299 258	1 299 258
DE	LUENEBURG	2	99 207	2 792 479	4 883 155
DE	ISERLOHN	2	98 865	8 349 039	22 262 252
DE	DESSAU	2	97 200	2 045 620	5 160 613
DE	AUE	2	96 109	1 645 871	3 115 600
DE	SINGEN	2	93 256	1 447 309	5 909 402
DE	KONSTANZ	2	91 505	2 185 129	5 909 402
DE	BOCHOLT	2	91 475	6 496 778	22 262 252
DE	RHEINE	2	89 535	2 441 179	7 608 656
DE	SCHWEINFURT	2	89 194	1 207 996	1 739 687
DE	HANAU	2	88 801	4 622 172	14 926 087
DE	CELLE	2	86 843	2 668 634	6 158 534
DE	SCHWAEBISCH GMUEND	3	86 359	2 715 949	2 715 949
DE	COBURG	2	85 765	1 022 776	4 184 642
DE	BAYREUTH	2	85 407	1 900 836	4 184 642
DE	OFFENBURG	2	84 934	2 343 034	3 504 173
DE	MARBURG AN DER LAHN	2	84 609	1 047 946	14 926 087
DE	NEUMUENSTER	2	84 102	3 504 314	4 883 155
DE	BAD NAUHEIM	2	83 985	4 599 524	14 926 087
DE	PLAUEN	2	83 709	1 612 593	3 115 600
DE	LIPPSTADT	2	82 956	2 458 361	7 608 656
DE	LANDSHUT	2	82 002	2 741 140	5 031 251
DE	FRIEDRICHSDORF	2	81 680	4 733 321	14 926 087
DE	BRANDENBURG	2	81 444	4 258 902	5 254 106
DE	GOSLAR	2	80 657	1 957 299	6 158 534
DE	WUELFRATH	2	80 625	10 136 490	22 262 252
DE	AALEN	2	80 533	1 622 557	3 887 679
DE	WOLFEN	2	79 433	1 901 283	5 160 613
DE	RAVENSBURG	1	78 870	1 325 424	2 052 274
DE	LIMBURG	2	75 374	4 503 158	14 926 087
DE	GUMMERSBACH	2	74 164	5 327 757	22 262 252

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
DE	DILLENBURG	2	73 080	1 759 867	14 926 087
DE	NEUBRANDENBURG	3	72 808	493 776	493 776
DE	PEINE	2	72 589	2 825 888	6 158 534
DE	NEUSTADT AN DER WEIN	2	71 738	3 797 897	14 926 087
DE	KEMPTEN (ALLGAEU)	2	71 048	1 114 026	2 052 274
DE	FRANKFURT AN DER ODE	3	70 308	4 130 616	4 130 616
DE	GOERLITZ	2	67 655	759 759	1 105 966
DE	BUEHL	2	67 418	2 303 399	3 504 173
DE	WEIMAR	2	66 420	1 512 725	2 866 464
DE	GREIZ	2	65 091	1 867 133	3 115 600
DE	HEIDENHEIM	2	64 205	1 655 281	3 887 679
DE	PIRMASENS	2	64 017	1 655 826	2 951 543
DE	IBBENBUEREN	2	61 995	2 380 273	7 608 656
DE	STRALSUND	1	61 600	335 860	511 044
DE	KLEVE	2	61 392	4 046 573	22 262 252
DE	HOF	2	60 647	1 231 872	4 184 642
DE	RENDSBURG	2	60 132	1 259 689	1 618 342
DE	SUHL	3	59 726	931 996	931 996
DE	FREIBERG	2	59 713	2 006 745	3 541 847
DE	RUESSELSHEIM	2	59 551	6 184 618	14 926 087
DE	HAMELN	2	59 052	3 009 609	6 158 534
DE	EMDEN	2	58 522	794 664	1 042 798
DE	AMBERG IN DER OBERPF	1	57 884	1 420 923	1 777 364
DE	PASSAU	1	57 473	860 120	1 456 288
DE	WEIDEN IN DER OBERPF	2	56 557	719 078	1 777 364
DE	GREIFSWALD	2	54 810	438 808	511 044
DE	HOYERSWERDA	2	54 302	1 271 017	3 541 847
DE	EUSKIRCHEN	2	54 047	6 871 086	22 262 252
DE	CUXHAVEN	2	53 168	346 175	1 287 295
DE	LANDAU IN DER PFALZ	2	52 971	3 787 924	14 926 087
DE	RIESA	2	52 795	1 452 492	3 541 847
DE	WETZLAR	2	52 657	3 299 395	14 926 087
DE	NORDHORN	2	52 479	1 738 412	2 782 886
DE	WISMAR	2	52 253	962 954	1 038 602
DE	WITTENBERG	2	52 101	1 499 591	5 160 613
DE	EISENACH	2	51 946	1 128 497	2 866 464
DE	NORDHAUSEN	3	51 812	967 548	967 548
DE	ALTENBURG	2	51 565	2 584 555	5 160 613
DE	LINGEN	2	51 362	1 027 960	1 259 936
DE	EBERSWALDE-FINOW	2	51 156	4 204 898	5 254 106
DE	NEU-ULM	2	50 709	1 977 969	3 887 679
DE	MEMMINGEN	2	50 645	1 676 758	3 887 679
DE	SPEYER	2	49 776	4 141 275	14 926 087
DE	GOTHA	2	48 872	1 230 461	2 866 464
DE	BAUTZEN	2	47 854	1 545 724	3 541 847

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DE	STRAUBING	2	44 014	950 433	1 478 095
DE	KAUFBEUREN	2	41 905	773 959	2 052 274
DE	HALBERSTADT	2	41 417	1 534 756	6 158 534
DE	FREISING	2	40 890	3 005 136	5 031 251
DE	ANSBACH	2	40 165	1 866 688	4 184 642
DE	STENDAL	3	39 795	696 124	696 124
DE	NEUMARKT	2	39 307	1 824 609	4 184 642
DE	SCHWABACH	2	38 213	2 181 294	4 184 642
DE	MERSEBURG	2	37 127	2 452 705	5 160 613
DE	SCHOENEBECK (ELBE)	2	36 397	1 077 698	1 290 614
DE	NEURUPPIN	2	32 598	4 303 151	5 254 106
DE	DEGGENDORF	2	31 219	1 058 320	1 456 288
DE	BAD HERSFELD	2	30 778	470 254	918 947
DE	NAUMBURG	2	30 399	2 179 983	5 160 613
DE	SAALFELD	2	29 511	1 161 036	2 866 464
DE	WEIL	2	28 942	2 510 273	5 242 058
DE	KULMBACH	2	28 258	1 016 162	4 184 642
DE	RUDOLSTADT	2	27 528	1 123 521	2 866 464
DE	FRIEDBERG (HESSEN)	2	26 751	4 645 536	14 926 087
DE	GARMISCH- PARTENKIRCH	2	26 364	759 667	999 720
DE	WEINGARTEN	2	23 604	4 270 572	14 926 087
DK	KOEBENHAVN	1	1 881 187	2 058 002	3 297 924
DK	AARHUS	1	429 811	781 957	1 768 566
DK	ODENSE	1	367 130	591 684	1 508 183
DK	AALBORG	1	269 774	495 514	545 622
DK	KOLDING	2	170 841	904 681	1 508 183
DK	VEJLE	2	162 218	1 112 002	1 768 566
DK	ESBJERG	3	157 258	253 997	253 997
DK	RANDERS	2	152 527	766 778	1 768 566
DK	HOLBAEK	2	129 221	1 490 833	3 297 924
DK	SLAGELSE	2	123 584	808 068	3 297 924
DK	HERNING	1	118 663	485 443	640 995
DK	NAESTVED	2	103 057	611 592	3 297 924
DK	VIBORG	2	93 447	547 146	1 768 566
DK	HORSENS	2	90 417	817 761	1 768 566
DK	HOLSTEBRO	2	85 529	372 895	640 995
DK	HADERSLEV	2	83 602	539 450	1 508 183
DK	SILKEBORG	2	81 199	753 546	1 768 566
DK	SOENDERBORG	2	75 474	327 340	790 143
DK	HJOERRING	2	68 369	364 092	545 622
DK	AABENRAA	2	60 025	574 527	1 508 183
DK	SVENDBORG	2	57 808	379 273	1 508 183
DK	NYKOEHING F	2	54 204	236 815	3 297 924
DK	FREDERIKSHAVN	2	52 913	342 114	545 622
DK	SKIVE	2	50 725	345 762	640 995
DK	ROENNE	3	35 481	36 440	36 440
DK	THISTED	1	35 392	102 819	147 012

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DK	MARIBO	2	31 438	167 391	3 297 924
DK	NAKSKOV	2	29 074	217 441	3 297 924
DK	NYKOBING MORSO	2	29 074	147 012	147 012
DK	LOGSTOR	2	27 588	292 557	545 622
DK	GRENAA	3	26 607	82 278	82 278
DK	TONDER	2	26 579	385 022	790 143
DK	RIBE	2	25 715	376 267	1 508 183
DK	LEMVIG	2	23 751	156 267	640 995
DK	RINGKOEING	2	22 984	231 653	640 995
EE	TALLINN	3	501 100	535 835	535 835
EE	TARTU	3	134 200	213 014	213 014
EE	NARVA	1	73 300	156 888	177 882
EE	KOHTLA-JARVE	2	67 700	177 882	177 882
EE	PARNU	3	64 700	94 552	94 552
EE	RAKVERE	2	37 100	146 966	177 882
EE	VILJANDI	3	33 400	93 161	93 161
EE	VORU	3	23 800	106 714	106 714
EE	KURESSAARE	3	23 600	33 928	33 928
EE	PAIDE	3	22 200	96 445	96 445
ES	MADRID	1	5 086 635	5 280 009	5 480 921
ES	BARCELONA	1	3 765 994	4 443 165	5 190 624
ES	VALENCIA	1	1 397 809	2 142 183	2 785 688
ES	SEVILLA	1	1 180 197	1 503 273	1 560 938
ES	BILBAO	1	947 334	1 517 569	1 636 334
ES	MALAGA	1	775 458	942 522	1 310 314
ES	ZARAGOZA	3	638 535	707 138	707 138
ES	LAS PALMAS DE GRAN C	1	587 641	733 113	747 434
ES	MURCIA	1	503 568	1 442 844	2 118 483
ES	GRANADA	3	440 302	632 878	632 878
ES	PALMA DE MALLORCA	3	432 113	677 043	677 043
ES	OVIEDO	1	425 829	871 948	893 843
ES	VIGO	1	412 939	764 335	1 047 690
ES	CADIZ	1	400 157	587 182	697 867
ES	SANTA CRUZ DE TENERI	1	399 104	713 891	744 076
ES	SAN SEBASTIAN	1	392 569	854 876	1 021 463
ES	ALICANTE	1	380 357	1 292 866	1 752 823
ES	LA CORUNA	1	375 697	668 670	1 232 117
ES	VALLADOLID	3	368 890	515 116	515 116
ES	TARRAGONA	1	325 333	604 935	3 042 133
ES	CORDOBA	1	314 034	511 432	652 120
ES	PAMPLONA	3	285 671	407 773	407 773
ES	GIJON	2	279 837	849 062	893 843
ES	ELCHE	2	264 536	1 648 361	2 118 483
ES	CASTELLON DE LA PLAN	1	258 532	1 503 819	1 503 964
ES	SANTANDER	1	248 761	453 403	472 435
ES	ALZIRA	2	241 472	2 141 106	2 785 688
ES	CARTAGENA	2	231 008	805 357	2 118 483
ES	VITORIA-GASTEIZ	2	226 498	813 180	1 636 334

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ES	ALGECIRAS	3	206 484	316 098	316 098
ES	HUELVA	3	193 285	321 576	321 576
ES	SALAMANCA	3	191 813	230 190	230 190
ES	ALMERIA	1	191 768	409 676	421 005
ES	JEREZ DE LA FRONTERA	2	189 370	685 138	697 867
ES	LEON	3	186 932	262 136	262 136
ES	JAEN	1	180 293	397 718	480 780
ES	COLLADOVILLALBA	2	176 251	4 845 786	5 480 921
ES	BURGOS	3	175 968	201 328	201 328
ES	MATARO	2	168 756	4 277 190	5 190 624
ES	GRANOLLERS	2	160 127	4 036 393	5 190 624
ES	LOGRONO	3	156 412	300 125	300 125
ES	VILANOVA I LA GELTRU	2	155 679	2 939 278	3 042 133
ES	ALBACETE	3	155 381	225 157	225 157
ES	FERROL	2	154 973	566 089	1 232 117
ES	ELDA	2	148 061	979 200	1 752 823
ES	LERIDA	3	146 907	328 457	328 457
ES	GERONA	1	143 566	365 585	532 517
ES	PONTEVEDRA	2	142 364	927 802	1 047 690
ES	BADAJOS	3	140 882	330 323	330 323
ES	LA OROTAVA	2	139 713	692 462	744 076
ES	AVILES	2	138 593	847 857	893 843
ES	SANTIAGO DE COMPOSTE	2	137 816	972 412	1 232 117
ES	ORENSE	3	137 038	369 052	369 052
ES	BENIDORM	2	134 488	866 048	1 752 823
ES	GANDIA	2	132 058	1 761 566	2 785 688
ES	BLANES	3	131 433	457 014	457 014
ES	MANRESA	2	122 360	3 713 966	5 190 624
ES	ORIHUELA	2	119 365	1 630 714	2 118 483
ES	MARBELLA	3	116 376	923 244	923 244
ES	TORRELAVEGA	2	116 249	443 036	472 435
ES	VIC	2	110 582	2 404 558	5 190 624
ES	GUADALAJARA	3	103 998	3 691 172	3 691 172
ES	SAGUNTO	2	101 002	507 014	1 503 964
ES	LUGO	3	99 065	296 972	296 972
ES	PALENCIA	3	98 892	442 347	442 347
ES	TOLEDO	1	95 107	583 158	4 096 696
ES	DENIA	2	92 933	456 260	1 752 823
ES	CACERES	3	92 742	123 666	123 666
ES	MOTRIL	3	90 899	526 952	526 952
ES	LORCA	3	88 144	247 259	247 259
ES	ARRECIFE	3	87 731	103 044	103 044
ES	TORREVIEJA	2	85 694	1 071 625	1 752 823
ES	TALAVERA DE LA REINA	3	83 867	159 634	159 634
ES	LINARES	2	83 797	361 625	480 780
ES	PONFERRADA	3	83 592	157 293	157 293
ES	VILAGARCIA	2	82 795	875 770	1 047 690

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ES	UTRERA	2	81 609	422 251	1 560 938
ES	ALCOY	2	80 494	781 882	1 752 823
ES	IGUALADA	2	79 655	3 006 831	5 190 624
ES	SANLUCAR DE BARRAMED	2	78 551	587 320	697 867
ES	SANTA LUCIA	2	78 551	747 434	747 434
ES	CIUDAD REAL	1	78 240	220 378	233 753
ES	XATIVA	2	76 621	1 927 815	2 785 688
ES	ZAMORA	3	76 297	275 336	275 336
ES	IBIZA	3	73 724	94 334	94 334
ES	CEUTA	3	71 505	0	0
ES	ROQUETAS DE MAR	2	70 994	370 506	421 005
ES	EIBAR	2	69 561	1 779 651	2 118 483
ES	VELEZ MALAGA	2	68 649	856 375	1 310 314
ES	SEGOVIA	2	67 441	256 113	5 480 921
ES	MELILLA	3	66 411	0	0
ES	VILAFRANCA DEL PENED	2	65 475	4 483 034	5 190 624
ES	UBEDA	2	65 357	328 439	480 780
ES	PUERTOLLANO	2	64 924	153 761	233 753
ES	MERIDA	1	62 121	216 352	236 451
ES	MONDRAGON O ARRASATE	3	60 965	229 150	229 150
ES	DON BENITO	2	60 666	170 389	236 451
ES	LUCENA	2	59 642	313 037	1 310 314
ES	EJIDO (EL)	2	59 389	380 915	421 005
ES	VALL D'UIXO (LA)	2	59 322	1 642 078	2 785 688
ES	ONTINYENT	2	59 259	613 242	2 785 688
ES	VINAROS	3	59 225	201 653	201 653
ES	ANDUJAR	3	56 874	205 245	205 245
ES	FIGUERES	2	56 644	370 809	532 517
ES	DURANGO	2	52 843	1 260 613	1 636 334
ES	CIEZA	2	52 728	679 354	2 118 483
ES	ALCAZAR DE SAN JUAN	3	52 502	190 469	190 469
ES	ARANJUEZ	2	52 489	3 987 140	4 096 696
ES	MONTILLA	2	52 252	527 001	652 120
ES	AVILA	2	50 907	239 260	5 480 921
FI	HELSINKI	1	1 284 775	1 306 760	1 452 805
FI	TAMPERE	3	336 947	381 766	381 766
FI	TURKU	1	321 495	345 113	362 795
FI	OULU	3	200 925	185 167	185 167
FI	LAHTI	3	161 995	193 696	193 696
FI	JYVASKYLA	3	150 441	178 640	178 640
FI	KUOPIO	3	115 903	118 552	118 552
FI	PORI	3	108 377	168 642	168 642
FI	VAASA	3	100 932	103 488	103 488
FI	KOUVOLA	3	91 550	131 388	131 388
FI	JOENSUU	3	90 087	97 357	97 357
FI	LAPPEENRANTA	1	82 832	108 286	118 984

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FI	HAMEENLINNA	3	81 959	188 066	188 066
FI	KOTKA	3	81 946	150 125	150 125
FI	RAUMA	3	66 793	70 372	70 372
FI	SEINAJOKI	3	62 502	119 690	119 690
FI	ROVANIEMI	3	57 253	56 991	56 991
FI	MIKKELI	3	54 560	69 585	69 585
FI	KAJAANI	3	54 438	47 063	47 063
FI	SALO	2	52 604	303 230	362 795
FI	KOKKOLA	1	49 933	93 245	102 945
FI	LOHJA	2	43 786	1 125 031	1 452 805
FI	RIIHIMAKI	2	41 858	1 012 176	1 452 805
FI	VARKAUS	3	41 855	60 620	60 620
FI	KEMI	1	38 647	54 741	65 125
FI	RAAHE	3	37 814	47 129	47 129
FI	IMATRA	2	36 867	110 464	118 984
FI	FORSSA	3	35 866	113 365	113 365
FI	SAVONLINNA	3	35 828	44 087	44 087
FI	PIETARSAARI	2	34 005	81 836	102 945
FI	IISALMI	3	32 746	50 298	50 298
FI	TAMMISAARI	3	28 436	85 123	85 123
FI	MARIEHAMN	3	25 776	18 652	18 652
FI	JAMSA	3	23 226	120 679	120 679
FI	TORNIO	2	22 617	65 125	65 125
FR	PARIS	1	11 174 743	10 853 764	11 364 664
FR	LYON	1	1 648 216	2 607 250	3 100 068
FR	MARSEILLE-AIX-EN-PRO	1	1 516 340	2 188 851	2 997 757
FR	LILLE	1	1 143 125	4 073 971	10 863 278
FR	TOULOUSE	1	964 797	1 091 475	1 182 042
FR	NICE	1	933 080	1 173 512	1 814 061
FR	BORDEAUX	1	925 253	1 203 940	1 284 456
FR	NANTES	3	711 120	1 171 907	1 171 907
FR	STRASBOURG	1	612 104	1 724 736	3 504 173
FR	TOULON	2	564 823	1 857 189	2 997 757
FR	DOUAI	2	552 682	2 553 919	10 863 278
FR	RENNES	1	521 188	751 849	857 455
FR	ROUEN	1	518 316	1 217 243	1 326 856
FR	GRENOBLE	1	514 559	995 292	2 001 763
FR	MONTPELLIER	1	459 916	1 147 290	2 067 364
FR	METZ	1	429 588	2 020 701	2 961 841
FR	NANCY	2	410 508	917 984	2 961 841
FR	CLERMONT-FERRAND	1	409 558	631 019	756 617
FR	VALENCIENNES	2	399 677	4 061 920	10 863 278
FR	TOURS	1	376 374	749 205	1 159 847
FR	CAEN	1	370 851	619 021	1 370 136
FR	ORLEANS	3	355 811	593 149	593 149
FR	ANGERS	1	332 624	572 144	974 146
FR	DIJON	1	326 631	605 018	963 064
FR	SAINT ETIENNE	2	321 703	2 078 021	3 100 068

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FR	BREST	1	303 484	390 960	588 184
FR	LE HAVRE	3	296 773	563 634	563 634
FR	LE MANS	3	293 159	525 888	525 888
FR	REIMS	1	291 735	606 067	2 304 957
FR	AVIGNON	3	290 466	1 224 479	1 224 479
FR	MULHOUSE	2	271 024	2 238 115	5 242 058
FR	AMIENS	1	270 870	778 525	3 120 973
FR	BETHUNE	3	268 439	954 465	954 465
FR	DUNKERQUE	1	265 974	1 511 815	2 027 499
FR	PERPIGNAN	3	249 016	398 232	398 232
FR	LIMOGES	3	247 944	363 402	363 402
FR	BESANCON	3	222 381	492 013	492 013
FR	NIMES	2	221 455	1 407 503	2 067 364
FR	PAU	1	216 830	459 399	558 105
FR	BAYONNE	2	213 969	818 710	1 021 463
FR	ANNEMASSE	2	212 248	1 448 181	1 718 834
FR	POITIERS	1	209 216	453 453	493 223
FR	ANNECY	2	189 674	1 262 436	1 718 834
FR	LORIENT	1	186 144	374 332	581 698
FR	MONTBELIARD	3	180 064	680 075	680 075
FR	TROYES	1	172 497	336 058	919 493
FR	SAINT NAZAIRE	1	172 379	732 360	828 061
FR	LA ROCHELLE	1	171 214	296 518	823 981
FR	VALENCE	1	167 155	608 923	848 197
FR	THIONVILLE	2	156 433	1 630 483	2 961 841
FR	ANGOULEME	3	153 781	265 351	265 351
FR	BOULOGNE-SUR-MER	3	135 116	687 843	687 843
FR	CHAMBERY	2	131 280	1 638 355	2 001 763
FR	CHALON-SUR-SAONE	3	130 825	726 538	726 538
FR	CHARTRES	3	130 681	2 781 274	2 781 274
FR	NIORT	2	125 594	454 944	823 981
FR	CALAIS	2	125 584	858 960	2 027 499
FR	BEZIERS	1	124 967	776 241	1 010 686
FR	ARRAS	2	124 206	2 499 432	10 863 278
FR	BOURGES	1	123 584	354 103	661 492
FR	SAINT BRIEUC	1	121 237	350 500	477 452
FR	QUIMPER	3	120 441	323 424	323 424
FR	VANNES	2	118 029	432 345	581 698
FR	CHERBOURG	3	117 855	206 527	206 527
FR	MAUBEUGE	2	117 470	2 147 742	11 868 661
FR	BLOIS	2	116 544	920 308	1 159 847
FR	COLMAR	2	116 268	2 221 471	5 242 058
FR	TARBES	2	109 892	444 901	558 105
FR	COMPIEGNE	1	108 234	3 769 815	4 201 916
FR	CHARLEVILLE-MEZIERES	1	107 777	337 792	376 577
FR	BELFORT	2	104 962	1 291 022	5 242 058
FR	ROANNE	3	104 892	228 625	228 625
FR	FORBACH	2	104 074	2 156 096	2 951 543

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
FR	SAINT QUENTIN	2	103 781	10 038 152	11 364 664
FR	LAVAL	1	102 575	456 668	880 093
FR	BOURG-EN-BRESSE	2	101 016	1 395 889	3 100 068
FR	BEAUVAIS	2	100 733	2 473 566	3 120 973
FR	NEVERS	3	100 556	242 396	242 396
FR	CREIL	2	98 277	8 156 275	11 364 664
FR	LA ROCHE-SUR-YON	1	98 175	763 824	1 014 713
FR	EVREUX	3	97 177	1 010 444	1 010 444
FR	AGEN	1	94 659	317 580	377 913
FR	SAINT-OMER	2	93 516	1 312 770	2 027 499
FR	PERIGUEUX	1	91 585	209 100	365 412
FR	CHATEAUROUX	3	90 573	331 619	331 619
FR	EPINAL	1	89 544	267 807	527 189
FR	ALES	3	89 390	425 497	425 497
FR	BRIVE-LA-GAILLARDE	1	89 260	230 643	249 753
FR	MACON	2	88 534	1 830 793	3 100 068
FR	ELBEUF	2	86 162	1 078 730	1 326 856
FR	ALBI	3	85 960	235 829	235 829
FR	AUXERRE	3	85 080	299 292	299 292
FR	SAINT CHAMOND	2	84 925	2 340 699	3 100 068
FR	FREJUS	2	83 840	1 087 770	1 814 061
FR	SAINT LOUIS	2	83 732	2 691 625	5 242 058
FR	CARCASSONNE	3	82 577	269 974	269 974
FR	DIEPPE	3	81 419	470 668	470 668
FR	VICHY	2	80 194	516 422	756 617
FR	CHALONS-EN- CHAMPAGNE	2	79 820	554 471	2 304 957
FR	MONTLUCON	3	78 477	167 101	167 101
FR	AJACCIO	3	77 287	82 842	82 842
FR	BASTIA	3	76 439	90 700	90 700
FR	MONTAUBAN	2	75 158	856 450	1 182 042
FR	CHOLET	2	74 055	756 842	1 014 713
FR	BERGERAC	2	72 891	295 037	365 412
FR	NARBONNE	2	70 750	609 119	1 010 686
FR	SAINT MALO	1	70 303	200 379	332 055
FR	THONON-LES-BAINS	3	70 154	786 190	786 190
FR	CHATELLERAULT	2	68 442	301 369	493 223
FR	MENTON	2	66 692	1 229 534	1 814 061
FR	MONTARGIS	3	66 299	457 376	457 376
FR	SETE	2	66 177	789 244	2 067 364
FR	LEPUY-EN-VELAY	3	66 129	152 523	152 523
FR	ROMANS-SUR-ISERE	2	65 933	424 800	848 197
FR	RODEZ	1	65 267	141 413	204 861
FR	ALENCON	1	64 970	457 729	756 008
FR	SOISSONS	2	64 042	755 214	4 201 916
FR	VILLEFRANCHE-SUR- SAO	2	63 632	1 978 306	3 100 068
FR	CASTRES	3	61 760	221 505	221 505

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
FR	CLUSES	2	61 109	1 031 267	1 718 834
FR	HAGUENAU	2	59 894	2 047 335	3 504 173
FR	LANNION	3	59 233	258 473	258 473
FR	CAMBRAI	2	58 828	2 265 151	10 863 278
FR	ARMENTIERES	2	58 706	3 476 723	10 863 278
FR	MONTELMAR	2	58 557	528 046	848 197
FR	MOULINS	2	58 355	258 497	756 617
FR	DREUX	3	57 982	1 046 674	1 046 674
FR	AURILLAC	3	56 830	111 324	111 324
FR	SENS	2	56 660	830 329	919 493
FR	SAINT DIZIER	1	55 814	194 926	237 703
FR	MONT-DE-MARSAN	3	54 577	164 744	164 744
FR	LONS-LE-SAUNIER	3	54 486	265 762	265 762
FR	ARCACHON	3	54 204	735 358	735 358
FR	VIENNE	2	53 843	2 537 439	3 100 068
FR	ARLES	2	53 057	1 366 348	2 067 364
FR	SAINTES	2	51 542	483 216	823 981
FR	SALON-DE-PROVENCE	2	50 532	2 357 166	2 997 757
FR	LAON	2	49 853	620 980	4 201 916
FR	DAX	2	49 219	388 497	1 021 463
FR	SAINT LO	3	48 837	453 713	453 713
FR	ROCHEFORT	2	48 772	368 880	823 981
FR	SAUMUR	2	47 445	766 082	974 146
FR	SAINT DIE	2	45 708	404 977	527 189
FR	VESOUL	3	45 291	391 919	391 919
FR	LISIEUX	2	45 065	793 456	1 370 136
FR	DRAGUIGNAN	2	44 851	789 859	1 814 061
FR	VILLENEUVE-SUR-LOT	2	44 841	283 719	377 913
FR	GAP	3	44 773	111 833	111 833
FR	COGNAC	3	44 051	261 461	261 461
FR	LE CREUSOT	3	42 846	345 055	345 055
FR	VOIRON	2	42 131	1 053 747	2 001 763
FR	SARREGUEMINES	2	42 077	2 006 554	2 951 543
FR	AUBENAS	2	40 390	282 780	848 197
FR	EPERNAY	2	40 167	506 293	2 304 957
FR	FOUGERES	2	40 132	673 742	857 455
FR	DOLE	2	40 059	675 966	963 064
FR	ANNONAY	2	39 507	1 380 726	3 100 068
FR	ISTRES	2	38 993	1 784 777	2 997 757
FR	SAINT-AVOLD	2	38 888	2 025 523	2 951 543
FR	ROUSSILLON	2	38 675	2 082 372	3 100 068
FR	VIERZON	2	38 525	569 381	661 492
FR	CAHORS	3	38 101	191 278	191 278
FR	ABBEVILLE	2	37 309	572 868	3 120 973
FR	CHAUMONT	3	36 565	166 673	166 673
FR	MORLAIX	2	35 996	476 155	588 184
FR	AUCH	3	35 958	160 028	160 028
FR	BEAUNE	2	35 521	604 489	963 064

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
FR	ALBERTVILLE	2	35 431	830 706	1 718 834
FR	VERDUN	3	35 078	590 083	590 083
FR	VITRY-LE-FRANCOIS	2	35 024	222 021	2 304 957
FR	VENDOME	2	34 159	510 887	1 159 847
FR	DINAN	2	32 903	313 684	332 055
FR	BAR-LE DUC	2	32 892	179 569	237 703
FR	CHATEAU-THIERRY	2	32 401	2 316 186	2 304 957
FR	SARREBOURG	3	31 908	271 105	271 105
FR	SEDAN	2	31 665	306 836	376 577
FR	LIBOURNE	2	31 662	1 147 504	1 284 456
FR	THANN	2	31 309	1 733 619	5 242 058
FR	FECAMP	3	31 013	34 012	34 012
FR	GUEBWILLER	2	30 738	1 085 080	5 242 058
FR	TULLE	2	30 686	208 162	249 753
FR	MARMANDE	3	29 930	273 610	273 610
FR	PONTARLIER	2	29 218	733 565	2 383 602
FR	ROMORANTIN- LANTHENAY	3	28 925	223 441	223 441
FR	LUNEL	2	28 558	1 099 476	2 067 364
FR	GUERET	3	28 095	67 534	67 534
FR	MILLAU	2	28 005	89 451	204 861
FR	LUNEVILLE	2	27 572	450 355	2 961 841
FR	ISSOIRE	2	27 502	521 357	756 617
FR	ARGENTAN	2	27 387	408 648	756 008
FR	AUTUN	2	26 845	208 429	963 064
FR	REDON	2	26 522	285 690	828 061
FR	MONTEREAU-FAUT- YONNE	2	26 455	2 180 077	919 493
FR	VIRE	2	26 274	526 709	1 370 136
FR	BAYEUX	2	25 943	498 020	1 370 136
FR	MAYENNE	2	25 268	346 950	880 093
FR	DINARD	2	25 089	238 413	332 055
FR	GUINGAMP	2	25 060	373 677	477 452
FR	MONTBRISON	3	23 953	357 928	357 928
FR	PAMIERS	3	23 876	99 027	99 027
FR	CHATEAUDUN	2	23 728	533 006	1 159 847
FR	DIGNE	3	23 671	109 507	109 507
FR	TOUL	2	23 180	764 025	2 961 841
FR	CHATEAUBRIANT	3	22 427	797 393	797 393
FR	PONTIVY	3	22 427	185 410	185 410
FR	TROUVILLE-SUR-MER	2	22 168	816 591	1 370 136
FR	OLORON-STE-MARIE	2	21 994	220 703	558 105
FR	LOURDES	2	21 549	334 672	558 105
FR	CHATEAU-GONTIER	2	21 526	424 971	880 093
FR	PRIVAS	2	20 795	460 267	848 197
FR	NOGENT-LE-ROTROU	3	20 456	262 087	262 087
GR	ATHINAI	1	3 761 810	3 645 055	3 905 718
GR	THESSALONIKI	1	1 057 825	1 293 870	1 538 694

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
GR	PATRAI	1	197 663	382 232	399 682
GR	IRAKLION	3	154 801	252 290	252 290
GR	LARISA	1	126 076	571 307	596 087
GR	VOLOS	2	82 439	365 468	596 087
GR	IOANNINA	3	70 203	203 246	203 246
GR	KAVALLA	1	63 293	317 644	459 600
GR	LAMIA	3	58 601	179 622	179 622
GR	KALAMATA	1	57 620	238 597	358 791
GR	KATERINI	1	56 434	944 142	1 197 564
GR	SERRAI	3	56 145	243 600	243 600
GR	DRAMA	2	55 632	266 547	459 600
GR	AGRINION	3	54 253	208 851	208 851
GR	RODHOS	3	53 709	112 694	112 694
GR	KHALKIS	2	53 584	657 648	3 905 718
GR	KHANIA	1	53 373	179 394	212 891
GR	ALEXANDROUPOLIS	1	52 720	161 156	269 828
GR	KOMOTINI	2	52 659	245 032	269 828
GR	XANTHI	2	52 270	293 971	459 600
GR	TRIKKALA	1	51 862	398 423	441 151
GR	KOZANI	1	47 451	280 203	353 376
GR	VEROIA	2	47 411	718 124	1 197 564
GR	CORFU	3	39 487	57 003	57 003
GR	KARDHITSA	2	37 768	404 161	441 151
GR	KORINTHOS	1	36 555	376 289	459 261
GR	MITILINI	3	36 196	85 113	85 113
GR	PTOLEMAIS	2	35 539	239 059	353 376
GR	PIRGOS	1	34 902	220 452	244 905
GR	AMALIAS	2	32 090	215 380	244 905
GR	RETHIMNON	2	31 687	167 258	212 891
GR	GIANNITSA	2	31 442	1 299 087	1 538 694
GR	ARGOS	2	29 228	259 313	459 261
GR	TRIPOLIS	2	28 976	218 814	358 791
GR	AIYION	2	27 812	316 388	399 682
GR	EDHESSA	2	25 619	357 027	1 197 564
GR	KILKIS	2	24 812	1 056 045	1 538 694
GR	ARTA	3	23 863	156 817	156 817
GR	THIVA	2	23 820	410 954	3 905 718
GR	KHIOS	3	23 779	51 936	51 936
GR	IERAPETRA	3	23 707	64 272	64 272
GR	NAOUSA	2	22 288	300 377	1 197 564
GR	ORESTIAS	3	21 730	102 109	102 109
GR	LEVADHIA	2	21 492	165 537	3 905 718
GR	ERMOUPOLIS	3	13 400	19 782	19 782
HU	BUDAPEST	1	1 775 203	3 013 587	3 298 193
HU	DEBRECEN	1	296 502	587 005	965 836
HU	MISKOLC	1	282 832	559 654	935 827
HU	NYIREGYHAZA	3	222 027	698 793	698 793
HU	SZEGED	1	214 302	378 505	670 256

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
HU	PECS	1	207 605	387 797	506 430
HU	GYOR	3	175 139	712 669	712 669
HU	BEKESCSABA	1	169 204	300 617	440 585
HU	KECSKEMET	1	167 482	419 325	768 573
HU	SZEKESFEHERVAR	1	165 803	731 181	1 350 224
HU	KAPOSVAR	3	124 891	203 350	203 350
HU	BUDAORS	2	124 783	2 780 602	3 298 193
HU	SZOLNOK	1	122 153	389 640	1 292 042
HU	CEGLED	2	120 665	508 202	768 573
HU	RACKEVE	1	118 049	1 470 171	1 899 054
HU	GODOLLO	2	115 919	2 793 244	3 298 193
HU	SZOMBATHELY	1	114 409	404 699	514 052
HU	DUNAUJVAROS	2	112 113	377 262	1 899 054
HU	ZALAEGERSZEG	3	105 749	389 405	389 405
HU	GYAL	2	97 675	2 447 615	3 298 193
HU	EGER	3	95 381	376 343	376 343
HU	SOPRON	3	93 851	2 241 723	2 241 723
HU	SZEKSZARD	1	90 389	257 714	340 599
HU	TATABANYA	1	89 850	1 032 092	1 052 990
HU	JASZBERENY	2	88 585	464 563	1 292 042
HU	VESZPREM	2	86 260	473 822	1 350 224
HU	PILISVOROSVAR	2	85 519	2 504 561	3 298 193
HU	NAGYKANIZSA	1	83 398	252 060	380 000
HU	NAGYKATA	2	78 133	994 484	1 292 042
HU	BAJA	2	76 955	240 142	340 599
HU	KARCAG	1	76 816	143 538	208 443
HU	GYONGYOS	2	76 564	1 334 352	3 298 193
HU	OZD	3	75 786	285 788	285 788
HU	VAC	2	75 328	2 363 061	3 298 193
HU	MOSONMAGYAROVAR	3	72 585	766 048	766 048
HU	KISVARDA	3	69 718	263 816	263 816
HU	SZENTENDRE	2	68 971	2 518 813	3 298 193
HU	SALGOTARIJAN	2	68 859	266 178	440 092
HU	MATESZALKA	1	67 754	450 400	454 870
HU	BERETTYOUJFALU	2	66 138	635 624	965 836
HU	KAZINCBARCIKA	2	65 292	565 002	935 827
HU	SZERENCS	2	64 024	419 848	935 827
HU	OROSHAZA	3	63 909	201 448	201 448
HU	PAPA	2	63 439	434 826	1 350 224
HU	DUNAKESZI	2	61 282	2 613 630	3 298 193
HU	HODMEZOVASARHELY	2	60 681	380 458	670 256
HU	AJKA	2	59 623	206 378	1 350 224
HU	HAJDUBOSZORMENY	2	59 521	438 661	965 836
HU	KISKOROS	2	58 993	252 943	1 899 054
HU	KALOCSA	2	57 703	140 563	1 899 054
HU	HATVAN	2	56 412	2 277 384	3 298 193
HU	ESZTERGOM	2	55 592	835 063	3 298 193
HU	MOHACS	2	53 454	340 296	506 430

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HU	PUSPOKLADANY	2	52 093	175 686	208 443
HU	KISKUNFELEGYHAZA	2	52 070	357 084	768 573
HU	MAKO	2	50 214	342 473	670 256
HU	PAKS	2	50 153	253 566	1 899 054
HU	KESZTHELY	2	47 701	261 298	380 000
HU	SIOFOK	2	47 700	460 942	1 350 224
HU	KISKUNHALAS	2	47 450	190 027	1 899 054
HU	TISZUJVAROS	2	46 579	450 119	935 827
HU	SZENTES	2	45 862	419 012	670 256
HU	SATORALJAUJHELY	2	44 000	183 992	935 827
HU	SZARVAS	2	42 197	280 218	440 585
HU	TISZAFURED	3	40 792	112 297	112 297
HU	FEHERGYARMAT	2	39 488	299 419	454 870
HU	SARVAR	2	36 960	317 929	514 052
HU	HAJDUSZOBOSZLO	2	33 725	424 444	965 836
HU	BALMAZUJVAROS	2	30 240	283 400	965 836
HU	MOR	2	28 412	343 752	1 350 224
HU	OROSZLANY	2	28 240	650 626	1 052 990
HU	SAROSPATAK	2	27 950	149 021	935 827
HU	FONYOD	2	27 517	167 112	380 000
HU	SARKAD	2	26 127	195 990	440 585
HU	RETSAG	2	25 993	678 819	3 298 193
HU	BALATONALMADI	2	24 790	443 983	1 350 224
HU	BALATONFURED	2	21 663	310 146	380 000
IE	DUBLIN	3	1 009 100	1 423 512	1 423 512
IE	CORK	3	191 500	337 917	337 917
IE	LIMERICK	3	84 000	326 279	326 279
IE	GALWAY	3	65 774	175 836	175 836
IE	WATERFORD	3	47 300	267 359	267 359
IE	DUNDALK	2	33 300	446 872	1 277 548
IE	TRALEE	3	20 900	117 964	117 964
IT	ROMA	1	3 314 237	3 599 144	4 575 848
IT	MILANO	1	2 890 384	7 516 698	12 861 094
IT	NAPOLI	1	2 381 483	4 837 176	5 668 619
IT	TORINO	1	1 545 202	2 778 541	6 302 253
IT	BARI	1	1 123 419	1 599 206	2 670 421
IT	FIRENZE	1	876 697	2 037 409	3 136 211
IT	PALERMO	1	818 356	1 146 239	1 647 327
IT	GENOVA	1	795 689	1 221 934	5 312 352
IT	BOLOGNA	1	682 724	2 400 571	4 766 087
IT	VENEZIA	1	611 236	2 419 457	5 831 892
IT	CATANIA	1	608 249	1 351 285	1 974 315
IT	PADOVA	2	505 963	3 004 470	5 831 892
IT	TARANTO	3	491 593	1 003 844	1 003 844
IT	DESIO	2	482 490	6 693 737	12 861 094
IT	VERONA	1	469 996	2 678 279	6 596 421
IT	CAGLIARI	1	460 774	548 620	651 584
IT	BERGAMO	2	456 333	6 972 774	12 861 094

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
IT	COMO	2	400 262	6 575 678	12 861 094
IT	LECCE	1	398 937	880 100	1 447 236
IT	BRESCIA	2	381 454	3 962 133	6 596 421
IT	BRINDISI	2	367 399	850 342	1 447 236
IT	CASERTA	2	364 473	4 822 332	5 668 619
IT	BUSTO ARSIZIO	2	357 443	6 899 875	12 861 094
IT	UDINE	1	357 228	1 237 811	1 440 577
IT	SALERNO	2	294 318	4 341 833	5 668 619
IT	LECCO	2	285 692	5 886 728	12 861 094
IT	TRIESTE	1	261 825	816 790	823 110
IT	FROSINONE	2	259 382	3 821 103	4 575 848
IT	SIRACUSA	1	258 332	783 723	1 192 579
IT	PARMA	1	257 525	1 796 476	2 949 842
IT	VARESE	2	254 157	5 177 677	12 861 094
IT	REGGIO NELL'EMILIA	2	254 087	2 314 233	2 949 842
IT	TREVISO	2	247 413	2 758 074	5 831 892
IT	PESCARA	1	246 155	969 300	2 020 461
IT	MODENA	2	243 348	2 283 162	4 766 087
IT	PRATO	2	240 461	1 858 674	3 136 211
IT	COSENZA	1	238 162	629 717	816 273
IT	MESSINA	1	236 183	1 158 320	1 590 828
IT	AVERSA	2	234 128	4 606 752	5 668 619
IT	VICENZA	2	233 566	3 018 252	5 831 892
IT	VIGEVANO	2	225 015	5 344 437	12 861 094
IT	REGGIO DI CALABRIA	2	221 751	783 559	1 590 828
IT	PORDENONE	2	221 521	2 064 164	5 831 892
IT	RIMINI	1	218 112	1 186 487	1 983 460
IT	LA SPEZIA	1	215 977	993 723	1 975 090
IT	SASSARI	1	204 440	295 923	452 148
IT	VELLETRI	2	198 010	3 671 066	4 575 848
IT	PAVIA	2	196 697	5 468 976	12 861 094
IT	FERRARA	2	196 416	1 925 935	4 766 087
IT	TREVIGLIO	2	190 725	6 701 077	12 861 094
IT	PERUGIA	1	190 185	643 815	1 709 710
IT	LIVORNO	1	186 769	1 282 495	1 347 537
IT	GALLARATE	2	185 551	6 659 907	12 861 094
IT	NOLA	2	183 972	4 852 057	5 668 619
IT	NOCERA INFERIORE	2	183 796	4 723 744	5 668 619
IT	PISA	2	179 331	1 787 034	3 136 211
IT	AGRIGENTO	1	177 245	498 028	786 495
IT	FOGGIA	1	175 816	787 498	1 439 727
IT	RAVENNA	2	172 017	1 517 582	4 766 087
IT	LATINA	2	170 945	689 574	4 575 848
IT	NOVARA	2	170 134	6 477 367	12 861 094
IT	TERNI	1	169 923	508 714	930 481
IT	PIACENZA	2	167 085	4 140 496	12 861 094
IT	TORRE ANNUNZIATA	2	166 962	4 648 080	5 668 619
IT	ANCONA	1	164 226	845 698	1 671 155

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
IT	BARLETTA	2	160 615	1 236 362	2 670 421
IT	GELA	1	159 012	499 752	908 614
IT	AVELLINO	2	158 688	4 735 633	5 668 619
IT	BOLZANO	1	156 674	632 362	1 605 143
IT	LUCCA	2	155 604	2 356 907	3 136 211
IT	CESENA	2	155 230	1 243 758	1 983 460
IT	TRENTO	2	154 666	579 908	1 605 143
IT	CALTANISSETTA	2	154 547	587 863	786 495
IT	ALESSANDRIA	2	150 915	2 076 385	5 312 352
IT	CASSINO	2	150 870	1 234 236	5 668 619
IT	CUNEO	1	149 872	511 757	2 345 087
IT	FORLI'	2	149 842	1 461 342	1 983 460
IT	IVREA	2	149 673	2 450 860	6 302 253
IT	CATANZARO	3	143 505	484 746	484 746
IT	LODI	2	141 592	6 204 968	12 861 094
IT	CASTELLAMMARE DI STA	2	138 978	4 644 797	5 668 619
IT	MANTOVA	2	138 638	1 992 118	6 596 421
IT	CREMONA	2	137 255	2 189 450	12 861 094
IT	TRAPANI	1	135 907	510 717	707 307
IT	POTENZA	3	135 685	476 029	476 029
IT	AREZZO	2	135 541	1 022 044	1 709 710
IT	MARSALA	2	135 256	444 592	707 307
IT	VITERBO	2	133 303	521 616	930 481
IT	SAVONA	2	132 717	1 383 187	5 312 352
IT	BASSANO DEL GRAPPA	2	130 801	1 850 398	5 831 892
IT	MONFALCONE	2	130 015	1 140 955	1 440 577
IT	IGLESIAS	2	129 103	459 921	651 584
IT	ASTI	2	128 736	2 642 250	6 302 253
IT	BIELLA	2	123 938	2 078 707	12 861 094
IT	PISTOIA	2	120 009	2 383 941	3 136 211
IT	SESTOCALENDE	2	117 235	5 778 928	12 861 094
IT	PINEROLO	2	115 547	2 216 890	6 302 253
IT	APRILIA	2	114 361	3 488 145	4 575 848
IT	BISCEGLIE	2	114 247	1 080 737	2 670 421
IT	CITTADELLA	2	113 934	2 740 526	5 831 892
IT	CAMPOBASSO	3	112 843	219 992	219 992
IT	TERAMO	2	111 953	841 050	2 020 461
IT	CASTELFRANCO VENETO	2	111 448	2 693 886	5 831 892
IT	SASSUOLO	2	110 429	1 654 227	2 949 842
IT	SAN GIUSEPPE VESUVIA	2	109 884	4 494 366	5 668 619
IT	IMOLA	2	109 624	2 020 245	4 766 087
IT	MONTECATINI-TERME	2	109 477	2 285 556	3 136 211
IT	PESARO	2	108 878	1 029 698	1 983 460
IT	MODICA	2	107 589	504 692	1 192 579
IT	VIAREGGIO	2	107 059	1 774 354	1 975 090
IT	ASCOLI PICENO	2	106 934	691 891	2 020 461
IT	SAN DONA' DI PIAVE	2	105 491	2 206 316	5 831 892

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
IT	BATTIPAGLIA	2	105 337	3 927 082	5 668 619
IT	CONEGLIANO	2	103 162	2 240 910	5 831 892
IT	BENEVENTO	2	102 564	3 616 596	5 668 619
IT	CHIETI	2	101 455	980 385	2 020 461
IT	SIENA	3	100 620	1 101 149	1 101 149
IT	MONTEBELLUNA	2	100 457	2 419 548	5 831 892
IT	PONTEDERA	2	100 280	2 181 630	3 136 211
IT	SAN BENEDETTO DEL TR	2	99 501	1 149 888	2 020 461
IT	CIRIE'	2	99 048	2 222 332	6 302 253
IT	CROTONE	3	98 472	201 333	201 333
IT	RIETI	2	97 680	405 113	930 481
IT	CREMA	2	96 802	5 355 582	12 861 094
IT	LUGO	2	96 657	1 773 144	4 766 087
IT	LAMEZIA TERME	2	96 611	525 614	816 273
IT	THIENE	2	96 293	2 289 091	5 831 892
IT	L'AQUILA	2	95 363	517 234	2 020 461
IT	AVEZZANO	2	94 631	316 843	2 020 461
IT	CHIERI	2	94 098	2 530 147	6 302 253
IT	ENNA	2	93 963	550 059	908 614
IT	GROSSETO	3	92 776	159 479	159 479
IT	SAN SEVERO	2	92 358	597 240	1 439 727
IT	VITTORIA	2	91 826	468 119	908 614
IT	BORGOMANERO	2	91 656	5 008 654	12 861 094
IT	EMPOLI	2	90 855	1 732 921	3 136 211
IT	ALBA	2	90 529	2 068 655	2 345 087
IT	RAGUSA	2	90 318	518 438	1 192 579
IT	ROVIGO	2	89 981	1 683 405	4 766 087
IT	VASTO	2	89 259	619 982	2 020 461
IT	FORMIA	2	88 984	575 859	5 668 619
IT	SANTA CROCE SULL'ARN	2	88 314	2 142 982	3 136 211
IT	CARMAGNOLA	2	86 424	2 610 782	6 302 253
IT	LONIGO	2	86 185	2 125 801	5 831 892
IT	GIARRE	2	86 130	1 325 553	1 974 315
IT	TERMOLI	2	85 969	390 642	2 020 461
IT	SAN REMO	2	85 157	979 074	1 814 061
IT	LANCIANO	2	84 694	588 859	2 020 461
IT	VOGHERA	2	83 184	4 643 852	12 861 094
IT	MANFREDONIA	2	82 699	647 970	1 439 727
IT	BELLUNO	2	82 578	771 912	5 831 892
IT	CARPI	2	82 196	2 514 074	4 766 087
IT	FAENZA	2	81 780	1 696 892	4 766 087
IT	CASARANO	3	80 633	330 320	330 320
IT	CHIARI	2	80 525	4 770 696	12 861 094
IT	PORTOGRUARO	2	80 473	1 783 975	5 831 892
IT	PORTOTOLLE	3	80 473	163 857	163 857
IT	NUORO	3	80 080	171 281	171 281
IT	ROVERETO	2	79 567	1 232 677	1 605 143
IT	FOLIGNO	2	78 676	536 048	1 709 710

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
IT	GALLIPOLI	2	78 604	701 982	1 447 236
IT	TERRACINA	2	78 249	650 811	4 575 848
IT	ORISTANO	3	77 149	176 359	176 359
IT	VERCELLI	2	77 143	4 650 857	6 302 253
IT	JESI	3	76 669	361 441	361 441
IT	BAGHERIA	2	76 522	1 163 858	1 647 327
IT	GIULIANA	2	76 433	984 420	2 020 461
IT	AVIGLIANA	2	76 049	2 278 259	6 302 253
IT	MASSA	2	75 895	1 364 127	1 975 090
IT	SORRENTO	2	75 503	3 760 076	5 668 619
IT	CARRARA	2	75 332	1 388 513	1 975 090
IT	ARZIGNANO	2	75 283	1 910 955	5 831 892
IT	CASALE MONFERRATO	2	75 203	1 752 296	12 861 094
IT	MACERATA	2	73 860	734 220	1 671 155
IT	PALAZZOLO SULL'OGGIO	2	73 443	5 558 721	12 861 094
IT	CHIAVARI	2	72 331	1 419 712	5 312 352
IT	CIVITAVECCHIA	2	72 235	2 682 915	4 575 848
IT	GORIZIA	2	71 941	1 062 772	1 440 577
IT	LUMEZZANE	1	71 742	920 062	1 684 852
IT	FANO	2	71 459	831 107	1 671 155
IT	VIGNOLA	2	71 277	1 559 560	4 766 087
IT	SUZZARA	2	71 181	1 715 282	6 596 421
IT	FOSSANO	2	70 652	1 987 069	2 345 087
IT	AOSTA	3	69 803	223 448	223 448
IT	PIOMBINO	3	68 324	170 929	170 929
IT	MERANO	2	68 274	511 793	1 605 143
IT	NOVI LIGURE	2	68 224	1 845 475	5 312 352
IT	ALCAMO	2	68 143	1 351 829	1 647 327
IT	VIBO VALENTIA	2	67 034	626 129	1 590 828
IT	SCHIO	2	66 763	1 656 050	5 831 892
IT	OSIMO	2	66 297	578 195	1 671 155
IT	TERMINI IMERESE	2	65 848	1 124 793	1 647 327
IT	ODERZO	2	65 801	1 684 586	5 831 892
IT	FERMO	2	65 233	929 209	1 671 155
IT	GIOIA DEL COLLE	2	65 186	1 679 420	2 670 421
IT	MATERA	2	65 023	992 888	2 670 421
IT	CERIGNOLA	2	64 919	992 208	1 439 727
IT	DESENZANO DEL GARDA	2	64 607	2 506 663	6 596 421
IT	SCIACCA	2	63 363	327 331	707 307
IT	SORA	2	63 155	557 805	4 575 848
IT	ADRANO	2	62 039	1 024 929	1 974 315
IT	SAN BONIFACIO	2	61 130	2 786 788	5 831 892
IT	GINOSA	2	60 842	233 781	2 670 421
IT	SALO'	2	60 548	1 673 759	6 596 421
IT	POGGIBONSI	2	59 965	1 626 345	3 136 211
IT	LENTINI	2	59 525	1 281 089	1 974 315
IT	TORTONA	2	59 268	3 873 897	5 312 352

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
IT	VALDAGNO	2	58 864	1 419 410	5 831 892
IT	MARTINA FRANCA	2	58 822	1 084 955	2 670 421
IT	COSSATO	2	58 791	1 326 166	12 861 094
IT	EBOLI	2	58 059	3 529 711	5 668 619
IT	VENTIMIGLIA	2	57 912	1 264 186	1 814 061
IT	ISEO	2	57 516	1 238 792	1 684 852
IT	GUASTALLA	2	57 458	1 311 395	2 949 842
IT	DARFO BOARIO TERME	2	56 117	1 293 592	1 684 852
IT	VITTORIO VENETO	2	55 794	1 706 274	5 831 892
IT	SONDRIO	3	55 239	191 636	191 636
IT	MANERBIO	2	54 933	2 790 547	12 861 094
IT	PALMI	2	54 593	935 916	1 590 828
IT	SULMONA	2	54 179	509 413	2 020 461
IT	DOMODOSSOLA	1	53 878	286 237	537 660
IT	LUINO	2	53 387	1 971 537	12 861 094
IT	MONTICHIARI	2	53 166	2 719 552	6 596 421
IT	CASTELVETRANO	2	53 163	645 429	1 647 327
IT	VERBANIA	2	53 071	200 756	537 660
IT	MILAZZO	2	52 817	753 565	1 590 828
IT	FIDENZA	2	52 338	1 466 823	2 949 842
IT	BARCELLONA POZZO DI	2	51 945	579 866	1 590 828
IT	IMPERIA	2	51 745	565 696	1 814 061
IT	NARDO'	2	51 687	751 118	1 447 236
IT	FELTRE	2	51 542	952 019	5 831 892
IT	CALTAGIRONE	2	51 098	829 387	1 974 315
IT	SENIGALLIA	2	50 396	968 074	1 671 155
IT	OLBIA	3	49 671	106 189	106 189
IT	ISERNIA	2	46 787	396 043	5 668 619
IT	ALGHERO	2	45 127	269 695	452 148
IT	FABRIANO	2	43 505	366 640	1 709 710
IT	RIVA DEL GARDA	2	43 056	388 041	1 605 143
IT	COPPARO	2	41 678	312 946	4 766 087
IT	BRESSANONE	2	41 645	305 506	1 605 143
IT	LEGNAGO	2	40 002	1 566 205	6 596 421
IT	BARGA	2	36 229	546 525	3 136 211
IT	ROSSANO	3	35 699	245 690	245 690
IT	ORZINUOVI	2	34 311	2 201 863	12 861 094
IT	ROSIGNANOMARITTIMO	2	33 862	774 132	1 347 537
IT	MELFI	2	33 419	601 506	1 439 727
IT	GUBBIO	2	32 349	421 783	1 709 710
IT	BRUNICO	2	30 473	249 595	1 605 143
IT	CASTELNUOVODIGARFAGN	2	25 482	256 033	3 136 211
IT	CORTONA	2	23 292	655 938	1 709 710
IT	MACOMER	2	22 921	202 302	452 148
IT	ALASSIO	2	21 390	501 095	1 814 061
IT	GIOIA TAURO	2	18 700	919 745	1 590 828
LT	VILNIUS	3	553 201	739 355	739 355

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
LT	KAUNAS	1	376 656	690 685	973 200
LT	KLAIPEDA	3	192 498	113 418	113 418
LT	SIAULIAI	3	133 528	372 130	372 130
LT	PANEVEZYS	3	119 417	286 676	286 676
LT	ALYTUS	3	71 611	278 506	278 506
LT	MARIJAMPOLE	2	48 674	735 920	973 200
LT	TELSIAI	3	32 809	169 188	169 188
LU	ESCH-SUR-ALZETTE	2	134 846	1 481 491	2 961 841
LU	LUXEMBOURG	2	125 055	1 647 363	2 961 841
LV	RIGA	1	1 195 310	1 137 593	1 261 723
LV	DAUGAVPILS	3	137 225	248 365	248 365
LV	LIEPAJA	3	112 190	133 461	133 461
LV	JELGAVA	2	93 999	1 139 922	1 261 723
LV	VENTSPILS	3	52 684	83 889	83 889
LV	REZEKNE	3	49 480	148 907	148 907
LV	VALMIERA	3	39 198	178 109	178 109
LV	JEKABPILS	3	38 807	148 744	148 744
MT	VALLETTA	3	388 594	272 324	272 324
NL	AMSTERDAM	1	1 378 873	6 790 617	15 534 772
NL	ROTTERDAM	2	1 173 533	6 125 820	15 534 772
NL	DEN HAAG	2	859 878	5 451 399	15 534 772
NL	UTRECHT	2	535 814	6 903 507	15 534 772
NL	HAARLEM	2	389 929	5 022 714	15 534 772
NL	EINDHOVEN	2	383 090	3 956 951	11 868 661
NL	GRONINGEN	1	332 562	1 262 646	1 464 851
NL	LEIDEN	2	327 549	5 924 697	15 534 772
NL	ARNHEM	2	321 694	3 369 496	15 534 772
NL	ENSCHDEDE	1	304 913	2 173 400	2 782 886
NL	BREDA	2	296 727	6 265 041	15 534 772
NL	DORDRECHT	2	280 037	6 198 753	15 534 772
NL	TILBURG	2	279 654	5 300 137	15 534 772
NL	NIJMEGEN	2	268 237	3 775 899	15 534 772
NL	HEERLEN	2	267 781	5 615 325	7 172 112
NL	AMERSFOORT	2	254 571	4 923 238	15 534 772
NL	APELDOORN	2	210 027	2 721 887	15 534 772
NL	MAASTRICHT	2	186 138	3 649 391	7 172 112
NL	DEN BOSCH	2	182 052	5 357 999	15 534 772
NL	ZWOLLE	2	169 285	1 808 790	15 534 772
NL	GELEEN	2	168 682	4 255 126	7 172 112
NL	ALMERE	2	158 976	4 372 899	15 534 772
NL	LEEWARDEN	3	154 514	831 154	831 154
NL	EMMEN	1	108 388	582 269	1 259 936
NL	EDE	2	103 762	4 741 420	15 534 772
NL	ALKMAAR	2	92 965	2 466 558	15 534 772
NL	VENLO	2	91 347	9 457 447	22 262 252
NL	DEVENTER	2	85 946	2 846 919	15 534 772
NL	HILVERSUM	2	83 210	5 180 696	15 534 772
NL	ROSENDAAL	2	77 558	4 839 714	15 534 772

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
NL	GOUDA	2	71 654	5 380 827	15 534 772
NL	ALPHEN AAN DEN RIJN	2	70 573	6 272 087	15 534 772
NL	VELSEN	2	67 356	4 969 605	15 534 772
NL	HOORN	2	66 455	2 965 584	15 534 772
NL	LELYSTAD	2	66 307	2 638 219	15 534 772
NL	BERGEN OP ZOOM	2	65 710	4 466 377	15 534 772
NL	VEENENDAAL	2	60 650	5 168 853	15 534 772
NL	ASSEN	2	60 273	1 070 229	1 464 851
NL	DEN HELDER	2	60 047	542 077	15 534 772
NO	OSLO	1	1 036 900	1 030 600	1 219 962
NO	BERGEN	3	334 902	286 933	286 933
NO	STAVANGER	3	258 656	240 890	240 890
NO	TRONDHEIM	3	223 889	180 636	180 636
NO	DRAMMEN	2	142 646	861 073	1 219 962
NO	FREDRIKSTAD	1	126 798	224 816	363 683
NO	SKIEN	1	120 900	193 723	277 729
NO	KRISTIANSAND	1	116 493	144 546	204 108
NO	TONSBERG	3	105 877	196 913	196 913
NO	HAUGESUND	3	94 216	90 271	90 271
NO	HAMAR	1	83 912	135 964	213 992
NO	LARVIK	2	82 905	261 610	277 729
NO	ALESUND	3	75 534	58 289	58 289
NO	ARENDAL	2	71 772	90 848	204 108
NO	GJOVIK	2	67 471	117 155	213 992
NO	TROMSO	3	62 551	60 086	60 086
NO	MOLDE	3	53 382	36 037	36 037
NO	MOSS	2	50 996	286 357	363 683
NO	KONGSVINGER	3	49 909	58 786	58 786
NO	BODO	3	44 892	41 541	41 541
NO	HONEFOSS	2	41 374	239 420	1 219 962
NO	LILLEHAMMER	2	35 916	101 724	213 992
NO	ASKIM	2	34 974	203 021	363 683
NO	STEINKJER	3	34 177	45 634	45 634
NO	LEVANGER	3	33 527	36 891	36 891
NO	LEIRVIK	3	32 996	26 826	26 826
NO	HARSTAD	3	30 820	32 910	32 910
NO	MO I RANA	3	29 941	29 941	29 941
NO	KRISTIANSUND	3	28 803	32 669	32 669
NO	HALDEN	2	28 552	199 737	363 683
NO	ELVERUM	2	26 693	78 885	213 992
NO	KONGSBERG	2	26 509	178 718	1 219 962
NO	SORTLAND	3	25 494	36 726	36 726
NO	NARVIK	3	24 119	22 615	22 615
NO	NOTODDEN	2	23 400	51 614	1 219 962
NO	ULSTEIN	3	22 775	22 775	22 775
PL	KATOWICE	1	2 592 513	3 422 807	4 083 848
PL	WARSAWA	3	2 394 337	2 795 429	2 795 429
PL	LODZ	1	1 170 142	1 623 230	1 900 922

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
PL	KRAKOW	3	1 076 143	2 163 457	2 163 457
PL	GDANSK	3	1 001 884	1 347 609	1 347 609
PL	POZNAN	3	828 180	1 337 080	1 337 080
PL	WROCLAW	3	728 957	1 219 564	1 219 564
PL	LUBLIN	3	566 007	983 609	983 609
PL	RYBNIK	2	545 423	2 202 197	4 083 848
PL	SZCZECIN	3	474 035	776 177	776 177
PL	BYDGOSZCZ	1	471 518	1 089 721	1 336 218
PL	BIALYSTOK	3	426 979	538 530	538 530
PL	KIELCE	3	406 930	836 017	836 017
PL	RADOM	3	375 707	782 350	782 350
PL	RZESZOW	3	330 156	1 010 795	1 010 795
PL	BIELSKO-BIALA	3	326 813	1 546 642	1 546 642
PL	TARNOW	3	301 801	957 873	957 873
PL	TORUN	2	289 308	1 139 829	1 336 218
PL	OLSZTYN	3	286 909	506 953	506 953
PL	NOWY SACZ	3	276 622	680 751	680 751
PL	OPOLE	3	268 462	761 357	761 357
PL	CZESTOCHOWA	3	256 364	967 610	967 610
PL	PLOCK	1	238 283	723 679	922 113
PL	WLOCLAWEK	2	210 516	625 575	922 113
PL	ZIELONA GORA	3	205 215	527 816	527 816
PL	KONIN	3	204 070	645 264	645 264
PL	JELENA GORA	1	197 697	453 458	1 053 366
PL	SLUPSK	3	197 003	350 099	350 099
PL	GORZOWWIELKO- POLSKI	3	189 713	414 265	414 265
PL	ELBLAG	3	188 301	474 438	474 438
PL	KALISZ	3	186 969	701 377	701 377
PL	BIALA PODLASKA	3	176 722	315 825	315 825
PL	KOSZALIN	3	175 888	349 954	349 954
PL	ZAMOSC	3	175 447	444 115	444 115
PL	PIOTRKOWTRY- BUNALSKI	2	172 810	1 532 683	1 900 922
PL	KROSNO	3	159 026	599 279	599 279
PL	SIEDLCE	3	157 950	463 958	463 958
PL	CHELM	3	147 209	336 639	336 639
PL	PRZEMYSL	3	141 310	358 995	358 995
PL	GRUDZIADZ	3	141 179	531 629	531 629
PL	OSTROLEKA	1	140 391	330 327	517 038
PL	WALBRZYCH	3	135 454	878 787	878 787
PL	LOMZA	2	116 386	369 241	517 038
PL	LESZNO	3	110 541	537 880	537 880
PL	LEGNICA	2	109 908	791 000	1 053 366
PL	SUWALKI	3	105 198	227 460	227 460
PL	SKIERNIEWICE	3	87 536	589 435	589 435
PL	SWINOUJSCIE	3	43 512	168 368	168 368
PT	LISBOA	1	2 590 792	2 837 095	3 368 545

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
PT	PORTO	1	1 231 438	2 597 465	3 655 200
PT	BRAGA	2	152 693	2 664 249	3 655 200
PT	COIMBRA	1	138 540	716 048	2 237 640
PT	GUIMARAES	2	126 745	2 227 366	3 655 200
PT	FEIRA	2	114 906	2 009 901	3 655 200
PT	FUNCHAL	3	102 521	240 537	240 537
PT	FAMALICAO	1	99 853	113 487	237 146
PT	LEIRIA	2	82 762	821 845	2 237 640
PT	AVEIRO	2	67 003	1 682 396	3 655 200
PT	PONTA DELGADA	3	65 718	131 112	131 112
PT	BARCELOS	2	63 880	1 793 429	3 655 200
PT	WISEU	3	63 187	366 004	366 004
PT	PAREDES	2	62 652	2 540 299	3 368 545
PT	SANTO TIRSO	2	56 225	2 461 826	3 655 200
PT	OVAR	2	55 198	2 045 531	3 655 200
PT	FARO	1	46 643	297 287	397 481
PT	AGUEDA	2	46 218	742 762	3 655 200
PT	LOULE	2	46 068	328 540	397 481
PT	TORRES VEDRAS	2	45 134	2 437 535	3 368 545
PT	EVORA	3	44 806	115 250	115 250
PT	PORTIMAO	2	41 220	214 955	397 481
PT	PACOS DE FERREIRA	2	40 577	2 583 035	3 655 200
PT	VIANA DO CASTELO	2	40 357	700 446	3 655 200
PT	FIGUEIRA DA FOZ	2	37 539	552 572	2 237 640
PT	FELGUEIRAS	3	35 810	41 871	41 871
PT	ILHAVO	2	35 688	1 224 223	2 237 640
PT	OLIVEIRA DE AZEM?IS	2	34 700	1 758 030	3 655 200
PT	VILA REAL	3	34 334	427 750	427 750
PT	MARINHA GRANDE	2	34 153	592 338	2 237 640
PT	OLHAO	2	33 217	279 862	397 481
PT	FAFE	2	32 097	873 454	3 655 200
PT	SANTAREM	2	31 996	1 316 132	3 368 545
PT	COVILHA	2	31 296	166 683	237 146
PT	CASTELO BRANCO	2	31 240	192 062	237 146
PT	CALDAS DA RAINHA	2	29 513	410 303	3 368 545
PT	GUARDA	2	25 807	168 415	237 146
PT	ALBUFEIRA	2	24 409	324 976	397 481
PT	PENAFIEL	2	23 651	2 361 899	3 655 200
PT	PENICHE	3	23 583	107 415	107 415
PT	BEJA	3	23 475	96 585	96 585
PT	SILVES	2	23 029	206 895	397 481
PT	TORRES NOVAS	2	22 405	636 351	2 237 640
PT	CHAVES	3	22 369	142 063	142 063
PT	SAO JOAO DA MADEIRA	2	21 102	1 957 544	3 655 200
PT	BRAGANCA	3	20 001	64 284	64 284
RO	BUCURESTI	1	1 921 751	2 369 184	2 400 257
RO	IASI	3	321 580	479 517	479 517
RO	CLUJ-NAPOCA	3	318 027	556 621	556 621

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
RO	TIMISOARA	3	317 651	462 525	462 525
RO	CONSTANTA	3	310 526	582 971	582 971
RO	CRAIOVA	1	302 622	501 781	674 702
RO	GALATI	1	298 584	634 319	724 866
RO	BRASOV	1	283 901	654 781	717 572
RO	PLOIESTI	3	232 452	695 037	695 037
RO	BRAILA	2	216 929	684 348	724 866
RO	ORADEA	3	206 527	391 032	391 032
RO	BACAU	3	175 921	512 559	512 559
RO	ARAD	3	172 824	322 677	322 677
RO	PITESTI	1	168 756	470 292	519 288
RO	SIBIU	3	155 045	274 086	274 086
RO	TIRGU MURES	3	149 577	364 939	364 939
RO	BAIA MARE	3	137 976	259 266	259 266
RO	BUZAU	3	133 116	369 822	369 822
RO	SATU MARE	3	115 630	326 396	326 396
RO	BOTOSANI	3	115 344	412 367	412 367
RO	RIMNICU VILCEA	3	107 656	300 232	300 232
RO	SUCEAVA	3	106 138	321 331	321 331
RO	PIATRA NEAMT	3	105 499	246 075	246 075
RO	DROBETA-TURNU SEVERI	3	104 035	257 089	257 089
RO	FOCSANI	3	103 219	332 634	332 634
RO	TIRGU JIU	3	96 567	232 151	232 151
RO	TULCEA	3	92 762	135 797	135 797
RO	TIRGOVISTE	3	89 429	630 020	630 020
RO	RESITA	3	83 985	196 267	196 267
RO	BISTRITA	3	81 467	180 544	180 544
RO	SLATINA	3	79 171	294 102	294 102
RO	HUNEDOARA	1	71 380	243 204	309 884
RO	VASLUI	3	70 267	327 222	327 222
RO	CALARASI	1	70 046	351 767	420 720
RO	GIURGIU	2	69 587	418 695	846 739
RO	ROMAN	3	69 483	491 595	491 595
RO	DEVA	2	69 390	301 108	309 884
RO	BIRLAD	3	69 183	232 396	232 396
RO	ALBA IULIA	3	66 369	269 952	269 952
RO	ZALAU	3	63 305	165 832	165 832
RO	SFINTU GHEORGHE	2	61 512	542 003	717 572
RO	TURDA	3	55 770	554 752	554 752
RO	MEDIAS	1	55 203	201 232	339 560
RO	SLOBOZIA	3	52 677	281 969	281 969
RO	ONESTI	3	51 681	426 954	426 954
RO	ALEXANDRIA	3	50 591	232 483	232 483
RO	PETROSENI	3	45 447	156 623	156 623
RO	LUGOJ	3	44 571	158 603	158 603
RO	MIERCUREA-CIUC	3	41 852	139 072	139 072
RO	MANGALIA	3	40 037	433 919	433 919

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
RO	CIMPINA	3	38 759	500 714	500 714
RO	CIMPULUNG	3	38 285	198 888	198 888
RO	ODORHEIU SECUIESC	3	36 926	133 290	133 290
RO	MIOVENI	2	35 849	432 768	519 288
RO	SACELE	2	30 044	600 605	717 572
RO	VOLUNTARI	2	29 995	2 375 997	2 400 257
RO	CODLEA	2	24 256	636 669	717 572
RO	BALS	2	21 194	566 431	674 702
RO	BLAJ	2	20 758	252 827	339 560
SE	STOCKHOLM	3	1 890 253	1 606 234	1 606 234
SE	GOETEBORG	1	903 490	833 326	1 137 009
SE	MALMOE	2	667 281	2 046 904	3 297 924
SE	HELSINGBORG	3	293 615	553 742	553 742
SE	UPPSALA	3	281 449	489 243	489 243
SE	LINKOEPING	1	241 265	341 535	384 970
SE	OEREBRO	3	211 403	247 617	247 617
SE	VAESTERAAS	1	173 280	244 748	477 209
SE	KRISTIANSTAD	3	172 234	162 911	162 911
SE	NORRKOEPING	2	165 949	300 370	384 970
SE	BORAAS	2	159 144	848 644	1 137 009
SE	LULEAA	3	149 641	71 952	71 952
SE	FALUN	3	149 053	112 720	112 720
SE	SKOEVD	3	146 967	152 338	152 338
SE	JOENKOEPING	3	146 482	147 140	147 140
SE	GAEVLE	3	142 927	147 494	147 494
SE	UMEA	3	136 783	113 455	113 455
SE	KARLSTAD	3	127 537	127 696	127 696
SE	VAEXJOE	3	124 360	101 425	101 425
SE	KALMAR	3	111 291	117 447	117 447
SE	SUNDSVALL	3	111 114	110 915	110 915
SE	HALMSTAD	1	107 947	147 211	200 283
SE	TROLLHAETTAN	1	105 306	192 942	231 577
SE	ESKILSTUNA	3	104 973	140 702	140 702
SE	OESTERSUND	3	94 468	58 361	58 361
SE	KARLSKRONA	1	89 198	89 170	145 068
SE	UDDEVALLA	2	78 628	196 320	231 577
SE	SKELLEFTEAA	3	77 165	72 035	72 035
SE	NYKOEPING	3	59 929	148 172	148 172
SE	VISBY	3	57 313	57 412	57 412
SE	OERNSKOELDSVIK	3	55 702	55 364	55 364
SE	VARBERG	2	52 648	91 792	200 283
SE	LIDKOEPING	3	49 818	74 002	74 002
SE	HUDIKSVALL	3	47 736	37 288	37 288
SE	KOEPING	2	46 781	283 374	477 209
SE	KARLSKOGA	3	46 562	72 267	72 267
SE	OSKARSHAMN	3	45 956	45 802	45 802
SE	FALKENBERG	2	38 817	177 534	200 283
SE	VAESTERVIK	3	37 433	36 956	36 956

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
SE	MARIESTAD	3	33 442	101 134	101 134
SE	VAERNAMO	1	32 256	123 370	133 086
SE	KARLSHAMN	2	30 741	84 472	145 068
SE	TRANAAS	3	28 499	54 868	54 868
SE	LJUNGBY	2	27 078	69 046	133 086
SE	HAERNOESAND	3	25 493	43 017	43 017
SE	KIRUNA	3	24 314	23 849	23 849
SE	FAGERSTA	3	23 175	66 968	66 968
SI	LJUBLJANA	3	522 079	712 011	712 011
SI	MARIBOR	1	218 810	967 480	1 313 721
SI	CELJE	2	169 327	557 916	1 313 721
SI	KOPER	2	77 287	529 778	823 110
SI	NOVA GORICA	2	61 227	801 405	1 440 577
SI	NOVO MESTO	3	46 679	146 418	146 418
SK	BRATISLAVA	3	599 015	2 662 099	2 662 099
SK	KOSICE	1	343 092	583 912	719 912
SK	BANSKA BYSTRICA	1	249 030	377 799	593 075
SK	NITRA	1	218 906	757 772	1 808 400
SK	TRENCIN	1	202 942	473 066	905 006
SK	POPRAD	3	189 384	223 853	223 853
SK	PRESOV	2	161 782	601 561	719 912
SK	MICHALOVCE	1	161 218	413 123	457 153
SK	ZILINA	1	156 361	571 915	654 314
SK	NOVE ZAMKY	2	148 147	542 123	1 808 400
SK	LIPTOVSKY MIKULAS	3	133 565	236 676	236 676
SK	TRNAVA	2	127 125	1 016 100	1 808 400
SK	PRIEVIDZA	3	107 871	317 536	317 536
SK	MARTIN	2	97 813	401 298	654 314
SK	LUCENEC	1	90 120	363 168	440 092
SK	POVAZSKA BYSTRICA	2	77 953	478 728	905 006
SK	BANOVCE NAD BEBRAVOU	2	67 726	460 515	905 006
SK	LEVICE	2	53 394	357 548	1 808 400
SK	TOPOLCANY	2	46 892	550 640	1 808 400
SK	ZIAR NAD HRONOM	2	45 529	460 988	593 075
SK	BARDEJOV	1	40 245	158 131	451 091
SK	TREBISOV	2	32 846	398 137	457 153
SK	TVRDOSIN	3	32 812	254 028	254 028
SK	SKALICA	3	28 390	626 059	626 059
SK	SVIDNIK	2	27 765	371 211	451 091
SK	SENICA	2	27 068	546 302	1 808 400
SK	STUROVO	2	21 678	334 324	1 808 400
UK	LONDON	1	7 651 634	11 202 043	17 223 087
UK	GREATER MANCHESTER	1	2 277 330	8 107 195	14 495 821
UK	GLASGOW	1	1 323 100	2 729 065	3 938 569
UK	BIRMINGHAM	1	965 928	5 168 308	9 630 529
UK	TYNESIDE	1	885 981	1 931 639	2 439 350
UK	BELFAST	1	675 000	1 120 661	1 277 548

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
UK	SHEFFIELD	1	552 987	5 890 832	9 438 706
UK	EDINBURGH	2	533 390	1 989 664	3 938 569
UK	LIVERPOOL	2	481 786	5 400 389	14 495 821
UK	WOLVERHAMPTON	2	432 682	5 120 003	9 630 529
UK	LEEDS	2	424 194	5 738 575	14 495 821
UK	BRISTOL	1	407 992	2 132 089	3 700 980
UK	LEICESTER	1	318 518	3 202 426	5 698 705
UK	HULL	1	310 636	814 014	3 355 487
UK	COVENTRY/BEDWORTH	2	299 316	5 526 044	9 630 529
UK	BRACKNELL	2	289 376	8 170 822	17 223 087
UK	BRADFORD	2	289 376	6 242 040	14 495 821
UK	CARDIFF	3	272 129	1 352 714	1 352 714
UK	NOTTINGHAM	2	270 222	3 570 191	9 438 706
UK	STOKE	2	266 543	5 779 270	14 495 821
UK	PLYMOUTH	1	245 295	634 106	873 044
UK	MIDDLESBROUGH	3	231 006	966 677	966 677
UK	DERBY	2	223 836	4 124 284	9 438 706
UK	LUTON/DUNSTABLE	2	221 337	8 078 121	17 223 087
UK	BRIGHTON/WORTHING/ LI	1	220 583	1 869 533	1 938 564
UK	READING/WOKINGHAM	2	213 474	5 194 756	17 223 087
UK	ABERDEEN	3	211 910	384 170	384 170
UK	SOUTHAMPTON/EASTLEI G	1	210 138	1 787 490	2 846 389
UK	DUDLEY	2	192 171	4 873 836	9 630 529
UK	WIGAN	2	192 112	6 266 133	14 495 821
UK	SUNDERLAND/WHITBUR N	2	183 310	2 224 116	2 439 350
UK	NORTHAMPTON	2	179 596	2 847 494	5 698 705
UK	PRESTON	2	177 660	5 772 576	14 495 821
UK	PORTSMOUTH	2	174 690	1 478 375	2 846 389
UK	NORWICH	1	171 304	766 028	2 096 489
UK	SWANSEA	1	171 038	759 839	810 132
UK	SOUTHEND	3	158 517	4 132 363	4 132 363
UK	MILTON KEYNES	2	156 148	1 535 013	17 223 087
UK	BOURNEMOUTH	2	155 488	1 059 014	2 846 389
UK	KIRCALDY	2	148 500	1 427 477	3 938 569
UK	BLACKPOOL	2	146 262	2 836 507	14 495 821
UK	DUNDEE	2	145 460	544 324	3 938 569
UK	FALKIRK	2	145 270	2 440 221	3 938 569
UK	SWINDON	2	145 236	1 127 594	3 700 980
UK	HUDDERSFIELD	2	143 726	7 272 265	14 495 821
UK	BOLTON	2	139 020	6 841 279	14 495 821
UK	POOLE	2	138 479	1 054 643	2 846 389
UK	PETERBOROUGH	1	134 788	1 142 472	1 553 059
UK	IPSWICH	1	130 157	682 920	1 282 955
UK	GLOUCESTER	3	126 149	1 192 965	1 192 965
UK	YORK	2	124 609	3 176 675	14 495 821

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
UK	TELFORD	2	119 340	3 918 839	9 630 529
UK	OXFORD	3	118 795	1 111 899	1 111 899
UK	GUILDFORD	2	117 354	8 053 033	17 223 087
UK	THANET	1	116 745	487 275	1 901 752
UK	NEWPORT	2	115 522	4 089 040	9 630 529
UK	LISBURN	2	111 300	1 074 044	1 277 548
UK	SLOUGH	2	110 708	7 670 184	17 223 087
UK	LONDONDERRY	3	106 600	324 158	324 158
UK	BLACKBURN/DARWEN	2	105 994	6 043 797	14 495 821
UK	AYR	2	100 000	1 329 204	3 938 569
UK	COLCHESTER	2	96 063	1 196 209	1 282 955
UK	CAMBRIDGE	3	95 682	1 062 291	1 062 291
UK	CANNOCK/GREAT WYRLEY	2	95 682	5 426 521	9 630 529
UK	EASTBOURNE	2	94 793	1 042 102	1 938 564
UK	EXETER	1	94 717	641 165	1 559 559
UK	ROCHDALE	2	94 313	7 521 189	14 495 821
UK	CHELTENHAM/CHARLTON	2	91 301	2 124 524	3 700 980
UK	MAIDSTONE	2	90 878	6 097 985	17 223 087
UK	CRAWLEY	2	88 203	5 344 797	17 223 087
UK	HARTLEPOOL	2	87 310	1 924 109	2 439 350
UK	DARLINGTON	2	86 767	1 978 591	2 439 350
UK	BATH	2	85 202	1 684 023	3 700 980
UK	GREENOCK	2	84 150	1 874 422	3 938 569
UK	WARRINGTON	2	82 812	6 619 163	14 495 821
UK	WORCESTER	2	82 661	4 175 041	9 630 529
UK	HASTINGS/BEXHILL	2	81 139	1 133 910	1 938 564
UK	KILMARNOCK	2	80 900	1 867 889	3 938 569
UK	LINCOLN	2	80 281	1 848 886	3 355 487
UK	CHESTER	2	80 110	5 134 920	14 495 821
UK	LURGAN	2	79 700	1 160 297	1 277 548
UK	WARWICK/LEAMINGTON	2	77 872	5 020 750	9 630 529
UK	BASINGSTOKE	2	77 837	3 222 756	17 223 087
UK	STEVENAGE	2	76 064	7 282 287	17 223 087
UK	SCUNTHORPE	2	75 982	2 194 544	3 355 487
UK	BARNSLEY	2	75 120	6 269 848	14 495 821
UK	BURNLEY/NELSON	2	74 661	6 114 389	14 495 821
UK	HARLOW	2	74 629	8 225 467	17 223 087
UK	WAKEFIELD	2	73 955	5 899 016	14 495 821
UK	BEDFORD/KEMPSTON	2	73 917	2 134 889	17 223 087
UK	CARLISLE	1	72 439	362 023	921 132
UK	MANSFIELD	2	71 858	3 782 862	9 438 706
UK	DONCASTER	2	71 595	4 463 772	9 438 706
UK	WESTON-SUPER-MARE	2	69 372	1 367 485	3 700 980
UK	HARROGATE	2	66 178	3 338 990	9 438 706
UK	SHREWSBURY	2	64 219	2 512 556	9 630 529
UK	BANGOR	1	63 800	199 162	224 132

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
UK	CREWE	2	63 351	4 477 826	14 495 821
UK	INVERNESS	3	63 100	172 571	172 571
UK	LOWESTOFT	2	62 907	552 336	2 096 489
UK	BURY ST. EDMUNDS	2	62 633	1 057 097	2 096 489
UK	STAFFORD	2	61 885	5 165 597	9 630 529
UK	RUGBY	2	61 106	2 660 711	9 630 529
UK	STIRLING	2	61 000	2 752 373	3 938 569
UK	BURTON UPON TRENT	2	60 525	6 395 811	9 630 529
UK	TORQUAY	2	59 587	623 489	1 559 559
UK	AYLESBURY	2	58 058	4 994 334	17 223 087
UK	GREAT YARMOUTH	2	56 190	573 278	2 096 489
UK	IRVINE	2	55 900	1 818 839	3 938 569
UK	TAUNTON	2	55 855	838 190	1 559 559
UK	DUNFERMLINE	2	55 083	1 744 968	3 938 569
UK	KIDDERMINSTER	2	54 644	4 327 523	9 630 529
UK	ASHFORD	2	52 002	1 785 353	1 901 752
UK	CLACTON-ON-SEA/LITTL	2	49 437	646 978	1 282 955
UK	LOUGHBOROUGH	2	46 867	3 623 046	5 698 705
UK	ABERGELE/RHYL/PREST A	3	46 696	109 006	109 006
UK	LLANELLI	2	44 953	359 402	810 132
UK	WELLINGBOROUGH	2	41 602	2 300 644	5 698 705
UK	PERTH	2	41 453	987 586	3 938 569
UK	KING'S LYNN	2	41 281	758 150	2 096 489
UK	BANBURY	2	39 906	2 861 189	9 630 529
UK	CANTERBURY/BLEAN	2	39 734	1 062 122	1 901 752
UK	PONTYPRIDD	3	39 658	714 500	714 500
UK	DOVER	2	39 312	856 888	1 901 752
UK	SALISBURY	2	39 268	1 633 494	2 846 389
UK	STROUD	2	38 835	1 833 111	3 700 980
UK	YEOVIL	2	38 805	1 043 257	2 846 389
UK	GRANTHAM/GREAT GONER	2	37 002	2 143 200	5 698 705
UK	ANDOVER	2	34 647	1 109 942	2 846 389
UK	BRIDGWATER	2	34 610	794 813	3 700 980
UK	BOSTON	2	34 606	900 837	1 553 059
UK	BRIDLINGTON	2	31 334	658 435	3 355 487
UK	COLWYN BAY	2	29 883	164 519	224 132
UK	TROWBRIDGE	2	29 334	1 442 648	3 700 980
UK	BARNSTAPLE	2	27 691	244 737	1 559 559
UK	FALMOUTH/PENRYN	3	27 324	339 907	339 907
UK	WHITEHAVEN	1	26 542	207 095	229 647
UK	WORKINGTON	2	25 579	225 314	229 647
UK	KENDAL	2	25 461	670 827	921 132
UK	MELTON MOWBRAY	2	24 348	3 150 862	5 698 705
UK	NEWTON ABBOT	2	23 801	582 017	1 559 559
UK	SPALDING/PINCHBECK	2	22 386	860 446	1 553 059
UK	ST. AUSTELL	2	21 622	609 680	873 044

Country	Name	Status 1: PIA main node 2: Other PIA node 3: PUSH not belonging to any PIA	FUA population	PUSH population	PIA population
UK	FELIXSTOWE	2	20 900	496 889	1 282 955
UK	BERWICK UPON TWEED	3	20 493	67 639	67 639
UK	THETFORD	2	20 058	1 042 196	2 096 489

7 List of cities with transnational PUSH areas

Country (FUA centre)	Name	Number of countries covered by PUSH area
AT	WIEN	4
AT	BREGENZ	3
AT	DORNBIRN	3
AT	FELDKIRCH-RANKWEIL	3
AT	INNSBRUCK	3
AT	KLAGENFURT	3
AT	LEONDING	3
AT	LINZ	3
AT	MOEDLING	3
AT	VILLACH	3
AT	WELS	3
AT	BADEN-TRAIKIRCHEN	2
AT	GRAZ	2
AT	KLOSTERNEUBURG	2
AT	KREMS AN DER DONAU	2
AT	SALZBURG	2
AT	TRAUN	2
AT	WIENER NEUSTADT	2
AT	WOLFSBERG	2
BE	VERVIERS	4
BE	AALST	3
BE	BRUGGE	3
BE	GENT	3
BE	HASSELT	3
BE	KORTRIJK	3
BE	LIEGE	3
BE	NAMUR	3
BE	OOSTENDE	3
BE	ROESELARE	3
BE	ANTWERPEN	2
BE	BRUXELLES/BRUSSEL	2
BE	CHARLEROI	2
BE	IEPER	2
BE	LA LOUVIERE	2
BE	MECHELEN	2
BE	MONS	2
BE	MOUSCRON	2
BE	SINT NIKLAAS	2
BE	TOURNAI	2
BG	DOBRICH	2
BG	MONTANA	2
BG	PETRICH	2
BG	RUSE	2
BG	SILISTRA	2

Country (FUA centre)	Name	Number of countries covered by PUSH area
BG	VIDIN	2
CH	AARAU	3
CH	ARBON RORSCHACH	3
CH	BADEN	3
CH	BASEL	3
CH	BRUGG	3
CH	BUCHS	3
CH	CHUR	3
CH	HEERBRUGG-ALTSTATTEN	3
CH	KREUZLINGEN	3
CH	LENZBURG	3
CH	LIESTAL	3
CH	OLTEN	3
CH	ROMANSHORN-AMRISWIL	3
CH	SOLOTHURN	3
CH	ST. GALLEN	3
CH	WIL	3
CH	WINTERTHUR	3
CH	ZOFINGEN	3
CH	BELLINZONA	2
CH	BRIG	2
CH	BURGDORF	2
CH	CHIASSO-MENDRISIO	2
CH	FRAUENFELD	2
CH	GENEVE	2
CH	LA CHAUX-DE-FONDS	2
CH	LAUSANNE	2
CH	LOCARNO	2
CH	LUGANO	2
CH	MONTHY	2
CH	NEUCHATEL	2
CH	RAPPERSWIL-JONA	2
CH	SCHAFFHAUSEN	2
CH	SION	2
CH	VEVEY	2
CH	WETZIKON-PFAFFIKON (	2
CH	YVERDON	2
CH	ZUERICH	2
CH	ZUG	2
CZ	FRYDEK-MISTEK	3
CZ	KARVINA	3
CZ	LIBEREC	3
CZ	BRNO	2
CZ	CESKE BUDEJOVICE	2

Country (FUA centre)	Name	Number of countries covered by PUSH area
CZ	CHOMUTOV	2
CZ	DECIN	2
CZ	HAVIROV	2
CZ	HRADEC KRALOVE	2
CZ	KARLOVY VARY	2
CZ	MOST	2
CZ	OPAVA	2
CZ	OSTRAVA	2
CZ	TEPLICE	2
CZ	USTI NAD LABEM	2
CZ	ZLIN	2
DE	TRIER	4
DE	AACHEN	3
DE	BAUTZEN	3
DE	DEGGENDORF	3
DE	DUEREN	3
DE	DUESSELDORF	3
DE	EUSKIRCHEN	3
DE	FREIBURG IM BREISGAU	3
DE	GOERLITZ	3
DE	KOELN	3
DE	KONSTANZ	3
DE	LOERRACH	3
DE	MONCHEN-GLADBACH	3
DE	PASSAU	3
DE	RAVENSBURG	3
DE	SAARBRUECKEN	3
DE	WEIL	3
DE	AUE	2
DE	BADEN BADEN	2
DE	BAYREUTH	2
DE	BOCHOLT	2
DE	BOCHUM	2
DE	BUEHL	2
DE	CHEMNITZ	2
DE	COTTBUS	2
DE	DRESDEN	2
DE	DUISBURG	2
DE	EBERSWALDE-FINOW	2
DE	EMDEN	2
DE	ESSEN	2
DE	FLENSBURG	2
DE	FRANKFURT AN DER ODE	2
DE	FREIBERG	2
DE	GARMISCH-PARTENKIRCH	2
DE	GREIZ	2
DE	HOF	2
DE	HOYERSWERDA	2
DE	IBBENBUEREN	2

Country (FUA centre)	Name	Number of countries covered by PUSH area
DE	KAISERSLAUTERN	2
DE	KARLSRUHE	2
DE	KAUFBEUREN	2
DE	KEMPTEN (ALLGAEU)	2
DE	KLEVE	2
DE	KREFELD	2
DE	LANDAU IN DER PFALZ	2
DE	LINGEN	2
DE	LUDWIGSHAFEN AM RHEI	2
DE	MANNHEIM	2
DE	MEMMINGEN	2
DE	MUENCHEN	2
DE	MUENSTER	2
DE	NEUSTADT AN DER WEIN	2
DE	NORDHORN	2
DE	OFFENBURG	2
DE	OSNABRUECK	2
DE	PFORZHEIM	2
DE	PIRMASENS	2
DE	PLAUEN	2
DE	RENDSBURG	2
DE	RHEINE	2
DE	ROSENHEIM	2
DE	SINGEN	2
DE	SPEYER	2
DE	VILLINGEN-SCHWENNING	2
DE	WEIDEN IN DER OBERPF	2
DE	WEINGARTEN	2
DK	AABENRAA	2
DK	HADERSLEV	2
DK	KOEBENHAVN	2
DK	RIBE	2
DK	SOENDERBORG	2
DK	TONDER	2
EE	VILJANDI	2
EE	VORU	2
ES	BADAJOS	2
ES	FIGUERES	2
ES	GERONA	2
ES	HUELVA	2
ES	MERIDA	2
ES	PONTEVEDRA	2
ES	SAN SEBASTIAN	2
ES	VIGO	2
FI	TORNIO	2
FR	THIONVILLE	4
FR	BELFORT	3
FR	CALAIS	3
FR	CLUSES	3

Country (FUA centre)	Name	Number of countries covered by PUSH area
FR	COLMAR	3
FR	GUEBWILLER	3
FR	METZ	3
FR	MONTBELIARD	3
FR	MULHOUSE	3
FR	SAINT LOUIS	3
FR	THANN	3
FR	ANNECY	2
FR	ANNEMASSE	2
FR	ARMENTIERES	2
FR	ARRAS	2
FR	BAYONNE	2
FR	CAMBRAI	2
FR	CHAMBERY	2
FR	CHARLEVILLE-MEZIERES	2
FR	DOUAI	2
FR	DUNKERQUE	2
FR	FORBACH	2
FR	HAGUENAU	2
FR	LILLE	2
FR	MAUBEUGE	2
FR	MENTON	2
FR	NICE	2
FR	PERPIGNAN	2
FR	PONTARLIER	2
FR	SAINT-AVOLD	2
FR	SAINT-OMER	2
FR	SARREBOURG	2
FR	SARREGUEMINES	2
FR	SEDAN	2
FR	STRASBOURG	2
FR	THONON-LES-BAINS	2
FR	VALENCIENNES	2
GR	ORESTIAS	2
HU	GYOR	3
HU	MOSONMAGYAROVAR	3
HU	BEKESCSABA	2
HU	BERETTYOUJFALU	2
HU	BUDAPEST	2
HU	ESZTERGOM	2
HU	FEHERGYARMAT	2
HU	KAZINCBARCIKA	2
HU	KISVARDA	2
HU	MAKO	2
HU	MATESZALKA	2
HU	MISKOLC	2
HU	MOR	2
HU	OROSZLANY	2
HU	OZD	2

Country (FUA centre)	Name	Number of countries covered by PUSH area
HU	PILISVOROSVAR	2
HU	RETSAG	2
HU	SALGOTARIJAN	2
HU	SARKAD	2
HU	SAROSPATAK	2
HU	SARVAR	2
HU	SATORALJAUJHELY	2
HU	SOPRON	2
HU	SZEGED	2
HU	SZENTENDRE	2
HU	SZERENCs	2
HU	SZOMBATHELY	2
HU	TATABANYA	2
HU	VAC	2
HU	ZALAEGRSZEG	2
IE	DUNDALK	2
IT	AOSTA	3
IT	ALASSIO	2
IT	APRILIA	2
IT	AVIGLIANA	2
IT	BERGAMO	2
IT	BORGOMANERO	2
IT	BRESSANONE	2
IT	BRUNICO	2
IT	BUSTO ARSIZIO	2
IT	CIVITAVECCHIA	2
IT	COMO	2
IT	CUNEO	2
IT	DESIO	2
IT	DOMODOSSOLA	2
IT	FROSINONE	2
IT	GALLARATE	2
IT	GORIZIA	2
IT	IMPERIA	2
IT	LATINA	2
IT	LECCO	2
IT	LUINO	2
IT	MILANO	2
IT	MONFALCONE	2
IT	NOVARA	2
IT	PAVIA	2
IT	PORDENONE	2
IT	PORTOGRUARO	2
IT	ROMA	2
IT	SAN REMO	2
IT	SESTOCALENDE	2
IT	SONDRIO	2
IT	TORINO	2
IT	TRIESTE	2

Country (FUA centre)	Name	Number of countries covered by PUSH area
IT	UDINE	2
IT	VARESE	2
IT	VELLETRI	2
IT	VENTIMIGLIA	2
IT	VERBANIA	2
IT	VIGEVANO	2
LT	KLAIPEDA	2
LT	MARIJAMPOLE	2
LT	SIAULIAI	2
LU	ESCH-SUR-ALZETTE	4
LU	LUXEMBOURG	4
LV	DAUGAVPILS	2
LV	JELGAVA	2
LV	VALMIERA	2
NL	DEN BOSCH	3
NL	EINDHOVEN	3
NL	GELEEN	3
NL	HEERLEN	3
NL	MAASTRICHT	3
NL	VENLO	3
NL	APELDOORN	2
NL	ARNHEM	2
NL	ASSEN	2
NL	BERGEN OP ZOOM	2
NL	BREDA	2
NL	DEVENTER	2
NL	DORDRECHT	2
NL	EDE	2
NL	EMMEN	2
NL	ENSCHDEDE	2
NL	GRONINGEN	2
NL	NIJMEGEN	2
NL	ROSENDAAL	2
NL	ROTTERDAM	2
NL	TILBURG	2
NL	VEENENDAAL	2
NO	HALDEN	2
PL	BIELSKO-BIALA	3
PL	GORZOWWIELKOPOLSKI	2
PL	JELENIA GORA	2
PL	KROSNO	2
PL	NOWY SACZ	2
PL	RYBNIK	2
PL	SWINOUJSCIE	2
PL	SZCZECIN	2
PL	WALBRZYCH	2

Country (FUA centre)	Name	Number of countries covered by PUSH area
PT	BRAGA	2
PT	BRAGANCA	2
PT	CASTELO BRANCO	2
PT	CHAVES	2
PT	FARO	2
PT	GUARDA	2
PT	OLHAO	2
PT	VIANA DO CASTELO	2
RO	CALARASI	2
RO	GIURGIU	2
RO	MANGALIA	2
RO	ORADEA	2
RO	SATU MARE	2
SE	HELSINGBORG	2
SE	MALMOE	2
SI	CELJE	2
SI	KOPER	2
SI	LJUBLJANA	2
SI	MARIBOR	2
SI	NOVA GORICA	2
SK	BRATISLAVA	3
SK	ZILINA	3
SK	BANOVCE NAD BEBRAVOU	2
SK	BARDEJOV	2
SK	KOSICE	2
SK	LEVICE	2
SK	LUCENEC	2
SK	MICHALOVCE	2
SK	NOVE ZAMKY	2
SK	POPRAD	2
SK	POVAZSKA BYSTRICA	2
SK	PRESOV	2
SK	SENICA	2
SK	SKALICA	2
SK	STUROVO	2
SK	SVIDNIK	2
SK	TREBISOV	2
SK	TRENCIN	2
SK	TRNAVA	2
SK	TVRDOSIN	2
UK	DOVER	2
UK	LONDONDERRY	2
UK	LURGAN	2

8 Potential Integration Areas (PIA)

List of PIAs, indicating the name of the main node, the total population and number of FUAs in each PIA, the names all secondary nodes, and the FUA population of all nodes.

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
KOELN	22 262 252	21	KOELN	1 823 475
			DUESSELDORF	1 315 736
			BONN	878 742
			WUPPERTAL	846 815
			ESSEN	591 889
			DORTMUND	589 240
			AACHEN	584 342
			DUISBURG	512 030
			MONCHEN-GLADBACH	476 306
			BOCHUM	390 087
			MUENSTER	286 567
			KREFELD	239 559
			HAGEN	202 060
			HAMM	183 505
			DUEREN	134 756
			ISERLOHN	98 865
			BOCHOLT	91 475
			VENLO	91 347
			WUELFRAETH	80 625
			GUMMERSBACH	74 164
			EUSKIRCHEN	54 047
LONDON	17 223 087	14	LONDON	7 651 634
			BRACKNELL	289 376
			LUTON/DUNSTABLE	221 337
			READING/WOKINGHAM	213 474
			MILTON KEYNES	156 148
			GUILDFORD	117 354
			SLOUGH	110 708
			MAIDSTONE	90 878
			CRAWLEY	88 203
			BASINGSTOKE	77 837
			STEVENAGE	76 064
			HARLOW	74 629
			BEDFORD/KEMPSTON	73 917
			AYLESBURY	58 058
AMSTERDAM	15 534 772	27	AMSTERDAM	1 378 873
			ROTTERDAM	1 173 533
			DEN HAAG	859 878
			UTRECHT	535 814
			HAARLEM	389 929
			LEIDEN	327 549

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			ARNHEM	321 694
			BREDA	296 727
			DORDRECHT	280 037
			TILBURG	279 654
			NIJMEGEN	268 237
			AMERSFOORT	254 571
			APELDOORN	210 027
			DEN BOSCH	182 052
			ALMERE	158 976
			EDE	103 762
			ALKMAAR	92 965
			DEVENTER	85 946
			HILVERSUM	83 210
			ROOSENDAAL	77 558
			GOUDA	71 654
			ALPHEN AAN DEN RIJN	70 573
			VELSEN	67 356
			HOORN	66 455
			LELYSTAD	66 307
			BERGEN OP ZOOM	65 710
			VEENENDAAL	60 650
FRANKFURT AM MAIN	14 926 087	25	FRANKFURT AM MAIN	1 896 741
			MANNHEIM	1 568 679
			WIESBADEN	780 190
			KARLSRUHE	590 718
			DARMSTADT	525 046
			MAINZ	377 026
			GIESSEN	308 727
			ASCHAFFENBURG	168 369
			LUDWIGSHAFEN AM RHEI	162 458
			HEIDELBERG	141 509
			KAISERSLAUTERN	130 051
			OFFENBACH AM MAIN	118 429
			HANAU	88 801
			MARBURG AN DER LAHN	84 609
			BAD NAUHEIM	83 985
			FRIEDRICHSDORF	81 680
			LIMBURG	75 374
			DILLENBURG	73 080
			NEUSTADT AN DER WEIN	71 738
			RUESSELSHEIM	59 551
			LANDAU IN DER PFALZ	52 971
			WETZLAR	52 657
			SPEYER	49 776
			FRIEDBERG (HESSEN)	26 751
			WEINGARTEN	23 604
GREATER MANCHESTER	14 495 821	17	GREATER MANCHESTER	2 277 330
			LIVERPOOL	481 786

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			LEEDS	424 194
			BRADFORD	289 376
			STOKE	266 543
			WIGAN	192 112
			PRESTON	177 660
			HUDDERSFIELD	143 726
			BOLTON	139 020
			BLACKBURN/DARWEN	105 994
			ROCHDALE	94 313
			WARRINGTON	82 812
			CHESTER	80 110
			BARNSLEY	75 120
			BURNLEY/NELSON	74 661
			WAKEFIELD	73 955
			CREWE	63 351
MILANO	12 861 094	27	MILANO	2 890 384
			DESIO	482 490
			BERGAMO	456 333
			COMO	400 262
			BUSTO ARSIZIO	357 443
			LECCO	285 692
			VARESE	254 157
			VIGEVANO	225 015
			PAVIA	196 697
			TREVIGLIO	190 725
			GALLARATE	185 551
			NOVARA	170 134
			PIACENZA	167 085
			LODI	141 592
			CREMONA	137 255
			BIELLA	123 938
			SESTOCALENDE	117 235
			LUGANO	104 547
			CREMA	96 802
			BORGOMANERO	91 656
			VOGHERA	83 184
			CHIARI	80 525
			PALAZZOLO SULL'OGLIO	73 443
			COSSATO	58 791
			MANERBIO	54 933
			CHIASSO-MENDRISIO	42 550
			ORZINUOVI	34 311
BRUXELLES/BRUSSEL	11 868 661	9	BRUXELLES/BRUSSEL	964 405
			ANTWERPEN	931 567
			LEUVEN	458 265
			CHARLEROI	420 214
			HASSELT	384 503
			MECHELEN	306 413

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			NAMUR	283 793
			SINT NIKLAAS	224 356
			LA LOUVIERE	174 124
PARIS	11 364 664	3	PARIS	11 174 743
			SAINT QUENTIN	103 781
			CREIL	98 277
LILLE	10 863 278	15	LILLE	1 143 125
			DOUAI	552 682
			GENT	496 608
			VALENCIENNES	399 677
			KORTRIJK	277 786
			BRUGGE	271 437
			AALST	262 337
			MONS	249 153
			OOSTENDE	142 946
			ROESELARE	140 684
			TOURNAI	140 673
			IEPER	104 320
			MOUSCRON	70 016
			CAMBRAI	58 828
			ARMENTIERES	58 706
BIRMINGHAM	9 630 529	14	BIRMINGHAM	965 928
			WOLVERHAMPTON	432 682
			COVENTRY/BEDWORTH	299 316
			DUDLEY	192 171
			TELFORD	119 340
			NEWPORT	115 522
			CANNOCK/GREAT WYRLEY	95 682
			WORCESTER	82 661
			WARWICK/LEAMINGTON	77 872
			STAFFORD	61 885
			RUGBY	61 106
			BURTON UPON TRENT	60 525
			KIDDERMINSTER	54 644
			BANBURY	39 906
SHEFFIELD	9 438 706	6	SHEFFIELD	552 987
			NOTTINGHAM	270 222
			DERBY	223 836
			MANSFIELD	71 858
			DONCASTER	71 595
			HARROGATE	66 178
BIELEFELD	7 608 656	10	BIELEFELD	578 980
			OSNABRUECK	309 878
			PADERBORN	177 706
			BAD OEYNHAUSEN	173 585
			MINDEN	145 822
			HERFORD	120 185
			DETMOLD	109 928

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			RHEINE	89 535
			LIPPSTADT	82 956
			IBBENBUEREN	61 995
STUTT GART	7 201 472	5	STUTT GART	2 593 087
			REUTLINGEN	358 010
			HEILBRONN	319 899
			TUEBINGEN	208 535
			PFORZHEIM	169 648
LIEGE	7 172 112	5	LIEGE	584 398
			HEERLEN	267 781
			VERVIERS	266 334
			MAASTRICHT	186 138
			GELEEN	168 682
VERONA	6 596 421	8	VERONA	469 996
			BRESCIA	381 454
			MANTOVA	138 638
			SUZZARA	71 181
			DESENZANO DEL GARDA	64 607
			SALO'	60 548
			MONTICHIARI	53 166
			LEGNAGO	40 002
TORINO	6 302 253	9	TORINO	1 545 202
			IVREA	149 673
			ASTI	128 736
			PINEROLO	115 547
			CIRIE'	99 048
			CHIERI	94 098
			CARMAGNOLA	86 424
			VERCELLI	77 143
			AVIGLIANA	76 049
HANNOVER	6 158 534	10	HANNOVER	996 586
			BRAUNSCHWEIG	346 815
			HILDESHEIM	147 177
			WOLFSBURG	127 609
			SALZGITTER	124 131
			CELLE	86 843
			GOSLAR	80 657
			PEINE	72 589
			HAMELN	59 052
			HALBERSTADT	41 417
ZUERICH	5 909 402	18	ZUERICH	940 180
			LUZERN	177 734
			WINTERTHUR	114 669
			KONSTANZ	91 505
			BADEN	80 617
			AARAU	73 731
			ZUG	71 173
			SCHAFFHAUSEN	59 819

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			OLTEN	50 839
			WETZIKON-PFAFFIKON (	48 366
			ZOFINGEN	38 969
			PFAEFFIKON-LACHEN	36 023
			BRUGG	25 255
			FRAUENFELD	24 792
			LENZBURG	24 495
			WIL	24 482
			KREUZLINGEN	23 804
			RAPPERSWIL-JONA	22 727
VENEZIA	5 831 892	19	VENEZIA	611 236
			PADOVA	505 963
			TREVISO	247 413
			VICENZA	233 566
			PORDENONE	221 521
			BASSANO DEL GRAPPA	130 801
			CITTADELLA	113 934
			CASTELFRANCO VENETO	111 448
			SAN DONA' DI PIAVE	105 491
			CONEGLIANO	103 162
			MONTEBELLUNA	100 457
			THIENE	96 293
			LONIGO	86 185
			PORTOGRUARO	80 473
			ARZIGNANO	75 283
			SCHIO	66 763
			ODERZO	65 801
			SAN BONIFACIO	61 130
			VITTORIO VENETO	55 794
LEICESTER	5 698 705	6	LEICESTER	318 518
			NORTHAMPTON	179 596
			LOUGHBOROUGH	46 867
			WELLINGBOROUGH	41 602
			GRANTHAM/GREAT GONER	37 002
			MELTON MOWBRAY	24 348
NAPOLI	5 668 619	14	NAPOLI	2 381 483
			CASERTA	364 473
			SALERNO	294 318
			AVERSA	234 128
			NOLA	183 972
			NOCERA INFERIORE	183 796
			TORRE ANNUNZIATA	166 962
			AVELLINO	158 688
			CASTELLAMMARE DI STA	138 978
			SAN GIUSEPPE VESUVIA	109 884
			BATTIPAGLIA	105 337
			BENEVENTO	102 564
			SORRENTO	75 503

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			EBOLI	58 059
MADRID	5 480 921	4	MADRID	5 086 635
			COLLADOVILLALBA	176 251
			SEGOVIA	67 441
			AVILA	50 907
GENOVA	5 312 352	6	GENOVA	795 689
			ALESSANDRIA	150 915
			SAVONA	132 717
			CHIAVARI	72 331
			NOVI LIGURE	68 224
			TORTONA	59 268
BERLIN	5 254 106	5	BERLIN	4 101 213
			POTSDAM	130 435
			BRANDENBURG	81 444
			EBERSWALDE-FINOW	51 156
			NEURUPPIN	32 598
BASEL	5 242 058	11	BASEL	406 391
			MULHOUSE	271 024
			LOERRACH	164 439
			COLMAR	116 268
			BELFORT	104 962
			SAINT LOUIS	83 732
			SOLOTHURN	68 272
			LIESTAL	37 914
			THANN	31 309
			GUEBWILLER	30 738
			WEIL	28 942
BARCELONA	5 190 624	7	BARCELONA	3 765 994
			MATARO	168 756
			GRANOLLERS	160 127
			MANRESA	122 360
			VIC	110 582
			IGUALADA	79 655
			VILAFRANCA DEL PENED	65 475
LEIPZIG	5 160 613	9	LEIPZIG	568 200
			HALLE	313 609
			GERA	132 098
			DESSAU	97 200
			WOLFEN	79 433
			WITTENBERG	52 101
			ALTENBURG	51 565
			MERSEBURG	37 127
			NAUMBURG	30 399
MUENCHEN	5 031 251	4	MUENCHEN	1 893 715
			ROSENHEIM	140 882
			LANDSHUT	82 002
			FREISING	40 890
HAMBURG	4 883 155	4	HAMBURG	2 515 468

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			LUEBECK	289 373
			LUENEBURG	99 207
			NEUMUENSTER	84 102
BOLOGNA	4 766 087	9	BOLOGNA	682 724
			MODENA	243 348
			FERRARA	196 416
			RAVENNA	172 017
			IMOLA	109 624
			LUGO	96 657
			CARPI	82 196
			FAENZA	81 780
			VIGNOLA	71 277
ROMA	4 575 848	7	ROMA	3 314 237
			FROSINONE	259 382
			VELLETRI	198 010
			LATINA	170 945
			APRILIA	114 361
			TERRACINA	78 249
			CIVITAVECCHIA	72 235
COMPIEGNE	4 201 916	2	COMPIEGNE	108 234
			SOISSONS	64 042
NURNBERG	4 184 642	9	NURNBERG	1 018 211
			ERLANGEN	229 717
			FUERTH	111 257
			BAMBERG	104 927
			COBURG	85 765
			ANSBACH	40 165
			NEUMARKT	39 307
			SCHWABACH	38 213
			KULMBACH	28 258
TOLEDO	4 096 696	2	TOLEDO	95 107
			ARANJUEZ	52 489
KATOWICE	4 083 848	2	KATOWICE	2 592 513
			RYBNIK	545 423
GLASGOW	3 938 569	12	GLASGOW	1 323 100
			EDINBURGH	533 390
			KIRCALDY	148 500
			DUNDEE	145 460
			FALKIRK	145 270
			AYR	100 000
			GREENOCK	84 150
			KILMARNOCK	80 900
			STIRLING	61 000
			IRVINE	55 900
			DUNFERMLINE	55 083
			PERTH	41 453
ATHINAI	3 905 718	3	ATHINAI	3 761 810
			KHALKIS	53 584

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			THIVA	23 820
ULM	3 887 679	5	ULM	243 372
			AALEN	80 533
			HEIDENHEIM	64 205
			NEU-ULM	50 709
			MEMMINGEN	50 645
BRISTOL	3 700 980	7	BRISTOL	407 992
			SWINDON	145 236
			CHELTENHAM/CHARLTON	91 301
			BATH	85 202
			WESTON-SUPER-MARE	69 372
			STROUD	38 835
			TROWBRIDGE	29 334
PORTO	3 655 200	13	PORTO	1 231 438
			BRAGA	152 693
			GUIMARAES	126 745
			FEIRA	114 906
			AVEIRO	67 003
			BARCELOS	63 880
			SANTO TIRSO	56 225
			OVAR	55 198
			AGUEDA	46 218
			PACOS DE FERREIRA	40 577
			OLIVEIRA DE AZEM?IS	34 700
			PENAFIEL	23 651
			SAO JOAO DA MADEIRA	21 102
DRESDEN	3 541 847	5	DRESDEN	681 953
			FREIBERG	59 713
			HOYERSWERDA	54 302
			RIESA	52 795
			BAUTZEN	47 854
STRASBOURG	3 504 173	5	STRASBOURG	612 104
			BADEN BADEN	145 671
			OFFENBURG	84 934
			BUEHL	67 418
			HAGUENAU	59 894
WIEN	3 424 971	7	WIEN	1 550 123
			SANKT POELTEN	49 121
			WIENER NEUSTADT	37 627
			KLOSTERNEUBURG	24 797
			BADEN-TRAIKIRCHEN	24 502
			KREMS AN DER DONAU	23 713
			MOEDLING	20 405
LISBOA	3 368 545	4	LISBOA	2 590 792
			PAREDES	62 652
			TORRES VEDRAS	45 134
			SANTAREM	31 996
HULL	3 355 487	4	HULL	310 636

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			LINCOLN	80 281
			SCUNTHORPE	75 982
			BRIDLINGTON	31 334
BUDAPEST	3 298 193	8	BUDAPEST	1 775 203
			BUDAORS	124 783
			GODOLLO	115 919
			GYAL	97 675
			PILISVOROSVAR	85 519
			VAC	75 328
			SZENTENDRE	68 971
			DUNAKESZI	61 282
KOEBENHAVN	3 297 924	7	KOEBENHAVN	1 881 187
			MALMOE	667 281
			HOLBAEK	129 221
			SLAGELSE	123 584
			NAESTVED	103 057
			NYKOEHING F	54 204
			NAKSKOV	29 074
FIRENZE	3 136 211	10	FIRENZE	876 697
			PRATO	240 461
			PISA	179 331
			LUCCA	155 604
			PISTOIA	120 009
			MONTECATINI-TERME	109 477
			PONTERERA	100 280
			EMPOLI	90 855
			SANTA CROCE SULL'ARN	88 314
			POGGIBONSI	59 965
AMIENS	3 120 973	3	AMIENS	270 870
			BEAUVAIS	100 733
			ABBEVILLE	37 309
CHEMNITZ	3 115 600	4	CHEMNITZ	432 445
			ZWICKAU	230 376
			AUE	96 109
			GREIZ	65 091
LYON	3 100 068	7	LYON	1 648 216
			SAINT ETIENNE	321 703
			BOURG-EN-BRESSE	101 016
			SAINT CHAMOND	84 925
			VILLEFRANCHE-SUR-SAO	63 632
			VIENNE	53 843
			ROUSSILLON	38 675
TARRAGONA	3 042 133	2	TARRAGONA	325 333
			VILANOVA I LA GELTRU	155 679
MARSEILLE-AIX-EN-PRO	2 997 757	4	MARSEILLE-AIX-EN-PRO	1 516 340
			TOULON	564 823
			SALON-DE-PROVENCE	50 532
			ISTRES	38 993

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
METZ	2 961 841	7	METZ	429 588
			NANCY	410 508
			THIONVILLE	156 433
			ESCH-SUR-ALZETTE	134 846
			LUXEMBOURG	125 055
			LUNEVILLE	27 572
			TOUL	23 180
SAARBRUECKEN	2 951 543	5	SAARBRUECKEN	959 084
			FORBACH	104 074
			PIRMASENS	64 017
			SARREGUEMINES	42 077
			SAINT-AVOLD	38 888
PARMA	2 949 842	5	PARMA	257 525
			REGGIO NELL'EMILIA	254 087
			SASSUOLO	110 429
			GUASTALLA	57 458
			FIDENZA	52 338
ERFURT	2 866 464	7	ERFURT	204 510
			JENA	102 909
			WEIMAR	66 420
			EISENACH	51 946
			GOTHA	48 872
			SAALFELD	29 511
			RUDOLSTADT	27 528
SOUTHAMPTON/EASTLEIG	2 846 389	6	SOUTHAMPTON/EASTLEIG	210 138
			PORTSMOUTH	174 690
			BOURNEMOUTH	155 488
			POOLE	138 479
			SALISBURY	39 268
			ANDOVER	34 647
VALENCIA	2 785 688	5	VALENCIA	1 397 809
			ALZIRA	241 472
			GANDIA	132 058
			XATIVA	76 621
			VALL D'UIXO (LA)	59 322
ENSCHEDA	2 782 886	2	ENSCHEDA	304 913
			NORDHORN	52 479
BREMEN	2 677 494	2	BREMEN	849 800
			OLDENBURG	191 538
BARI	2 670 421	6	BARI	1 123 419
			BARLETTA	160 615
			BISCEGLIE	114 247
			GIOIA DEL COLLE	65 186
			MATERA	65 023
			MARTINA FRANCA	58 822
TYNESIDE	2 439 350	4	TYNESIDE	885 981
			SUNDERLAND/WHITBURN	183 310
			HARTLEPOOL	87 310

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			DARLINGTON	86 767
ST. GALLEN	2 416 961	7	ST. GALLEN	134 606
			ARBON RORSCHACH	42 494
			DORNBIRN	42 301
			HEERBRUGG-ALTSTATTEN	34 825
			FELDKIRCH-RANKWEIL	28 607
			BREGENZ	26 752
			ROMANSHORN-AMRISWIL	22 701
BUCURESTI	2 400 257	2	BUCURESTI	1 921 751
			VOLUNTARI	29 995
BERN	2 383 602	9	BERN	332 494
			BIEL (BE)	87 683
			THUN	84 436
			FRIBOURG	80 006
			NEUCHATEL	70 709
			LA CHAUX-DE-FONDS	48 207
			BURGDORF	26 530
			GRENCHEN	24 934
			INTERLAKEN	20 189
CUNEO	2 345 087	3	CUNEO	149 872
			ALBA	90 529
			FOSSANO	70 652
REIMS	2 304 957	4	REIMS	291 735
			CHALONS-EN-CHAMPAGNE	79 820
			EPERNAY	40 167
			CHATEAU-THIERRY	32 401
COIMBRA	2 237 640	6	COIMBRA	138 540
			LEIRIA	82 762
			FIGUEIRA DA FOZ	37 539
			ILHAVO	35 688
			MARINHA GRANDE	34 153
			TORRES NOVAS	22 405
OSTRAVA	2 183 731	5	OSTRAVA	1 157 918
			FRYDEK-MISTEK	226 497
			OPAVA	180 916
			HAVIROV	85 502
			KARVINA	64 653
MURCIA	2 118 483	5	MURCIA	503 568
			ELCHE	264 536
			CARTAGENA	231 008
			ORIHUELA	119 365
			EIBAR	69 561
NORWICH	2 096 489	6	NORWICH	171 304
			LOWESTOFT	62 907
			BURY ST. EDMUNDS	62 633
			GREAT YARMOUTH	56 190
			KING'S LYNN	41 281
			THETFORD	20 058

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
MONTPELLIER	2 067 364	5	MONTPELLIER	459 916
			NIMES	221 455
			SETE	66 177
			ARLES	53 057
			LUNEL	28 558
RAVENSBURG	2 052 274	2	RAVENSBURG	78 870
			KEMPTEN (ALLGAEU)	71 048
DUNKERQUE	2 027 499	3	DUNKERQUE	265 974
			CALAIS	125 584
			SAINT-OMER	93 516
PESCARA	2 020 461	9	PESCARA	246 155
			TERAMO	111 953
			ASCOLI PICENO	106 934
			CHIETI	101 455
			SAN BENEDETTO DEL TR	99 501
			L'AQUILA	95 363
			VASTO	89 259
			LANCIANO	84 694
			GIULIANOVA	76 433
GRENOBLE	2 001 763	3	GRENOBLE	514 559
			CHAMBERY	131 280
			VOIRON	42 131
PRAHA	1 990 120	2	PRAHA	1 335 733
			KLADNO	70 702
RIMINI	1 983 460	4	RIMINI	218 112
			CESENA	155 230
			FORLI'	149 842
PESARO			PESARO	108 878
			LA SPEZIA	215 977
			VIAREGGIO	107 059
			MASSA	75 895
CARRARA			CARRARA	75 332
			CATANIA	608 249
			GIARRE	86 130
			ADRANO	62 039
LENTINI	1 974 315	5	LENTINI	59 525
			CALTAGIRONE	51 098
			BRIGHTON/WORTHING/LI	220 583
			EASTBOURNE	94 793
KASSEL	1 909 215	2	KASSEL	330 290
			GOETTINGEN	148 858
THANET	1 901 752	4	THANET	116 745
			ASHFORD	52 002
			CANTERBURY/BLEAN	39 734
			DOVER	39 312
LODZ	1 900 922	2	LODZ	1 170 142
			PIOTRKOWTRYBUNALSKI	172 810
RACKEVE	1 899 054	5	RACKEVE	118 049

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			DUNAUJVAROS	112 113
			KISKOROS	58 993
			KALOCSA	57 703
			PAKS	50 153
NICE	1 814 061	8	NICE	933 080
			SAN REMO	85 157
			FREJUS	83 840
			MENTON	66 692
			VENTIMIGLIA	57 912
			IMPERIA	51 745
			DRAGUIGNAN	44 851
			ALASSIO	21 390
NITRA	1 808 400	6	NITRA	218 906
			NOVE ZAMKY	148 147
			TRNAVA	127 125
			LEVICE	53 394
			TOPOLCANY	46 892
			STUROVO	21 678
AMBERG IN DER OBERPF	1 777 364	2	AMBERG IN DER OBERPF	57 884
			WEIDEN IN DER OBERPF	56 557
AARHUS	1 768 566	6	AARHUS	429 811
			VEJLE	162 218
			RANDERS	152 527
			VIBORG	93 447
			HORSENS	90 417
			SILKEBORG	81 199
ALICANTE	1 752 823	4	ALICANTE	380 357
			ELDA	148 061
			BENIDORM	134 488
			TORREVIEJA	85 694
WUERZBURG	1 739 687	2	WUERZBURG	204 185
			SCHWEINFURT	89 194
GENEVE	1 718 834	4	GENEVE	424 028
			ANNEMASSE	212 248
			ANNECY	189 674
			CLUSES	61 109
PERUGIA	1 709 710	6	PERUGIA	190 185
			AREZZO	135 541
			FOLIGNO	78 676
			FABRIANO	43 505
			GUBBIO	32 349
			CORTONA	23 292
LINZ	1 703 842	6	LINZ	183 504
			WELS	56 478
			STEYR	39 340
			TRAUN	23 470
			AMSTETTEN	22 595
			LEONDING	22 203

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
LUMEZZANE	1 684 852	3	LUMEZZANE	71 742
			ISEO	57 516
			DARFO BOARIO TERME	56 117
DECIN	1 676 298	4	DECIN	133 601
			TEPLICE	126 274
			USTI NAD LABEM	117 324
			MOST	116 655
ANCONA	1 671 155	6	ANCONA	164 226
			MACERATA	73 860
			FANO	71 459
			OSIMO	66 297
			FERMO	65 233
			SENIGALLIA	50 396
PALERMO	1 647 327	5	PALERMO	818 356
			BAGHERIA	76 522
			ALCAMO	68 143
			TERMINI IMERESE	65 848
			CASTELVETRANO	53 163
BILBAO	1 636 334	3	BILBAO	947 334
			VITORIA-GASTEIZ	226 498
			DURANGO	52 843
KIEL	1 618 342	2	KIEL	328 553
			RENDSBURG	60 132
BOLZANO	1 605 143	6	BOLZANO	156 674
			TRENTO	154 666
			ROVERETO	79 567
			MERANO	68 274
			RIVA DEL GARDA	43 056
			BRESSANONE	41 645
SOFIA	1 604 674	2	SOFIA	1 173 811
			PERNIK	104 625
MESSINA	1 590 828	6	MESSINA	236 183
			REGGIO DI CALABRIA	221 751
			PALMI	54 593
			MILAZZO	52 817
			BARCELLONA POZZO DI	51 945
			GIOIA TAURO	18 700
SEVILLA	1 560 938	2	SEVILLA	1 180 197
			UTRERA	81 609
EXETER	1 559 559	5	EXETER	94 717
			TORQUAY	59 587
			TAUNTON	55 855
			BARNSTAPLE	27 691
			NEWTON ABBOT	23 801
PETERBOROUGH	1 553 059	3	PETERBOROUGH	134 788
			BOSTON	34 606
			SPALDING/PINCHBECK	22 386
THESSALONIKI	1 538 694	3	THESSALONIKI	1 057 825

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			GIANNITSA	31 442
			KILKIS	24 812
LAUSANNE	1 517 588	4	LAUSANNE	294 604
			VEVEY	70 797
			YVERDON	27 437
			MONTHÉY	22 462
ODENSE	1 508 183	6	ODENSE	367 130
			KOLDING	170 841
			HADERSLEV	83 602
			AABENRAA	60 025
			SVENDBORG	57 808
			RIBE	25 715
CASTELLON DE LA PLAN	1 503 964	2	CASTELLON DE LA PLAN	258 532
			SAGUNTO	101 002
REGENSBURG	1 478 095	2	REGENSBURG	192 683
			STRAUBING	44 014
GRONINGEN	1 464 851	2	GRONINGEN	332 562
			ASSEN	60 273
PASSAU	1 456 288	2	PASSAU	57 473
			DEGGENDORF	31 219
HELSINKI	1 452 805	3	HELSINKI	1 284 775
			LOHJA	43 786
			RIIHIMAKI	41 858
LECCE	1 447 236	4	LECCE	398 937
			BRINDISI	367 399
			GALLIPOLI	78 604
			NARDO'	51 687
UDINE	1 440 577	4	UDINE	357 228
			MONFALCONE	130 015
			GORIZIA	71 941
			NOVA GORICA	61 227
FOGGIA	1 439 727	5	FOGGIA	175 816
			SAN SEVERO	92 358
			MANFREDONIA	82 699
			CERIGNOLA	64 919
			MELFI	33 419
CAEN	1 370 136	5	CAEN	370 851
			LISIEUX	45 065
			VIRE	26 274
			BAYEUX	25 943
			TROUVILLE-SUR-MER	22 168
SZEKESFEHERVAR	1 350 224	7	SZEKESFEHERVAR	165 803
			VESZPREM	86 260
			PAPA	63 439
			AJKA	59 623
			SIOFOK	47 700
			MOR	28 412
			BALATONALMADI	24 790

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
LIVORNO	1 347 537	2	LIVORNO	186 769
			ROSIGNANOMARITTIMO	33 862
BYDGOSZCZ	1 336 218	2	BYDGOSZCZ	471 518
			TORUN	289 308
ROUEN	1 326 856	2	ROUEN	518 316
			ELBEUF	86 162
MARIBOR	1 313 721	2	MARIBOR	218 810
			CELJE	169 327
MALAGA	1 310 314	3	MALAGA	775 458
			VELEZ MALAGA	68 649
			LUCENA	59 642
SZOLNOK	1 292 042	3	SZOLNOK	122 153
			JASZBERENY	88 585
			NAGYKATA	78 133
MAGDEBURG	1 290 614	2	MAGDEBURG	256 041
			SCHOENEBECK (ELBE)	36 397
BREMERHAVEN	1 287 295	2	BREMERHAVEN	195 863
			CUXHAVEN	53 168
BORDEAUX	1 284 456	2	BORDEAUX	925 253
			LIBOURNE	31 662
IPSWICH	1 282 955	4	IPSWICH	130 157
			COLCHESTER	96 063
			CLACTON-ON-SEA/LITTL	49 437
			FELIXSTOWE	20 900
BELFAST	1 277 548	3	BELFAST	675 000
			LISBURN	111 300
			LURGAN	79 700
OLOMOUC	1 268 570	4	OLOMOUC	224 106
			ZLIN	194 462
			PREROV	135 025
			PROSTEJOV	109 502
KLAGENFURT	1 267 729	3	KLAGENFURT	90 141
			VILLACH	57 497
			WOLFSBERG	25 301
RIGA	1 261 723	2	RIGA	1 195 310
			JELGAVA	93 999
EMMEN	1 259 936	2	EMMEN	108 388
			LINGEN	51 362
LA CORUNA	1 232 117	3	LA CORUNA	375 697
			FERROL	154 973
			SANTIAGO DE COMPOSTE	137 816
OSLO	1 219 962	4	OSLO	1 036 900
			DRAMMEN	142 646
			HONEFOSS	41 374
			KONGSBERG	26 509
KATERINI	1 197 564	3	KATERINI	56 434
			VEROIA	47 411
			NAOUSA	22 288

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
SIRACUSA	1 192 579	3	SIRACUSA	258 332
			MODICA	107 589
			RAGUSA	90 318
TOULOUSE	1 182 042	2	TOULOUSE	964 797
			MONTAUBAN	75 158
CHUR	1 163 287	2	CHUR	57 611
			BUCHS	19 083
TOURS	1 159 847	2	TOURS	376 374
			BLOIS	116 544
GOETEBORG	1 137 009	2	GOETEBORG	903 490
			BORAAS	159 144
LIBEREC	1 105 966	2	LIBEREC	157 853
			GOERLITZ	67 655
PLOVDIV	1 094 300	3	PLOVDIV	721 905
			PAZARDZHIK	127 900
			ASENOVGRAD	52 116
JELENIA GORA	1 053 366	2	JELENIA GORA	197 697
			LEGNICA	109 908
TATABANYA	1 052 990	2	TATABANYA	89 850
			OROSZLANY	28 240
VIGO	1 047 690	3	VIGO	412 939
			PONTEVEDRA	142 364
			VILAGARCIA	82 795
WILHELMSHAVEN	1 042 798	2	WILHELMSHAVEN	115 788
			EMDEN	58 522
ROSTOCK	1 038 602	2	ROSTOCK	211 964
			WISMAR	52 253
SAN SEBASTIAN	1 021 463	2	SAN SEBASTIAN	392 569
			BAYONNE	213 969
LA ROCHE-SUR-YON	1 014 713	2	LA ROCHE-SUR-YON	98 175
			CHOLET	74 055
BEZIERS	1 010 686	2	BEZIERS	124 967
			NARBONNE	70 750
INNSBRUCK	999 720	2	INNSBRUCK	113 392
			GARMISCH-PARTENKIRCH	26 364
ANGERS	974 146	2	ANGERS	332 624
			SAUMUR	47 445
KAUNAS	973 200	2	KAUNAS	376 656
			MARIJAMPOLE	48 674
DEBRECEN	965 836	4	DEBRECEN	296 502
			BERETTYOUJFALU	66 138
			HAJDUBOSZORMENY	59 521
			HAJDUSZOBOSZLO	33 725
DIJON	963 064	3	DIJON	326 631
			DOLE	40 059
			BEAUNE	35 521
MISKOLC	935 827	6	MISKOLC	282 832
			KAZINCBARCIKA	65 292

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			SZERENCS	64 024
			TISZUJVAROS	46 579
			SATORALJAUJHELY	44 000
			SAROSPATAK	27 950
TERNI	930 481	3	TERNI	169 923
			VITERBO	133 303
			RIETI	97 680
PLOCK	922 113	2	PLOCK	238 283
			WLOCLAWEK	210 516
CARLISLE	921 132	2	CARLISLE	72 439
			KENDAL	25 461
TROYES	919 493	2	TROYES	172 497
			SENS	56 660
FULDA	918 947	2	FULDA	104 041
			BAD HERSFELD	30 778
STARA ZAGORA	917 657	3	STARA ZAGORA	167 661
			KAZANLAK	81 533
			DIMITROVGRAD	64 852
GELA	908 614	3	GELA	159 012
			ENNA	93 963
			VITTORIA	91 826
TRENCIN	905 006	3	TRENCIN	202 942
			POVAZSKA BYSTRICA	77 953
			BANOVCE NAD BEBRAVOU	67 726
OVIEDO	893 843	3	OVIEDO	425 829
			GIJON	279 837
			AVILES	138 593
LAVAL	880 093	3	LAVAL	102 575
			MAYENNE	25 268
			CHATEAU-GONTIER	21 526
PLYMOUTH	873 044	2	PLYMOUTH	245 295
			ST. AUSTELL	21 622
RENNES	857 455	2	RENNES	521 188
			FOUGERES	40 132
VALENCE	848 197	4	VALENCE	167 155
			ROMANS-SUR-ISERE	65 933
			MONTELIMAR	58 557
			PRIVAS	20 795
RUSE	846 739	3	RUSE	178 379
			GIURGIU	69 587
			RAZGRAD	58 874
SAINT NAZAIRE	828 061	2	SAINT NAZAIRE	172 379
			REDON	26 522
LA ROCHELLE	823 981	4	LA ROCHELLE	171 214
			NIORT	125 594
			SAINTES	51 542
			ROCHEFORT	48 772
TRIESTE	823 110	2	TRIESTE	261 825

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			KOPER	77 287
COSENZA	816 273	2	COSENZA	238 162
			LAMEZIA TERME	96 611
SWANSEA	810 132	4	SWANSEA	171 038
			FORMIA	88 984
			ISERNIA	46 787
			LLANELLI	44 953
FLENSBURG	790 143	3	FLENSBURG	114 462
			SOENDERBORG	75 474
			TONDER	26 579
AGRIGENTO	786 495	2	AGRIGENTO	177 245
			CALTANISSETTA	154 547
KECSKEMET	768 573	3	KECSKEMET	167 482
			CEGLED	120 665
			KISKUNFELEGYHAZA	52 070
CLERMONT-FERRAND	756 617	3	CLERMONT-FERRAND	409 558
			VICHY	80 194
			ISSOIRE	27 502
ALENCON	756 008	2	ALENCON	64 970
			ARGENTAN	27 387
PARDUBICE	748 455	2	PARDUBICE	160 618
			HRADEC KRALOVE	159 357
LAS PALMAS DE GRAN C	747 434	2	LAS PALMAS DE GRAN C	587 641
			SANTA LUCIA	78 551
SANTA CRUZ DE TENERI	744 076	2	SANTA CRUZ DE TENERI	399 104
			LA OROTAVA	139 713
GALATI	724 866	2	GALATI	298 584
			BRAILA	216 929
KOSICE	719 912	2	KOSICE	343 092
			PRESOV	161 782
BRASOV	717 572	4	BRASOV	283 901
			SFINTU GHEORGHE	61 512
			SACELE	30 044
			CODLEA	24 256
LEOBEN	707 402	2	LEOBEN	25 804
			BRUCK/MUR-KAPFENBERG	22 234
TRAPANI	707 307	3	TRAPANI	135 907
			MARSALA	135 256
			SCIACCA	63 363
CADIZ	697 867	3	CADIZ	400 157
			JEREZ DE LA FRONTERA	189 370
			SANLUCAR DE BARRAMED	78 551
VARNA	675 424	2	VARNA	320 464
			DOBRICH	125 721
CRAIOVA	674 702	2	CRAIOVA	302 622
			BALS	21 194
SZEGED	670 256	4	SZEGED	214 302
			HODMEZOVASARHELY	60 681

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			MAKO	50 214
			SZENTES	45 862
BOURGES	661 492	2	BOURGES	123 584
			VIERZON	38 525
ZILINA	654 314	2	ZILINA	156 361
			MARTIN	97 813
CORDOBA	652 120	2	CORDOBA	314 034
			MONTILLA	52 252
CAGLIARI	651 584	2	CAGLIARI	460 774
			IGLESIAS	129 103
HERNING	640 995	4	HERNING	118 663
			HOLSTEBRO	85 529
			SKIVE	50 725
			RINGKOEHING	22 984
LARISA	596 087	2	LARISA	126 076
			VOLOS	82 439
BANSKA BYSTRICA	593 075	2	BANSKA BYSTRICA	249 030
			ZIAR NAD HRONOM	45 529
BREST	588 184	2	BREST	303 484
			MORLAIX	35 996
LORIENT	581 698	2	LORIENT	186 144
			VANNES	118 029
VELIKO TARNOVO	577 924	2	VELIKO TARNOVO	90 432
			GABROVO	74 930
PAU	558 105	4	PAU	216 830
			TARBES	109 892
			OLORON-STE-MARIE	21 994
			LOURDES	21 549
AALBORG	545 622	4	AALBORG	269 774
			HJOERRING	68 369
			FREDERIKSHAVN	52 913
			LOGSTOR	27 588
DOMODOSSOLA	537 660	3	DOMODOSSOLA	53 878
			VERBANIA	53 071
			BRIG	28 684
HASKOVO	535 823	2	HASKOVO	99 181
			KARDZHALI	69 830
GERONA	532 517	2	GERONA	143 566
			FIGUERES	56 644
EPINAL	527 189	2	EPINAL	89 544
			SAINT DIE	45 708
PITESTI	519 288	2	PITESTI	168 756
			MIOVENI	35 849
OSTROLEKA	517 038	2	OSTROLEKA	140 391
			LOMZA	116 386
SZOMBATHELY	514 052	2	SZOMBATHELY	114 409
			SARVAR	36 960
STRALSUND	511 044	2	STRALSUND	61 600

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			GREIFSWALD	54 810
PECS	506 430	2	PECS	207 605
			MOHACS	53 454
PLEVEN	497 630	2	PLEVEN	149 142
			LOVECH	62 165
POITIERS	493 223	2	POITIERS	209 216
			CHATELLERAULT	68 442
JAEN	480 780	2	JAEN	180 293
			LINARES	83 797
SAINT BRIEUC	477 452	2	SAINT BRIEUC	121 237
			GUINGAMP	25 060
VAESTERAAS	477 209	2	VAESTERAAS	173 280
			KOEPING	46 781
SANTANDER	472 435	2	SANTANDER	248 761
			TORRELAVEGA	116 249
KAVALLA	459 600	3	KAVALLA	63 293
			DRAMA	55 632
			XANTHI	52 270
KORINTHOS	459 261	2	KORINTHOS	36 555
			ARGOS	29 228
MICHALOVCE	457 153	2	MICHALOVCE	161 218
			TREBISOV	32 846
MATESZALKA	454 870	2	MATESZALKA	67 754
			FEHERGYARMAT	39 488
SASSARI	452 148	3	SASSARI	204 440
			ALGHERO	45 127
			MACOMER	22 921
BARDEJOV	451 091	2	BARDEJOV	40 245
			SVIDNIK	27 765
VRACA	444 497	2	VRACA	85 215
			MONTANA	61 422
TRIKKALA	441 151	2	TRIKKALA	51 862
			KARDHITSA	37 768
BEKESCSABA	440 585	3	BEKESCSABA	169 204
			SZARVAS	42 197
			SARKAD	26 127
SHUMEN	440 165	2	SHUMEN	104 456
			TARGOVISHTE	60 890
LUCENEC	440 092	2	LUCENEC	90 120
			SALGOTARIJAN	68 859
SLIVEN	439 069	2	SLIVEN	136 148
			YAMBOL	95 000
ALMERIA	421 005	3	ALMERIA	191 768
			ROQUETAS DE MAR	70 994
			EJIDO (EL)	59 389
CALARASI	420 720	2	CALARASI	70 046
			SILISTRA	61 942
PATRAI	399 682	2	PATRAI	197 663

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
			AIYION	27 812
FARO	397 481	6	FARO	46 643
			LOULE	46 068
			PORTIMAO	41 220
			OLHAO	33 217
			ALBUFEIRA	24 409
			SILVES	23 029
LINKOEPING	384 970	2	LINKOEPING	241 265
			NORRKOEPING	165 949
NICOSIA	382 693	2	NICOSIA	250 633
			LARNACA	160 733
NAGYKANIZSA	380 000	3	NAGYKANIZSA	83 398
			KESZTHELY	47 701
			BALATONFURED	21 663
AGEN	377 913	2	AGEN	94 659
			VILLENEUVE-SUR-LOT	44 841
CHARLEVILLE-MEZIERES	376 577	2	CHARLEVILLE-MEZIERES	107 777
			SEDAN	31 665
PERIGUEUX	365 412	2	PERIGUEUX	91 585
			BERGERAC	72 891
FREDRIKSTAD	363 683	3	FREDRIKSTAD	126 798
			MOSS	50 996
			HALDEN	28 552
TURKU	362 795	2	TURKU	321 495
			SALO	52 604
KALAMATA	358 791	2	KALAMATA	57 620
			TRIPOLIS	28 976
KOZANI	353 376	2	KOZANI	47 451
			PTOLEMAIS	35 539
SZEKSZARD	340 599	2	SZEKSZARD	90 389
			BAJA	76 955
MEDIAS	339 560	2	MEDIAS	55 203
			BLAJ	20 758
SAINT MALO	332 055	3	SAINT MALO	70 303
			DINAN	32 903
			DINARD	25 089
HUNEDOARA	309 884	2	HUNEDOARA	71 380
			DEVA	69 390
SKIEN	277 729	2	SKIEN	120 900
			LARVIK	82 905
ALEXANDROUPOLIS	269 828	2	ALEXANDROUPOLIS	52 720
			KOMOTINI	52 659
BRIVE-LA-GAILLARDE	249 753	2	BRIVE-LA-GAILLARDE	89 260
			TULLE	30 686
PIRGOS	244 905	2	PIRGOS	34 902
			AMALIAS	32 090
SAINT DIZIER	237 703	2	SAINT DIZIER	55 814
			BAR-LE DUC	32 892

Main node	PIA population	Number of FUAs in PIA	NAME	FUA POPULATION
FAMALICAO	237 146	3	FAMALICAO	99 853
			COVILHA	31 296
			GUARDA	25 807
MERIDA	236 451	2	MERIDA	62 121
			DON BENITO	60 666
CIUDAD REAL	233 753	2	CIUDAD REAL	78 240
			PUERTOLLANO	64 924
TROLLHAETTAN	231 577	2	TROLLHAETTAN	105 306
			UDDEVALLA	78 628
WHITEHAVEN	229 647	2	WHITEHAVEN	26 542
			WORKINGTON	25 579
BANGOR	224 132	2	BANGOR	63 800
			COLWYN BAY	29 883
HAMAR	213 992	4	HAMAR	83 912
			GJOVIK	67 471
			LILLEHAMMER	35 916
			ELVERUM	26 693
KHANIA	212 891	2	KHANIA	53 373
			RETHIMNON	31 687
KARCAG	208 443	2	KARCAG	76 816
			PUSPOKLADANY	52 093
RODEZ	204 861	2	RODEZ	65 267
			MILLAU	28 005
KRISTIANSAND	204 108	2	KRISTIANSAND	116 493
			ARENDAL	71 772
HALMSTAD	200 283	3	HALMSTAD	107 947
			VARBERG	52 648
			FALKENBERG	38 817
NARVA	177 882	2	NARVA	73 300
			KOHTLA-JARVE	67 700
THISTED	147 012	2	THISTED	35 392
			NYKOBING MORSO	29 074
KARLSKRONA	145 068	2	KARLSKRONA	89 198
			KARLSHAMN	30 741
VAERNAMO	133 086	2	VAERNAMO	32 256
			LJUNGBY	27 078
LAPPEENRANTA	118 984	2	LAPPEENRANTA	82 832
			IMATRA	36 867
KOKKOLA	102 945	2	KOKKOLA	49 933
			PIETARSAARI	34 005
KEMI	65 125	2	KEMI	38 647
			TORNIO	22 617

9 Incentives for polycentric integration

European Rank of urban node if PUSH area population is substituted by PIA population - all other nodes being assessed according to their PUSH area population. This reflects the potential gain individual cities can achieve through regional polycentric integration with other cities in their PIA, presuming that no comparable strategies are carried out in other PIAs. The list contains the main nodes of each PIA.

Country	Name	European rank in terms of PUSH population	Potential new rank of PIA entity to which the city belongs	Potential change of rank
AT	WIEN	35	26	+ 9
AT	LINZ	107	76	+ 31
AT	LEOBEN	219	204	+ 15
AT	KLAGENFURT	227	105	+ 122
AT	INNSBRUCK	253	142	+ 111
BE	BRUXELLES/BRUSSEL	7	1	+ 6
BE	LIEGE	21	6	+ 15
BG	SOFIA	82	78	+ 4
BG	PLOVDIV	159	133	+ 26
BG	VARNA	233	215	+ 18
BG	RUSE	268	163	+ 105
BG	STARAZAGORA	290	157	+ 133
BG	VELIKOTARNOVO	326	249	+ 77
BG	PLEVEN	327	282	+ 45
BG	SLIVEN	345	314	+ 31
BG	HASKOVO	347	264	+ 83
BG	SHUMEN	368	314	+ 54
BG	VRACA	375	312	+ 63
CH	BASEL	29	11	+ 18
CH	ZUERICH	30	8	+ 22
CH	ST. GALLEN	79	49	+ 30
CH	BERN	81	50	+ 31
CH	GENEVE	84	75	+ 9
CH	LAUSANNE	109	83	+ 26
CH	CHUR	232	122	+ 110
CY	NICOSIA	381	338	+ 43
CZ	OSTRAVA	73	56	+ 17
CZ	DECIN	130	76	+ 54
CZ	LIBEREC	189	130	+ 59
CZ	PARDUBICE	269	191	+ 78
CZ	OLOMOUC	292	105	+ 187
DE	KOELN	1	1	+ 0
DE	FRANKFURT AM MAIN	9	1	+ 8
DE	BERLIN	13	11	+ 2
DE	STUTTGART	14	6	+ 8
DE	HAMBURG	19	12	+ 7
DE	MUENCHEN	24	12	+ 12

Country	Name	European rank in terms of PUSH population	Potential new rank of PIA entity to which the city belongs	Potential change of rank
DE	BIELEFELD	31	5	+ 26
DE	HANNOVER	32	8	+ 24
DE	CHEMNITZ	46	30	+ 16
DE	LEIPZIG	47	12	+ 35
DE	SAARBRUECKEN	53	35	+ 18
DE	NURNBERG	55	16	+ 39
DE	ULM	58	19	+ 39
DE	BREMEN	62	43	+ 19
DE	DRESDEN	65	26	+ 39
DE	KASSEL	90	70	+ 20
DE	AMBERG IN DER OBERPF	92	73	+ 19
DE	WUERZBURG	93	74	+ 19
DE	KIEL	95	77	+ 18
DE	RAVENSBURG	99	64	+ 35
DE	BREMERHAVEN	105	104	+ 1
DE	REGENSBURG	114	88	+ 26
DE	MAGDEBURG	118	104	+ 14
DE	ERFURT	121	36	+ 85
DE	PASSAU	161	89	+ 72
DE	FULDA	177	157	+ 20
DE	FLENSBURG	191	172	+ 19
DE	WILHELMSHAVEN	260	137	+ 123
DE	ROSTOCK	277	137	+ 140
DE	STRALSUND	374	274	+ 100
DK	KOEBENHAVN	63	27	+ 36
DK	AARHUS	176	73	+ 103
DK	ODENSE	240	86	+ 154
DK	AALBORG	282	261	+ 21
DK	HERNING	288	221	+ 67
DK	THISTED	578	538	+ 40
EE	NARVA	526	505	+ 21
ES	MADRID	10	9	+ 1
ES	BARCELONA	15	11	+ 4
ES	VALENCIA	59	38	+ 21
ES	BILBAO	83	76	+ 7
ES	SEVILLA	87	80	+ 7
ES	MURCIA	89	62	+ 27
ES	ALICANTE	103	73	+ 30
ES	MALAGA	153	100	+ 53
ES	OVIEDO	160	157	+ 3
ES	SAN SEBASTIAN	162	139	+ 23
ES	VIGO	183	136	+ 47
ES	LAS PALMAS DE GRAN C	194	191	+ 3
ES	SANTA CRUZ DE TENERI	201	191	+ 10
ES	LA CORUNA	215	109	+ 106
ES	TARRAGONA	237	32	+ 205

Country	Name	European rank in terms of PUSH population	Potential new rank of PIA entity to which the city belongs	Potential change of rank
ES	CADIZ	243	207	+ 36
ES	TOLEDO	246	18	+ 228
ES	CORDOBA	273	217	+ 56
ES	SANTANDER	308	296	+ 12
ES	ALMERIA	323	319	+ 4
ES	JAEN	330	291	+ 39
ES	GERONA	352	264	+ 88
ES	CIUDAD REAL	465	449	+ 16
ES	MERIDA	467	448	+ 19
FI	HELSINKI	100	89	+ 11
FI	TURKU	365	356	+ 9
FI	LAPPEENRANTA	572	556	+ 16
FI	KOKKOLA	588	578	+ 10
FI	KEMI	620	608	+ 12
FR	PARIS	3	1	+ 2
FR	LILLE	18	3	+ 15
FR	COMPIEGNE	20	16	+ 4
FR	LYON	44	32	+ 12
FR	MARSEILLE-AIX-EN-PRO	54	35	+ 19
FR	METZ	66	35	+ 31
FR	STRASBOURG	74	26	+ 48
FR	DUNKERQUE	85	65	+ 20
FR	ROUEN	113	99	+ 14
FR	BORDEAUX	115	104	+ 11
FR	NICE	119	71	+ 48
FR	MONTPELLIER	124	63	+ 61
FR	TOULOUSE	133	118	+ 15
FR	GRENOBLE	142	68	+ 74
FR	AMIENS	178	29	+ 149
FR	BEZIERS	179	140	+ 39
FR	LA ROCHE-SUR-YON	184	139	+ 45
FR	RENNES	188	162	+ 26
FR	TOURS	190	122	+ 68
FR	SAINT NAZAIRE	195	167	+ 28
FR	CLERMONT-FERRAND	226	188	+ 38
FR	CAEN	231	93	+ 138
FR	VALENCE	234	163	+ 71
FR	REIMS	235	51	+ 184
FR	DIJON	236	150	+ 86
FR	ANGERS	249	145	+ 104
FR	PAU	300	256	+ 44
FR	ALENCON	301	188	+ 113
FR	LAVAL	304	158	+ 146
FR	POITIERS	307	284	+ 23
FR	BREST	333	243	+ 90
FR	LORIENT	344	249	+ 95
FR	BOURGES	360	216	+ 144
FR	SAINT BRIEUC	362	292	+ 70
FR	CHARLEVILLE-	371	342	+ 29

Country	Name	European rank in terms of PUSH population	Potential new rank of PIA entity to which the city belongs	Potential change of rank
	MEZIERES			
FR	TROYES	373	157	+ 216
FR	AGEN	392	341	+ 51
FR	LA ROCHELLE	402	167	+ 235
FR	EPINAL	419	266	+ 153
FR	BRIVE-LA-GAILLARDE	453	435	+ 18
FR	PERIGUEUX	469	353	+ 116
FR	SAINT MALO	483	377	+ 106
FR	SAINT DIZIER	489	447	+ 42
FR	RODEZ	542	475	+ 67
GR	ATHINAI	23	19	+ 4
GR	THESSALONIKI	102	81	+ 21
GR	KATERINI	152	116	+ 36
GR	LARISA	251	239	+ 12
GR	TRIKKALA	328	314	+ 14
GR	PATRAI	338	328	+ 10
GR	KORINTHOS	343	301	+ 42
GR	KAVALLA	391	300	+ 91
GR	KOZANI	410	361	+ 49
GR	KALAMATA	446	359	+ 87
GR	PIRGOS	464	440	+ 24
GR	KHANIA	502	469	+ 33
GR	ALEXANDROUPOLIS	519	419	+ 100
HU	BUDAPEST	33	27	+ 6
HU	RACKEVE	88	70	+ 18
HU	TATABANYA	137	136	+ 1
HU	SZEKESFEHERVAR	196	97	+ 99
HU	DEBRECEN	244	150	+ 94
HU	MISKOLC	255	154	+ 101
HU	MATESZALKA	310	305	+ 5
HU	KECSKEMET	319	181	+ 138
HU	SZOMBATHELY	325	271	+ 54
HU	SZOLNOK	334	104	+ 230
HU	PECS	336	277	+ 59
HU	SZEGED	340	215	+ 125
HU	BEKESCSABA	396	314	+ 82
HU	SZEKSZARD	429	369	+ 60
HU	NAGYKANIZSA	434	340	+ 94
HU	KARCAG	540	471	+ 69
IT	MILANO	5	1	+ 4
IT	NAPOLI	12	9	+ 3
IT	ROMA	25	15	+ 10
IT	TORINO	39	8	+ 31
IT	VERONA	42	7	+ 35
IT	VENEZIA	48	9	+ 39
IT	BOLOGNA	49	13	+ 36
IT	FIRENZE	64	29	+ 35
IT	PARMA	71	35	+ 36
IT	BARI	78	43	+ 35

Country	Name	European rank in terms of PUSH population	Potential new rank of PIA entity to which the city belongs	Potential change of rank
IT	CATANIA	96	68	+ 28
IT	LIVORNO	104	98	+ 6
IT	UDINE	108	90	+ 18
IT	GENOVA	111	10	+ 101
IT	RIMINI	117	68	+ 49
IT	MESSINA	122	79	+ 43
IT	PALERMO	125	76	+ 49
IT	LA SPEZIA	143	68	+ 75
IT	PESCARA	145	67	+ 78
IT	LUMEZZANE	156	76	+ 80
IT	LECCE	157	89	+ 68
IT	ANCONA	163	76	+ 87
IT	TRIESTE	168	167	+ 1
IT	FOGGIA	172	90	+ 82
IT	SIRACUSA	174	117	+ 57
IT	PERUGIA	218	75	+ 143
IT	BOLZANO	225	78	+ 147
IT	COSENZA	229	169	+ 60
IT	CAGLIARI	259	217	+ 42
IT	CUNEO	272	51	+ 221
IT	TRAPANI	274	204	+ 70
IT	TERNI	275	155	+ 120
IT	GELA	280	157	+ 123
IT	AGRIGENTO	281	173	+ 108
IT	SASSARI	403	309	+ 94
IT	DOMODOSSOLA	407	263	+ 144
LT	KAUNAS	209	145	+ 64
LV	RIGA	127	108	+ 19
NL	AMSTERDAM	6	1	+ 5
NL	ENSCHEDÉ	56	38	+ 18
NL	GRONINGEN	106	89	+ 17
NL	EMMEN	248	108	+ 140
NO	OSLO	138	112	+ 26
NO	FREDRIKSTAD	459	354	+ 105
NO	SKIEN	490	412	+ 78
NO	KRISTIANSAND	539	475	+ 64
NO	HAMAR	545	468	+ 77
PL	KATOWICE	26	18	+ 8
PL	LODZ	76	70	+ 6
PL	BYDGOSZCZ	134	99	+ 35
PL	PLOCK	198	156	+ 42
PL	JELENIA GORA	306	136	+ 170
PL	OSTROLEKA	378	270	+ 108
PT	LISBOA	36	27	+ 9
PT	PORTO	45	23	+ 22
PT	COIMBRA	199	53	+ 146
PT	FARO	400	331	+ 69
PT	FAMALICAO	560	447	+ 113
RO	BRASOV	216	199	+ 17

Country	Name	European rank in terms of PUSH population	Potential new rank of PIA entity to which the city belongs	Potential change of rank
RO	GALATI	222	198	+ 24
RO	CRAIOVA	278	215	+ 63
RO	PITESTI	297	269	+ 28
RO	CALARASI	361	319	+ 42
RO	HUNEDOARA	442	396	+ 46
RO	MEDIAS	482	370	+ 112
SE	GOETEBORG	165	128	+ 37
SE	LINKOEPING	367	337	+ 30
SE	VAESTERAAS	440	292	+ 148
SE	TROLLHAETTAN	492	452	+ 40
SE	HALMSTAD	536	484	+ 52
SE	VAERNAMO	553	549	+ 4
SE	KARLSKRONA	592	539	+ 53
SI	MARIBOR	148	100	+ 48
SK	NITRA	187	71	+ 116
SK	KOSICE	245	199	+ 46
SK	ZILINA	250	217	+ 33
SK	TRENCIN	295	157	+ 138
SK	MICHALOVCE	321	303	+ 18
SK	BANSKA BYSTRICA	341	240	+ 101
SK	LUCENEC	355	314	+ 41
SK	BARDEJOV	524	310	+ 214
UK	LONDON	2	1	+ 1
UK	GREATER MANCHESTER	4	1	+ 3
UK	SHEFFIELD	8	4	+ 4
UK	BIRMINGHAM	11	4	+ 7
UK	LEICESTER	27	9	+ 18
UK	GLASGOW	40	19	+ 21
UK	BRISTOL	60	22	+ 38
UK	TYNESIDE	69	48	+ 21
UK	BRIGHTON/WORTHING/ LI	70	69	+ 1
UK	SOUTHAMPTON/EASTLE IG	72	36	+ 36
UK	PETERBOROUGH	126	80	+ 46
UK	BELFAST	128	105	+ 23
UK	HULL	169	27	+ 142
UK	NORWICH	182	62	+ 120
UK	SWANSEA	186	170	+ 16
UK	IPSWICH	211	104	+ 107
UK	EXETER	220	80	+ 140
UK	PLYMOUTH	223	160	+ 63
UK	THANET	287	70	+ 217
UK	CARLISLE	356	156	+ 200
UK	WHITEHAVEN	471	455	+ 16
UK	BANGOR	484	460	+ 24

10 Characteristics of national urban systems

This Annex contains details of the calculation of polycentricity indices presented in Chapter 2 in two sections:

Section 1 contains the 27 x 4 diagrams underlying the measurement of polycentricity of countries: four diagrams for each of the 27 countries included in the analysis (Luxembourg and Malta were excluded because they have less than three FUAs). The four diagrams are

- rank-size distribution of population of FUAs
- rank-size distribution of GDP of FUAs
- size of service areas of FUAs
- correlation between population and accessibility of FUAs

Section 2 contains two tables underlying the calculation of polycentricity indices of 88 NUTS-1 regions:

- the seven sub-indicators of polycentricity
- the four polycentricity indices

The following NUTS-regions were excluded because they contain less than three FUAs:

- BE1 Brussels
- DE3 Berlin
- DE5 Bremen
- DE6 Hamburg
- DEC Saarland
- FI2 Aaland
- FR1 Ile de France
- GR3 Athens (Attike)
- LU2 Luxembourg
- MT1 Malta
- UKI1 London

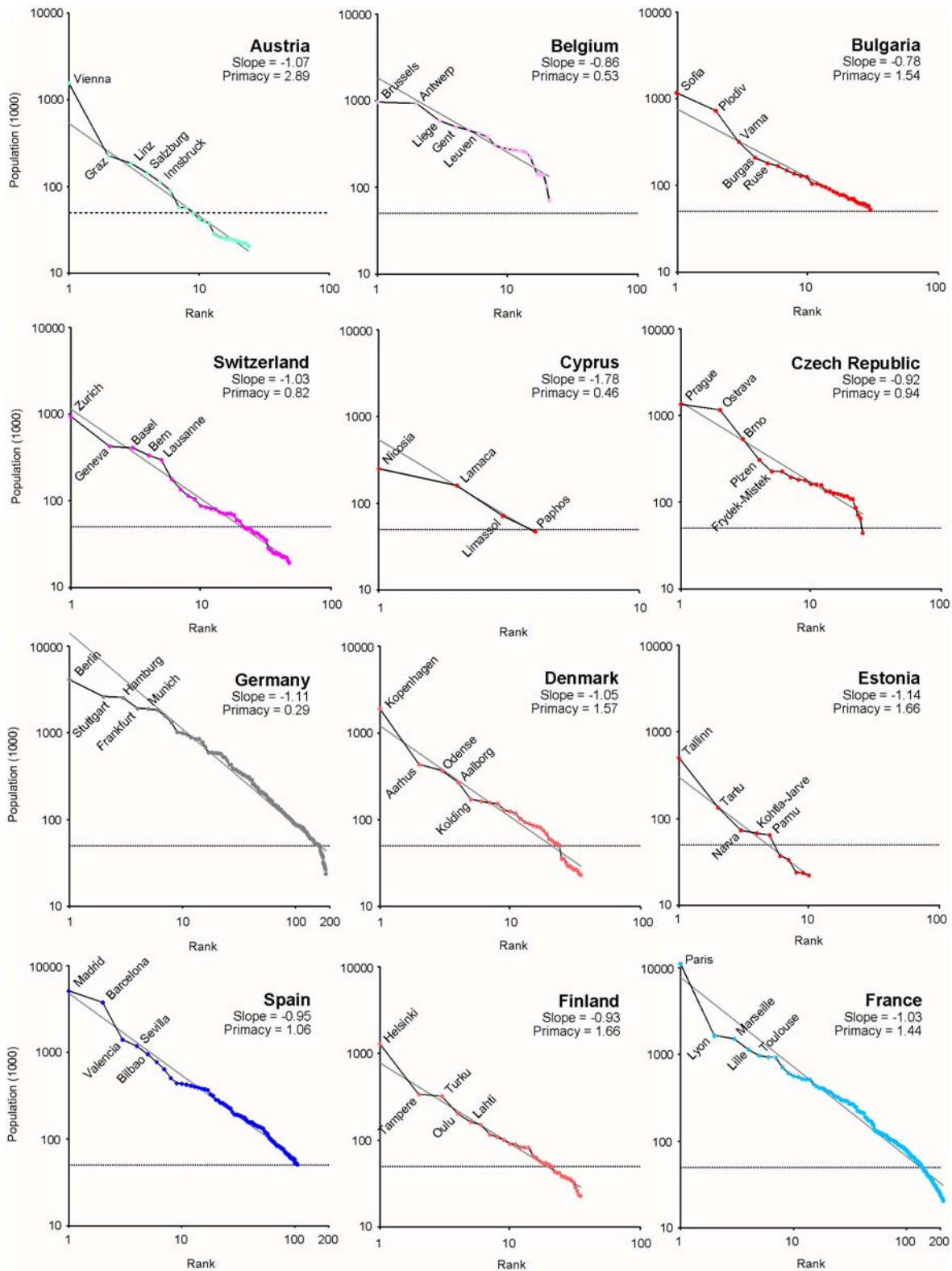


Figure A10.1 Rank-size distribution of population of FUAs by country

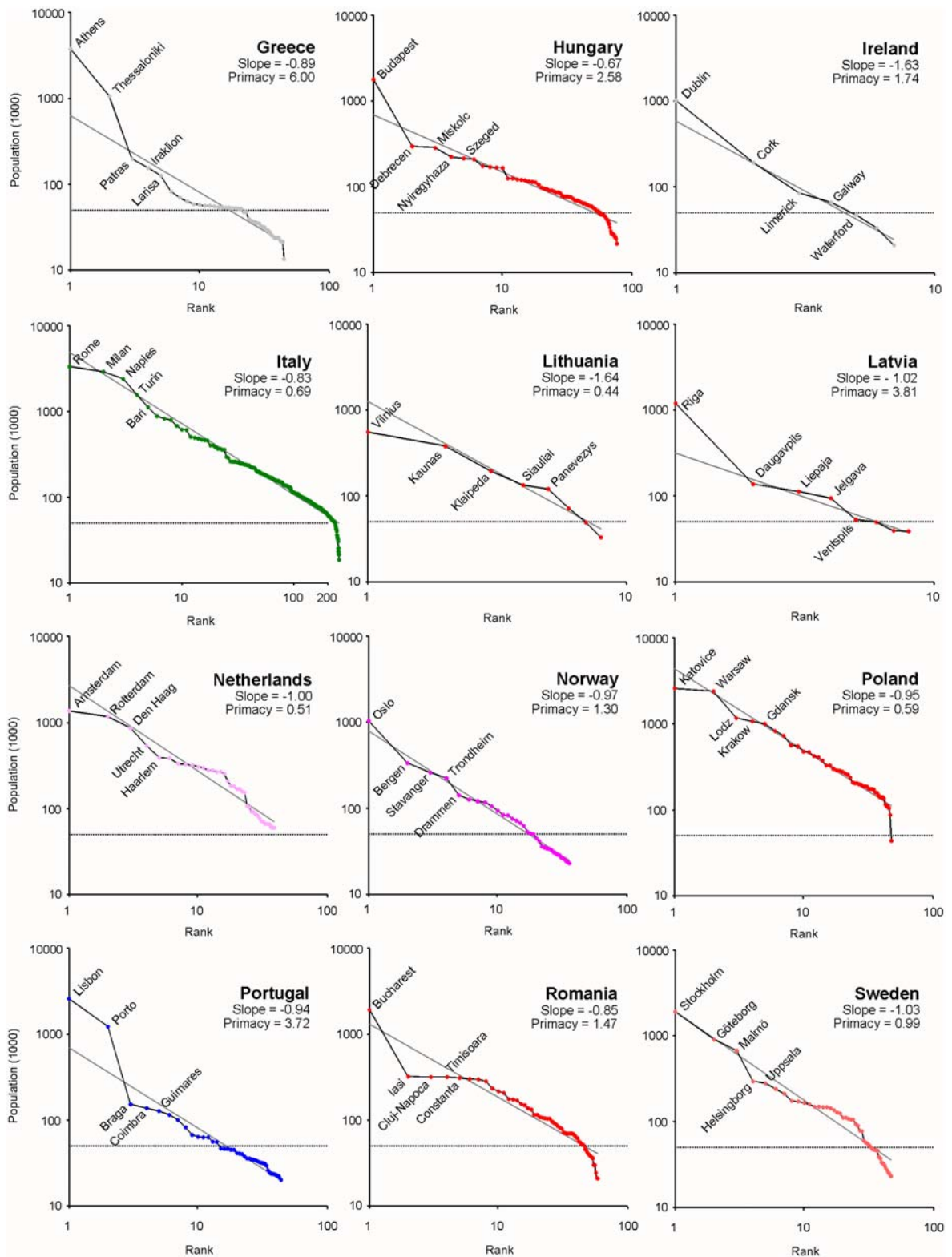


Figure A10.1 (continued) Rank-size distribution of population of FUAs by country

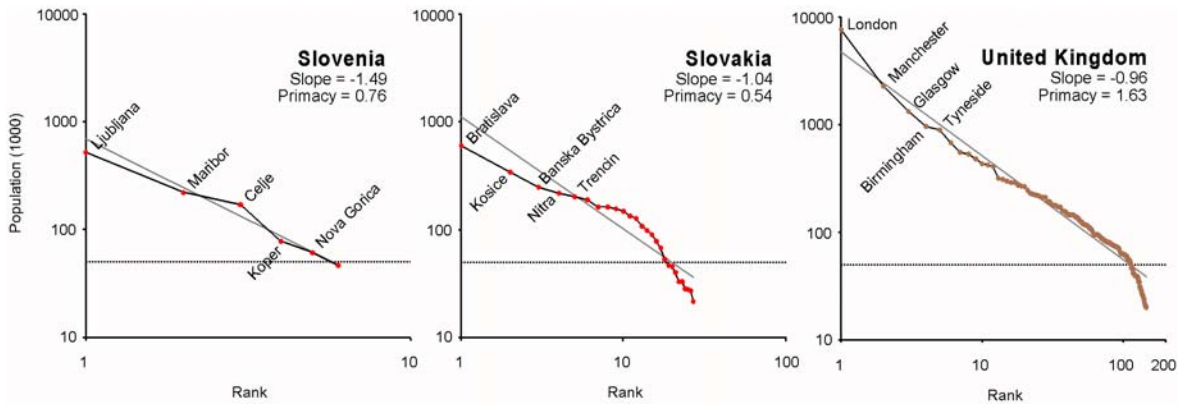


Figure A10.1 (continued) Rank-size distribution of population of FUAs by country

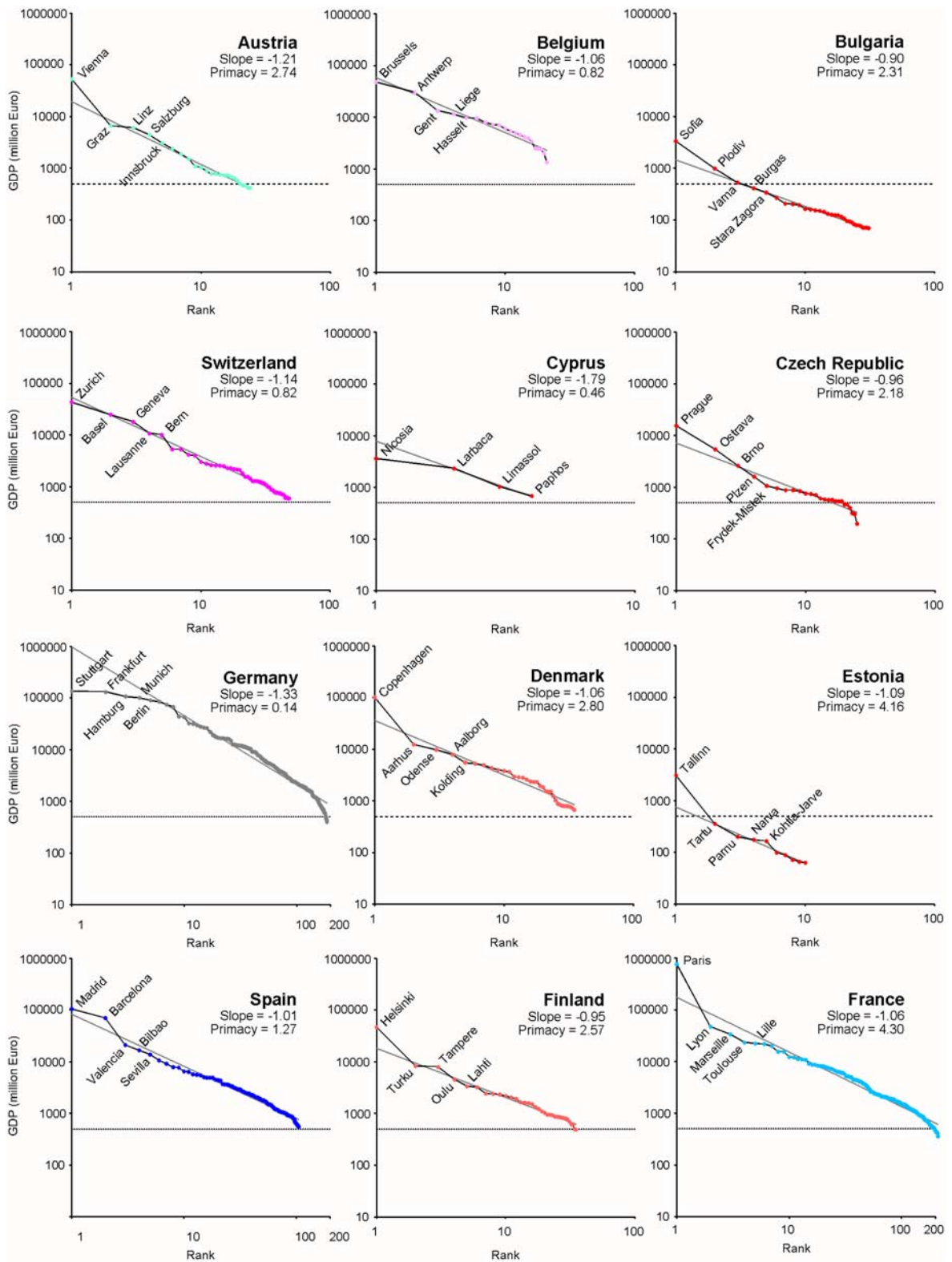


Figure A10.2 Rank-size distribution of GDP of FUAs by country

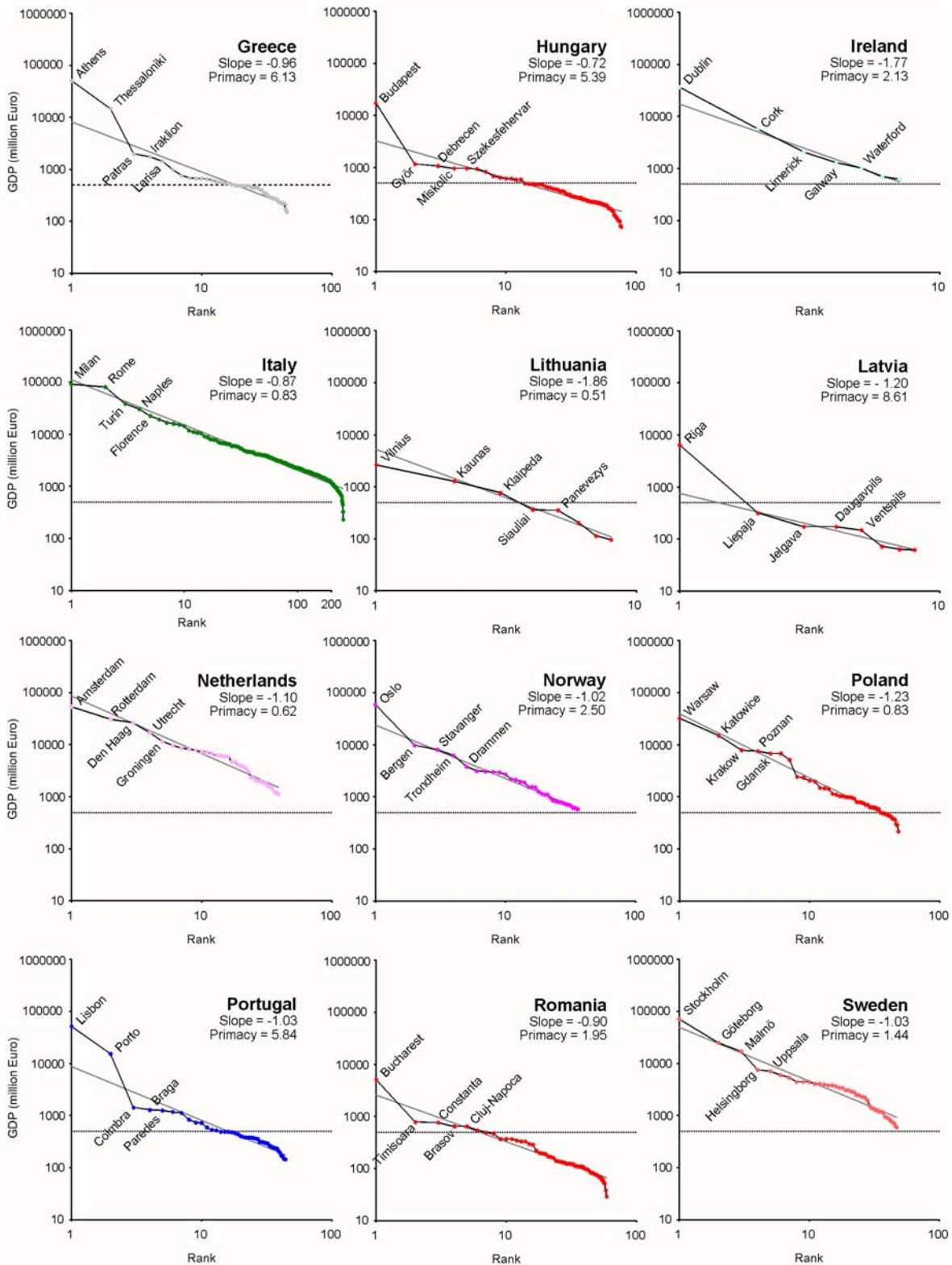


Figure A10.2 (continued) Rank-size distribution of GDP of FUAs by country

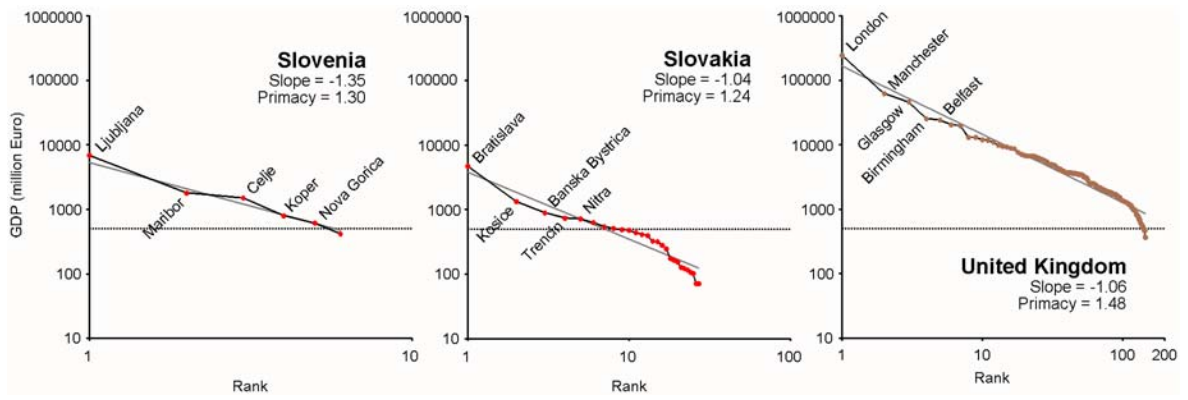


Figure A10.2 (continued) Rank-size distribution of GDP of FUAs by country

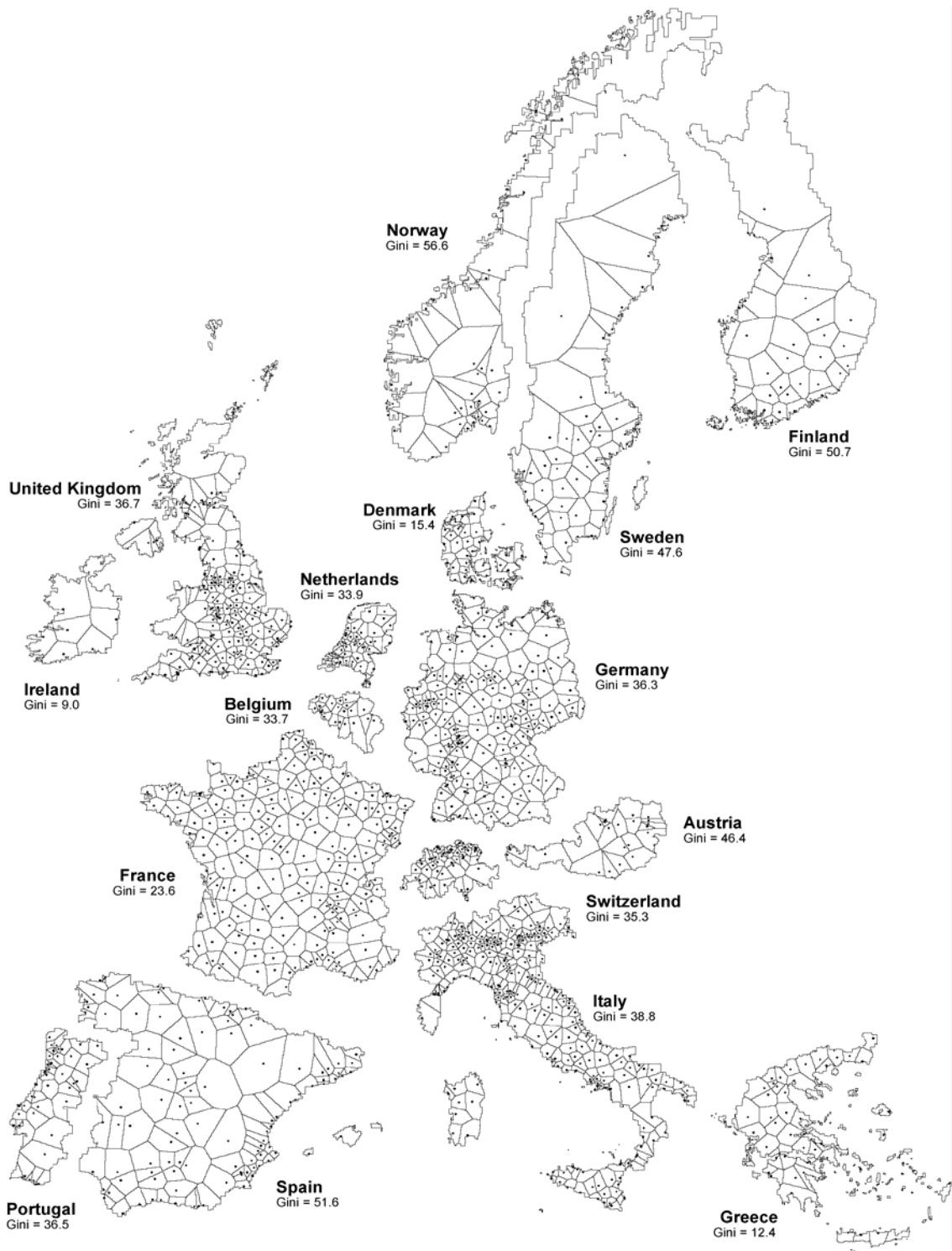


Figure A10.3 Service areas of FUAs in western Europe by country

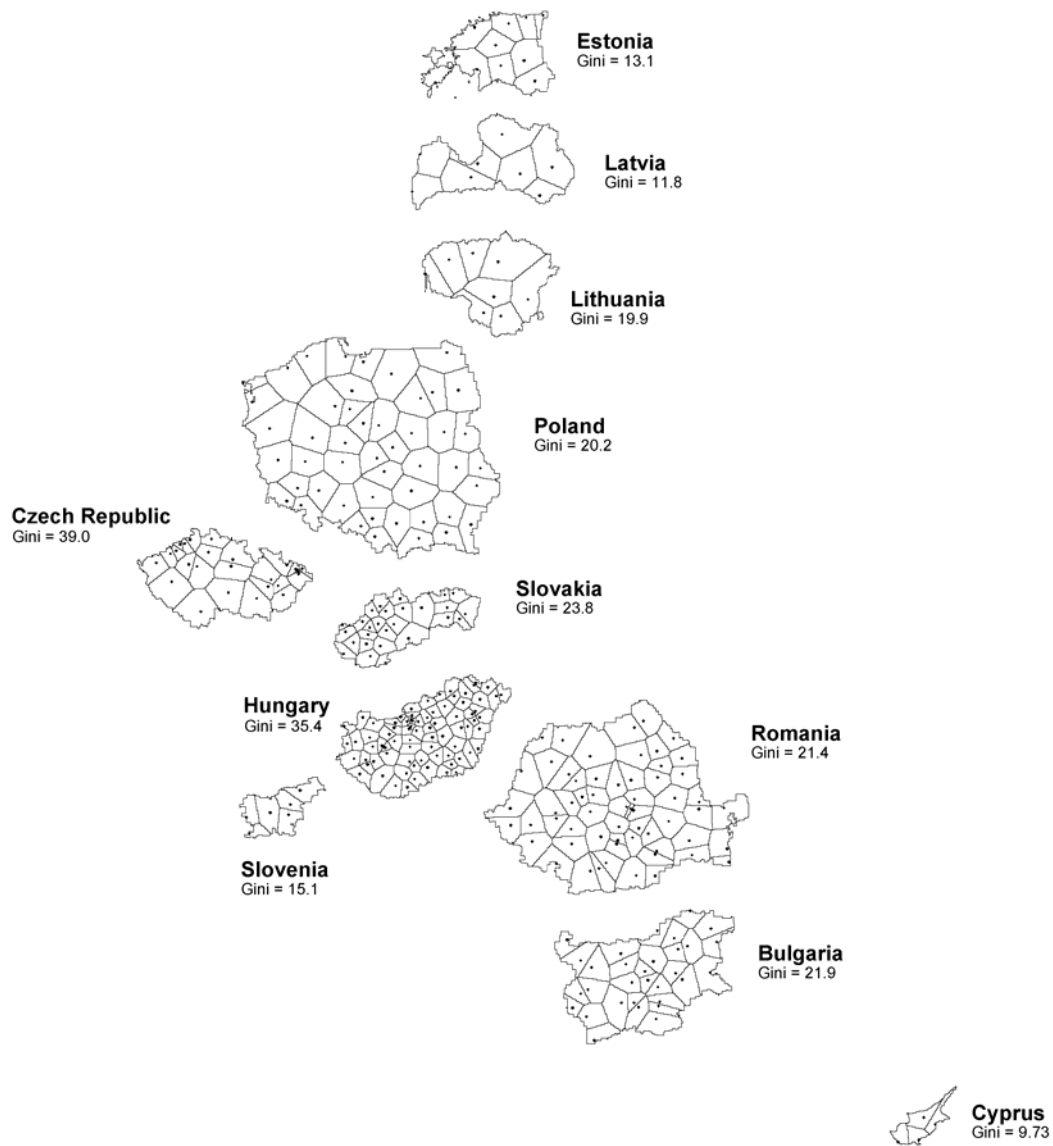


Figure A10.3 (continued) Service areas of FUAs in the accession countries

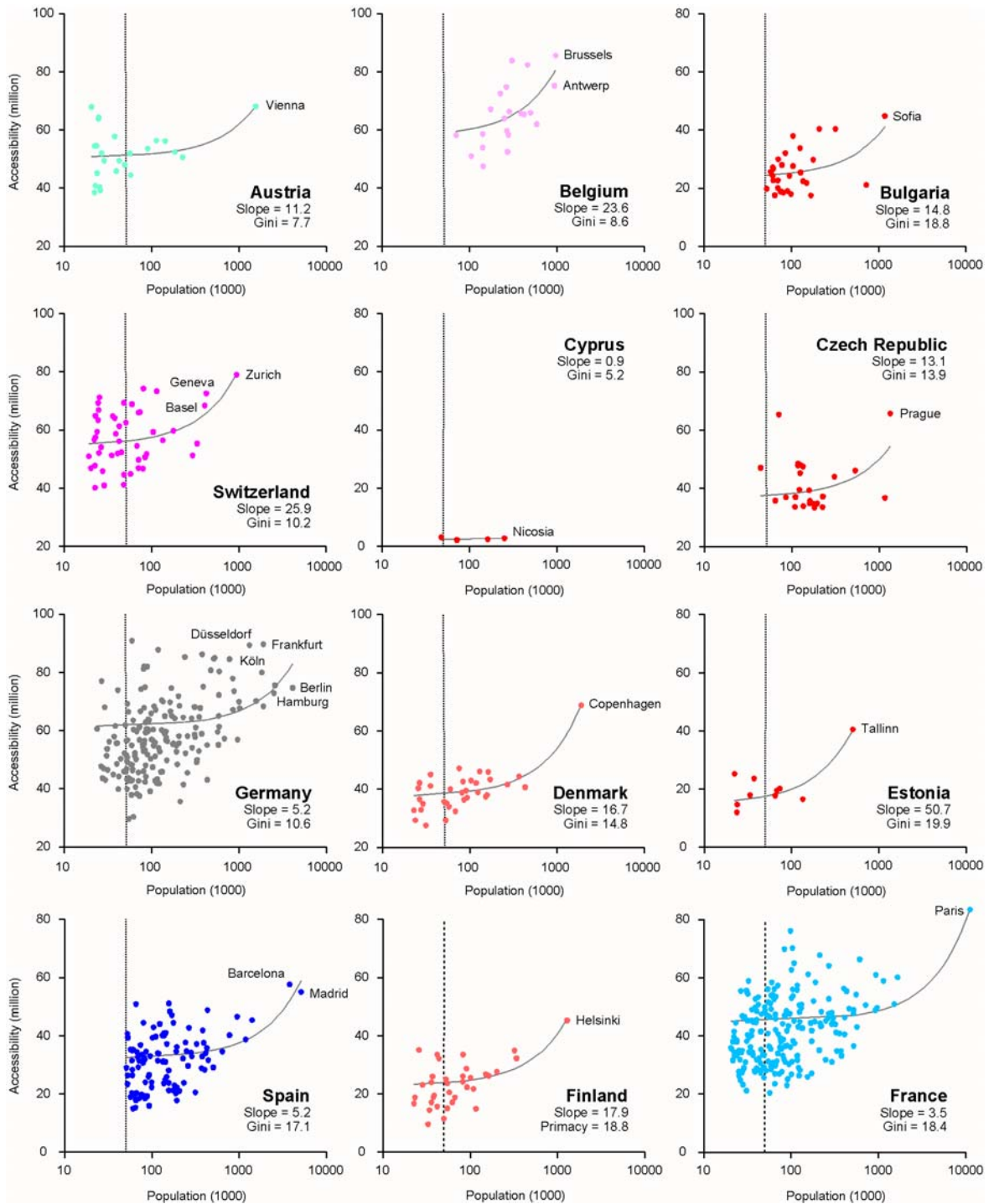


Figure A10.4 Correlation between population and GDP of FUAs by country

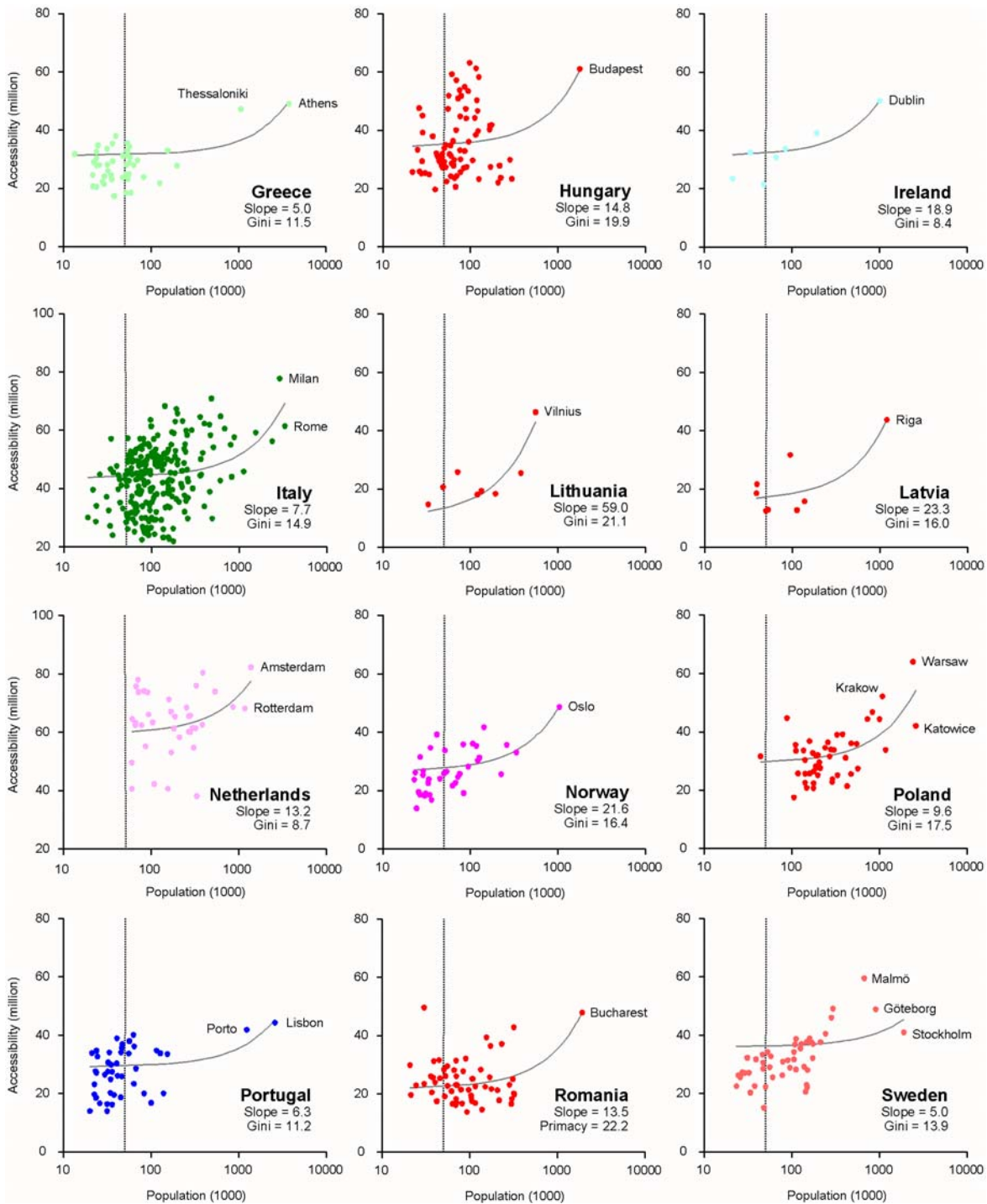


Figure A10.4 (continued) Correlation between population and GDP by country

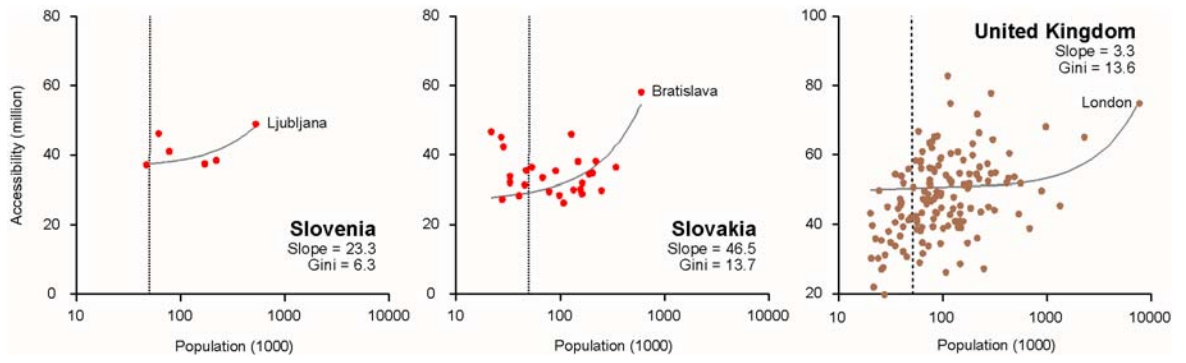


Figure A10.4 (continued) Correlation between population and GDP by country

Table A10.1 Polycentricity indicators of NUTS–1 regions

Region	No. of FUAs	Rank-size distribution of population		Rank-size distribution of GDP		Size of service areas	Population and accessibility	
		Slope (a)	Primacy (b)	Slope (c)	Primacy (d)	Gini (e)	Slope (f)	Gini (g)
AT1 Ostösterreich	8	-0.62	21.87	-0.64	32.12	19.0	8.9	2.2
AT2 Südtösterreich	6	-1.37	0.98	-1.70	0.82	12.8	35.5	5.1
AT3 Westösterreich	10	-1.25	0.52	-1.27	0.57	39.2	18.8	2.9
BE2 Vlaams Gewest	12	-0.80	0.86	-0.97	0.94	27.2	17.6	8.5
BE3 Region Wallone	8	-1.05	0.59	-1.14	0.58	35.0	0.2	2.5
BG Bulgaria	31	-0.78	1.54	-0.90	2.31	21.9	14.8	18.8
CH Switzerland	48	-1.03	0.82	-1.14	0.82	35.3	25.9	10.2
CY Cyprus	4	-1.78	0.46	-1.79	0.46	9.73	0.9	5.2
CZ Czech Republic	25	-0.92	0.94	-0.96	2.18	39.0	13.1	13.9
DE1 Baden-Würt	23	-1.35	0.78	-1.62	0.73	36.5	6.1	5.8
DE2 Bayern	31	-1.14	1.18	-1.38	0.93	27.7	7.4	7.1
DE4 Brandenburg	6	-1.10	0.47	-1.52	0.41	17.0	72.2	11.0
DE7 Hessen	17	-1.46	0.81	-1.83	0.96	47.4	10.6	7.2
DE8 Mecklenb-Vorp	6	-0.68	1.29	-1.07	0.54	22.9	2.3	6.4
DE9 Niedersachsen	18	-0.91	1.36	-1.28	1.11	27.9	21.0	8.8
DEA Nordrh-Westf	32	-1.19	0.39	-1.44	0.37	21.3	11.1	8.0
DEB Rheinland-Pfalz	10	-1.15	0.53	-1.59	0.35	47.7	59.9	8.5
DED Sachsen	11	-1.62	0.37	-1.93	0.29	15.0	28.3	8.5
DEE Sachsen-Anhalt	10	-1.24	0.68	-1.53	0.53	22.4	18.0	6.1
DEF Schleswig-Holst	5	-1.70	0.38	-1.98	0.37	14.6	16.2	4.3
DEG Thüringen	12	-0.76	0.91	-0.97	0.96	23.3	58.1	5.7
DK Denmark	35	-1.05	1.57	-1.06	2.80	15.4	16.7	14.8
EE Estonia	10	-1.14	1.66	-1.09	4.16	13.1	50.7	19.9
ES1 Noroeste	13	-0.86	0.50	-0.89	0.48	34.4	11.1	6.5
ES2 Noreste	8	-1.75	0.35	-1.69	0.36	63.0	18.6	9.5
ES3 Madrid	3	-2.99	3.64	-2.99	3.64	1.1	2.3	0.9
ES4 Centro	20	-0.62	0.99	-0.73	1.01	24.9	14.0	14.6
ES5 Este	32	-0.95	2.25	-0.97	2.46	44.2	5.3	11.6
ES6 Sur	29	-1.07	0.62	-1.07	0.64	39.1	13.8	13.3
FI1 Manner Suomi	34	-0.92	1.67	-0.96	2.51	50.4	18.1	18.8
FR2 Bassin Parisien	55	-0.97	0.36	-0.99	0.38	28.5	1.0	13.1
FR3 Nord-Pas-de-C	12	-1.25	0.76	-1.30	0.75	23.0	10.3	5.5
FR4 Est	27	-1.22	0.43	-1.23	0.51	24.3	19.1	8.7
FR5 Ouest	34	-1.16	0.41	-1.17	0.45	24.4	24.9	11.8
FR6 Sud-Ouest	28	-1.21	0.72	-1.28	0.78	15.3	19.1	11.8
FR7 Centre-Est	30	-1.10	1.26	-1.15	1.50	25.2	9.7	11.3
FR8 Méditerranée	23	-1.42	0.55	-1.42	0.63	23.1	6.7	7.8
GR1 Voreia Ellada	20	-0.63	5.75	-0.69	6.87	13.7	21.1	15.7
GR2 Kentriki Ellada	16	-0.59	1.62	-0.61	1.45	27.5	5.1	8.8
GR4 N. Aigaiou, Kriti	8	-0.92	1.25	-1.04	0.98	10.0	18.5	5.0

Table A10.1 (continued) Polycentricity indicators of NUTS-1 regions

Region		No. of FUAs	Rank-size distribution of population		Rank-size distribution of GDP		Size of service areas	Population and accessibility	
			Slope (a)	Primacy (b)	Slope (c)	Primacy (d)	Gini (e)	Slope (f)	Gini (g)
HU	Hungary	77	-0.67	2.58	-0.72	5.39	35.3	14.8	19.9
IE	Ireland	7	-1.63	1.74	-1.77	2.13	9.0	18.9	8.4
IT1	Nord Ovest	31	-0.79	2.13	-0.80	2.28	31.4	7.3	6.7
IT2	Lombardia	31	-1.02	1.67	-1.04	2.16	22.6	6.8	8.3
IT3	Nord Est	37	-0.89	0.52	-0.87	0.53	42.6	28.0	8.5
IT4	Emilia-Romagna	19	-0.79	0.99	-0.80	1.08	22.9	25.9	8.2
IT5	Centro	37	-0.68	1.60	-0.70	1.85	39.4	19.3	11.4
IT6	Lazio	12	-0.77	6.87	-0.80	8.46	13.6	6.5	8.4
IT7	Abruzzo-Molise	12	-0.40	1.41	-0.38	1.54	25.5	32.4	6.1
IT8	Campania	14	-0.83	3.22	-0.83	3.10	47.6	4.5	6.0
IT9	Sud	28	-1.04	0.85	-1.04	0.94	23.0	14.2	11.9
ITA	Sicilia	24	-0.90	0.94	-0.91	0.90	31.9	23.7	13.9
ITB	Sardegna	8	-1.40	0.79	-1.41	0.78	16.5	20.0	8.7
LT	Lithuania	8	-1.64	0.44	-1.86	0.51	19.9	59.0	21.1
LV	Latvia	8	-1.02	3.81	-1.20	8.61	11.8	23.3	16.0
NL1	Noord-Nederl	4	-1.32	0.82	-1.50	1.13	12.1	-14.3	2.2
NL2	Oost-Nederland	9	-1.00	0.43	-1.03	0.44	27.5	-12.3	4.4
NL3	West-Nederland	16	-1.63	0.28	-1.79	0.33	37.0	5.4	4.9
NL4	Zuid-Nederland	10	-0.95	0.49	-0.93	0.54	34.1	-14.9	2.5
NO	Norway	36	-0.97	1.30	-1.02	2.50	56.6	21.6	16.4
PL	Poland	48	-0.95	0.59	-1.23	0.83	20.2	9.6	17.5
PT1	Continente	44	-0.94	3.72	-1.03	5.83	36.8	6.3	11.2
RO	Romania	59	-0.85	1.47	-0.90	1.95	21.4	13.5	22.2
SE	Sweden	47	-1.03	0.99	-1.03	1.44	47.6	5.0	13.9
SI	Slovenia	6	-1.49	0.76	-1.35	1.30	15.1	23.3	6.3
SK	Slovakia	27	-1.04	0.54	-1.04	1.24	23.8	46.5	13.7
UKC	North East	6	-1.87	0.81	-1.86	0.85	33.5	7.4	3.2
UKD	North West	16	-1.21	2.20	-1.10	3.27	14.2	5.7	6.1
UKE	Yorkshire & Hum	12	-1.33	0.43	-1.55	0.30	38.7	8.2	4.2
UKF	East Midlands	12	-1.51	0.32	-1.72	0.26	24.7	34.2	4.9
UKG	West Midlands	15	-1.10	0.96	-1.10	1.05	32.2	12.6	4.9
UKH	Eastern	17	-0.88	0.50	-0.92	0.52	23.0	86.8	10.5
UKJ	South East	21	-0.82	0.49	-1.01	0.46	29.4	61.3	10.7
UKK	South West	21	-1.04	0.64	-1.20	0.62	28.6	27.6	12.1
UKL	Wales	7	-1.26	0.83	-1.45	0.90	36.7	38.1	7.7
UKM	Scotland	14	-1.14	1.42	-1.45	1.17	47.1	6.0	5.2
UKN	Northern Ireland	4	-0.45	4.25	-0.45	8.88	21.1	7.0	3.6

Table A10.2 Polycentricity indices of NUTS-1 regions

Region	No. of FUAs	Size Index	Location Index	Connectivity Index	Polycentricity Index
AT1 Ostösterreich	8	17.9	85.0	89.7	51.3
AT2 Südtösterreich	6	74.9	95.4	66.2	77.6
AT3 Westösterreich	10	82.8	51.4	81.6	70.0
BE2 Vlaams Gewest	12	85.5	71.3	71.4	75.5
BE3 Region Wallone	8	85.1	58.3	95.0	77.5
BG Bulgaria	31	77.1	80.2	52.6	68.5
CH Switzerland	48	82.9	57.9	62.3	66.6
CY Cyprus	4	75.7	100.0	89.1	87.3
CZ Czech Republic	25	79.2	51.7	63.5	63.6
DE1 Baden-Württ	23	77.1	55.8	84.4	71.0
DE2 Bayern	31	77.8	70.4	80.9	75.9
DE4 Brandenburg	6	82.9	88.4	29.8	60.0
DE7 Hessen	17	74.1	37.7	78.5	60.1
DE8 Mecklenb-Vorp	6	85.0	78.5	85.8	82.7
DE9 Niedersachsen	18	78.8	70.2	68.4	72.0
DEA Nordrh-Westf	32	83.4	81.2	76.5	80.0
DEB Rheinland-Pfalz	10	81.8	37.2	43.1	50.6
DED Sachsen	11	78.0	91.6	64.2	76.8
DEE Sachsen-Anhalt	10	80.1	79.4	75.8	78.1
DEF Schleswig-Holst	5	76.9	92.3	80.7	82.7
DEG Thüringen	12	85.5	77.9	49.9	68.9
DK Denmark	35	71.6	90.9	59.3	72.5
EE Estonia	10	64.7	94.8	26.4	54.3
ES1 Noroeste	13	89.4	59.3	79.6	74.7
ES2 Noreste	8	77.2	11.6	68.6	39.3
ES3 Madrid	3	46.0	100.0	96.7	76.0
ES4 Centro	20	87.9	75.2	61.4	73.7
ES5 Este	32	70.8	43.1	73.4	60.5
ES6 Sur	29	85.0	51.5	64.2	65.2
FI1 Manner Suomi	34	74.0	32.6	50.3	49.3
FR2 Bassin Parisien	55	88.9	69.1	73.2	76.3
FR3 Nord-Pas-de-C	12	80.6	78.4	82.2	80.0
FR4 Est	27	84.1	76.2	69.9	76.2
FR5 Ouest	34	85.4	76.1	59.9	72.7
FR6 Sud-Ouest	28	81.1	91.2	63.6	77.4
FR7 Centre-Est	30	77.3	74.8	70.8	73.9
FR8 Méditerranée	23	79.9	78.1	79.9	78.9
GR1 Voreia Ellada	20	39.3	93.8	54.5	58.3
GR2 Kentriki Ellada	16	84.0	70.8	79.1	77.4
GR4 N. Aigaiou, Kriti	8	81.7	99.9	77.7	85.5
HU Hungary	77	61.6	57.7	50.4	56.1
IE Ireland	7	63.1	100.0	70.6	76.1

Table A10.2 (continued) Polycentricity indices of NUTS-1 regions

Region	No. of FUAs	Size Index	Location Index	Connectivity Index	Polycentricity Index
IT1 Nord Ovest	31	74.8	64.3	81.8	72.9
IT2 Lombardia	31	74.0	79.1	78.8	76.9
IT3 Nord Est	37	89.1	45.7	64.3	63.7
IT4 Emilia-Romagna	19	85.6	78.6	66.3	76.1
IT5 Centro	37	81.0	51.0	64.3	64.0
IT6 Lazio	12	24.9	94.0	78.9	56.8
IT7 Abruzzo-Molise	12	81.9	74.2	66.3	73.5
IT8 Campania	14	65.2	37.4	84.9	58.9
IT9 Sud	28	83.1	78.3	66.8	75.4
ITA Sicilia	24	84.8	63.6	56.4	67.0
ITB Sardegna	8	78.3	89.2	69.3	78.2
LT Lithuania	8	76.5	83.5	18.5	48.9
LV Latvia	8	35.5	97	52.4	56.3
NL1 Noord-Nederland	4	76.5	96.6	95.6	88.7
NL2 Oost-Nederland	9	87.8	70.8	91.1	82.4
NL3 West-Nederland	16	78.1	55.0	86.6	71.6
NL4 Zuid-Nederland	10	88.1	59.8	95.0	79.1
NO Norway	36	75.1	22.3	52.7	44.4
PL Poland	48	84.1	83.0	58.7	74.0
PT1 Continente	44	49.0	55.8	73.3	58.3
RO Romania	59	78.3	80.9	46.6	66.3
SE Sweden	47	80.4	37.3	69	58.9
SI Slovenia	6	76.0	91.6	72.0	79.1
SK Slovakia	27	83.5	77.0	41.6	64.2
UKC North East	6	72.3	60.8	88.6	72.7
UKD North West	16	64.7	93.0	84.0	79.3
UKE Yorkshire & Hum	12	81.5	52.1	86.1	71.2
UKF East Midlands	12	79.4	75.6	67.4	73.6
UKG West Midlands	15	81.1	62.9	81.7	74.4
UKH Eastern	17	88.9	78.3	29.1	58.5
UKJ South East	21	88.9	67.7	37.7	60.7
UKK South West	21	84.2	69.0	57.4	69.1
UKL Wales	7	78.3	55.5	59.3	63.4
UKM Scotland	14	75.0	38.2	85.5	62.4
UKN Northern Ireland	4	39.9	81.5	88.2	65.7

ESPON 111
Potentials for polycentric development
in Europe

Annex report A
Critical dictionary of polycentricity
European urban networking



This report represents the final results of a research project conducted within the framework of the ESPON 2000-2006 programme, partly financed through the INTERREG programme.

The partnership behind the ESPON programme consists of the EU Commission and the Member States of the EU25, plus Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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ESPON 1.1.1

Potentials for polycentric development in Europe

Annex report A

Critical dictionary of polycentricity European urban networking

Separate volumes

Project report

Potentials for polycentric development in Europe
ISBN 91-89332-37-7

Annex report B

The application of polycentricity in European countries
ISBN 91-89332-39-3

Annex report C

Governing polycentricity
ISBN 91-89332-40-7

Annex report D

Morphological analysis of urban areas based on 45-minutes isochrones
ISBN 91-89332-41-5

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Foreword

This annex report of the ESPON 1.1.1. project "The role, specific situation and potentials of urban areas as nodes in a polycentric development" presents the findings of work package 1, a critical dictionary of polycentricity and studies on flows between European cities conducted by CNRS-UMR Géographie-citiés, Paris. The following persons took part in the work. Nadine Cattan (co-ordinator), Sophie Baudet-Michel, Sandrine Berroir, Anne Bretagnolle, Cécile Buxeda, Eugénie Dumas, Marianne Guérois, Lena Sanders, Thérèse Saint-Julien (UMR Géographie-cités) and Remy Allain, Guy Baudelle, Danielle Charles Le Bihan, Juliette Cristescu, Emmanuèle Cunningham-Sabot (UMR RESO).

The findings of the critical dictionary are presented in full in this report.

The synthesis of the European Urban Networking study is presented in the project report. Therefore, the findings presented in this annex report are complementary to the project report.

The project report and the four annex reports are available at www.espon.lu

Stockholm, August 2004

<p>The content of this report does not necessarily reflect the opinion of the ESPON Monitoring Committee</p>

Content

- 1. Critical dictionary of polycentricity**
- 2. European urban networking**



ESPON Project 1.1.1

The role, specific situation and potentials for urban areas as nodes of polycentric development

CRITICAL DICTIONNARY OF POLYCENTRICITY

July 2004

CNRS – UMR Géographie-cités

Nadine Cattan (coordination),
Sophie Baudet-Michel, Sandrine Berroir, Anne Bretagnolle, Cécile Buxeda, Eugénie
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Critical Dictionary of Polycentricity

1. A dictionary: what is the aim?

The focus of this work package is on clarifying the concept of polycentricity and on establishing an overview of the major concepts and notions linked to polycentricity.

The objective is to produce a critical thematic dictionary in order to provide a better understanding of the idea of polycentricity. The dictionary seeks to clarify scientific ideas and to bring common sense to the wider debate.

Indeed, polycentricity is a concept that refers to differentiated mechanisms and strategies of development according to the territorial scale and to the definition taken into account. Although the concept is not new, it has never been clearly clarified. As such, it remains rather confused and ambiguous. To define this concept is one of the major challenges of the ESPON programme. From a methodological and empirical point of view, it allows for a better identification of the territorial indicators and tools that are the essential elements in the evaluation of the current and future trends with regard to the organization of the European space. From an operational point of view, it is the best way to ensure the better determination of spatial planning strategies and development policies targeted at spatial cohesion.

Therefore, our objective is to carry out

- Comprehensive definitions of polycentricity and of the major concepts, notions and expressions linked to it
- A critical analysis of these concepts, their usages and their territorial impact.

The object for this TIR is to present a revised and comprehensive *typology of polycentricity* providing a number of hypothesis and models and a revised and comprehensive *general framework* of the Critical Dictionary of Polycentricity and list of concepts.

Method

To ensure the efficiency of the dictionary, a common **method** was used to define each concept.

The 'writing rules' consist of following a *common structure* for each concept, meaning that each definition will

- Outline how the concepts are defined in the literature and development strategies (in the European official documents),
- Evaluate their territorial impacts,
- Assess their linkages to each other.
- Provide examples and maps (if real value-added)

The common 'writing rules' consist also in grouping the concepts into *three types*, according to their relative 'importance' in relation to the concept of polycentricity. The belonging of a type to such a group determines the length of the definition.

- Key concept: 4500 characters
- Important concept: 2500
- Basic notion: 1000

2. Polycentricity: description and types

2.1. Polycentricity: two complementary aspects

Our first main position -- that has been developed in the second Interim report and is deepened in the Third Interim Report -- is that polycentricity has two complementary aspects:

- Morphological, laying out the distribution of urban areas in a given territory.
- Relational, based on the networks of flows and cooperation between urban areas at different scales (Figure 1).

Morphological aspect

The observation of a system of cities automatically implies the observation of several nodes and centres. The urban pattern may be, either strongly or weakly hierarchical.

Two extreme patterns can be identified as follows:

- *Mono-nuclear pattern*: one dominant city and several peripheral/dependant cities.
- *Poly-nuclear pattern*: no dominant city. Cities are quite similar in size.

Relational aspect

Relations, flows and cooperation, may be oriented in different ways between centres.

Two extreme patterns can be identified as follows:

- *Mono-oriented*: relations are preferentially oriented towards one centre.
- *Multi-directional*: relations have no obvious orientation.

Thus far, our main strong position is that polycentricity cannot, and should not, be linked a priori to a poly-nuclear, and weakly hierarchical pattern, nor should it be drawn from a multidirectional pattern of relations between cities of a given territory.

Poly-nuclearity and a weak hierarchy to the urban pattern are not prerequisites for polycentricity.

Nothing has thus far been said on the characterisation of the centres, nor on that of their relations. It is however obvious that both the specialisation of the centres, and the specialisation of relations will have to be taken into account in order to deepen the study more fully.

2.2. Polycentricity: two main processes

The second main position is that polycentricity results from two main processes

- Institutional, based on voluntary cooperation
- Structural, resulting from “spontaneous” spatial development (Figure 2)

Institutional or political polycentricity

Institutional or political polycentricity relies on co-constructions, cooperation, and on the willingness of people in territorial administrations to work together. It implies that localities will start to work together on various projects. In that context, polycentricity corresponds to “planified” strategies and actions.

The cities may, or may not, be complementary with regard to urban functions. The functional complementarity is not a pre-condition for cooperation. What is important is that two or more cities develop common projects in order to build thematic and joint projects, actions and strategies, to exchange knowledge, best practices etc. and to share equipment and upgrade infrastructure (cultural, social, transport...).

Structural polycentricity

Structural polycentricity is related to the organisation of a territory i.e. to its spatial patterns. It is based on the joint observation of the spatial distribution of urban nodes and on the spatial orientation of flows in a territory.

Polycentricity may also be occurring through urban networking: from migrations (students, active population, commuters...), rail and air traffic, financial flows, information flows etc....

Thus far, polycentricity is not only the result of voluntary strategies and actions. Polycentricity could occur spontaneously as a product of historical, economic, or spatial patterns.

2.3. Polycentricity: Different territorial scales

The third main position is that polycentricity can occur at different territorial scales, from the regional to the national and the European (Figure 3).

Connectivity

Distant urban areas are connected through various types of relations:

- co-operation directed towards the sharing of experiences, of methods, of information, participating in a development project
- flows and exchanges

Examples of institutional polycentricity:

- URBAN programme led to a form of smooth cooperation, exchange of experience between distant cities around a thematic issue.
- INTERREG III B and III C tend also to encourage this form of cooperation as regards connectivity in transnational areas.

Examples regarding structural polycentricity :

- Financial flows, telecommunications networks, exchanges of students, air traffic

Proximity

As in the connectivity case, close urban areas are linked through

- co-operation between cities that aim at the sharing of equipment, projects, or policies: locating a university in one centre , and a hospital in a neighbouring one, etc.. in order to allow inhabitants of both cities to use both facilities.
- flows and exchanges such as daily commuters, telephone calls

Examples regarding institutional polycentricity:

- Interreg IIIA enhances trans-border cooperation.

Examples regarding structural polycentricity :

- Travel to work

Thus far, spatial proximity is not a condition of polycentricity. Urban areas can cooperate and exchange even if they are not in close spatial proximity. Urban Networking is not only dependent on spatial proximity: connective networking is one of the major guarantees in the promotion of polycentric spatial organisations.

2.4. Integration: four main types

Combining the two aspects of polycentricity leads to the identification of four main types of integration. Although, our hypothesis is that polycentricity is a process, it is plain that there is not one inescapable way to achieve this kind of structure, nor is there one unique model of performance (Figure 4).

Integrated monocentrism

This defines a highly hierarchical urban pattern, combined with a strongly oriented flows pattern. All centres may, or may not, be specialised, though the main one is rather diversified, the labour market may be locally organised, although it is dependent on the main centre.

Examples :

- European scale: London and the European urban network, as regards air traffic.
- National scale: Budapest and the Hungarian urban system, Vienna and the Austrian urban system.
- Regional scale: Madrid and the Navarre urban system.

Emerging polycentricity

The spatial structure combines an urban pattern that is rather strongly hierarchical, and multidirectional flows. Some of the secondary centres could have developed a specific thematic competence that promotes them to the upper layer of the local or enviroing urban hierarchy. Those specific competences have induced the multidirectional pattern of the relations. This multidirectional pattern may be developed when the cities – either act in the same field, are competitors and/or develop complementary specialisations: research and production in electronics, aeronautics..., whisky or wine production and tourism – either share a project in common (INTERREG).

Examples:

- European scale: specialized networks of cities in aeronautics, finance, based on university cooperation and exchanges, on INTERREG cooperation.
- National scale : Italy
- Regional scale: Greater London region, Parisian region, textile activity in the Po valley : Milan, Turin, etc

Metropolitan polycentricity

This type of polycentricity describes a weak urban hierarchy with strongly orientated relations towards an upper level of cities that consequently act *together* as the main centres of the network.

One can label this as ‘one level polycentricity’, observed when the upper level of cities is developed through a poly-nuclear pattern.

It is not linked with the obvious types of specialisation, although one may argue that the upper layer of the hierarchy is specialized in rare functions, in rare activities, inducing several specific links and specialised networking.

Examples :

- European level: political and economic European capital network
- National level: Spain with Barcelona and Madrid
- Regional scale: Lorraine (Fr) with Nancy and Metz, Tuscany (It) with Sienna and Florence

Integrated polycentricity

This type of polycentricity describes a weak urban hierarchy associated with multidirectional relations.

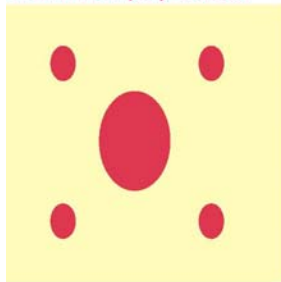
It may not as yet be observable at the European level. Though one may find that the German urban network responds to this description, or at the regional level, the Randstad.

Figure 1: Polycentricity: two complementary aspects

I. Polycentrism: two complementary aspects

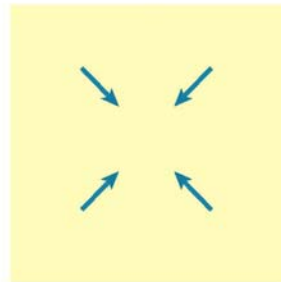
MORPHOLOGICAL

mono-nuclear
hierarchical poly-nuclear

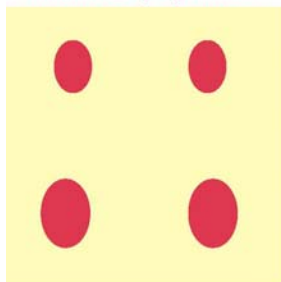


RELATIONAL

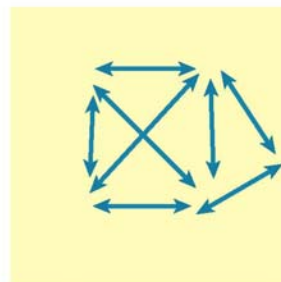
mono-directional



polynuclear
a-hierarchical polynuclear



multi-directional

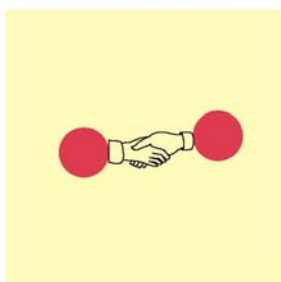


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Figure 2: Polycentricity: two main processes

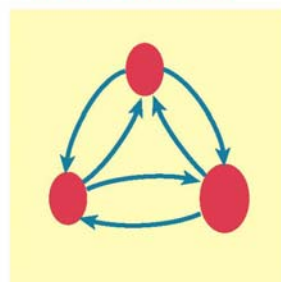
II. Polycentrism: two main processes

INSTITUTIONAL POLYCENTRISM



Polycentrism of cooperation

STRUCTURAL POLYCENTRISM



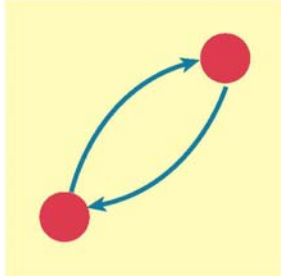
Polycentrism of flow

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Figure 3: Polycentricity: different territorial scales

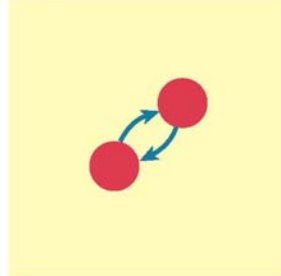
III. Polycentrism: different territorial scales

CONNEXITY



At national, transnational and European levels...
Examples: building thematic and joint projects, actions, strategies, exchanges of students, air traffic...

SPATIAL PROXIMITY



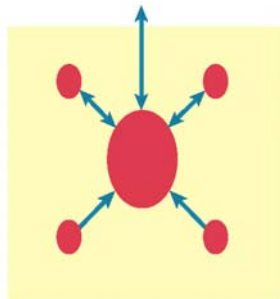
At urban, regional, and transborder levels...
Examples: sharing equipments, upgrading infrastructures, commuters...

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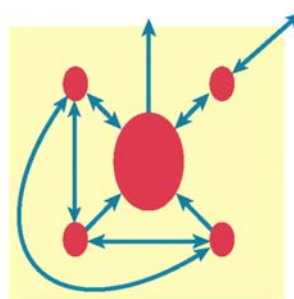
Figure 4: Integration: four main types

IV. Integration: four main types

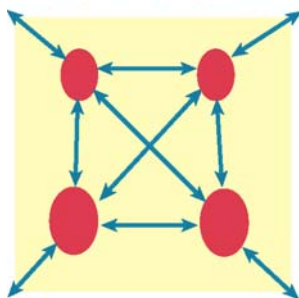
Integrated monocentrism



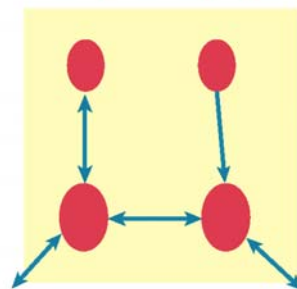
Outcoming polycentrism



Integrated polycentrism



Metropolitan polycentrism



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3. Polycentricity: seven major questions

The general framework of the Dictionary addresses seven major questions. Each will be developed, explained and discussed through several main concepts.

Table no 5: Polycentricity: major questions and the primary set of concepts related to polycentricity

What are the elementary concepts that are necessary for the comprehension of polycentric spatial structures?	Metropolis Nodal region Territory Proximity Conurbation
What processes underlie polycentric territorial structures?	Concentration Polarisation Spatial diffusion
What are the challenges to polycentric territorial structures?	Spatial integration Sustainable development Territorial equity
In what contexts can the concept of polycentricity be said to be spreading?	Centre-periphery Cross-border Blue Banana ESDP Political-administrative system Community space Community territory
What common conceptual strategies have been developed to enhance polycentricity?	Partnership Governance Coordination Contract Coherence Devolution
What are the ideal spatial types of polycentric configurations to be achieved?	Gateway city Global city Belt Bunch of grapes Blue Orchid Red octopus Industrial district
What are the European policies that enhance, or are linked with, polycentric objectives?	The example of Interreg

4. Main definitions

4.1. Elementary concepts

Metropolis

Basic definition

The term “metropolis” generally defines the greatest centre of a whole group of towns. In practice, only large towns enjoying easy accessibility, large size and a varied economic and human environment are defined as “metropolises”. Their position, at the top of such urban hierarchies, has been constructed over time. However, the acceleration of the relative strengthening of their power over the last forty years can be linked too a wider global metropolisation process. For a small number of large towns, which generally enjoy a very high status in the network of central spaces, this process has enhanced their ability to attract activities linked with primary entrepreneurial organisational functions, new activities for which the metropolitan market is a privileged place for experiment and activity, for which the immediate proximity of an adjacent wide and diversified conglomerate of companies is an advantage. The space directly and tightly polarized by one or several metropolis is defined as a “metropolised space”.

Links to other concepts

To designate the greatest metropolises that have become the major nerve centres of the world economy, the term “global cities” has been proposed. It corresponds to the most advanced forms of what can be identified at present as the new form of worldwide centrality.

Territorial impact

There is open debate on a possible and progressive disconnection between the metropolises and their surroundings. This hypothesis does not appear to take into consideration the long-lasting territories and the systemic links between the centres and their peripheries. The various territorial systems continue to influence the shaping of economic, socio-spatial networks, “rooting” them into metropolises and the impact of metropolisation processes extends beyond their limits. On the contrary, the links deeply rooted in territories shape metropolitan spaces and intervene in their dynamics.

Metropolisation and sustainable development can however become conflictual when the costs of concentration increase, and when their socially and environmentally negative effects are inadequately monitored.

Development strategies

The metropolitan model is bound to disseminate in and around a certain number of large towns. But, contrary to other diffusion processes, the increasing dissonance between time and space that has accelerated globalisation, and thus the metropolisation process, is liable to contribute to the short-cut of a number of them. Too close to one another or hardly innovative enough to secure their position, or weakened by surroundings hardly integrated, some large towns are liable to miss this initial and highly selective

accumulation in the first phase of spatial diffusion. At that stage, the polycentric territorial systems can be selective and at the origin of new hierarchies.

Nodal region

Basic definition

A nodal region is an urban region in which power is inseparable from its position as a nerve centre within a diversified interregional, international..., network of relationships. A real pole, its capacities of accumulation, attraction and diffusion, are linked to its powerful concentration and to the complexity of its economic, social and territorial internal structures. On the wider Western European scale, the Rhine region, the Randstad, the greater London region and the Ile de France are nodal regions. The nodal region is often structured around the capital cities (political or/and economic) of States and it enjoys structuring capacities able to expand far beyond the simple national framework. So is it for the region of Athens in Greece, Budapest in Hungary, Milan in northern Italy, Vienna in Austria, etc.

Territorial impact

Nodal regions are very important structuring elements of transnational spaces. They can be considered to be at the core of transnational planning procedures. These nodal regions are often equipped with polycentric – or on their way to becoming polycentric – territorial structures. They are the first regions on their way towards integration into networks expanding in the European integrated space.

They can therefore fulfil the functions of gateways for large parts of the European continental territory and be considered as strong assets in a polycentric territorial system.

Development strategies

The “euro-corridors” are nodal regions where development could be facilitated by a structuring axial dimension. An efficient transport network facilitating the linear development of powerful and strongly interconnected poles should support the formation or the development of these regions.

Territory

The territory has been defined as an “appropriate space” (R. Brunet). Whatever be the scale taken into consideration, Europe, State, Region, Village, it has been built either by History or by institutions or else by collective logics, or by all of these elements together. It implies a notion of identity, authority and, increasingly, a notion of planning (Country charter, European plan). Therefore it is not a space a priori bordered with intangible limits. It was considered that globalisation would weaken or eradicate territories. On the contrary, they reappear stronger than ever as elements resisting standardization and asserting their necessary rooting, and also as decisive elements in the strategies of settlements of enterprises. In this manner, they are no longer a passive framework endowed with material resources that are exploited, nor are they a space that has

become more or less attractive due to its socio-economic assets (good salaries, subsidies from regional or State authorities).

They must be increasingly perceived as a space characterized by its “industrial environment”, the entrepreneurial mind, the quality of its inhabitants, relationships of complementarity and trust that they have established, the opportunities for planning and reaction. All of these elements give way to wealth and new resources. The idea is not new. In the 16th century, Jean Bodin was already stating: “There is no other wealth than mankind”. “Mankind” is also one of the main components of the concept of “industrial district” (A. Marshall, 1890, G. Beccatini, 1991) and of the more recent concept of the “learning region” (B. Johnson, 1992, P. Cooke, 1999) defined by the capacity to learn, to adapt and to innovate. A real polycentricity can appear only when the emergent conditions behind these factors of development are created.

Proximity

This term defines the closeness in space, the existence of a small distance between two places, two cities, or two regions (geographical distance or distance in time). Due to a change in meaning, this term now also defines the similarity of socio-economic conditions between families, even the cultural affinities of the people themselves. This term also defines the institutional, organizational or functional proximity constituted by the intensity and the quality of the relationships between the participants, however not necessarily in the same space. It is in reference to the first and the third meanings that our reflections on land planning and polycentricity refer.

Since Adam Smith (1776), a major part of economic theory confirmed proximity and spatial concentration as the conditions of economic efficiency. The argument with regard to “external economies of agglomeration” was set out at the end of the XIXth century by Alfred Marshall (*Principes d'économie – Principles of Economics*, 1890). This argument is also discernable in the Weberian notion of “agglomeration force”. The theory of “poles of growth” (F. Perroux, 1955) and the reflections on polarization, both considered as ineluctable even though not always deemed desirable emerged from this idea on the advantages to be drawn from spatial proximity.

This argument is essential for the concept of “industrial district”. Recent studies show that far from weakening the notion of spatial proximity, the New Technologies of Information and Communication - NTIC rather strengthen it. The strongest physical proximities are sought by the upper-tertiary sector (co-presence in business centres) (S. Sassen). Apparently, the advantages of proximity are far superior to the disadvantages (diseconomies), otherwise we would have witnessed a general dispersal of the business activities. These activities are less concentrated but there is no dispersal. The idea of local interactions is therefore fundamental.

The notion of proximity often includes a normative dimension, more or less implicitly, and is therefore a representation. Rather than sticking to a merely relative position in space, it reveals the existence of an absolute reference point, generally the centre (economic pole or core of the area enjoying a high potential of population...) and the criteria of economic efficiency. What is referred to here is the logic of the enterprise.

From the point of view of the citizen-inhabitant and of the quality of life, the response is not as clear. Many planners and town planners still consider proximity-concentration as a condition of urbanity, without always questioning the price to be paid by the individuals in broad urban regions (land and housing prices, pollution, traffic jams, insecurity).

The negative effects of dis-economies had not escaped the attention of Alfred Marshall. The quality of territories, not only from a residential viewpoint but also from the viewpoint of interactions, knowledge and the trust they can provide has become an important criteria in respect of the degree of proximity. This aspect, which is no longer only economic, plays an increasingly important role in the strategies of enterprises.

Conurbation

Basic definition

This concept was created in 1915 by Patrick Geddes to define a conglomeration resulting from the coalition of several neighbouring cities originally separated, though they eventually end up joining to form a continuous urban area. Ex : Liverpool-Manchester, Lille-Roubaix-Tourcoing-Courtrai. Each core-city generally remains individualized by its place in the hierarchy. Conurbations are often formed in coal basins (West Midlands, West Yorkshire, The Potteries, Ruhr, Upper Silesia, Mons-La Louvière) or tourist regions (Antibes-Grasse-Cannes). They are therefore frequent in urban regions and in the European megalopolis. The urban spreading continues to create new conurbations (ex. : Marseille-Aix and Douai-Lens in 1999). However, the identification of conurbations depends on the various definitions of the morphological agglomeration.

Links with other concepts

If the term keeps its original meaning in French, in English it is rather used to define multinodal functional urban units. It is therefore often increasingly replaced by the notion of metropolitan area or even by other concepts such as city-region, urban area or functional urban region – FUR.

Territorial impacts

For a similar population, a conurbation often holds a lower position than a unipolar agglomeration due to the fact that the functions are shared between its cities and due to the low population in the main city of that conurbation. Moreover, the competition can be real between the various poles often performing similar functions different to their relative specializations. The perception of a conurbation is therefore negative and is not promoted as a model of development.

Development strategies

The multipolar character of these agglomerations is a weakness in the perspective of a polycentric strategy due to the dissemination of the function between several urban centres. However, the layout of conurbations favours the strategy of clusters of cities and euro-corridors owing to their geographical and cultural proximity and to their satisfactory internal links. With their polycentric organization (and their relative proximity in certain parts of North-West Europe), conurbations can also contribute to the

construction of networks of cities, even of polycentric metropolitan regions on the pattern of the Randstad or the Ruhr. The extension of their radius of alternating migrations favours, in fact, the constitution of wide unified labour markets and larger customer catchment areas, as processes favouring competition and the improvement of the hierarchical position of agglomerations traditionally segmented and partitioned.

4.2. Processes and/or logics

Concentration

Basic definition

Concentration defines the gathering of persons, activities or wealth in a central location and can be characterized at various scales. More widely and still in spatial terms, the notion of concentration indicates the state of the development of unequal distribution on a territory. There is no theoretical definition of this notion, only methods of assessment based on the idea that the concentration of a population, observed at a certain level of administrative units, represents an intermediary state between two extreme theoretical distributions – the uniform distribution and the concentration at one unique location of the territory. The concentration is then assessed as a discrepancy between the distribution observed and one of the extreme theoretical distributions.

Links with other concepts

The results of these measures reveal that the concentration of the population tends to noticeably increase – whether at the regional level or at the national and European one. These increasing inequalities can be explained, in the context of competitions between urban centres and globalisation, by the attraction of the main poles for companies attempting to realise agglomeration economies and by the increasing speed of trade, resulting in a loss of accessibility to smaller centres.

Territorial impact

Contrasting systematically the process of concentration and the development of polycentricity would be too simplistic. If certain forms of the concentration of population or wealth result in the reinforcement of a central pole over peripheral centres (monocentrism), other forms indicate, on the contrary, a reinforcement of some peripheral poles and a relative decrease in influence of the central pole, enhancing a structure of polycentric nature.

Development strategies

Given the above -mentioned processes, closely linked to the current economic, technological and global context, it is unlikely that inequalities in the concentration of population and wealth will decrease in the absence of planning policy. The solutions proposed by the SDEC to re-balance the “European core” and the peripheral regions go through the emergence of global economic integration zones and a transport policy aiming at the rectification of the discrepancies in accessibility between these regions.

However the consequences of this policy at infra-regional scales must be taken into consideration insofar as targeted support to the main poles of peripheral regions entail the risk of enhancing – within these regions – the process of the concentration of population and wealth.

Polarisation

Basic definition

Polarisation corresponds to all of the asymmetric relationships linking a centre and its periphery and places the periphery in a position of dependence towards its pole. The territorial polarisations observed are two distinct subsets but not totally independent regarding their territorial organization. The first is linked to influential networks of urban centres structured according to a more or less hierarchical system of populated centres. The second indicates a polarised structure of exchange and influence between local zones of activity undergoing asymmetrical and differentiated relationships picturing the relationships between towns. The pole is a place of attraction and diffusion. It has the function of stimulation on the neighbouring space.

Territorial impact

In a polycentric territorial setting, the specialisations and complementarities of the centres' position them in a situation that enables several to exert the functions of poles. Their areas of polarisation can combine or interfere. The processes of polarisation could then enable several poles to dispose of stimulating capacities and favour asymmetric and intermingled structures.

Links with other concepts

The processes of polarisation are fed by pyramidal territorial networks (appearing with the populations' provision of goods and services), which the theory of places has shaped, more tree-like networks of relationships between companies, and networks of creation and innovation stimulating the great centres.

The theory of polarisation has attempted to assess the regional effects of these various complementarities. The polarised or multi-polarised regional space assumes the possibility of geographical, technical and economic interconnections.

Development strategies

The important means that the SDEC enjoys in order to promote a balanced development of the European territory relies on the power and diversity of the processes of polarisation. "Motor region", "euro corridor", "global city" are among the many models constructed on the potentialities of polarization.

Spatial diffusion

Basic definition

Diffusion is the action – and the result of the action – that lets an object or a phenomenon within a system disseminate quite homogeneously or is transmitted.

Diffusion and innovation are associated when this process of dissemination deals with something new that is liable to invest in the system, and therefore to transform it. The more complex the object is, the more the diffusion will be a decisive factor for this transformation due to the increase in, and/or expansion of, the effects resulting from its adoption.

“ Spatial diffusion” occurs in spatial systems such as polycentric systems. In these systems, the various centres liable to be either transmitting poles of innovation or relay poles of diffusion are accurately selected. Spatial diffusion covers both propagation processes and the backlashes that it produces in the spatial system.

Beyond the specific propagation channels of each phenomenon, or the general ones intervening whatever the phenomenon is, spatial diffusion privileges two main channels: the channel of proximity focusing on nearby diffusion and the channel of the hierarchy of centres. In this case, diffusion tends to follow the downward trend of the hierarchy.

The largest centres are those more liable to instigate propagation, the middle-sized centres being its relay-poles. A polycentric regional context should increase the channels of diffusion insofar as the centres able to play the role of transmitters and relays in the diffusion of an innovation are more numerous, more diversified and better interlinked than in a more strictly monocentric structure.

Links with other concepts

In a polycentric regional system, the centres playing the role of the transmitters of a process of diffusion are similar to poles of development. According to the terminology of the theory of polarization, the relay-poles of this diffusion would be poles of expansion.

Territorial impact

The processes according to which spatial diffusion takes place clearly reveal the degree of integration of the territorial system and its workings on a more or less polycentric mode.

Development strategies

The attention given by the SDEC to “clusters”, “polycentric metropolitan regions”, and “motor regions”, is based on the capability of those polycentric structures not only to internally accelerate the diffusion of innovations but also to transfer them to the outside. In these various models, the strong territorial integration underlining these structures is a fundamental driver of the acceleration of the diffusion process.

4.3. Challenges to polycentricity

Spatial integration

Basic definition

The notion of integration defines a process of increasing interaction between the various elements of a territory carried out through increasing flows between these elements.

Integration implies a strong capacity for spatial connections and must be understood from both static and dynamic viewpoints. At any given time, the level of integration is estimated in relation to the intensity of the links between the various elements of a territory. For some, a space is really integrated only if these inner links are more important than the outer ones. As a process, it is more the increase of the relationships in time that should be taken into consideration. The improvements in spatial integration can be promoted by spontaneous mechanisms. In this case, they partake in the process of the internationalisation of the exchanges. The networks of cities through which these exchanges are being strengthened and developed constitute the main territorial points. Integration can also result from increasing projects of voluntary cooperation. The phasing out of discrepancies due to material and non-material barriers is then made possible through the improvement of transport infrastructures and the adoption of legal and fiscal measures aimed at weakening the influence of inner borders.

Links with other concepts

Integration is tightly linked to the notion of cohesion. Unlike integration – a dynamics increasing interaction between geographical targets - cohesion organises these dynamics for the benefit of the entire spatial setting with a concern for equity. The integration process increases the potential for interaction between spaces and can benefit their interdependence and therefore their cohesion. It can also create situations of dependence and domination enhancing spatial disparities, thus entailing the marginalisation of some spaces. While all projects of territorial development are based on the requirement for reinforced integration, the European project is based on the double requirement of integration and cohesion.

Territorial impacts

Two models of spatial organisation can support a process of integration: a centreperiphery model where the centre is the motor of integration and a polycentric model of metropolises' networking when integration is carried out through a system of more balanced supports. When implementing this polycentric model at a European scale, integration would come from the top, - supported by interactions between capital cities (political, economical, cultural) – as the “bridgehead” of an inner diffusion of national urban systems. A less hierarchical integration process can nevertheless be founded on specialised urban networks or on cross-border regional networks. At such, the projects of cooperation between cities or regions can now strengthen one another with these dynamics.

The articulation between integration and the polycentric model is not limited to the European scale. One of the main targets of spatial integration in fact dwells in the articulation of scales: reinforcing interdependencies between already well connected places, rooting new peripheral territories in highly integrated spaces at the European scale and improving the relationships between cities and their region at a local scale.

Contexts and development strategies

Among the processes of European integration, the centre-periphery model appears to be the most “spontaneous”. However, is it capable of ensuring the double request linked

to the improvement of connectivity : linking up places on the one hand, while strengthening the cohesion of a whole territorial setting on the other? It could only reach a target – if not of spatial equity – though perhaps of territorial harmony by operating a re-distribution from the core to the margins. The polycentric model, which responds to the aim of territorial balance, cannot be implemented without political voluntarism but is often presented as the model best adapted to a total integration of the European territory. But is this request compatible with the quality of the connection of the European space with worldwide networks?

Sustainable development

Basic definition

Sustainable development, according to the Brundtland Report definition (World Commission on Environment and Development, 1987), is a principle of action “that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Adopted by the General Assembly of the United Nations at the “Earth Summit” (International Conference of Rio on Environment and Development - 1992), a part of the preamble of the Treaty of Amsterdam (1997), ever present in the reports of the European Union, since the end of the 1980s this concept has been regularly promoted as a major scope of territorial management. It involves the conjunction of three elements: protection of the environment, economic development and social equity through the articulation of several time-scales (short and long term) and space-scales (from global to local). As such, it is partly related to criticisms raised since the end of the 1960s regarding the model of growth, putting more stress on qualitative than on quantitative improvement, but it is distinct from the principles of “eco-development” with its more all-encompassing character and wider dissemination in the global political and scientific spheres.

Links with other concepts

Sustainable development is very often associated with the notions of balance and balanced development. If either of these two expressions are used, balanced development can be more accurately defined as the territorial chapter of the general economic and social principles of sustainable development. It is in this case presented as a compromise between the spontaneous logics of development – which bear inequalities in the spatial dissemination of the economic potential, and more interventionist logics for balance that confront forms of excessive concentrations of populations and urban functions but which – if they were the only ones advocated – could be prejudicial to the dynamics of the economically strongest regions.

Territorial impacts

The appropriateness of a polycentric model of territorial organisation for sustainable development is asserted several times in the final report of the ESDP: at a European level, urban polycentricity could be the model that ensures at best, the fair distribution of economic development and the reduction of territorial inequalities. Similarly, a fairer distribution of the flows of populations and merchandise is encouraged in order to relieve the traffic congestion on the central corridors and to preserve the environment in

the regions crossed by these corridors. At the scale of urban regions, the polycentric model is enhanced for the structuring of urban expansion around secondary poles in order to minimize land use by towns and help the development of public transport in urban peripheries. At each level, moreover, polycentricity would best respond to the prerequisites of sustainable development, granting a more important role to decentralized action.

Development strategies

In the political sphere, sustainable development is therefore a fundamental principle of action supporting territorial balance, whereas in the scientific sphere it is often still presented as a vague concept beset by numerous contradictions. The debate over the success of this concept deals in particular with the contents of these broad principles lacking proper norms: what can the operating scope of such an inclusive concept be? Can it go beyond the status of a label, or be seen as anything more than the rhetoric of good intent? And at what time and space scale can these principles be implemented with efficiency? The principle of sustainable development, which is regarded by some as basically contradictory and therefore useless, is regarded by others as a principle enhancing those contradictions and promoting a debate: how can the economic efficiency of a connection to worldwide networks ensured by the large metropolis' at the same time encourage economic decentralization? At the scale of urban regions, how can we solve the contradiction between the will to minimize urban expansion for the purpose of the environmental preservation of cities, and the will to promote social equity, often frustrated by measures of urban densification?

Territorial equity

Territorial equity can be understood in the sense that Rawls (1971) gives to social equity. His concept of "fairness" implies a priority given to justice in relation to usefulness but without taking the equality of revenues into account since this is considered to be counterproductive. His theory of justice can be applied to space. The aim is to ensure to territories a maximum of equality in services (training, culture, health, economy) compatible with efficiency and a real possibility for the emergence of local or endogenous dynamisms (where again the notion of territory is present).

Territorial equity should therefore aim higher than the target of reducing inequalities and focus on the optimisation of potentials in order to create the conditions for the emergence of a real polycentricity. It should therefore go beyond the liberal logics of short-term profit to which some territories are almost inevitably doomed. It also implies a decisive involvement of public policies in well-targeted actions aiming at restarting autonomous local developments.

4.4. Contexts of polycentricity

Centre-periphery

Basic definition

The centre is a space that is distinct from the periphery by way of its concentration and the complexity of its various functions, which grant to it the direct or indirect power of attraction and domination over persons and entities. Traditionally, the centres benefit from better accessibility, which enhances their relative attractiveness. Centres are required for the maximisation of the proximities they can provide. The passage from centre to periphery undergoes a gradient of decreases in concentration, diversity and in the complexity of functions. This gradient generally also undergoes a decrease in the densities of land use and ground rent.

Territorial impact

Centre-periphery structures can be observed at various levels of the territory.

- At the local level of the towns and their rural surroundings. The main and secondary centres and their surrounding peripheries can be observed in every town, even in every part of a town, labour-market areas or within large urban areas.
- Regional level: most often, a region is structured around one or more powerful centres, all of which have peripheries.
- National level: a centre-periphery structure can determine the strength of the links between the various parts of a wider territory.
- European level: the first dimension of interregional differentiation dwells in the centre-periphery contrast that corresponds to a gap in wealth between the “central” region, a wide urban region called either the north-western axis, the “Pentagon” or the “golden triangle”, and the peripheral regions. The designation of peripheral and ultra-peripheral regions appears with the territorial categories selected by the European Union for the allocation of the structural funds.

The contexts of the territorial integration of centres generally hold an intermediate position between two extremities. These extremities are, on the one hand, monocentrism with its strictly binary structure, and polycentricity on the other. In a polycentric territorial structure, the global dominating structure is never the one with centre-periphery asymmetries.

Links with other concepts

The processes of agglomeration linked with the research of positive externalities and accumulation tend to create a discrepancy between centre spaces and their neighbourhoods. The differences that characterise a centre and constitute its centrality are of the nature of differentials of concentrated masses, degrees of complexity of the functions associated, potentials of attraction and related symbolic powers. In the long term, the strength of these centres is closely linked to the accumulated centralities a space is meant to exercise: economic, politico-administrative, commercial, cultural, etc.

Development strategies

The centre-periphery structures bear intra-urban and interregional, disparities. Territorial policies have to reduce spatial imbalances due to the attraction and diffusion processes associated with it. These policies must also remedy the social effects that this imbalance could initiate in the field of territorial equity.

Cross-border

Basic definition

While the term “border” defines a neighbouring situation or position, the prefix “cross” – through / across – means a passage or a change. The word cross-border qualifies spaces or relationships of various natures, material links or non -material flows, crossing or encroaching upon a political boundary and linking two neighbouring spatial entities. Since the term implies spatial proximity, the number of spaces concerned is limited to those that have a common border (partners are therefore two or three nationalities at most).

Links with other concepts

The concept of cross-border is tightly linked to the concept of integration because it assumes a process of linkage of two spaces and of bringing them closer together. Crossborder integration therefore indicates the increasing interdependence, at an average scale, of two spaces, contiguous but separated by a political boundary. But Integration constitutes the ultimate step in cross-border relationships, which can often be limited to mere cooperation. Integration and cross-border cooperation are stimulated by complementary relationships but also by differences on either side of the border: so crossborder relationships are asymmetrical in most cases and can entail the domination of one space over the other. Besides, comparing the terms cross-border and transnational, it appears that while cross-border indicates relationships between contiguous spaces separated by a political boundary, transnational does not indicate this contiguity between the spaces or national partners brought together.

Territorial impact

The networks of cross-border cities joining spaces – often peripheral or marginalized in national spaces – can bypass the national bridgeheads and, like all the specialised networks, participate in the promotion of a polycentric logic, less hierarchical at a regional scale. They can also favour articulation between regional and local scales through the constitution of (or proximity) networks. The notion of cross-border therefore a priori indicates polycentricity at a regional scale, based on the logic of spatial contiguity.

Contexts and development strategies

The existence and intensity of non -tangible cross-border flows (cross-border commuters, residential migrations, settlements of companies, etc.) depends upon the

degree of openness of a boundary, though they are also generated by the differences between neighbouring spaces. Material links need, on the contrary, a harmonisation and a homogenisation of the conditions existing on either side of the border (for example the size of land communication routes). Does the cross-border integration made possible through these relationships imply homogenisation, or the maintenance of disparities between these neighbouring areas?

Blue banana

Basic definition

A pleasant term created, according to the sources, either by a journalist or by the French ex-minister of Regional Development, Jacques Chérèque, to define the European megalopolis following a coloured map representation made by the GIP -RECLUS team of Roger Brunet in 1989 (R. Brunet (dir.), *Les villes "européennes"*, Report to DATAR, Paris, La Documentation Française, 1989).

Links with other concepts

The term "European megalopolis" today connotes a meaning somehow outdated or pejorative to denounce the economic and urban prevalence of a megalopolitan Europe.

The "Blue Banana" is also known as the "Hot banana" or the "European banana". The representation of the prevalence of some large urban regions is also expressed in various ways: "European core region", "Rhine axis", "Red Octopus", "Blue Orchid", "Europe of the capital cities", "Pentagon". The expression, the "grey banana" has also been used in recent research to define the declining industrial basins in countries that have, from the Baltic States to the Czech Republic and Romania, economies in transition.

Territorial impacts

The map of the Blue Banana has been reproduced in numerous scientific articles and in the media for the general public. The term Blue Banana met with large success, contributing to forge the image of a two-speed Europe structured on the centre-periphery model and confronting a core that is well supplied with towns of international dimension and a periphery lacking "European" towns. The bearing of that term has been considerable in regions that from that time had considered themselves to be peripheral.

Development strategies

The process leading to the establishment of the European Spatial Development Perspective (ESDP) and the promotion of a polycentric Europe is directly attributable to the shock of the sudden emergence of the Blue Banana, insofar as it is a question of counterbalancing the power of that part of Europe to reduce regional disparities. A more balanced development, deemed more sustainable, has since been claimed in support of this search for a better territorial cohesion. Many policies have been set up in order to contribute to the development of the regions outside the Blue Banana: regional planning, decentralization, networks of towns, endogenous development, interregional cooperation, and polycentricity.

European Spatial Development Perspective

Basic definition

The European Spatial Development Perspective is a document drafted by the Member States in order to evolve (as its subtitle indicates) “towards a balanced and sustainable territorial development of the European Union.

This text, based on an intergovernmental consensus, but deprived of any binding character is presented as a “political framework”. Conceived in 1989, officially launched in 1993, drafted in 1997 in the form of a project in Noordwijk, the EDSP was, in 1999, officially adopted in Postdam during an informal council of the Ministers of Land Planning. It will now be regularly updated.

Links with other concepts

The EDSP is based on several statements: high geographical focalisation of activities and population (cf. Pentagon); increase in spatial disparities of development between the core of the Union and peripheries in constant expansion; increasing territorial impact of the European policies; unequal accessibility and innovative capacities of the regions; environmental threats. This perspective holds polycentricity as its major goal in view of the need for the better economic and social cohesion of the Community space.

Territorial impacts

The ESDP has considerably improved reflection on territorial problems due to the permanent nature of the consultation process involving many partners: Member-States, committees (European Commission), Parliaments, Regions and European Organizations including the Committee for Spatial Development. It has now become the recommendation that national regional and local policies are meant to follow and actually increasingly refer to (cf. spatial view). The European Community clearly aims at implementing a better level of coordination between territorial policies and the planning policies of the Member-States.

The ESDP intends to concentrate its efforts on estimating the impacts of the planning projects by carrying out Studies on Territorial Impacts (STI) in order to measure the environmental, social, economic and cultural effects of an initiative compared with the development goals of a given area, in particular with regard to large developments and infrastructure projects.

The global principle of the ESDP, resulting from a consensus on minimum requisites and its non-binding status has however fuelled a number of criticisms. Several economists highlight the “idle” nature of polycentricity that stands in contrast to the powerful processes of polarization and metropolization; others even deem it dangerous and point to the power of concentration and agglomeration economies. The geographers criticize a spatial perspective without any cartographic element. The jurists question the bearing of a text without any regulation and only mere instructions, and they describe it as “paper tiger” and as a “catalogue of good intentions”. However the ESDP does open up certain prospects and new horizons, thus indicating the directions to follow. In this way, it may be a step, possibly imperfect, but certainly necessary, towards the establishment of a potential community competence in territorial planning.

Development strategies

The ESDP has established three major goals :

- the development of a polycentric urban system with a reinforcement of partnerships between urban and rural spaces ;
- equal access to infrastructures and knowledge ;
- careful management of the natural and cultural heritage.

These three strategic principles are developed into 60 political options.

The choice of a “model of polycentric development” aims at avoiding further reinforcement of the spatial concentration of the economic and demographic power of the European Union by relying on the urban network “relatively decentralized characterizing Europe”. The political options defined view the polycentric concept on three different scales.

- the creation of large areas of economic integration on a global scale,
- the reinforcement of a more balanced and polycentric system for metropolitan regions (cf. urban region, city-region), clusters of cities (cf. clusters) and urban networks by means of cooperation (cf. networks of cities) and the policy of Trans-European networks (TEP) ;
- support for the development of small and medium-sized cities of underprivileged regions and rural spaces of peripheral regions by their networking.

In this framework, a strategic role is given to gateway-cities, to the improvement of accessibility by a better connexion to transport and telecommunication networks and to infrastructures linked to knowledge, cross-border and transnational cooperation (cf. Interreg, interregional cooperation, transnational cooperation spaces).

Political-administrative system

The conception of the State, its role, the distribution and organization of powers and decision-bodies, has powerful and cumulative effects. The question of mono or polycentricity is primarily a concern for the States. It is a challenge tightly linked with the conception of population and territorial management (modalities and scale of involvement of territorial and sectoral public policies) which is superimposed on the challenge of the content of public policies (more or less important regulation...).

Centralized and federal models can be debated. The monocentric, hierarchised and authoritarian model is less efficient for the management of a large quantity of information (Polanyi, 1951). The real evolution to the decentralization of competences in States traditionally highly centralized, like France, has hardly decreased the high centralization of sectoral policies, energy, transport, which are managed in a pyramidal way by large public companies (EDF, SNCF, Air France, etc.)

Community space

Basic definition

The Community Institutions have opted for the notion of “Community Space” defined by reference to the territory of the Member-States. The Community Space coincides with

the territorial components of the States. It is therefore of a terrestrial, maritime and aerial nature. The principle of the referral to internal law entails that the communities are not competent to delimit the Community territories (bilateral or unilateral delimitations). However it is possible that the competences of the community intervene in the competences accepted by Member-States (example : delimitation of areas under their jurisdiction) and in the competences of the Member-States apart from the spaces under their jurisdiction. The notion of community space would therefore cover “functional spaces” for the European Communities to define and implement policies and actions.

Links with other concepts

The notion of “spatial planning” (a neutral term adopted by the European Commission) defines “the methods widely used by the public sector to influence the future distribution of activities in the space”. This process is undertaken in order to create a more rational territorial organization for the use of lands and the links between them, to balance the necessities of development with those of the protection of the environment and to reach the social and economic targets. It covers all the measures in order to coordinate the impacts on the space of the other sectoral policies, to ensure the distribution of an economic development between the regions better balanced than the one which would result from the mere laws of market economy, and to regulate the change in land and housing planning. It also includes national and transnational elements of planning, the regional policy and detailed planning procedures regarding the use of lands.

This concept is different from the French concept of regional planning which is tightly linked to administrative and political traditions. It deals with regional economic planning in its broadest sense (Yves Madiot, Land planning, Ed. A. Colin, 1996).

Development strategy

This concept of functional space, accepted by the “European Spatial Development Perspective” does not preclude from the progressive emergence of a more political notion of “Community Territory”.

Community territory

Basic definition

There is a general uncertainty on what criteria should be relevant for the delimitation of the Community territory following the Treaties and the Community’s judicial precedents which refer to various criteria to delimit the territory of the Union or the territory of the Community (geographical, institutional, principle of referral to the first line of internal law). The variable character of the Community territory is accepted notably with the possibility to reduce it or enlarge it according to the policies concerned.

That being the case, the territory does not constitute a claim of competence to the benefit of the Community or the Union, it is only determined by the necessity to establish the sphere of implementation within the framework of the functional competences ascribed by the institutive Treaties of each of the Communities of the Union (J. Ziller, “Champ d’application du droit communautaire, Jurisclasseur Europe, Fascicule 470, 3-1998, p. 4 – “Field of implementation of the community law”, Europe Jurisfile).

The Court of Justice of the European Community, in its decree of 31 January 2001, Kingdom of Spain against Council of the European Union (case C-36/98) has considered that the territory, the land of the Member-States and their water resources were limited resources and that “the measures as such affecting them (par. 2, art. 175 of the Treaty instituting the European Union and the spatial planning) are measures regulating the quantitative aspects of the use of these resources”.

Links with other concepts

In France, the concept of land planning is tightly linked with the administrative and political traditions and it deals with the regional economic planning of the territory in its largest sense (Yves Madiot, *Aménagement du territoire*, Ed. A. Colin, 1996 – Land planning).

A minimalist conception is accepted by the Law Commission of the European Community. Land planning, according to article 175, par. 2 of the Treaty instituting the European Community includes the measures which “aim at achieving the targets of article 174, they regulate the uses of the territory of the Member-States such as the measures referring to regional, urban or rural planning or to the planning of various projects regarding the infrastructure of Member-States. These measures are regulating only the quantitative aspects of the use of the territory and not those regarding its improvement nor the protection of its quality.

A conception related to the specificity of the community has been developed in a document, “for a new model of land planning”. The commission makes an assessment of the new initiatives TERRA – Trans-European Resource for Research and Agriculture (article 10 transformed into article 4 of ERDF – European Regional Development fund) and proposes criteria and options for a “new land planning” and sets its new targets :

- new political criteria and options
- planning is a legal instrument for public investment (...) and also an operational and “programmatic” instrument for the elaboration of policies, investment strategies and private local initiatives
- local administrations are encouraged to play an active role in the elaboration and implementation of the plan
- cooperations between cities and regions play a predominant role.

The concept of sustainability is at the core of land planning insofar as it integrates longterm targets. The strategy of land planning is characterized by a middleterm and long term conception and by partnership. The targets of land planning consist of stimulating economic growth, reducing the vulnerability of regional economies to external threats, supporting the competitive assets of the regions and the dialogue between public and private socio-economic participants in their management of territorial strategies. Putting together the wishes and intentions and coordinating the initiatives of the regional economic, social and political participants, is an essential element of these strategic plans. They must also ensure that production activities are diversified by using the endogenous resources and attempting to attract new ones. Social participation and consensus are necessary to the success of such an approach.

Beyond the “resource-territory” or the “spatially functional-territory” where the Community defines and implement its policies and action, a global community conception of land planning emerges and appears to respond to the philosophical and practical view recommended by the European Spatial Development Perspective (ESDP) (triangular target : balanced and sustainable development of space).

Development strategies

The territory is “a space which is not only economic but also bearing a project and solidarity for the community living in it. This term is generally associated with the state which constitute the ultimate form of integration. At the European scale, the challenge remains that the European space is not only a market but also a space for projects and solidarity. Could we contemplate the emergence of the concept of “European Union Territory”?

4.5. Conceptual strategies

Partnership

Basic definition

The principle of partnership, a “programming” principle with a limited accountability, is also a founding principle of community democratization. According to the functional community approach, it is a principle of participation by nature, evolutionary and present at every stage of the structural policies of the community. It is also a principle of political structuring and legitimacy of the powers of the participants in their communities relationships. This mutual acceptance aimed at an institutional articulation between the politicians in charge and all the participants is operating on either side of the State which plays a pivotal role and responds to an expansion and deep rooting of decentralization.

Besides, partnership appears to be a method revealing the community action, aimed at adapting the legal mechanisms to the targets and conveying a trend of integration directed towards the permanent expansion of the joint action of the community and the other regional and local participants, as recommended by the Agenda 2000 (O. Castric, *Quel partenariat pour les régions de l'Union Européenne?*, ed. Apogée 2002 – What partnership for the regions of the European Union?).

Links with other concepts

The principle of subsidiarity, a flexible criterium for the exercise of competences in the fields which do not exclusively come within the remit of the Community but which are the shared responsibility of the Community, the Member-States and the Regions, is applied only to the field of the relationships between the Union and the States without working de jure in favour of the Infra-State communities. Nevertheless, it favours a partnership between the Community and the Regions regarding the competences they share but do not specify the procedures of cooperation between these different levels.

The contractual method, applied to the Community policies, is regarded as the most adapted to the partnership between the Community, national and regional levels needing strengthening.

Territorial impacts

If a “partnership” is established in the framework of the legal system of the economic and social cohesion, the Member-States are committed to undertaking close consultations between the commission and the Member-State as well as the authorities and organizations appointed by the Member-State in the framework of the national rules and current practices”, without entailing community laws for local communities. The general definition of partnership has remained unchanged but its structure has been enlarged and is composed of the Commission, the Member-States, the regional and local authorities (including the environmental authorities), the economic and social partners, the other organizations concerned, including those dealing with environment and equality between men and women.

The principle of partnership relies on the search for a greater efficiency of public action by associating the different levels of decisions with the participants nearest to the territory. But this does not resolve the problems of the competences granted in each country to the State and local authorities for the implementation of the community policies. The forms of partnership remain different from one state to another and from one region to another (G. Marcou, “La régionalisation en Europe”, document de travail du Parlement Européen, Direction générale des études, REDI 108 FR – The regionalization in Europe”, working paper of the European Parliament, General Direction of Studies).

Development strategies

With the reinforcement of the needs of transnational and interregional development and the European cooperation meant to support it, it appears that most of the practical difficulties met stem from the variety of the administrative systems, the diversities in competences at regional levels, the lack of clarity on the role of the regions and local authorities in the implementation of the community policy having an impact on territorial development.

This obligation for partnership can be better defined in the framework of the current positive law as some practices and experiments reveal it, but it appears in addition that the local authorities should be legally recognized as participants in the definition and implementation of the community policies.

Governance

Basic definition

According to P. Le Gales, “we find in the governance the ideas of leading, steering and management, but without the priority granted to a sovereign State. To consider the question of governance means to understand the articulation of the different types of regulations in a territory both in terms of political and social integration and the capacity to act”. “It is a process of coordination of participants, social groups and institutions, to

reach goals discussed and defined collectively in fragmented, uncertain environments". According to the CPMR (Conference on the Peripheral Maritime Regions), the challenge of governance implies "an articulation between the geographical levels of public and private participants on common targets. The involvement of regional, local and non-governmental participants in the Community decision process appears to be "the condition of efficiency and acceptability of the European rules" (cf. "Approfondir la démocratie dans l'Union européenne", contribution au Livre Blanc sur la gouvernance européenne. Etapes préparatoires,- "Improving democracy in the European Union", contribution to the White Paper on the European Governance, Intermediary workshop - December 2000 – March 2001).

The topic of governance thus covers three dimensions : the global character of the thorough review of the project-plan of the European Union, the government at several levels (European, National and Infra-State) and the contact with the civil society taking into account the public-private interdependence.

Regarding global governance, the difficult negotiations of the Treaties of Amsterdam and Nice reveal the crisis met by the current community model which is still unfinished. The projects undertaken of the Convention anticipate a "sui generis" European model of a "federative type" adaptable to the enlarged Europe on the basis of the adherence of its members to a common project, or, the third way between a confederation and a federal State.

Regarding the articulation of the different levels of governance, it clearly appears that "Europe cannot be built only in Brussels": the challenge is cultural insofar as the phenomenon of networks introduces a revolution in the exercise of authority and political power insofar as a classical administrative authority bound to the direct authority of a commissioner or a minister does not in fact benefit from a sufficient authority or independence to regulate a sensitive topic. A "structural reform" i.e. a different position between the European, national, regional and local public participants is necessary. The increasing devolution (across all Member-States) of competences from the national to the regional level, the development of forms of local democracy, the capacities for crossborder initiatives demonstrated by the regions and cities really constitute one of the major changes in the Union over the last ten years. Moreover, the phenomenon of networks acts as a conveyor of the renaissance of the Europe of cities and territories.

The Commission states five principles for good governance :

- opening up of the institutions to clearer functioning ;
- participation for the quality, the relevance and the efficiency of the policies of the Union;
- responsibility in clarifying the role of the individual in the democratic process;
- greater efficiency of the measures liable to produce the expected results at the correct time ;
- and the coherence of policies and actions is to be made "fully understandable".

Links with other concepts

Links to the concept of partnership are readily apparent. The European Union is in fact at a crossroad, between a "centralizing Europe where institutions are criticized for their

weak legitimacy and their “democratic deficit” and a Europe where the “new participants” would see their participation accepted in the framework of partnership. The new participants are the regional, communal, urban and rural authorities in charge of the implementation (on home ground, on territory, on site...) of community policies and regulations. They are also the socio-economic participants, social partners, NGOs and associations constituting the “organized civil society”. They are also the groups, structures, networks more or less formalized and concerned with community responsibilities. Finally, they are the numerous professional people who have become experts on Europe due to their function.

Territorial impact

The debate on governance has become a strategic priority of the Union. The necessity to elaborate a strategy in order to give a direction to the development of the European Territory has also become an important topic for political debate due to the removal of the borders in the single market and to the increased possibilities to constitute networks linking together the territories and economies of the whole continent, imposing the convergence of the targets and the coordination of the policies.

Development strategies

A new global governance regime, at several levels and a meeting with civil society appear to be necessary in order to achieve the triangular target (society, economy, environment) expounded by the ESDP.

Coordination

Basic definition

The EC Treaty recommends the coordination (fitting together several elements in order to constitute a whole) of some policies (for example the policies of employment), revealing the weak integration of these policies into the Community.

The method of “open coordination” applied to regional and local participants in the framework of national constitutions appears to be particularly adapted to the construction of a “Europe of territories in a strategy of sustainable development”, taking into account the major political changes in respect of the increasing devolution of competences from the national level to the regional and the cross-border qualities indicated by the regions and cities. This method is presented as a “method of mutual training” creating confidence between the national administrations and enmeshing the Member-States in the construction of a framework of efficient cooperation. This method is experienced primarily in the field of education.

Beyond the mere juxtaposition of national tendencies, it also results in a “sui generis” European dimension, which could be taken into account in the next phase of the long-term programming of the Union’s policies (Agenda 2007) in order to organize cross-border, or transnational, cooperation within the relevant intermediary territorial frameworks (also called “Small Europes”).

This method provides the Member-States with the means to exchange good practices and to agree upon common objectives and orientations, on occasion with the support of national plans of action.

Links with other concepts

Similarly to the contractual method, the open coordination is an instrument liable to participate in the principle of the action of coherence, serving cohesion.

Territorial impacts

This method must contribute to the drive to go beyond the ingrained and over-compartmentalized sectoral culture, of community policies, also taking into account the public costs met by Member-States (decentralization, territorialization, mediation, coordination...) as well as a strong structuralisation of the territories all over the "community territory", which involve not only the public and parapublic structures, but also the lifeblood available (J. C. Leygues, Report of the Workshop "Governance at several levels : articulation and networking of the different territorial levels" - Group 4C, May 2001, p. 42).

Development strategy

It therefore becomes necessary to propose methods and coordinating instruments for community policies and their impact on sustainable development and the cohesion of the Union.

Contract

Basic definition

If, in the framework of the policy of economic and social cohesion, the contractual operations (legally guaranteed mutual agreements) are widely used (such as the support community framework and the Single Programming Document - SPD) and entail a partnership in the structural intervention between the European Commission, the Member-States and the authorities concerned at the regional and local levels, nevertheless, these operations do however remain an exception in the functioning of the policies of the Union.

The Commission recommends (White Paper on Governance) the exploration of the "contracts based on the realization of targets" which result in :

- long-term contract-based community policies and their impact on given territories in the form of targets and planning contracts ;
- the legal establishment of a partnership between the Union, the States, the regions and the socio-economic partners, in the form of "contracts of governance at several levels".

Links with other concepts

A consensus appears to be taking shape with regard to the fact that contract-based procedures are the methods best adapted to creating partnerships at the community,

national and regional levels and to reinforcing coherence and integrating the European, national and regional procedures into the framework of several European policies.

The political and legal involvement of these three categories of partners results in a real partnership that is well-organized and systematic, with a structuring between the networks of associations in local communities and the institutions and community organizations, i.e. the “governance at several levels”.

Territorial impacts

The targets and planning contracts aim at a global programme in the form of Integrated territorial plans that integrate all the policies of the Union with a territorial impact (the policy of economic and social cohesion, the environment and sectoral policies, research, transport, agriculture...) establishing common targets. Less ambitious options contemplate either a formalization by contract of highly targeted topics of community policy such as for example, a directive or a programming of structural funds on the basis of territorial projects presenting a strategic interest for spatial (urban and rural) planning or an integration of the territorial dimension into sectoral policies, or else an adaptation of the legal frameworks of the INTERREG European programme notably in the form of the creation of a “statute of association of community law” or other specific procedures which could be recognized by the national administrations and could grant to local communities grouped together to define transnational common strategies between the States, the Regions and the Union.

These contracts included in the process of governance at several levels imply a structuring between the networks of associations of local communities and the community institutions and organizations, a really organized and systematic partnership. This structuring can be implemented according to the degree of political and legal involvement of the three categories of partners. An option of a global contract, on a coherent territory, permitting the coordinated implementation of the community policies, could be undertaken taking into consideration the different approaches of the four groups of States. Such a contract framework, liable to stimulate the local and regional participants and necessary for the implementation of decentralized policies, must be flexible enough depending on the sectors and the needs of formalization, adapted to the human and financial resources of the communities (leaving them the decision and the choice of the procedures) and respectful of the principles of subsidiarity and proportionality.

Development strategies

These “targets contracts” eventually entail a new global definition and elaboration of community policies (in the institutional and material field) as well as their implementation (based on partnerships). They should be launched in the form of “pilot-projects” which could lead to a first assessment with a view to the next long-term financial prospects (after 2007) of the enlarged Union (cf. “European Governance. A White Paper, COM, 2001 428 of 25 July 2001). These planning and governance procedures are recommended for serving the target of polycentricity stated in the ESDP.

Coherence

Basic definition

Coherence contributes both to the rationalisation of the action of institutions and to the establishment of cooperation between partners. It is also a factor in implementing the distribution of competences at different levels of governance. As a general and global commitment of the Union, it appears to be a general principle for the action of the Community, accepted by the Treaty which introduced several clauses on coherence between Community policies, such as the clause of article 159, paragraph 1 which establishes the principle of the coherence of economic and social cohesion with the other policies and actions of the Community (cf. also the coherence of research policy with the other policies (article 163, par. 3,) of public health policy with the other policies (article 152), and of consumer policy (article 153, par. 2).

This principle was reinforced when the Treaty of Amsterdam came into effect (article 6 of the Treaty) establishing , among the principles of the European community, a general clause of coherence according to which “the requirements for the protection of the environment must be integrated into the definition and implementation of the policies and actions of the Community aimed at in article 3, particularly for promoting sustainable development”.

Coherence is also one of the five basic principles “of good governance” as envisaged by the European Commission insofar as the range of tasks of the Union has expanded and enlargement will proceed in the sense of a wider diversity.

Links with other concepts

As a general principle of action, coherence is linked with the principle of integration, which takes into account the aims of other community policies for the elaboration of Community policy and is therefore placing itself in its service.

It has placed itself in the service of the sustainable development of the Community through article 6 of the Treaty. It also serves the goal of “good governance”.

Territorial impacts

Due to the territorial impact of Community policies in the fields of agriculture, transport, energy, and environment, these policies must be integrated into a coherent setting and must also avoid any sectoral logics. Researching “a legalization of the planning of territorial planning therefore becomes an aim in order to guarantee the coherence of public policies and social and territorial cohesion” at the Community scale.

The challenges that the Union will have to accept “go beyond the boundaries of sectoral policies” on which it has been built. The principle of coherence implies a rationalization of the actions of the institutions, of the cooperation of the partners in the framework of a distribution of the competences within which implementation needs to be regulated as far as necessary (the principle of proportionality) and in a sufficient and efficient manner (the principle of subsidiarity). Coherence is also subject to “the ability to give political direction and the assertion of the responsibility of the institutions to guarantee an integrated approach to a complex reality”.

Development strategies

In order to have the means to realize this political option, the European Union must, as the second report on economic and social cohesion published by the Commission clearly reveals, attempt to establish coherence between the Community policies that have a strong territorial impact, an option which is recommended by the ESDP.

Devolution

Basic definition

Devolution is derived from “devolutus”, the past participle of “devolvere” which in medieval Latin figuratively meant “to pass on”. Devolution therefore consists of passing selected governmental powers from central to local governments (another French term could be “selective decentralization”). This devolution often results in the creation of Regional Assemblies or Parliaments.

Territorial impact

In reaction to globalisation, cultural and linguistic minorities are asserting themselves more clearly increasingly claiming political recognition.

The European Union has encouraged this movement in response to the “principle of subsidiarity” according to which decisions must be made by the authorities at the closest levels to those who will be directly affected by such decisions. Certain European countries, such as Germany, due to its constitution, are already functioning according to this principle, others such as Spain have more recently granted considerable powers to its regions, while in the UK, Northern Ireland, Scotland and Wales obtained Regional Parliaments in 1998 and 1999. These Assemblies have the power of political, economic and legal decisions over their territories.

Development strategy

In the western world, the end of the 20th century has witnessed the advent of a supranational political government (the European Union) as well as a strong demand for local self-determination resulting in numerous processes of devolution: the whole process has come to be seen as a counterbalance to the hegemonic power of the Nation-States.

4.6. Ideal spatial configurations

Gateway city

Basic definition

For a given space, gateway-cities are poles in a system of relationships of which the distinctive feature is that all flows pass through them. Attracting flows of all kinds – material or informational – from abroad, these gateway-cities also re-disseminate flows

on the continent, as well as disseminating new flows themselves, these new flows being secreted by the development of the passage. This “gate”-like function is in favour of both the development of interface activities, which, in a highly competitive environment, must challenge a greater free flow, and the development of activities enhancing those flows.

Links with other concepts

The gateway-cities enjoy the most favourable situations for the formation of poles of development. It is assumed that as regards the expansion of such poles, the diversification and the increasing complexity of their functions have everything to gain from the reinforcement of this inter- and intra-continental polarisation.

Territorial impact

Harbour-cities or some border cities have, more often than not, been the great gateways of national and continental territories. Following the development of air transport and the fast and massive flow of non-material commodities on the new networks, the models of gateway-cities have diversified and now new continentally based locations can fulfil this traditional role.

These indisputable advantages for the development of a greater territorial polycentricity are not definitely secured. With the improvement of the speed of circulation, the extension of the distances of commerce, the gradual elimination of national borders, these gateway functions have become extremely competitive. The towns concerned – or liable to become concerned – must attempt to diversify these functions and gain other activities that, in a very unstable context, can position them in a favourably competitive situation. These particularly demanding conditions appear to be more in favour of the development of large metropolises, which themselves enjoy a relatively more advantageous position.

Development strategies

The attention given by the SDEC to the European “gateway-cities” is related to their potential development. In a polycentric territorial system, the Hubs, multi-modal platforms are among many of the assets inevitably associated with the development of real gateway-cities.

However, they (the hubs and multi-modal platforms) do not guarantee the development of gateway-cities. This development requests that the advantages offered by the new gateway-cities be enhanced further than those strictly resulting from well-organised transport infrastructures.

Global city

Basic definition

The term “global city” has been suggested to designate what would be the latest form of world centrality in the context of globalisation (at the top, Tokyo, London, Paris, Sao Paulo, Hong Kong, Frankfurt, Singapore, Toronto, etc.). The concentration of direct foreign investments appears to be a sign of these new levels of networking. As the economies of urban areas are totally active for these nerve centres within a worldwide

network, the activities, which are highly integrating innovations due to the pilot-role they have to play in the world economy – a permanent adaptation of the territories to globalisation, sometimes the necessity to sooth its brutal effects – tends to settle in these very large centres. These centres become very attractive for activities weakened by this new context and, in the new expansion of intra-metropolitan environments, looking for the means to deal with these new tensions. Today, global cities appear to be one of the best territorial forms of globalisation.

Territorial impact

The tight and powerful web between these global poles, at this global scale, display polycentric space. It evokes the archipelago in the sense that each of its elements makes sense only through the relationships structuring the whole web.

Questions do however remain over the manner in which these “global cities” still enjoy a polarization role in the territorial continuity, or if they can polarize the world without their surrounding territories.

Belt

Cartographic representations of Europe display homogenous belts by analogy with the classical belts of the economic geography of the United States. Most of them identify belts as potential cooperation areas such as the Atlantic arc, the Mediterranean arc or the Baltic arc (cf. transnational cooperation areas) or axes characterized by a type of development or economic trajectory similar to that of the Blue Banana. Some other maps are attempts at new prospective views. The research team “Europe and territorial planning” (DATAR (Délégation à l’Aménagement du Territoire et à l’Action Régionale – Territorial Planning and Regional Action Delegation), Programme “Perspective 2020”, 2002) identifies various belts in the framework of a scenario of “diffused metropolization, the arms of the Red Octopus, a Sun Belt, a Sea Belt, a Fun Belt and a Rust Belt. Such representations have a stimulating function according to the aims of the prospective. They are alternatives to the current representations (cf. the Bunch of Grapes). However, their territorial impact remains modest. Strategies of development can attempt to enhance the comparative advantages illustrated by integrating them into shared spatial views.

Bunch of grapes

Basic definition

The Bunch of Grapes is the graphic representation of Europe as introduced by prospective researchers to illustrate the polycentric scenario. The various grapes placed side –by- side cover the whole of the European Union and are meant to illustrate the possibility of harmonious development well spread across all of the regions. The image symbolises a community of regions interlinked and sharing the common target of spatial equity.

Links with other concepts

This “spatial metaphor” (Klaus R. Kunzmann) is a response to the Blue Banana. It reveals that a polycentric Europe is to be built.

Territorial impacts

This alternative model intends not only to be closer to the polycentric reality of the European urban system but also appears to be the best metaphor available to concentrate efforts in favour of a relative spatial equity in the European Union. Klaus R. Kunzmann, the author of this “mega-symbol” stresses the stimulating and partly self-realizing dimension of such a vision bearing a pro-active aim, deemed indispensable to allow planners to define their axes and guidelines. With this doctrine, these decision-makers may think that the old diversity of Europe’s urban network will constitute one of its main assets in the global economic competition and therefore act day after day to preserve and develop this potential. The image acts as a metaphoric code and as an artefact aimed at encouraging adhesion, it contributes to realising the aim of a polycentric Europe.

Development strategies

The image of the bunch of grapes can facilitate the construction of spatial visions oriented to the polycentric target. It permits us to modify the participants’ representations, often marked with the Blue Banana, offering the image of another Europe, spatially balanced. The Bunch of Grapes intends to function as a “soft doctrine” encouraging planners to search for better solutions to reach that target. This representation however is not yet well spread and its function is still not well understood, the current trend being to compare that virtual image to the current reality.

Blue Orchid

Synonymous with the Red Octopus

Red Octopus

The Red Octopus is a graphic representation of Europe introduced by prospective studies to illustrate the scenario of an extension of the European megalopolis (or Blue Banana) on its margins by extending new axes of development, the tentacles of the octopus, particularly towards Central and Southern Europe. The Blue Orchid is its accurate equivalent.

This concept leads us to consider the absolute predominance of the megalopolis as a relative one. As a consequence, it has a stimulating value permitting us to contemplate a new balance resulting from the spatial diffusion of development supported by a structuring policy (cf. euro-corridors), able to favour polycentricity by reducing the gap between the European core region and its peripheries.

Development strategies can lean on the already initiated process of unlocking the most cumbersome activities subjected to agglomeration diseconomies in urban regions and large cities of the European core region and welcoming production units in search of better sites and salary conditions.

Industrial district

Basic definition

A territory composed of a concentration of many specialized enterprises united by mutual links. Several research trends are currently debating the interpretation of this phenomenon, though all stress the importance of relations between economic agents and on the networks built in a territory. The geographic closeness of the premises permits a network to function and facilitates synergies in favour of flexibility and externalities.

Links with other concepts

The term industrial district is synonymous with “Marshallian district”, referring to the research of the economist Alfred Marshall (*Principes d'économie politique - Principles of political economy*, 1890) who was the first to explain certain choices on the location of enterprises according to economies of external scales and to show the advantages linked with the closeness of activities associated with industrial basins characterized by an “industrious atmosphere”, a climate and an agglomeration of activities favourable to business (Lancashire textiles, Birmingham with its “thousand and one industries”, the metallurgic complex of Sheffield). The French term for “industrial district” should be understood as “active area”, “industrious area”. The expression “local production system” (LPS) is also meant to define this type of spatial agglomeration with similar activities. Numerous districts result from endogenous development. Certain districts situated adjacent to a major trunk road or a motorway constitute corridors of development able to create euro-corridors (M4 to the west of London).

Territorial impacts

The concept of “district” was used again in the 1970s by Italian researchers to describe the success of this new mode of development in the “Third Italy”. This analysis shows that it is not always an enterprise that imposes itself upon a local environment but that the characteristics of the territory can sometimes secrete it through the synergy between local agents – thus the importance of their mutual relations and the close networking specific to each of these territories. The reunion of the activities on a territory also permits the reduction of the “transaction costs”, i.e. the costs of the time and information needed by the participants in a business negotiation. Many more or less complex industrial districts have been listed in Europe. The Porto region, Baden-Wurtemberg, Arve Valley, the watchmaking Swiss Jura, Western Flanders, etc.

Development strategy

The novelty dwells in the discovery of the “territory” by the economists who formerly considered the space as a neutral category. The territory is not interchangeable and neutral, it has a history, particular inhabitants and spatial relationships that are not reproducible and constitute an immobile resource.

New local and regional development strategies are based on encouraging and trying to structure and organize the dynamics existing in these districts and/or in supporting these emerging territorial dynamics in order to reinforce the synergies and expand the

economic infrastructure. The industrial districts appear to be the kind of development favourable to the better integration of mainly rural regions or those slightly metropolized for the international economy, therefore a polycentric structuralisation ensues at a European scale by favouring the emergence of new regions as well as at the regional scale by favouring a type of spatial development relatively independent of the urban hierarchy. In France, the DATAR has censured “LPS” (local production systems) of which it is encouraging the development and organization into “project-territories”.

However, a certain contradiction arises between this external intervention sometimes officially acknowledged and the fundamentally endogenous and autonomous character of the district dynamics.

The networking, the density of social relationships favouring the informal exchanges, the collaborations and mutual training between specialized producers cannot be decided from the top. However such a policy finds its legitimacy in the encouragement of specific dynamics for “project-territories,” which seems to replace a form of classical external intervention sometimes unsatisfactorily connected with the local economic environment. The support to industrial districts aims at reinforcing their inner organization due to the frequent institutional weakness of the LPS and their relative fragility. The districts generally produce items of poor technological content highly exposed to changing conditions and international competition. The economic trajectories of districts differ and indicate that proximity is not enough to ensure reactions and competition. The unexpected performances of the districts nevertheless question the regional policy of the European Union, which could take into better consideration the ability of territorial partners to support projects.

4.7. European policies

Interreg

Created in 1990 and financed by the European Regional Development Funds (ERDF) up to 4.8 billion Euros for the programme 2000-2006, this Community Initiative (CI) mainly involves regional partners but also national partners from the countries that have not yet reached the NUTS II level. This CI is constituted by three main elements, each with complementary goals.

Interreg A is devoted to cross-border cooperation between contiguous areas of the NUTS III level, located alongside internal and external borders of the European Union.

The Interreg B element is involved with transnational cooperation between national, regional and local partners distributed over seven areas of transnational cooperation, and is aimed at the promotion of common strategies of development and land planning on a super-State scale.

Finally, Interreg C, “interregional cooperation” is designed to improve the efficiency of policies and the means of regional development. It is in the framework of these last two

elements that polycentricity finds a good opportunity to be implemented at the scale of large transnational spaces outside the community borders, even though a number of problems relating to harmonization remain between the different funds, depending on the level of integration of the various States involved.



ESPON Project 1.1.1

The role, specific situation and potentials for urban areas as nodes of polycentric development

EUROPEAN URBAN NETWORKING

July 2004

CNRS – UMR Géographie-cités

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I. Examples of European urban networking linked to university cooperation

a. Data and methods

Our results on university networking on the European scale concern the exchanges of students in the context of the ERASMUS programme. The majority of studies that have already analysed student flows in Europe have done so with attention paid to the national scale. Nothing has yet been done at the European level, i.e. no study has been undertaken that covers all of Europe, analysing the whole matrix of exchanges between universities at sub-national scales.

Our objective is to study the flows of students in Europe with regard to urban networking. Thus, a huge amount of work on the data has been necessary to transform the ERASMUS files and to discern the urban location of the origins and destinations of the students concerned.

Methodology for identifying the location of student origins and destinations

ERASMUS files provide the university of origin and of destination for each student.

An ERASMUS institutional code identifies each university:

- 3 letters or spaces for the country
- 7 letters for the city
- 2 or 3 numbers for the institution (university, school, institute....)

At this stage of the study, we decided to locate each institution by its administrative address, note should however be taken of the fact that this system has some consequences on the final geographical location of a few institutions, mainly those located in the suburbs of large cities.

b. Image of Erasmus students exchanges

Cities relative attractiveness for ERASMUS students (map 1)

It is not enough to reach a positive balance of students. It is also necessary to develop and maintain equilibrated relations with other cities.

Methodology for the calculation of the orientation of flows

The indicator calculated for the map on “orientation of ERASMUS student flows” enables us to measure the degree of asymmetry of student arrivals and departures. The index can be calculated quite simply. It corresponds to the ratio between

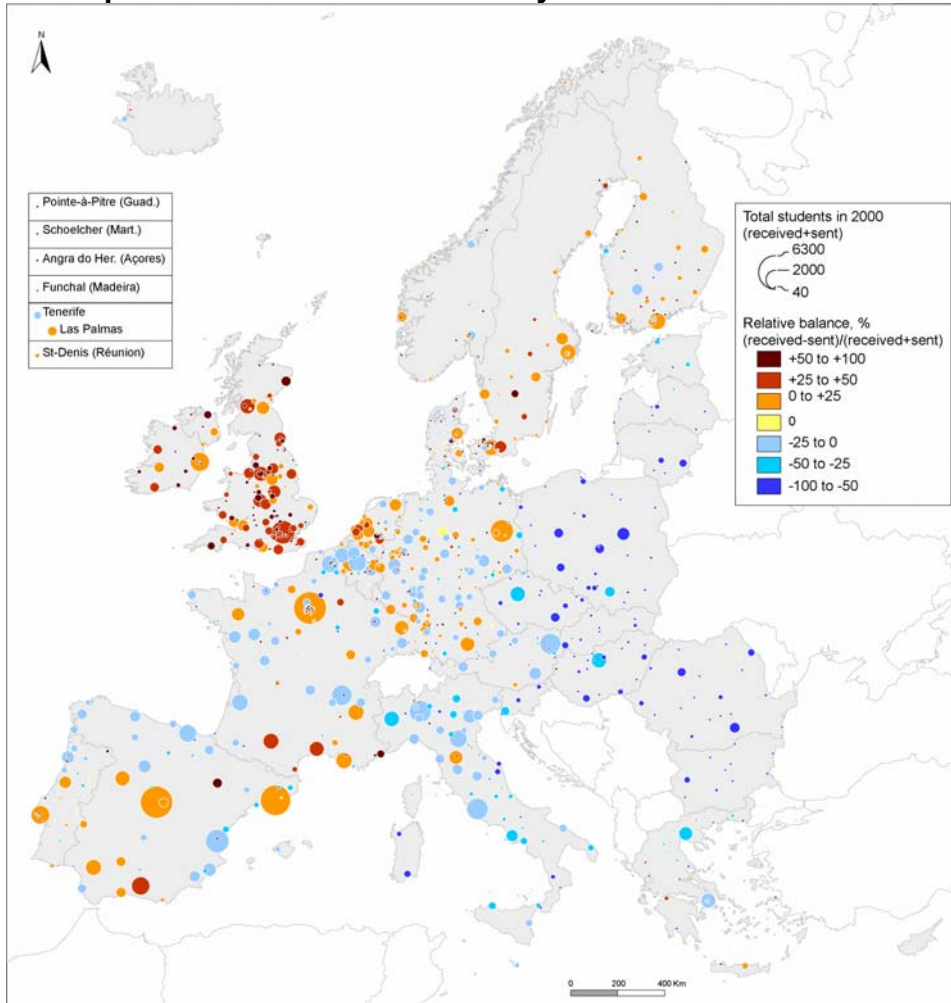
- a) the difference between the students that arrive and those that leave a given city, and
- b) the total volume of students (received+exported).

It is expressed as a percentage, varying from –100% to 100%. The closer the index is to 100, the greater is the asymmetry of the network; the closer it is to 0, the greater is the tendency to maintain links of the same intensity in both directions.

In relative terms, London and indeed most other British cities seem to attract more students than other European cities. A few French southern cities, some Spanish, Swedish and Irish cities also show a similar level of performance.

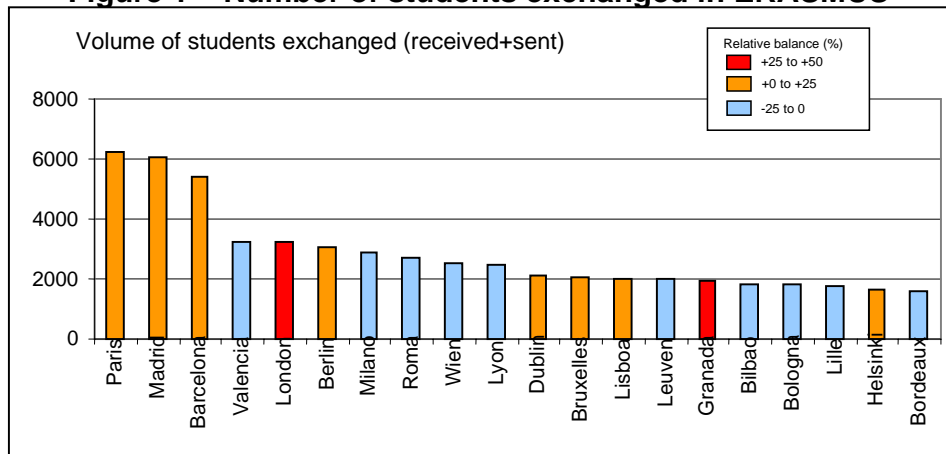
However, this index means that those cities have an important asymmetry between their arrivals and departures with regard to the total volume of students exchanged. In that sense, one can argue that this asymmetry is a sign of autarky, and that a better position is given by cities where the asymmetry is less evident, i.e. where the number of students received by a city corresponds to an equivalent number of students exported. This equilibrium of exchanges can be considered as the best warrant of the existence of a real network, and is thus a very encouraging sign as regards the existence of polycentric networking.

Map 1 - Cities' relative attractivity for ERASMUS students



Source : Erasmus
© N. Cattán, G. Leseq, CNRS-Géographie-cités, 2003

Figure 1 – Number of students exchanged in ERASMUS



Urban domination and dependence for ERASMUS flows (map 2)

- What are the network structures that describe the major flows of students?
- Do the major flows highlight any privileged transnational associations?

Graph theory provides a simple tool to define the main structure of a given network. It gives an image of the main preferential direction of the major connections of each city. This leads to the identification of the main dominant centres of attraction and, contrarily, those that are dependent.

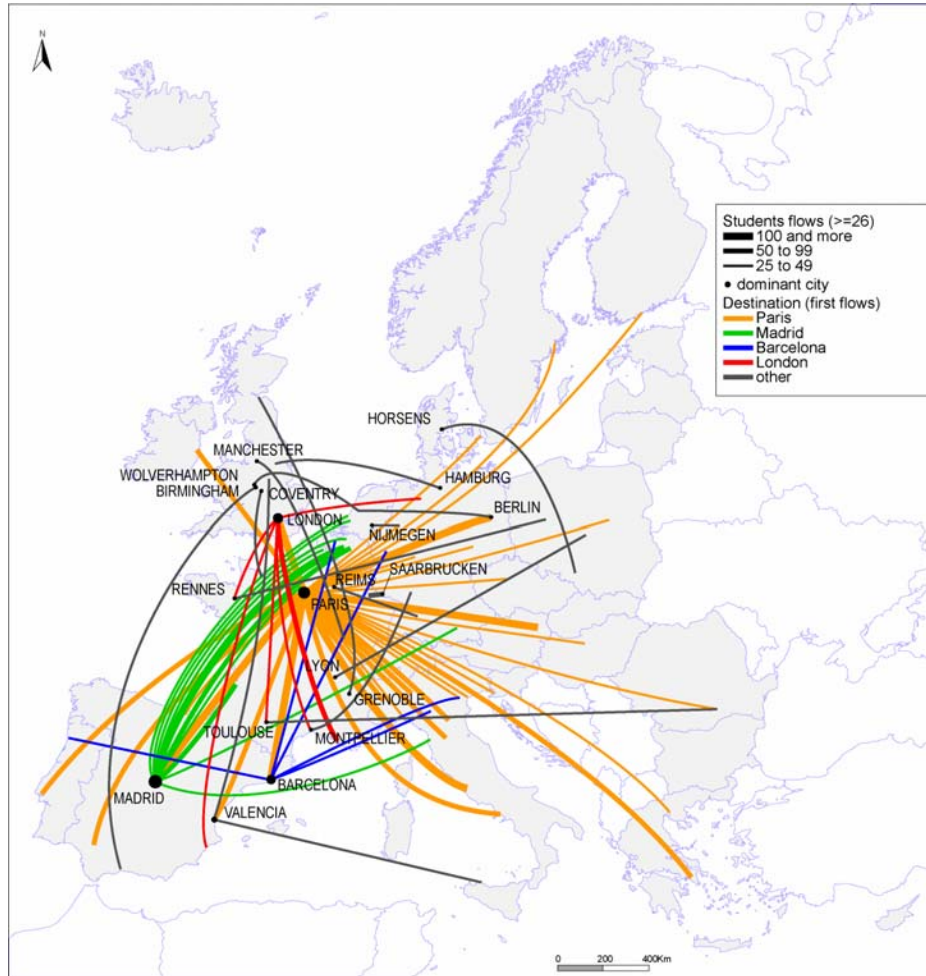
The methodology can be summarized as follows:

- Identify the major flows sent from a city (A).
- Verify that the city of destination (B) is « larger » than the city of origin (A): size is usually measured by the total number of received flows by the city of destination (B).
- If the city of origin (A) sends its major flow to a city of destination (B) that is larger, THEN (A) is dependant on (B). On the contrary, if (A) sends its major flow to a city of destination that is smaller, THEN (A) is a dominant city.

The first impression given by the major flows is that of a network dominated by Paris. This monocentric structure is however supplemented by an important number of transversal flows linking cities at a meso-regional level and on a wider transnational scale. For example, Madrid has privileged linkages with cities located in Northern France, Belgium and The Netherlands. Major flows also show privileged associations between Italian cities and Spanish ones. Some trans-border flows can, in addition, be highlighted.

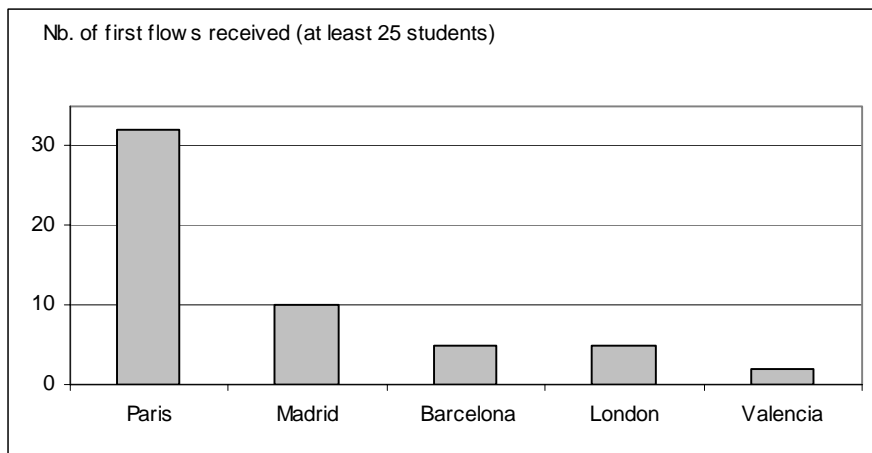
What is important to notice here is that the major flows allow us to identify approximately 20 dominant cities i.e. those receiving their first flow from at least one other city. Although the major domination and dependence structure is strongly polarized, the transversal links and the important number of cities receiving the first flow of one other city can be considered as a dynamic sign that supports the emergence of a polycentric structure of urban networking at the European level.

Map 2 – Major dominations and dependences for ERASMUS students in 2000



Source : Erasmus
© N. Cattán, G. Leseq, CNRS-Géographie-cités, 2003

Figure 2 - Number of first flows for ERASMUS students



II. Examples of urban networking linked to trans-national cooperation

In the early 1990s, 13 Community initiative programmes (CIP) were drawn up by the European Commission with a view to enhancing regional development, particularly in the less advanced regions. Among them, the Interreg CIP was created. At this stage only the border regions could benefit from this programme. Later on, in 1996, seven trans-national co-operation programmes were established in order to test cooperation in spatial planning. In the North-Western Metropolitan Area (NWMA), the Atlantic Area (AA) and the Central European, Adriatic, Danubian and South-East Space (CADSES), the first programming period lasted approximately from 1997 to 2001. Spatial development is the backbone of such co-operative attempts, and many fields of action are required in the numerous projects. As the European Spatial Development Perspective states, the partners involved in projects “are expecting an added value from spatial development”. The latter range from ministries to SMEs, including universities, territorial authorities... There is an official “impetus given to companies, authorities, federations and regional and local authorities to take part in trans-national co-operation¹” Therefore, the analysis of the trans-national Interreg projects will provide a representation of the trans-national urban networks and a more precise idea of the actors ruling those networks. As the NWMA and the AA are partially overlapping, a comparison of the networks in the “common” area could help in creating a hierarchy within the network. Drawing a parallel between each transnational co-operation space will stake out different types of networks.

a. Data and methods

The methodology regarding those large spaces will be close to the cross-border spaces’ though it presents some particularities, mainly resulting from the scale change from cross-border to trans-national co-operation spaces.

The sources are the Interreg IIC programmes:

- NWMA (1997-1999): 45 projects
- AA (1999-2001): 48 projects
- CADSES (1997-2001): 45 projects

Three major themes have been selected in order to analyse this specific co-operation network: the spatial scope, the objective of the project and the type of actors involved.

The spatial scope

The spatial scope of a project can be **punctual** if a very located zone is targeted as some cities, bridges, and suburban areas... The project can target a wider zone, trans-national but **partly** comprising the **trans-national** co-operation space. This is the case when Euroregions, trans-border natural parks are involved. Thirdly, the **entire trans-**

¹(ESDP, 1999, p. 39).

national co-operation space can be the spatial scope of the projects. It will be met when the objective of a project is to draw guidelines for common spatial development policies to the entire programme's space.

The objective

Most of the time, there are many objectives to a project but the most important one has been maintained, the one presented by the actors as the main project's objective. They are classified in four categories: "**accessibility**", "**economy**", "**environment**", and "**image**". The first category means the projects are either contributing to the improvement of the accessibility of the projects' space and/or contributing to the enhancement of the flow of material or immaterial exchanges between the actors of the same space. The "economy" category groups projects supporting some economic actors or a specific economic field. In the third category, the projects are purchasing the protection of the natural heritage, *i.e.* the environment, an area, the biodiversity, the air or water quality. The last one, "image" gathers the projects improving the attractiveness of the space by protecting the cultural heritage, by acting on the quality on life, on the image exported abroad.

The type of actors

As for the types of actors involved, many items have been synthesised to the 8 remaining items:

- ENTPRI: the firms, SMEs, private cabinets...
- GRIPRI: the groups of private interest (some NGOs, federations, private interest unions...)
- ORCONS: public consular organisms (Chambers of commerce and Industry, of Agriculture, ports managed by a CCI...)
- GRIPUB: the groups of public interest (development agencies, urban spatial development agencies, foundations, some NGOs, some natural parks...)
- COLLOC: the local collectivities (town or city municipalities, groups of towns, agglomerations...)
- COLREG: the county or regional authorities (county, region, Länder, Kranj, judete, *i.e.* at the NUTS II or III level)
- UNIVER: the universities and public research centres (technical universities, specialised institutes...)
- ORETAT: the state organisms (ministries, ports, public establishments, decentralised state services in water management, environment protection...)

b. Main results for the CADSES

Foreword: the limits of the method applied to the CADSES example.

The CADSES is the only trans-national space (of this study) involving non-EU actors, namely accessing countries and third countries. Coupled with the fact that a joint secretariat did not exist during this programming period, the data has yet to be centralized and as such remains scattered. This is the main reason why some data are missing.

This is what we call a filter. The latter can be defined as everything that impacts on our ability to effectively compile the results of this study, e.g a loss of information. We can call the lack of data a technical filter. Some of the actors have not been identified. Among the 45 projects, which involved 452 partners, only five are not totally identified :

- - B2 Co-operative network (1 Romanian and 1 Bulgarian actors are missing)
- - D4 CEDN (1 Polish actor is missing)
- - E10 IMRA (2 German actors could not be localized).

The results in terms of actors' dynamism or cities' representation will have to be a little tempered but the general trends are not disturbed as these actors are only involved in one project. The second source of information loss is what we can call a institutional filter. The projects are being implemented within the framework of the Community Initiative Programme Interreg IIC CADSES that imposes some constraints. The first one is concerning the lead partners. The CIP stipulates that every project has to be managed by an actor from the EU member states but can be in close co-operation with some actors from the accessing and third countries. The former are financed by the ERDF², the latter by different funds related to their geo-political status. Consequently no comments can be made in the sense of a lack of incentive or an apprehension towards investment in their counterparts. In the Operational programme Interreg CADSES for the period 1997-2002, the objective is namely to "emphasize the development of a strategic vision for the spatial planning of the areas in question". The term "vision" advocates that it is more a programme of reflection or guidelines for future actions, than one of concrete realisations as constructions. This is part of the difficulty of evaluating the spatial impact of co-operations. The last constraint could be the definition of measures in which the projects has to fit, but they are so widespread that all the fields of actions can find an appropriate framework:

- Measure A: Initiatives for the launching of a co-operative spatial planning process.
- Measure B: Promoting co-operation for the establishment of more balanced and polycentric urban systems and settlement patterns.
- Measure C: Development of multimodality in transport systems and parity of access to infrastructures.
- Measure D: Co-operation for the improvement of access to knowledge and information.
- Measure E: Prudent management and development of natural and cultural heritages.

² European Regional Development Fund

- Measure F: Technical Assistance.

As far as the analysis is concerned, we will focus in particular on the impact of this co-operation on a polycentric urban network. Therefore we will initially present the actors' cities network, the different types of actors involved, the existence of privileged partners, the presence of geographically distinct sub-networks. We will argue that it is a polarized network. In the second part, we will focus on the thematics and the spatial scopes of the projects in order to assess the impact of those projects on polycentric spatial organisation. This will widen a little the polycentric approach, from an urban to a more global polycentric spatial organisation.

The actors

Map 26 presents the links between the cities in terms of the actors' residency. Links representing at least two common participations were represented, as the map would otherwise not support the totality of links. Those representing only one common participation of two actors reached 1585 (cf. Table 1).

Number of links	1585	248	82	43	16	16	4	2	3	1	1	1	1
For x projects	1	2	3	4	5	6	7	8	9	10	12	14	19

Table 1 - Number of links between two cities by the number of projects

This network shows that between cities the highest amount of projects reached 19 participations. In other words, Vienna and Budapest are partners in 19 out of 45 projects. They can be considered as the most active cities in the programme. On the contrary, there are many cities that participate in only one project, which are the most peripheral cities, most of them are located outside the CADSES. This is easy to understand, as generally speaking they are not supposed to be involved in this co-operation space as they are already more intensively involved in other interregional European co-operation spaces. Within the framework of CADSES they are welcome, but their participation should remain the exception rather than the rule. Between those extremes, we can see that the network has its centre in the area of Vienna-Budapest-Bratislava. This confirms that there is only one network, centred in the CADSES. Some could imagine that there would be two main sub-networks: one involving mainly member states and the other regrouping mainly accessing countries.

The network we identified had a core of cities and some concentric belts of cities. The belts are not perfect rings as the first is a group of north-eastern Italian cities such as Trieste and Venice, Ljubljana in Slovenia, the German city of Dresden and the Czech capital Prague all located in the western half of a circle around the core. Still in this first group stands Bucharest, the Romanian capital. If it were not for this last city, there would only be a western half circle. Bucharest stretches the belt to the east without any relay in the space in between. The reason for such a distortion is of course that Bucharest is located in the eastern part of Romania, which is also the eastern part of the CADSES. It seems that the reason for such an involvement is the role of relay ministries are playing between the European commission and the local actors. The latter do not have enough

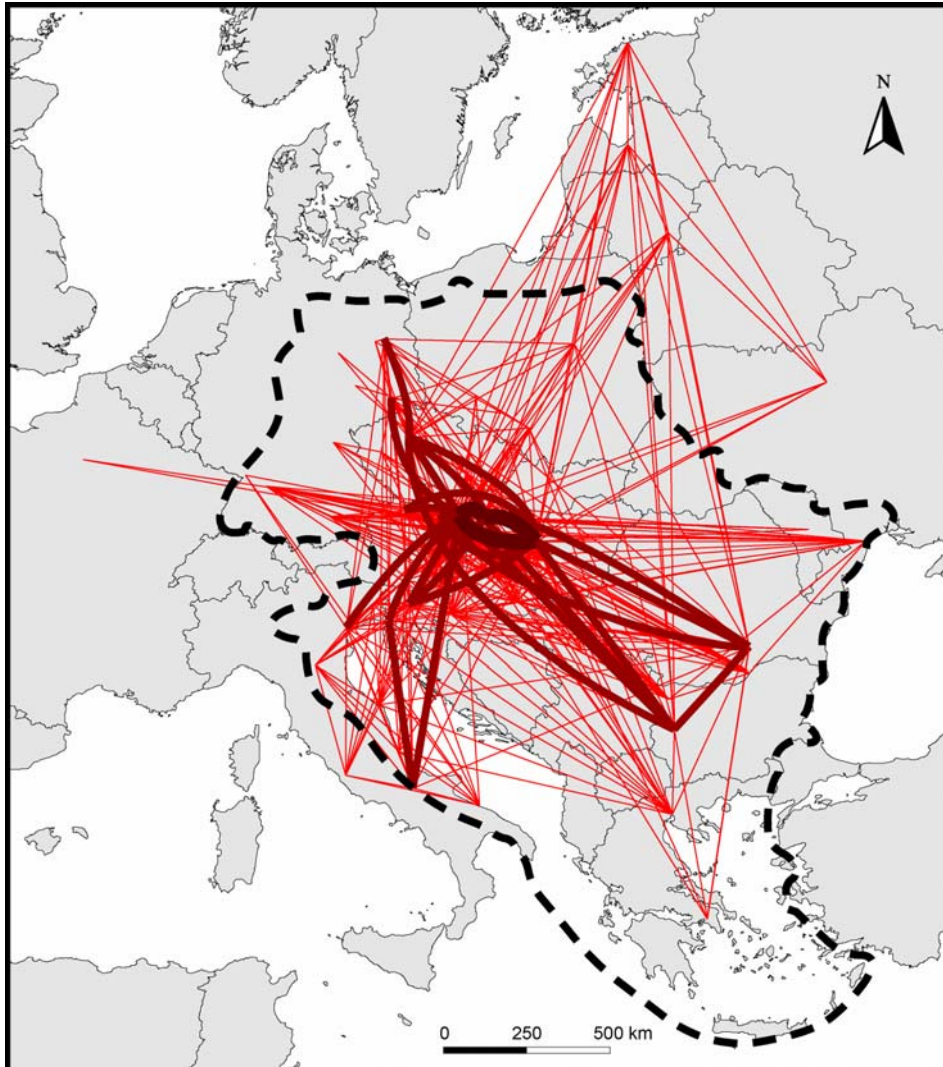
contacts at the local level so that they could involve themselves in some projects. Moreover, the analyse of the type of actors showed that many NUTS II level romanian administrative units (judete) where involved in some projects. Romania is now slowly emerging into the post-Communist era and from a highly centralized state organisation and there still are higher connections at the government level. Therefore Romanian actors are predominantly ministries, state universities undertaking studies for different ministries and judete, which are deconcentrated bodies realising the government's poticies. The important participation of the city of Dresden has been taken into account in the decision to locate the joint technical secretariat of the following Interreg IIIB-CADSES programme.

A second belt is located in the periphery of the first one, towards the marges of the CADSES. Here we find actors from northern Germany, Poland, the Baltic countries, Ukraine and the Republic of Moldova (only from the capital), Bulgaria, Greece and the Balkan countries. The fact that only Chisinau is involved in projects is due to the recent political conflict that reached its apogee in may 2002 but has been lasting for a decade, since the independence of the NIS countries. Some Moldavian actors began to launch projects, but the communist government abruptly decided not to support their participations with the consequence that they had to withdraw from all their projects. There is a gradient of decreasing dynamism as we draw near the external borders, except in the direction of Greece. Greek actors, especially those from Thessaloniki are the dynamic element in this southern part of the CADSES area, thus acting as "the link between the Orient and the Occident."

One has to admit that there is a gap between the involvement of the cities of UE member states and the others. We explained one of the reasons for this in the foreword. Another comes from the discrepancies between the administrative structures of the two types of countries. Most of the formers have a functioning NUTS II and III organisations. Germany and Austria also have federal institutions along with those of the different Länder, which are very important in terms of local affairs. Italian autonomous regions have almost the same competencies and thus the same importance as the Länder. Moreover, they often participate as a national network, by this we mean it is not rare to find three or four regions participating in the same project, one is never involved on its own. The numerous actors from these countries is the result of the joint effect of the Operational Programme constraints and the administrative organisation.

This is also easier for actors to work with homologues, which are at the same level of organisation and used to co-operate with each other, compared to the accessing countries. The latters are still in the process of capacity building, in terms of their administration capabilities, as well as in all the fields of action (political, economical, social, cultural...). A clue being that among the accessing countries' actors, those most represented are the ministries and some research institutes very close to the government. They appear to be privileged partners as if they were the only ones having the capability to undertake such a partnership.

Map 3 - The CADSES city network



Number of co-operations on more than two projects

-  2 to 3
-  4 to 9
-  10 to 19



Limits of the CADSES II C

Source: Database J. Cristescu, 2004

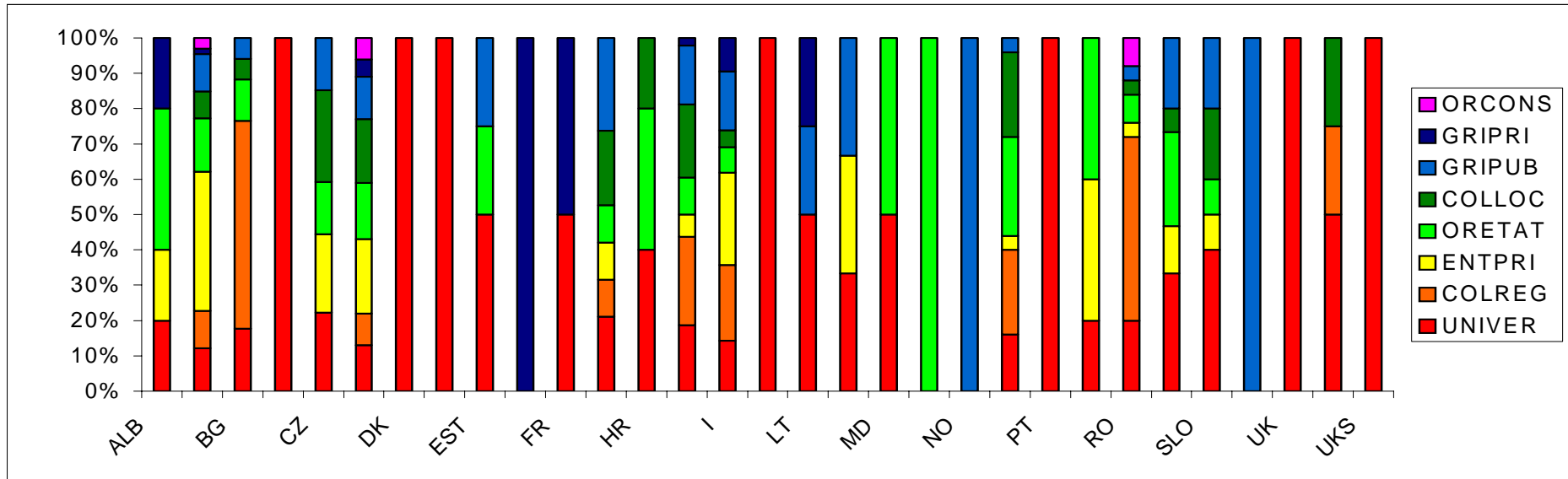
Figure 3 classifies the actors by type of organism in each country involved.

The initial results concentrate on 449 different actors, not including the missing ones, located in 191 cities, mostly from the CADSES. Some actors located in cities from outside the co-operation space, such as Stockholm, Helsinki, the Baltic States' capitals, and Rome were also taken into account as they participated in some projects in an active way. The Operational Programme promotes co-operation between member and non-member states even outside the CADSES but in this case they cannot benefit from the attached financial assistance package.

Two countries distinguished themselves through the number of actors involved : Germany (100 actors) and Austria (66). In third place came the Hungarian actors, more numerous than Italian or Grec (only 16 partners), despite their EU memberships. Further behind came the Czech Republic followed by Poland and Romania (26), then Slovenia with 20 partners, and Slovakia. There was then a further gap between this first group and another one gathering the rest of the CADSES countries and some "exteriors" involved in only one project.

In terms of activity, the best represented actors were the universities and public research centres, themselves often hosted by universities. This shows that the knowledge potential concentrated in these organisations was recognized by the partners. Though this may also be due to the fact that academics have their own network and are able to mobilize it quite easily. Then at the regional and county level, public collectivities were in second position. This is due to their proximity to the population along with their deconcentrated state competencies leading them close to the places of power. This is why the local collectivities such as the municipalities were not as visible because on the one hand they are closer to the population and better know their needs, while on the other, they are too far away from the centres of power. Nonetheless is the participation of cities important enough to be indicative of the impact on a polycentric urban network organisation. However one has to notice here that small or medium enterprises were not set aside. Many countries had at least one SME involved in projects, often small consultancy private cabinets. They were a little more involved (with a difference of 5 partners) in the co-operation than the state organisations such as Ministries, cabinets, decentralised State services (Regional environmental Agencies, county water management Agencies...). They participated widely in the different projects as they generally had the first contacts with the European Commission, and they intensively communicated with each other. The public groups of interest were represented almost as much with many NGOs and public Federations (of municipalities, of counties or regions). They are increasingly present on the international scene and strongly supported by European bodies such as the Committee of the Regions and the European Committee of the Local and Regional Authorities. Those least represented were the consular organisations and the private interest groups, even if some projects were targeted to elevate the level of public-private partnership. These two types of private organisations are not as numerous in eastern Europe as they are in western part of Europe. The private sector remains under represented, and even then only by firms such as the ones cited above. In accessing countries however, there were some unidentified partners that could rebalance this divide, though it is not expected that this would significantly change the trends analysed so far.

Figure 3 - Types of actors by countries



The projects

The projects' objectives were limited by the budget of the Interreg CADSES IIC programme. The projects' outcomes could not be of expensive realisations, infrastructures for example, as they do not benefit from enough allocations. The projects range from 20 452 to 4 460 591 euros for a total of 21,5 million euros.

Table 2 crosses the spatial scope of the projects with their main objective. It clearly shows that co-operation on a part of the trans-national CADSES was of utmost preoccupation. One would have thought that considering the general aim of the Interreg IIC programmes, there would not have been punctual projects. Finally, they were almost as numerous as the projects having the total CADSES for spatial scope. This means that some projects put in the forefront specific small spaces that had crucial needs like damaged suburbs. Under the totally trans-national spatial scope, we accepted projects setting aside countries such as those from the Balkans or countries with temporary political problems (Moldova, Ukraine). If not engulfing those countries, there would have only been two projects with such a spatial scope, namely Vision Planet and ESTIA aiming respectively at establishing a common vision for the spatial development of the CADSES and at strengthening the spatial policy integration and co-ordination among the CADSES.

Project objective	Spatial scope			
	Punctual	Partly trans-national	Totally trans-national	Total
Accessibility	2	13	4	19
Economy	4	7	2	13
Environment	0	10	1	11
Image	1	0	1	2
Total	7	30	8	45

Table 2 - Spatial scope of each project considering its objective

One has to remember that among the measures of the Operational Programme, one was specifically aiming at the enhancement of a polycentric city network (B measure), so we can tell that this was an obvious and official objective. Looking closer, we can assess that the best represented objective was the one pursuing the improvement of accessibility and material or immaterial exchanges in a portion of the co-operation space. The improvement of accessibility testified that there was a willingness to strengthen the network between people with a greater ability to reach the different places of the co-operating area. This often begins with links between the main cities, the building of river bridges especially if the river is a natural boundary. Such links are concrete elements of a polycentric spatial organisation. If the outcome of the project cannot be the building of a bridge, it can be the emergence of the necessity to build such a bridge. Most of these projects came under B measure, while some projects came under other measures, mainly C measure, having an impact on the urban polycentricity. For example, we found many projects aiming at the strengthening of the city network with medium size cities by launching the basis of a future polycentric organisation. The latter emerged as projects created a network of actors between cities and smaller

localities, often from rural areas. Some other projects focused on the solving of suburbs' problems via targeted spatial development plans, while at the same time reaping the benefit of the experience of others in Central and Eastern Europe.

We should also assess the importance of environmental issues, as they were the second best represented projects' objectives. We should however note here that these projects were not totally found under E measure focused on "Prudent management and development of natural and cultural heritages" but rather they are disseminated among all other measures. If many projects involved organisations along the Danube this also fulfilled the objective of the establishment or enhancement of a network. It was characterised by its linear more than its polycentric shape, but it relied on the Danube cities as dynamic poles. The Danube and other rivers of the CADSES did also federate the actors towards a touristic objective, the latter being under the "economy" category.

Only two projects were targeted towards positive communication with regard to the project area, this is what we can call territorial marketing. The first one³ also aimed at a balanced urban settlement organisation even if it targeted very localised zones (large housing estates of five cities). The second one⁴ looked at demographic studies aimed at forecasting the future development of different regions and helping the most neglected among them to be attractive again. There was no reference to any urban system organisation as a hint to achieve the objective in this case. Consequently only the first project could be considered as taking part in and promoting an urban polycentric organisation.

As regards the location of the actors, the city of Vienna clearly hosted the highest amount of lead partners (17). Dresden was in second position, though with only 4 lead partners. Apart from the Vienna partners, the majority of the others were located in Germany, even in some small cities like Gross Glienicke, Gutttau or Günzenhausen. Hence can we assess that the leadership and the management was west-oriented, but this has been explained in the foreword through the institutional filter with the Operational Programme obligation of positioning UE member as lead partners. Nonetheless was It hoped that when the ten accessing countries would join the EU, lead partners would diffuse eastwards.

In respect of the "accessibility" objective, but also with those of "economy" and "environment", we can see that the projects participated to different extents in an urban polycentric organisation, though it was at the programme level as a whole, that we could better assess this impact. We saw that most of the actors were from the cities, important enough to have their own universities, state decentralised agencies and city hall departments to tackle different topics such as spatial planning or environmental protection. Nevertheless, even if less numerous, other actors were located in rural areas as national parks, rural counties and localities. These also established networks and they were not necessary linked to the urban ones. They are not waiting for potential help from the cities, these actors get directly involved in projects, pursuing an endogenous development.

³ "Further development of large housing estates in Central and Eastern Europe"

⁴ "CEDN"

This must remind us that polycentricity, as a spatial organisation is not only targeted towards cities. It is a more global concept as its objective is to make the rural areas benefit from the cities' economic growth in terms of employment, better public equipment and services. Stronger relations between cities and their surrounding hinterlands is another aim of polycentricity. The objective is to achieve complementarity between the cities and the rural area to lupt against urban centripete processes and the idea that growth can afterwards be spread in all directions. It is not a matter of mechanical diffusion, but rather of a dynamism of exchanges that has to be supported by many actors.

III. Examples of European urban networking linked to air traffic

a. Data and methods

Our data comes from the ICAO database. A statistical test has demonstrated that the passenger flows between two cities are symmetrical. Over a oneyear period, there is no significant variation between the outward and the return flows. Consequently, our database on air- flows is a symmetric matrix. One remark should however be made here with regard to the flows that connect Italian cities: due to a lack of information from some important air carriers in the 2000 ICAO database, air flows connecting Italian to other cities have been taken from the 1996 ICAO database.

b. Images of urban connexion by air traffic

Domination and dependence for air traffic (map)

- What are the dominant cities for air networking in Europe?
- What are the main privileged associations at the meso-regional and European scales?
- Can we identify huge differences in the evolution of the dominant structure defined by the major connections of each city over the last decade?

Graph theory provides a simple tool to define the main structure of a given network. It gives an image of the main preferential direction of the major connections of each city. This leads to the identification of the main dominant centre of attraction and those that are dependent.

The methodology can be summarized as follows:

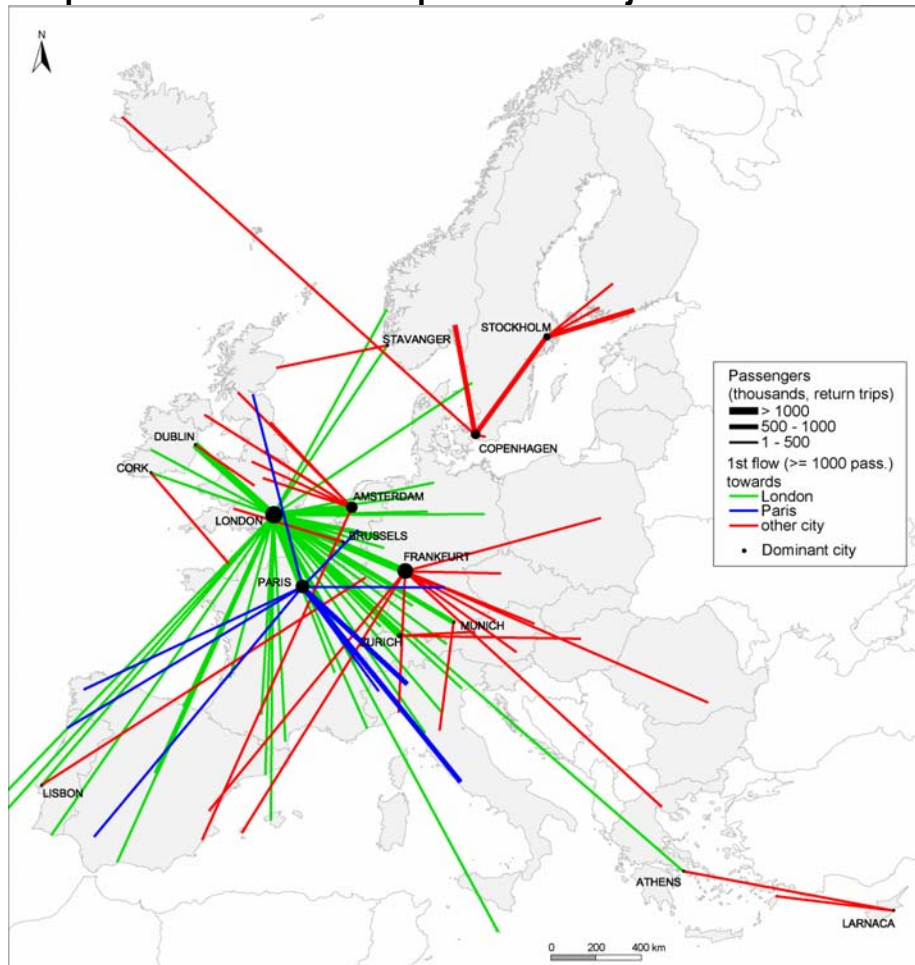
- Identify the major flows sent from a city (A).
- Verify that the city of destination (B) is « larger » than the city of origin (A): size is usually measured by the total number of received flows by the city of destination (B).
- If the city of origin (A) sends its major flow to a city of destination (B) that is larger, THEN (A) is dependent on (B). On the other hand, if (A) sends its major flow to a city of destination that is smaller, THEN (A) is a dominant city.

In 1990 there were four main dominant cities - London, Frankfurt, Paris and Amsterdam - in terms of the structure of air networks at the European level. Two dominant cities at the meso-regional level could also be identified: Copenhagen and to lesser degree, Athens. In terms of preferential links, Frankfurt is the gateway for all of the central European cities (except for Budapest), Paris attracts several southern European cities, several British cities are dependant on Amsterdam, and London dominates all of the networks.

By 2000 the situation had changed markedly. Frankfurt had lost its privileged position as the gateway for the central European cities, while London and Paris had maintained their respective roles as dominant cities at the European level. In Northern Europe, Stockholm and Copenhagen consolidated their dominant role at the meso-regional scale.

By and large, it seems that the central theme arising from these networks shows that over the last decade we have witnessed a trend towards flow polarization around London and Paris, reducing the number of main central capitals from 4 to 2. It is as if, in 1990 the major air flows provided a more balanced image of the structure of the dominant European centres than does the one provided ten years later (Maps 4 and 5, Tables 3 and 4).

Map 4 - Domination and dependence: Major air flows in 1990

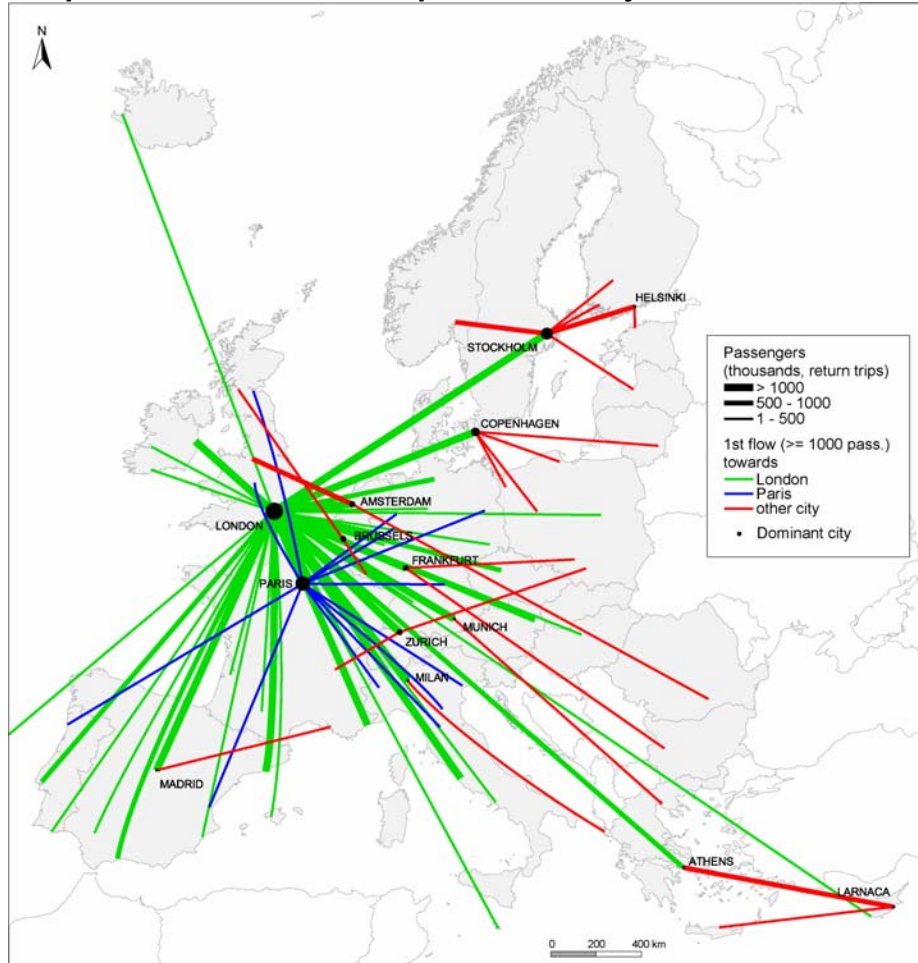


Source : ICAO
 © N. Cattán, G. Lesecq, CNRS-Géographie-cités, 2003

Table 3 - Dominant cities 1990

<i>Dominant city</i>	<i>Number of dependant cities (≥ 2)</i>
London	43
Frankfurt	10
Paris	9
Amsterdam	7
Copenhagen	4
Stockholm	3
Zurich	2

Map 5 - Domination and dependence: Major air flows in 2000



Source : ICAO*
© N. Cattán, G. Leseq, CNRS-Géographie-cités, 2003

Table 4 - Dominant cities 2000

<i>Dominant city</i>	<i>Number of dependant cities (≥ 2)</i>
London	45
Paris	12
Stockholm	5
Copenhagen	4
Amsterdam	2
Brussels	2
Frankfurt	2
Zurich	2

* Due to a lack of information from some important air carriers in the ICAO files, 2000 dataset for Italy have been replaced by 1996 dataset

Evolution of European air passengers

- Are the highest increases in air traffic related more to the largest cities?
- Does the dynamics of air traffic enable us to confirm the tendency towards the better integration of other cities?

The localization of the principal airports highlights the major duality of European space: a centre with many peripheries. The comparison between the two giants is interesting: concerning the number of European passengers, London concentrates more than thousand, while Paris reaches a disappointing 20.

The evolution of air traffic shows that many peripheral capitals such as Lisbon, Madrid, Barcelona, Prague, Munich, Berlin and Warsaw are increasing their traffic more quickly than are the central capitals. This means that those cities are not only growing faster but that they are also becoming dynamic vectors of European integration. Do these strong increases however let us predict a reduction in the urban inequalities with regard to air traffic?

Gateways for Europe

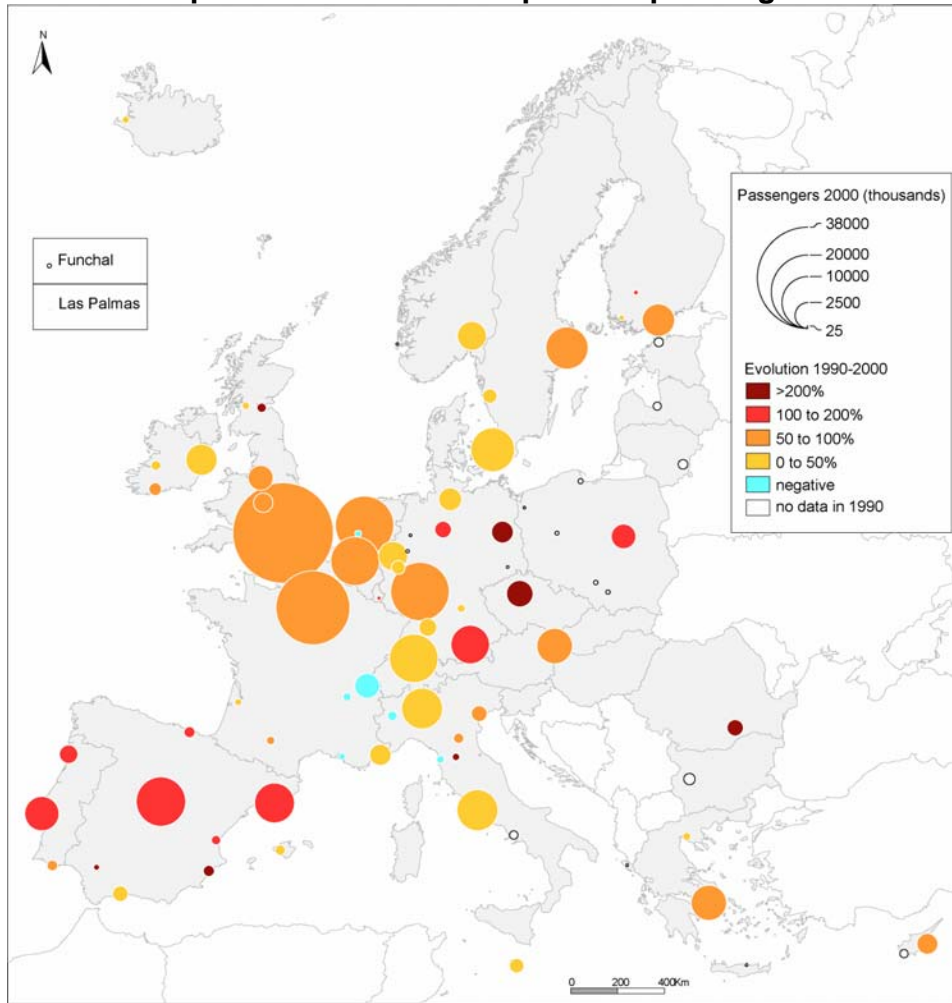
- Where do the processes of internationalisation occur in Europe?
- What are the main European gateways for air traffic?
- How do cities perform in terms of air traffic internationalisation?

Cities are the points at which the internationalisation processes of a territory begin and materialize. Because of its relatively rapid capacity to reply in terms of supply and demand, air traffic is a relevant indicator in the quest to evaluate the international capacity of European cities.

The two maps of the “Gateways in Europe” consider the degree of international opening as a percentage of international (extra-European) traffic in terms of overall traffic (European and extra-European). The maps show that in terms of the number of extra-European passengers, three cities can be considered to be major European gateways, namely: London, Frankfurt and Paris. However, with more than 40% of extra-European passengers, London and Frankfurt have the highest degree of international opening. During the last decade, Amsterdam has however doubled its number of extra-European passengers (Maps 6 and 7, Figure 5).

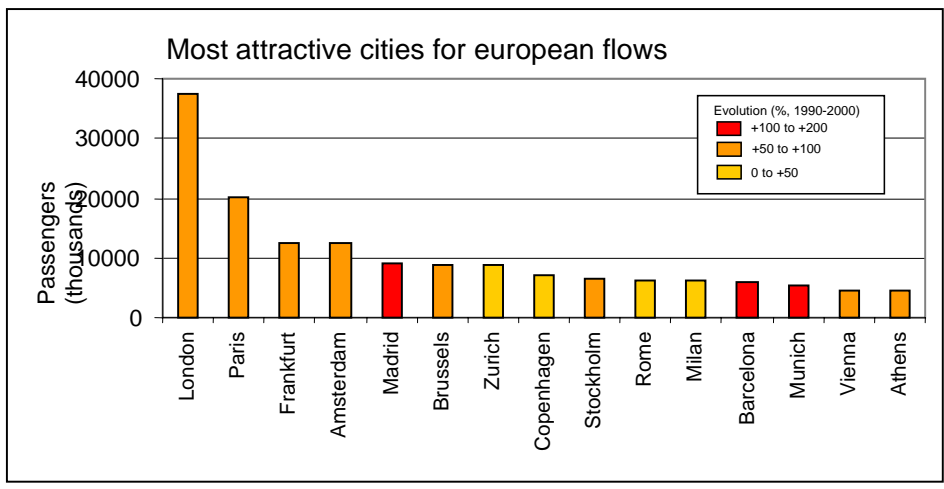
What is important to note here however is that Madrid and Rome share with Paris, Zurich and Amsterdam a similar percentage of extra-European passengers. This means that the peripheral capitals do actively contribute to the integration of the European space within an international network.

Map 6 - Evolution of European air passengers

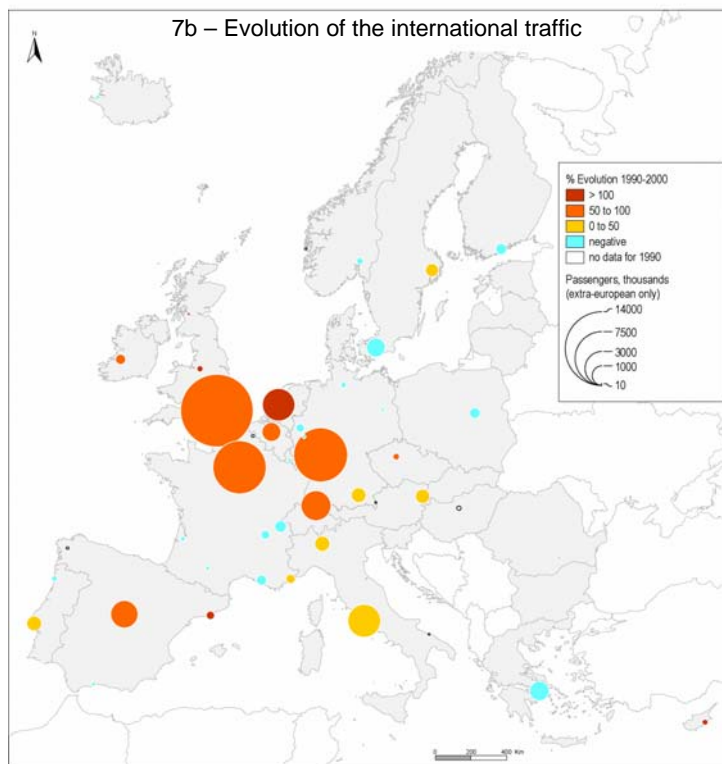
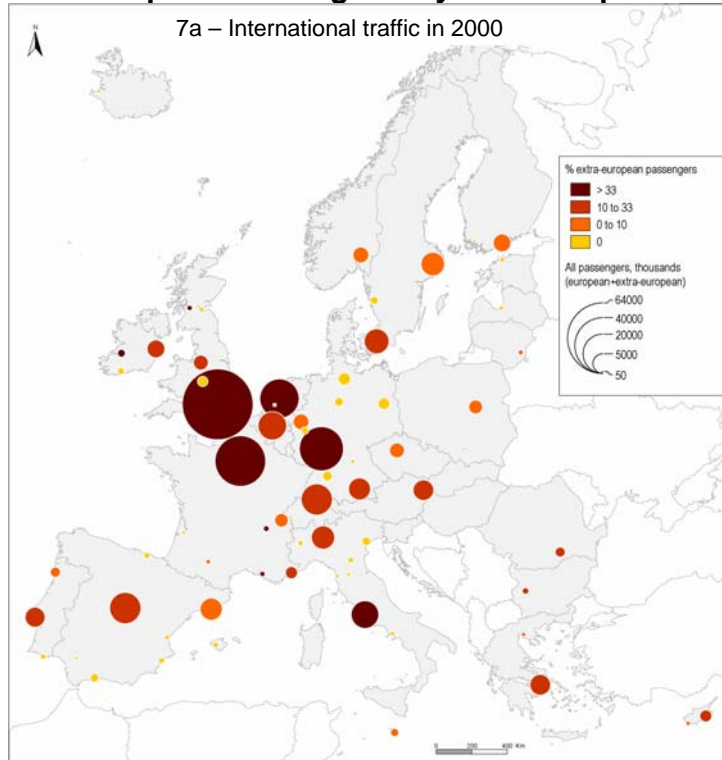


Source : ICAO*
© N. Cattan, G. Leseq, CNRS - Géographie-Cités, 2003

Figure 5 - Most attractive cities for European flows



Map 7 - The air gateways for Europe



* Due to a lack of information from some important air carriers in the ICAO files, 2000 datas for Italy have been replaced by 1996 datas

World air traffic and crossroads

- How does Europe perform in the World system of exchanges?
- Does the world air network draw a polycentric image of the world networking system?

Charting the major air links on a world level makes it possible to highlight privileged associations between places. The world air traffic map shows that the majority of major international flows occur in the Northern hemisphere. Major flows go to, and return from, a few poles, reinforcing the North-South contrast. These poles and world air crossroads can be identified to coincide with the principal *metropolises* that are the national capitals, such as London and Tokyo, or to important economic capitals such as New York.

It is interesting to note here that “regional” processes of integration are visible across different parts of the planet, mainly in Southern and Latin America and in South-Eastern Asia, showing the importance of proximity linkages and demonstrating that distance continues to play a role in networking processes.

By and large, one can say that the map of world air traffic shows a European metropolitan polycentricity structure in a World metropolitan polycentricity organisation. Among the 15 strongest flows, 5 are European. This means that Europe participates actively in the world system of exchanges (Table 5).

Table 5 - Highest flows

<i>Link</i>	<i>Rank</i>	<i>Passengers (return trips)</i>
London - New York	1	> 3 millions
Amsterdam - London	2	
Dublin - London	3	> 2 millions
Hong Kong - Taipei	4	
Paris - London	5	
Kuala Lumpur - Singapore	6	
Tokyo - Seoul	7	
Singapore - Bangkok	8	
Hong Kong - Bangkok	9	
Frankfurt - London	10	> 1,6 millions
Hong Kong - Tokyo	11	
Tokyo - Honolulu	12	
Hong Kong - Singapore	13	
Madrid - London	14	
Paris - New York	15	

IV. Examples of European urban networking linked to trans-border cooperation

a. Data and methods

Based on INTERREG IIA programmes (1994-1999), five trans-border zones have been taken into consideration:

- - France-Flanders (73 projects)
- - France-Wallonia (142 projects)
- - France-Germany-Switzerland (Rhin Supérieur Centre Sud) (94 projects)
- - France-Germany (Pamina) (34 projects)
- - France-Germany (Sarre-Lorraine-Palatinat) (79 projects)

There is a large difference between the project databases in the Franco-Belgian case and those in the Franco-German one. The first database provides a description of the project holders, while the second one gives an overview of all the financial contributors. In the first one, there is no hierarchy between the project holders, while in the second one there is always one lead partner per project. As a consequence, the maps produced in both cases are not fully comparable.

In spite of these differences, a common methodology has been worked out. To analyse the types of networking that occur in INTERREG programmes with regard to a polycentric perspective, each project has been analysed within a set of common rules to identify a) the spatial scope of the project, b) the topic of cooperation, c) the kind of partners involved, d) the project results.

⇒ *Spatial scope of the project*

This category is one of the most important as far as polycentricity is concerned, because it allows for the selection of polycentricity-related projects.

The spatial scope may be of 3 kinds:

- **Zonal.** The project aims at fostering exchanges between people belonging to large areas (e.g. INFOBEST in the Franco-German border region, which aims at providing advice on cross border matters to all border people). It does not concern any urban network.
- **Linear.** The purpose of the project is to improve cross border connections (setting up trans-border public bus services, widening and maintaining canals...etc). To some extent this can be associated with polycentricity, for example when 2 municipalities work together on such a project. Nevertheless, these projects are not taken into account in the present paper, though they will be in the next steps of the work.
- **Punctual.** The project leads to the production of common output between well-localized partners. The very purpose of the project is to strengthen the links between them (and not to benefit people from a large area *per se* zonal). In this paper, analysis will focus on punctual projects because they are immediately linked to urban networking issues.

⇒ ***Topic of cooperation***

12 topics have been identified: planning, environment, training, tourism, economy, culture, research, health, transport, agriculture, vocational training and information

These topics have been gathered into 5 categories: training, cultural and natural environment, planning economy and transport, tourism and daily life (health, information)

⇒ ***The types of partners involved***

The partners involved in the projects can be of different types:

- local municipalities
- national, regional or sub-regional institutions
- associations
- firms

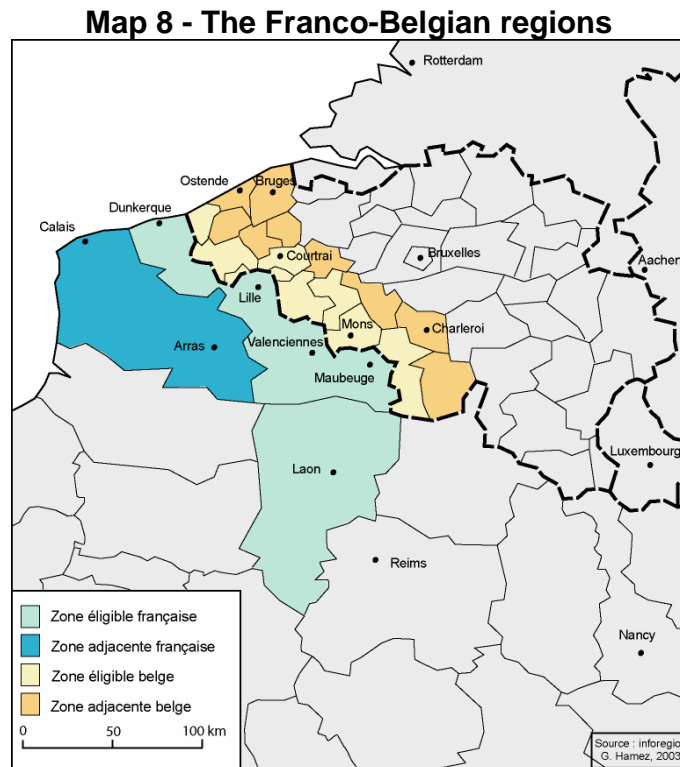
⇒ ***Project results***

What are the main outcomes of the project?

- Drawing up of plans, papers, studies;
- information: networking, common marketing, common events, etc.
- working out a common structure (such as the INFOBEST);
- school, university and vocational training;
- setting up light common facilities (rambling paths, TV programmes, web sites and newsletters, etc.)
- - setting up heavy common facilities (improving roads, restoring customs houses, etc.)

b. The main results for the Franco-Belgian border

As regards the Franco-Belgian border (map 8), a brief view of the results can be provided. The total number of projects was 215.



Spatial scope and the topic of cooperation

The major proportion of the projects concerned (53%) fall into the 'punctual' type category. After this come the 'zonal' type (40%), and finally the 'linear type' (7%). There is a relation between the projects' spatial scope and the topic of cooperation. We have observed that some topics are over-represented in the punctual type, and others are under-represented (Figures 6 and 7).

It is possible to analyse more precisely the topic specificity of various projects following their spatial scope, by means of a contingency table in order to highlight the over or under representation of each topic with regard to spatial scope (Table 6). In this Table, the topics of cooperation are crossed with the spatial scope. The figures in italics are calculated from the product of the margins divided by the total. The figures in bold illustrate the difference between the observed figure and the theoretical one.

Figure 6 - Topics of cooperation (215 FB projects)

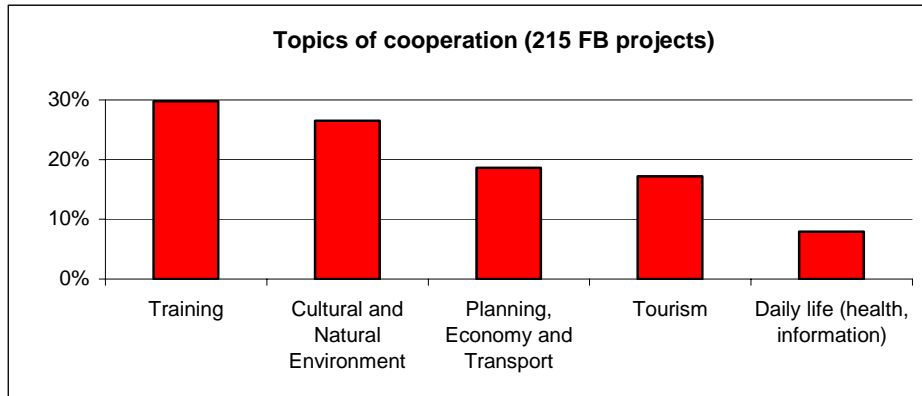


Figure 7 - Topics of cooperation (113 punctual FB projects)

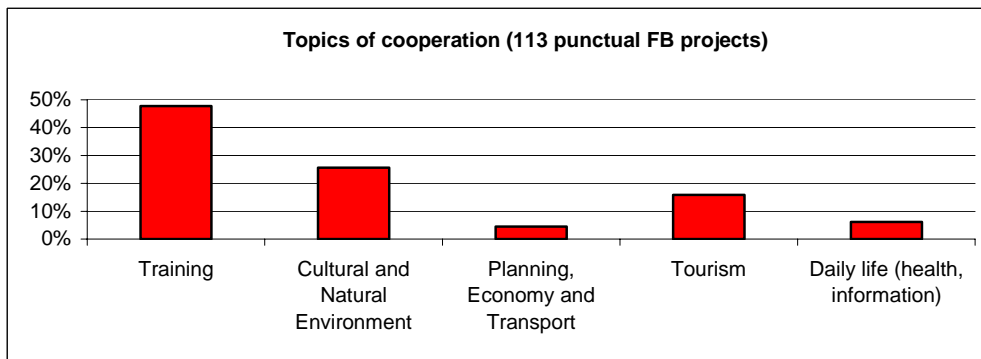


Table 6 - Spatial scope and topics of cooperation

Observed <i>Theoretical</i> Deviation	Punctual	Linear	Zonal	Total
Training	54 33,6 20,4	0 4,8 -4,8	10 25,6 -15,6	64
Environment	29 30,0 -1,0	6 4,2 1,8	22 22,8 -0,8	57
Planning, Economy and Transport	5 21,0 -16,0	7 3,0 4,0	28 16,0 12,0	40
Tourism	18 19,4 -1,4	3 2,8 0,2	16 14,8 1,2	37
Daily life	7 8,9 -1,9	0 1,3 -1,3	10 6,8 3,2	17
Total	113	16	86	215

Hamez

From table 6, we can infer that the topic of “planning, economy and transport” is over-represented for zonal projects, and under-represented as regards punctual ones. On the contrary, the topic of “training” is over-represented in the punctual projects.

In other words, the projects related to polycentricity (i.e. the punctual type) are much more concerned with the topic of training than the global amount of projects, and far less concerned with the topic of “economy”.

Analysis in terms of polycentricity: which towns are involved?

In this part, only the projects related to the punctual type are considered.

An initial overview of the number of projects per town is provided in Figures 6 and 7. At first glance, 3 categories can be identified.

- 4 towns stand out and can be gathered into a *first class*: Lille (F), Valenciennes (F), Mons (B) and Charleroi (B). Each of these towns is involved in more than 24 projects.
- A *second class* is formed by towns involved in more than 5 projects but less than 11. There are 5 towns in this class, 3 Belgian (Tournai, Courtrai, Mouscron) and 2 French (Maubeuge, Dunkerque).
- A *third class* is composed of the 22 towns involved in more than 2 projects but less than 4. There are 10 French towns and 12 Belgian in this category.

Further analysis could be made in respect of this data by means of a gravity model: the weight of each town would be valued following its population and its distance to the border. Then it could be assessed which towns are actually more involved in cross border interrelations than the model would lead us to expect, and which are under-represented.

Moreover, the border is linguistic between France and Flanders but not between France and Wallonia. The interest of such a model could be an evaluation of the linguistic factor weight in the INTERREG relations.

The different topics of cooperation between towns.

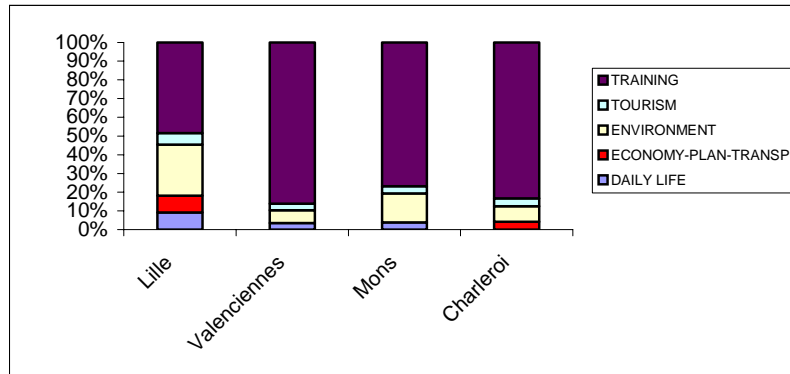
We consider here only the projects of the punctual type. Focus here is on the 4 cities involved in more than 20 projects.

There are few common points between the 4 cities. The only ones being:

- the topic of “training” is dominant in each city (more than 50%)
- the topic of “environment” is the second most important.

Huge differences do however emerge between the 4 cities as regards their topic profile, particularly between Lille and the 3 others. Lille’s profile is the most diversified; there are projects in each of the 5 themes. The 3 other cities are much more focused on projects in respect of training (more than 80% of the projects).

Figure 8 - Topics of cooperation per town



An explanation can be proposed as regards the size of these towns. There are around 1million inhabitants in Lille, against 206 000 in Charleroi, 92 000 in Mons and 59 000 in Valenciennes. Moreover, Lille plays the role of a regional capital and consequently provides a lot of services. On the contrary, the profiles of the 3 other cities deal more with heavy industry than with services. The weight of the “training” topic can thus be linked to the numerous institutions of vocational training in these cities.

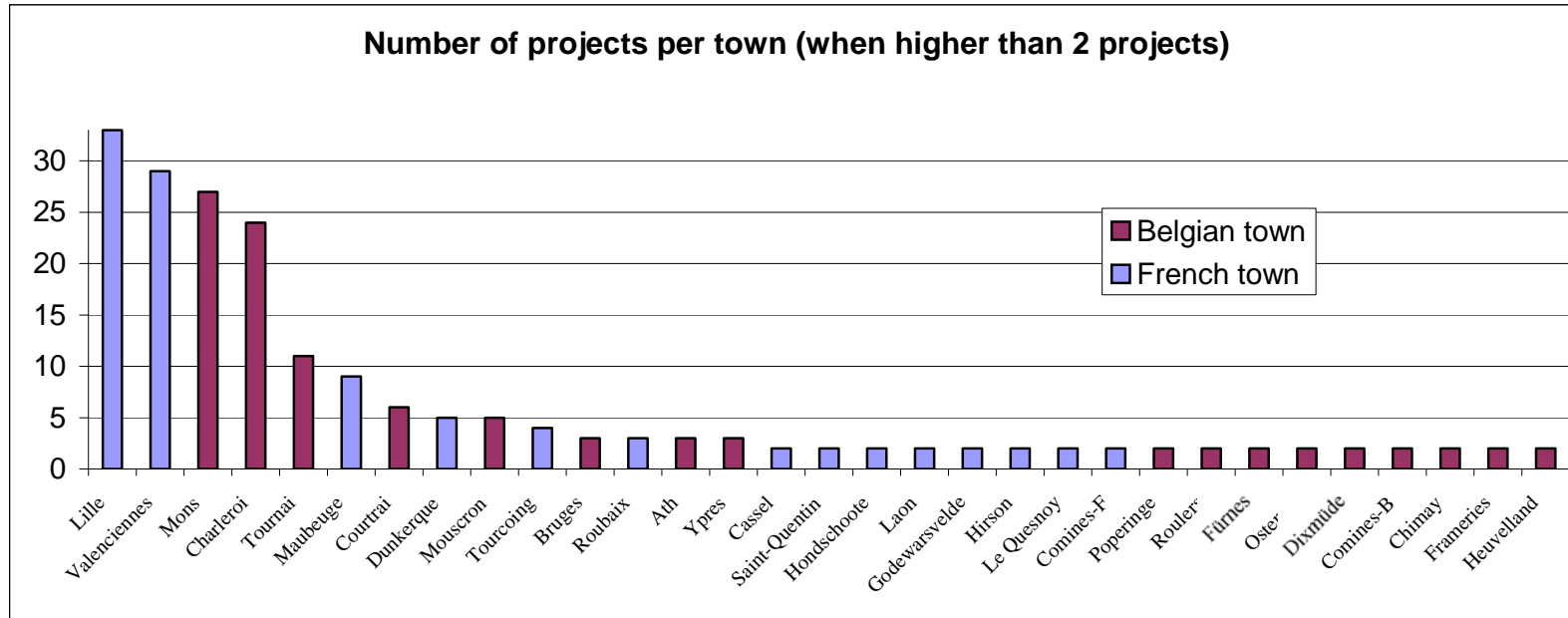
Which couples of towns?

The 4 largest towns show very different networking profiles:

- Lille is the more diversified town in its exchanges, with links to 13 other towns (and a maximum of 24% of links with another town).
- Charleroi’s profile is less diversified though it also looks eclectic: links to 6 other towns (and a maximum of 38% of links with another town).
- Mons’ networking profile is more focused on a few other towns, particularly with Valenciennes (70% of its links).
- Valenciennes’ profile also looks highly specialised: strong links with only two Belgian towns, Mons and Charleroi.

What is interesting to notice here is that a large number of such cooperative associations emerge between medium and small towns located in the Northern part of the area. Although major cities gather an important number of projects, medium and small cities are very active in setting up cooperative projects in the context of the INTERREG programme. This dynamic contributes to the reinforcement of such transborder urban networks.

Figure 9 - The towns involved in more than 2 projects.



c. The main results for the Franco-German-Swiss border

The current work takes into account the Rhin Supérieur Centre Sud INTERREG programme and provides for this area the first provisional results.

Total number of INTERREG projects: 94.

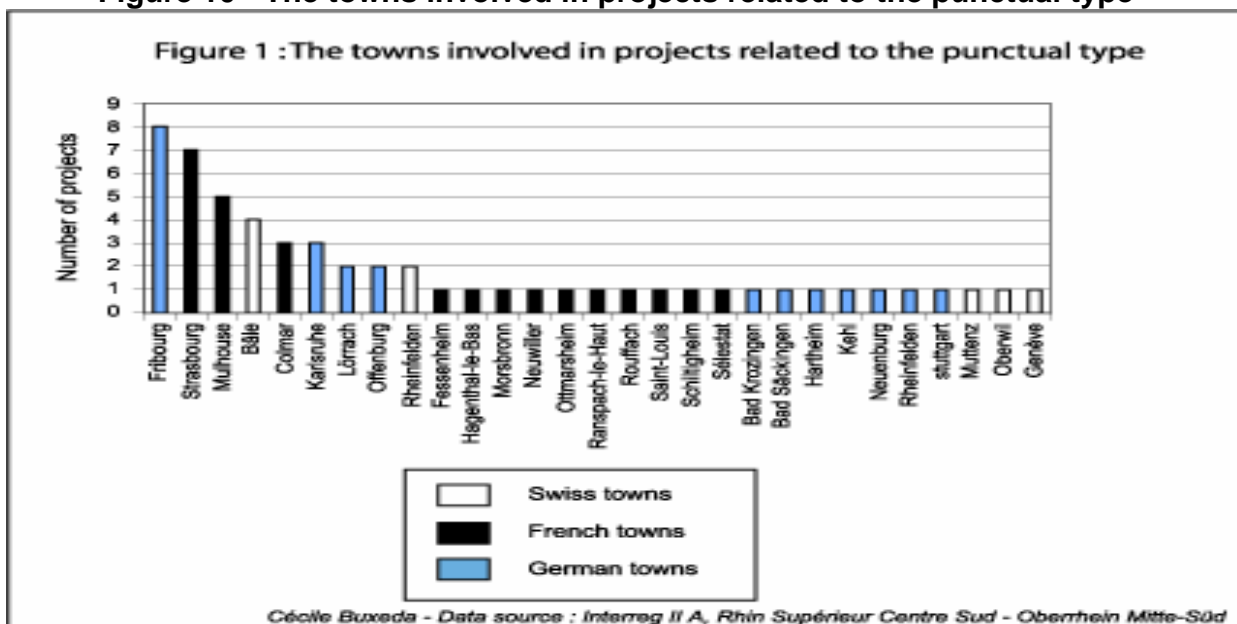
The same methodology was used here as for the Franco-Belgian zone to define the spatial scope of the projects. Contrary to the Franco-Belgian area, the proportion of the projects in this area were of the zonal type (70 %). Only 22 % are of punctual type and 8% of the linear type. Although relatively few projects were of the punctual type, we focused our analysis on the 21 projects related to the punctual type in order to provide a comparative set of results to those of the Franco-Belgian area.

Nevertheless, a complete analysis in terms of polycentricity has to take into account some of the projects of the zonal and linear types that could support the emergence of border urban networks.

Analysis in terms of polycentricity: which towns?

A first overview of the number of cooperative associations by town is provided in the Figure 10.

Figure 10 - The towns involved in projects related to the punctual type



Four towns were involved in more than 4 projects: Freiburg-in-Breisgau (G), Strasbourg (F), Mulhouse (F) and Basle (S). Two towns involved in 3 projects can also be cited here: Colmar (F) and Karlsruhe (G). It seems that the most important towns of the zone are involved in INTERREG projects. A gravity model, as explained above, could better highlight the towns that are over or under-represented in the cross border interrelations

and networks. The linguistic proximity between the Franco-German border regions – German dialects are commonly used in Alsace - could partly explain some forms of INTERREG relations.

The different topics of cooperation between towns

The number of INTERREG projects of the punctual type in the Rhin Supérieur Centre Sud area were not sufficient in number to attain relevant results on the dominant topics of cooperation for each city. This analysis will be realized in a future step for the entire Franco-German area, i.e. Saar-Moselle, PAMINA and Rhin Supérieur Centre Sud. By and large, the initial impressions suggest that Colmar, Strasbourg, Mulhouse, Fribourg and Karlsruhe seem to have privileged topics of cooperation.

Which couplets of towns?

Again, only the projects of the punctual type are considered here.

Strasbourg (F) and Mulhouse (F) are the more diversified or complete towns in their exchanges with more than 5 cooperative associations (respectively 6 and 9) with other French and German towns. But, one should notice that Mulhouse has important links (3 projects) with Fribourg (G) and Basel (S) whereas Strasbourg has several main relations with Fribourg (3 projects), Karlsruhe (2 projects) and Basel. The distance effect can help to explain these differences: Strasbourg, being equidistant from Fribourg and Karlsruhe, while Mulhouse is nearer to Fribourg than to Karlsruhe. Fribourg has important relations with each principal Alsatian town (Colmar, Mulhouse, Strasbourg and Basel).

It is interesting to highlight that two main complementary types of networking can be observed here: the first linking the major cities of the area, and the second connecting medium and small sized towns. Both structures are polycentric.

ESPON 111
Potentials for polycentric development
in Europe

Annex Report B
**The application of polycentricity
in European countries**



This report represents the final results of a research project conducted within the framework of the ESPON 2000-2006 programme, partly financed through the INTERREG programme.

The partnership behind the ESPON programme consists of the EU Commission and the Member States of the EU25, plus Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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ESPON 1.1.1

Potentials for polycentric development in Europe

Annex report B **The application of polycentricity in European countries**

Separate volumes

Project report
Potentials for polycentric development in Europe
ISBN 91-89332-37-7

Annex report A
Critical dictionary of polycentricity
European urban networking
ISBN 91-89332-38-5

Annex report C
Governing polycentricity
ISBN 91-89332-40-7

Annex report D
Morphological analysis of urban areas based on 45-minutes isochrones
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Foreword

This annex report of the ESPON 1.1.1. project "The role, specific situation and potentials of urban areas as nodes in a polycentric development" presents the findings of work package 2, a survey on the application polycentricity in national plans and strategies conducted by OTB, Delft. The work was carried out by Wil Zonneveld (co-ordinator), Bas Waterhout and Evert Meijers. The findings of this work package are summaries in the project report and presented in full in this report.

The project report and the four annex reports are available at www.espon.lu

Stockholm, August 2004

**The content of this report does not necessarily reflect
the opinion of the ESPON Monitoring Committee**

Final Report

The Application of Polycentricity in European Countries

Part A: Analysis

**Work Package 2 of the ESPON 1.1.1 Project on
'The role, specific situation and potentials of
urban areas as nodes in a polycentric
development'**

**Wil Zonneveld
Evert Meijers
Bas Waterhout**

The Application of Polycentricity in European Countries

Part A: Analysis

Work Package 2 of the ESPON 1.1.1 Project on 'The role, specific situation and potentials of urban areas as nodes in a polycentric development'

This research has been carried out under the authority of the ESPON 2006 Programme and in co-operation with the ESPON 1.1.1 Transnational Project Group with Nordregio as leadpartner.

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July 2004

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Part B – Country Reports (in separate band)

1 Investigating the application of the polycentricity concept: general introduction

1.1 Introduction

The research carried out in the second work package (WP 2) of the ESPON 1.1.1. project has the aim to look at the use or *application* of the concept of polycentricity in the countries forming the study area of the ESPON 2006 programme. The European Union can contribute through its own policy measures and policy programmes to a polycentric development of the European territory, especially through its structural policies. Nevertheless the effectiveness of European policies aiming at such a polycentric development is highly dependent on national policies and the (potential) synergy between European and national policies. The prime objective is to determine if and how the concept of polycentricity is applied in the ESPON study area. The central question is as follows: *are there policies in operation or being promoted addressing the distribution of economic and/or economically relevant functions over the urban system?* The issue of policies aiming at polycentric development has not been studied before in an area as wide as the study area covered by the ESPON 2006 programme. The ESPON 1.1.1. project has therefore followed a selective approach. Its second work package focuses on the *national* level. Its fifth work package focuses on the *regional* level, on a selected number of urban regions, varying in urban structure, governance arrangements and organising capacity.

1.2 The concept of polycentricity

The concept of polycentricity is one of the cornerstones of the European Spatial Development Perspective (ESDP), the first EU policy document on territorial government, albeit informal and non-binding, agreed upon by the EU15 ministers responsible for territorial development and the European Commission (CEC, 1999).

The polycentricity concept was the outcome of a long debate during the ESDP process between representatives of the Member States. This debate can be characterised by giving and taking and finding compromises and consensus. From a substantive point of view its most important feature is that it links the seemingly conflicting goals of cohesion across the EU territory and the level of competitiveness of the EU at large on the global level. The ESDP itself shallowly works out the concept of polycentricity. The main idea is to promote the development of so-called 'Global Economic Integration Zones' throughout Europe on basis of their own endogenous potential. Global Economic Integration Zones are areas fully participating in the global economy. The general way of looking at the EU territory is that at the present the EU is characterised by just one area meeting the criteria related to the status of a Global Economic Integration Zone. This is the area located between London, Paris, Milan, Munich and Hamburg and hence, pending on the language edition of the ESDP, called the 'pentagon'. In this pentagon 50% of EU GDP is produced by 40% of the EU inhabitants at 20% of the EU territory. The

ESDP does not say much about the locations of possibly new global integration zones and considers this subject of further debate.

Table 1.1 Polycentric development policies in Europe according to priority, status and scale

Country	Polycentric policy at national level				No polycentric policy at national level	
	Formal policy		Informal policy (vision by a working group etc.)		Polycentric policy at regional level (some cases)	No national, no regional polycentric policy
	Polycentricity major aim*	Polycentricity subsidiary or minor aim	Polycentricity major aim	Polycentricity subsidiary aim		
Austria				X	X	
Belgium					X	
Bulgaria	X					
Cyprus						X
Czech Republic						X
Denmark	X					
Estonia	X					
Finland	X					
France	X					
Germany			X		X	
Greece	X					
Hungary	X					
Ireland	X					
Italy		X			X	
Latvia		X				
Lithuania	X					
Luxembourg	X					
Malta						X
Netherlands	X					
Norway	X					
Poland	X					
Portugal	X					
Romania		X				
Slovak Republic		X				
Slovenia	X					
Spain					X	
Sweden		X		X		
Switzerland	X					
United Kingdom					X	

* Polycentricity major aim: explicitly mentioned or interpretation by authors.

The polycentricity concept marks a paradigm change in thinking about Europe's spatial and economic structure. It replaces the core-periphery model often put forwards in the first years (roughly 1989-1991) of co-operation between the EC Member States and the Commission. Now, the ESDP advocates the creation of several "dynamic zones of global economic integration, well distributed throughout the EU territory and comprising a network of internationally accessible metropolitan

regions and their hinterland (towns, cities and rural areas of varying sizes)” and continues by saying that this polycentric development should not remain restricted to Europe’s larger metropolitan areas because this would not be “... in line with the tradition of maintaining the urban and rural diversity of the EU.” (CEC 1999: par. 70, 71) The guiding principle here is the concept of city hierarchies: a polycentric settlement structure has to cut across the whole of the EU territory. In fact the ESDP embraces a *nested* polycentricity concept.

Every centre (even though the ESDP does not give an indication of the size of a ‘centre’) is seen as a polycentric system. It is at this precise point that the polycentricity concept goes over into urban-rural partnerships through the statement that cities have increasingly diverse functional inter-dependencies with their surrounding countryside, and that these “*interdependencies require voluntary co-operation*” (ibid: para 75). At this point the ESDP not only addresses urbanised regions, but also less densely settled and economically weaker regions. Here the ESDP advocates the creation of networks of smaller towns because co-operation between urban centres to develop functional complements may be the only possibility for achieving viable markets and maintaining economic institutions and services, which could not be achieved by the towns on their own. This is just one of the many manifestations of partnerships within the ESDP. Be that as it may, any discussion on the application of the concept of polycentricity has to take into account that the concept can be applied to various levels of scale: the pan-European scale, the EU-scale, transnational scale and, finally, national and sub national scales. These two latter scales are the focus of interest of this report and the research behind it (see Table 1.1 for an overview).

1.3 The meaning of ‘application’

A central concept in WP 2 is *application*. It has been developed specifically in the context of European spatial policy. It is a variant of the concept *performance* as used in the decision-centred view of spatial planning (see for example Mastop & Faludi 1997; Faludi 2000). The assumption made here is that the function of strategic planning lies in the provision of discussion contexts for more operational decision-making and not in the programming of these decisions. In relation to European spatial policy frameworks (in particular the ESDP), *application* is indeed spoken of in this context. The concern here is for spatial policy documents drawn up in a discourse that is not incorporated in the legislation. Spatial policy is not identified in the EG Treaty as a formal competence of a European institution. The use of a strategic ‘plan’ such as the ESDP as an appraisal framework is accordingly not self-evident. *Application* can then be described as the influencing of future policy actions without their content being dictated. The prime function of a strategic policy document is not to prescribe future courses of action but to enrich decision situations with conceptual frames, which can improve the quality of decision being taken. A document like the ESDP provides insights to understand the spatial organisation of a concrete area and gives indications to the sort of policy actions to change the present situation into a desired situation. From this viewpoint on spatial planning it makes sense to describe the concept of polycentricity in a very loose way as was the case in the ESDP. In this way the ESDP pays tribute to the wide internal diversity in the EU, in terms of territorial organisation at, for instance, national or sub-national levels of scale, but also in terms of the political situation.

1.4 Research methodology and central questions

Before turning to the WP 2 research strategy, first of all we need to acknowledge that polycentricity can come in many ways. That, of course, was the assumption under which the WP 2 research project started. WP 2 wants to make an inventory of the use, if at all, of polycentric strategies in policies throughout Europe (see Table 1.1). First it wants to find out if the concept is used anyhow and what meaning is attached to it in terms of policy concepts. Secondly it wants to know if European countries execute policies, at national and regional level, that take polycentric development as (one of) their major or subsidiary aim(s). If so, this research, thirdly, wants to get a clear view on the implementation of the concept in these policies and which measures have been developed in order to pursue the objective of polycentricity. Fourthly, the research wants to find out if and to what extent polycentric development strategies are rooted in policy systems. In the case that polycentricity is not a major aim but an (unintended) outcome of certain policies the research is interested in the features of these policies that seem to stimulate polycentric development and also in possible developments that point at an increasing interest in the concept of polycentric development. The overall objective of this research, finally, is to provide insights and knowledge that might be of help when designing a European polycentric strategy and all that goes with it.

Whether (ambitious) research objectives like this will be met will depend, of course, on many conditions, one of the most important ones the information being available. The empirical bases of the WP 2 is mainly formed by the results of a questionnaire which we send out to key persons in all the countries forming the ESPON 2006 Programme area. The rationale of the decision to base WP 2 at large on the results of a questionnaire was the following. First, policies in general are extremely dynamic as, for instance, is shown by the EU Compendium on national spatial planning systems (CEC, 1997a). One of the key findings of the compendium research was that national spatial planning systems are almost constantly in a state of flux, policy objectives, policy documents and policy instruments overhauled in many cases fairly regularly. As the concept of polycentricity is a novel policy concept we can expect a high level of change. Desk research is simply not good enough in these circumstances. For instance basing the research on published (academic) literature will result in a highly distorted picture since in literature only a few European countries can be studied in more detail. Especially the accession countries, with no established track record in the field of territorial policies, will in this way fall through the meshes of the research net so to speak. So this is the second reason why a questionnaire was more or less self evident as a key source of information. Third a questionnaire makes it possible to follow the same research format. This is important because the ambition was to investigate all the 29 countries of the ESPON 2006 programme. A common research format in principle makes it possible at least to draw comparisons and categorise research outcomes.

Basing a research project largely on a questionnaire is, to some extent, a vulnerable research method. First of all one is dependent on the level of co-operation among the respondents. We can give away that this level has been very high altogether. In the context of discussion on territorial policies in Europe a more serious problem which we anticipated was that there may be national cases extremely difficult to lay our hands on. In investigating territorial policies in the EU15 the situation is, on the whole, fairly easy. The involvement in the ESDP process and the ESPON programme of these countries makes it possible, in most cases, to identify

national governmental agencies and respondents. Nevertheless we have to mention that the system of European Contact Points (ECPs) established for the purpose of the ESPON programme was not in operation in all EU15 member states. This posed a challenge to the project as these ECPs formed an important (potential) group of respondents.

Some of the accession countries proved to be difficult to involve in the research. In this sense we have had an experience comparable with the Compendium exercise that was carried out in the context of the INTERREG IIC project ‘Vision Planet’ involving CADSES: Central European, Adriatic, Danube and South Eastern European Space. For an explanation we have to go back to what we said above: some countries do not have a track record in the field of territorial policies. Although many policies are spatially relevant, that does not mean there will always be a policy domain focusing mainly or entirely on territorial development. Even in the present EU15 representatives of national government participating in (political) discussions on territorial development and spatial policies come from ‘sectoral’ departments or agencies, where spatiality is a side interest. Where no national respondents were identifiable as a proxy members of the ESPON 1.1.1. consortium stepped in. In some cases, however, and despite considerable effort to study secondary literature the results of the research are fragmentary. It is important to underline the entire WP 2 research project is based on the combination of the judgment of national experts, the research team’s own interpretations of the questionnaires and the policy documents send in plus the analysis of this secondary literature.

The general question behind the entire work package was the following: *are there policies in operation or being promoted addressing the distribution of economic and/or economically relevant functions over the urban system?*

By posing our central question in this way we have brought back the aim of the polycentricity concept to its fundamentals. There is no level of scale defined here. This is because we expected that in the case of polycentric development policies not in all countries the national level is the basic level of government. In unitary states this might be the case, but not in federal states. Where the national level is not decisive, we have asked respondents to go down one level, to the level of regional government. Not in all cases we have acquired basic information on the role and authorities of intermediate layers of government though. One can understand that another, new group of respondents on state, regional or *Länder* level ideally has to enter the scene here, but in the time constraints of the research this was impossible to achieve.

The project at large and – more specifically - the questionnaire was aiming at getting answers to the following three main questions:

1. What are the principle goals of policies striving for a polycentric development of the national (or sub-national) territory? We have to underline here that we did not expect the term ‘polycentricity’ would be used. This is the reason why we have formulated the above mentioned phrase in which the term polycentricity is absent and the (EU) concept of polycentricity is brought back to its basics.
2. How, in those cases where polycentricity goals are pursued, are these goals put into in practice? Which instruments are being used and is it possible to categorize these?
3. What is the level of embeddedness of policies aiming at polycentric territorial development? This can be considered more or less as the round-up of the

answers to the questions related to the previous three points. In particular we are interested in the historic dimension of polycentricity policies: is there an established tradition for example?

1.5 Structure of the report

This report is divided in two sections. Part A, introduced by this chapter, will continue with three chapters treating the central questions formulated above. Chapter 2 deals with the central goals of polycentric policies pursued in the '27+2' countries. Chapter 3 deals with the questions concerning policy instruments and policy subjects. Chapter 4 discusses the level of embeddedness of polycentricity. Chapter 5 provides a summary and conclusion and chapter 6 ends with policy recommendations.

Part B entails all the country reports. These are based on the results of our questionnaire, combined with the results of the analysis of secondary literature and the analysis of key policy documents which in some cases have been sent in by respondents. As indicated it is not possible to gather comparable data for all countries, which is why the outcomes of six Central and East European countries have been combined in one chapter 'Transition countries'. Consequently Part B contains 24 reports instead of 29. Although the bulk of Part B is based on the outcome of the questionnaire we have to emphasize that the actual text is the result of our interpretation and reworking of this outcome. In no way the respondents can be held responsible for the content of this part of the report. The respondents themselves are listed in Appendix 1. The questionnaire, including its introductory explanation, forms Appendix 2.

2 National polycentric policies serving multiple objectives

2.1 Introduction

This chapter aims to provide an inventory of the objectives being pursued by polycentric policies across European countries. As our aim is to simply list and categorize these objectives, we do not reflect on the appropriateness of a certain objective or qualify objectives in terms of ‘true’ polycentric policies or not. Neither do we address the feasibility of fulfilling an objective by means of a polycentric policy. We listed and categorized the objectives on the basis of the country descriptions in part B. In other words, we relied on the judgment of a local expert, or our own interpretation of policy documents and/or secondary literature. The questionnaire included a number of explicit questions on the objectives of polycentric policies.

Our broad working definition of what a polycentric policy is – namely, *a policy addressing the distribution of economic and/or economically relevant functions over the urban system* – leaves room for a wide variety of objectives. A first inventory led to the identification of several objectives or rationales behind polycentric policies. It was found that these can be grouped in two main clusters of objectives being pursued by polycentric policies. The first cluster of polycentric policies addresses disparities between cities within the national or regional urban system and tries to diminish them in order to enhance cohesion (A). The second cluster of polycentric policies is predominantly occupied with enhancing the competitiveness of the national urban system (B). Section 2.2 presents these two main clusters. Table 2.1 presents a general overview of clusters of objectives linked to different rationales and different elaborations and acts as a reference table for this chapter. These rationales and elaborations will be presented in sections 2.3 and 2.4, section 2.3 being devoted to the cluster occupied with the diminishing of disparities to enhance cohesion and section 2.4 to the cluster of objectives linked to competitiveness. Finally, section 2.5 provides some overall conclusions.

2.2 Clusters of objectives of polycentric policies: enhancing cohesion and competitiveness

The variety of objectives of polycentric policies that we found can be grossly categorized in two main clusters of objectives. The first includes a number of objectives aiming at the diminishing of existing urban disparities between (groups of) cities within a country, thus resulting in a better balance within the urban system. This cluster then is clearly related to developing more cohesion. In many European countries there exists a certain disparity between cities (and regions) relating to issues such as population development, economic development, income, accessibility to public and private services, jobs and other opportunities. Large urban disparities are considered unwanted in many European countries, as is for instance often explicated

in a country's constitution. Therefore, this cluster of objectives includes policies that try to 'flatten' the hierarchy in the urban system or try to bring a better balance between the categories making up the hierarchy. This can be done through improving the development potential of certain groups of cities. These cities may be grouped on the basis of a geographic location (for instance peripheral cities or cities located in lagging regions), or on the basis of size (and thus on the basis of category in the national urban system, for instance medium-sized cities). The second cluster of polycentric policies focuses on enhancing the competitiveness of (often) parts of the urban system. In contemporary debates on globalization, internationalization and economic development increasing attention is paid to the need for regions and cities to be competitive rather than the nation-states in which they are located. Given the emphasis on competitiveness, national policy-makers have developed policies to increase the competitiveness of their national urban system as a whole or a group of cities in particular.

Table 2.1 Reference table on clusters of objectives, rationales and their elaboration.

Cluster of objectives	Rationales	Elaboration
Cohesion	<ul style="list-style-type: none"> - political norms referring to principles of economic and social cohesion and solidarity - counterbalance a situation of (over)concentration in one place and under-utilization of resources and potentials in another - prevention of a rural exodus 	<ul style="list-style-type: none"> - closing gap between top-level cities and the next cities in the national urban hierarchy - addressing gap in the national urban hierarchy caused by the lack of or limited representation of a certain category of cities - addressing gap in terms of uneven economic development across the national territory
Competitiveness	<ul style="list-style-type: none"> - perceived need for (inter)national competitiveness of cities 	<ul style="list-style-type: none"> - identifying cities/urban regions having to compete on a certain spatial scale - emphasizing endogenous potential or spatial quality - increasing local or regional organizing capacity/ administrative reform - designation of urban networks

In analyzing the country reports with respect to the objectives of polycentric policies, we listed what the objectives behind policies addressing the distribution of economic development over the urban system were. In other words, with what kind of objectives is a polycentric development associated? Only countries that have a policy in place that can be labelled polycentric were included in the analysis. As we saw in section 1 (table 1.1), not all European countries have policies that can be labelled as polycentric policies. Table 2.2 attributes European countries to both clusters of objectives. This table should not be read as indicating countries with policies that try to, for instance, enhance urban competitiveness (probably all European countries have these kind of policies), rather, it indicates which countries associate polycentric development with enhancing the urban competitiveness.

What follows from the table is that both clusters of policies do not exclude each other. Policies may be in place that try to diminish urban disparities and enhance urban competitiveness at the same time. With the exception of France and Latvia, all countries mentioned under the first cluster relating to the diminishing of

urban disparities are listed under the second cluster on urban competitiveness as well. However, though both clusters of objectives seem quite common in many countries, the rationales and elaboration varies considerably from one country to another. The next two sections will highlight these.

Table 2.2 Main objectives of current polycentric policies in ESPON countries.

Cluster of objectives	Country
Diminishing urban disparities (cohesion)	Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Norway, Poland, Portugal, Slovenia
Enhancing urban competitiveness	Austria, Belgium, Denmark, Estonia, Finland, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, Sweden, Switzerland, United Kingdom

2.3 Polycentric policies trying to diminish urban disparities for cohesion

Not all cities in a national urban system develop in a comparable manner, some grow fast, while others decline. Large differences between cities in terms of population development, economic growth, productivity, average income development, accessibility to public and private services (education, medical facilities, cultural facilities etc.), jobs and other opportunities are often considered unwanted by national and regional governments. Some countries try to diminish such disparities between cities through developing policies that favour the economic development of certain relatively lagging (groups of) cities, or categories of cities that are underrepresented in the urban hierarchy. Reducing urban disparities is expected to result in a more balanced urban system that is less polarized, or, in other words, is expected to lead to more cohesion within the urban system. Table 2.2 lists countries with polycentric policies in which this objective plays an important role. Here, we present these countries in more detail.

Denmark

Despite the dominance of Copenhagen, disparities between Danish cities in terms of population and employment are becoming slowly less. However, in terms of the distribution of wealth disparities increase as high value-added jobs tend to be located in Copenhagen. Seven ‘national centres’ are appointed for which the central government provides conditions for economic development. These national centres should be the highest ranking centres in the Danish urban hierarchy.

Estonia

In Estonia, the ‘spatial balancing of settlement’ is considered a major objective in the Estonia 2010 national plan. Settlement is expected to be balanced by guiding the location of residential and business locations and services that satisfy basic human needs, and by improvement of the availability by means of transport and information technologies. Smaller country centres need to be empowered. For instance the city of Tartu has to become the major centre for the south-east region. By empowering country centres, the gap between the capital city Tallinn and the other national centres that were identified must be minimized.

Finland

Population, employment and GDP tends to be located in the five most urbanized regions of Finland. Medium and small towns are losing population. In order to balance the national urban network more, a regional centre programme was initiated for the years 2000-2006. The aim of this programme is that more urban centres develop into strong centres than just 5. The aim is to have about 30 strong centres spread over the country.

France

The apparent monocentric urban structure in France that follows from Paris' dominating position has been raising issues of spatial balance and equity within France for a long time. Certainly in the 1990s attempts have been made to counter this situation. Narrowing the gap between Paris and the rest of the country is seen as the major objective, and applying the concept of 'netted polycentricity' should be the answer. This means that urban poles need to be developed next to Paris. Local co-operation is one of the main issues in developing these poles and therefore strongly encouraged.

Germany

The German federal government regards its urban system as polycentric which is considered as very favourable. One of the three main objectives for German national planning is the further reduction of spatial disparities. These disparities are not so much linked to disparities within the urban system, but rather between urban and rural and between East and West. In the 1990s and up till today, an enormous amount of investments were made in the former DDR-*länder*. However, much of these investments were done in the cities of these five *länder*, thus fostering an even more polycentric character of the country.

Greece

Greece has a long tradition of policies addressing the balance in the national urban system. In the past, it was felt that Greece lacks settlement centres of some 2000-15000 inhabitants that could serve their rural hinterland. The promotion of middle and small settlements was to eliminate spatial inequalities. Also the prime position of Athens and Thessalonica needed to be challenged by other large cities. After 1997, this policy was somewhat remodelled, based on the new European perspective that required a better integration within Europe. Paradoxically, priority was given to Athens and Thessalonica as it was felt that they could compete more easily in an international context.

Ireland

Irish policymakers are concerned about the dependency of the country on its capital. Dublin witnessed rapid development, while underdevelopment continued in other regions. This leads to congestion, rising commuting distances, environmental pressure as well as pressure on the housing market in Dublin, while development potential of other regions and cities diminished relative to Dublin. The National spatial Strategy is to counteract these trends as it strives for correcting the negative effects of growth in Dublin and under-utilization of resources and potential in other areas. This strategy focuses on the cities in the lagging regions. A number of gateway cities are identified, which should act as 'strategically placed engines of growth' by drawing together people, business activity, services, infrastructure and amenities.

Italy

In Italy, the present North-South divide is also reflected in disparities between cities. Cities in the north of Italy develop much better in social and economic terms than the southern ones. The policy on 'complex urban programmes', in place since 1993, tries to reinforce the intermediate level of the urban system – the medium-sized cities -, in particular those in the South.

Latvia

The Latvian capital Riga is rather dominant in the national urban system. A draft of the National Development Plan lists as one of its three priorities the balanced and sustainable development of the territory. Though this priority is also elaborated in the objective to 'promote balanced development of cities and countryside ensuring a polycentric development of Latvia'. However, this is not elaborated in more detail.

Norway

Urbanized regions and cities in the south of Norway perform better in terms of population, employment and GDP than regions in the North. Regional policy – broadly embedded in Norwegian politics - is to balance the development of employment and production throughout the country, in order to maintain the main structure of the settlement pattern. Regional policy is complemented with other policies that try to increase a polycentric urban structure, for instance a policy on the localization of so-called State supervising Authorities. The key concern of this policy is to strengthen a selection of regional centres and create a functional division of labour among them, in stead of enhancing the dominance of the capital Oslo.

Poland

The Polish urban system can be characterized as relatively polycentric, though at present, Warsaw has no rivals in terms of political functions and of economic development and attractiveness. The relatively polycentric structure is considered beneficial and policies have been in place to sustain this structure. Currently, the National Concept for Spatial Development envisages the raising of importance of the regional centres located in eastern Poland as potential gate-cities in the vicinity of the future boundary of the EU. More, in general, the main strategic objective is the 'equilibration of regional development'. Cities are categorized within a kind of anticipated urban hierarchy, requiring them to develop upward in the hierarchy given their present situation. However, the document conveys awareness that as a consequence of being in a transition phase, polarization within the national urban system is more likely to occur at the short term than a diminishing of urban disparities. However, the long term strategy is one of reducing these disparities.

Portugal

In Portugal, the metropolitan areas of Lisbon and Porto dominate the urban system in economic and cultural terms. Moreover, there is large gap in size between these two large metropolitan areas and the range of cities below. In fact, medium-sized cities are missing. This results in a strong dependency on the two major urban areas, also for international competitiveness. Through the identification of 'anchor cities', 'urban axes' and 'urban constellations' policy-makers try to reinforce the role of medium-sized cities as structuring elements in the urban system.

Slovenia

Although Slovenia has a polycentric urban system there are still disparities between, on the one hand, the capital city-region of Ljubljana and other small and medium sized cities and, on the other hand, between regions in the more advanced western and central parts of Slovenia vis-à-vis eastern part of Slovenia. Due to independence of Slovenia from the Yugoslav Federation in 1991 and transition reforms in 1990s, the polycentric development of Slovenia was neglected in practice despite being an important policy goal in (still valid) comprehensive planning documents from the end of 1980s. In the new spatial development documents (i.e. policies, strategies, instruments, laws and other legislative acts) that have been adopted since 2001, polycentricity is one of the major goals (and an instrument) of both sustainable development and competitiveness of Slovenia - at the national, regional and local level(s) – in an enlarged Europe.

The results of this overview are summarized in Table 2.3, which indicates the type of gap in the (national) urban system that the policy tries to bridge as well as the type of cities that the policy tries to strengthen. Table 2.3 illustrates that even though the countries mentioned share the same overall objective of diminishing disparities in the urban system, still a large variety in types of urban disparities and cities on which the policy focuses exists. The most common type of urban disparities addressed is the gap between the top-level cities (most often only the capital) and the next cities in the urban hierarchy. This applies mainly to countries in which a relatively monocentric urban system is present. Another gap addressed by these policies is the lack of a certain category of cities within the urban hierarchy or the limited representation of cities in that category. Finally, a third kind of gap in the national urban system is more of a geographical nature, following from differences between regions in terms of economic development. Consequently, the focus is often on the level of cities immediately below the top-level city or cities (often medium-sized cities), a more or less lacking level of cities (medium-sized cities or rural centres) or on cities in a certain region.

The political rationale behind the objective to reduce the gaps mentioned above varies. These rationales explain why a certain objective is being pursued. Our analysis revealed three main rationales behind such a policy:

1. political norms referring to principles of economic and social cohesion and solidarity;
2. counterbalance a situation of (over)concentration in one place and under-utilization of resources and potentials in another;
3. prevention of a rural exodus.

Ad. 1. Most common is simply a political norm referring to principles of economic and social cohesion, as well as a norm of solidarity (the better-off compensate in some way the worse-off). Often such a policy intends to prevent lagging regions from further peripheralisation or to prevent increasing polarization in development (or development potential) between regions or cities. Diffusion of growth and prosperity is therefore a central theme. This rationale applies to nearly all countries referred to in this section.

Ad. 2. In some countries, the rationale behind such a policy may (also) be based on the objective to counterbalance over-concentration and the resulting agglomeration diseconomies. The policy then addresses an existing situation of unequal development (or development opportunities), leading to negative effects of

over-concentration in one place while at the same time under-utilizing resources and potential in other areas. The better off areas are often capital regions. Policies to counterbalance over-concentration can for example be found in Ireland and in Nordic countries such as Finland, Norway and Sweden.

Table 2.3 Type of gaps addressed and focus in national policies fostering polycentric development in the sense of diminishing urban disparities (cohesion).

Country	Type of urban disparities the policy addresses	Type of cities the policy focuses on
Denmark	Gap between the capital Copenhagen and other major cities or urban regions in terms of economic development opportunities	'National centres'
Estonia	Gap between the capital Tallinn and other major cities in terms of socio-economic development	Smaller country centres
Finland	Gap between five most urbanized regions of Finland and other cities or regional centres in terms of population development, employment and GDP.	Regional centres (medium and small towns)
France	Gap between the capital Paris and cities in the rest of the country	Urban areas except for Paris
Germany	Gap between cities in former West Germany and cities in former East Germany	Cities in former East Germany
Greece	Gap between the two largest cities, the capital Athens and Thessalonica on the one side and the next group of cities in the hierarchy on the other, as well as the establishment of currently lacking rural centres	Major cities outside Athens and Thessalonica as well as rural centres
Ireland	Gap between the capital Dublin and cities in lagging regions	'Gateway cities'
Italy	Gap between cities in the North and cities in the South, in particular addressing medium-sized cities	Cities in the south of Italy, in particular medium-sized cities
Latvia	Gap between the capital Riga and the rest of the urban system	Not specified
Norway	Gap between the capital Oslo and other cities in the south on the one hand and other regional centres on the other in terms of population development, employment and GDP as well as service provision	A selection of regional centres
Poland	Gap between the capital Warsaw and more diversified cities (mainly in the west) on the one hand and less diversified, lagging or peripheral cities on the other in terms of economic development	Less diversified lagging and peripheral cities (east Poland)
Portugal	Gap between the capital Lisbon and Porto on the one hand and the next group of cities in the hierarchy (the level of medium-sized cities is lacking)	Medium-sized cities
Slovenia	Gap between advanced western and central part of Slovenia vis-à-vis eastern part. Gap between Ljubljana and other cities.	National (regional) centres, urban regions and cross-border regions

Ad. 3. A third rationale for making-up a polycentric policy that tries to diminish urban disparities particularly aims to strengthen rural urban centres in terms of employment opportunities, (public) services and amenities in order to prevent a rural exodus. Maintaining a minimal level of acceptable living conditions is deemed necessary in rural areas. In some countries, where there is a quite large difference in development (opportunities) between regions, people tend to migrate to the better-off regions in order to increase their chances for employment and development opportunities. In particular young people are inclined to do so. Some countries

developed policies that have the explicit objective to increase employment and development opportunities in rural regions, often by designating certain urban centres within rural regions in which development, services (such as education or the relocation of certain government agencies) and amenities will be concentrated. Countries in which this rationale is applied in polycentric policies include Greece, Ireland, Norway and Sweden.

2.4 Polycentric policies trying to enhance urban competitiveness

A policy that addresses the distribution of economic development over the national urban system may also be based on objectives relating to competitiveness rather than, or next to, cohesion. In fact, a polycentric development of the urban system is more often linked with competitiveness than with norms relating to cohesion, solidarity, over-concentration or underutilization of resources or the prevention of a rural exodus. Countries in which a polycentric development of the national urban system is associated with competitiveness include Austria, Belgium, Denmark, Estonia, Finland, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Sweden, Switzerland and the United Kingdom. Given the relatively homogeneous interpretation of the relation between polycentricity or polycentric development and competitiveness, we do not present each of these countries separately, but rather present examples of some different elaborations.

A very usual elaboration of a polycentric policy links the size and importance of cities to different spatial domains of competition. This then results in a classification of the national urban system based on the principle of hierarchy. This means that different classes of cities are identified, e.g. major centres that have to compete internationally, national and regional centres having to compete nationally or regionally and local centres. Often this classification is based on a desired future situation rather than a present situation, thus indicating the desired development. Often, appealing metaphors are developed for the centres that have to compete internationally, for instance 'European Metropolitan Regions' (Germany), 'Europols' (Poland), 'gateways' or 'gate-cities' (Greece, Ireland), '*Centres de Développement et d'attraction*' (Luxembourg), and 'anchor cities' (Portugal). Examples of this elaboration can be found in Austria, Belgium, Denmark, Estonia, Germany, Lithuania, Luxembourg, the Netherlands, Poland and Switzerland.

In another elaboration, emphasis can be put on the endogenous potential of cities or for instance spatial quality as a means to enhance competitiveness. Though most national governments focus their attention on the major urban centres and their international position, some countries, most notably Italy, pay more attention to the strengthening of the position of medium-sized cities which they link with the notion of industrial districts and its competitive advantages. In some countries, national governments try to increase urban competitiveness by increasing the local or regional organizing capacity by fostering inter-municipal co-operation (France, Italy, Germany, Netherlands, most countries in Central and Eastern Europe where in most case the regional level in the national administration is virtually absent) or by enhancing the competencies and enlarging the territory of regions and cities through administrative reform (for instance in Latvia, Greece, Spain and France).

Increasingly popular is also the designation of urban networks. Such a policy stimulates the creation of more critical mass in letting two or more cities located

relatively close together form a more coherent functional entity and by fostering co-operation between them. This may for instance be a means to improve the international status of such an urban region (together they can be placed in a higher category, for which the individual cities lack mass), but also ‘classic’ urbanization and planning goals may apply. For instance, in the more densely populated parts of North West Europe, urban networks are designated in which about all future urban expansions should be concentrated thus avoiding a further urban sprawl. Table 2.4 lists countries in which polycentric urban regions are identified and conceptualized as urban networks (or other synonymous metaphors) for reasons of competitiveness and others.

Table 2.4 ‘Urban network’ concepts in European countries.

Country	Concept	Examples
Belgium (Flanders)	‘urban network’	Flemish Diamond (Brussels-Antwerp-Ghent-Leuven)
Denmark	‘Regions of competence’, polycentric ‘National centres’ ¹	Struer – Holstebro – Herning – Ikast; Middelfart – Kolding – Vejle – Fredericia
Estonia	‘urban network’	Ida-Viru county: Jõhvi - Kohtla-Järve – Narva
France	‘réseaux des villes’ ² (urban networks)	e.g. Normandie Métropole (Caen-Le Havre-Rouen)
Germany	‘European Metropolitan Region’ ¹ , ‘Städtenetze’ ³ (urban network)	RheinRuhr Region (among which Cologne – Bonn – Dortmund – Essen -Düsseldorf); Bergisches city triangle (Remscheid- Solingen-Wuppertal)
Greece	‘twin poles’ or ‘bi-poles’	Larissa-Volos
Italy	‘city network’, ‘multicentric metropolitan system’	Emilia-Romagna and Veneto regions
Ireland	‘linked gateways’	Letterkenny-Derry; Athlone-Tullamore-Mullingar
Lithuania	‘Metropolis Vilnius-Kaunas’	Vilnius-Kaunas
The Netherlands	‘urban networks’	e.g. Randstad (Amsterdam-Rotterdam-The Hague-Utrecht) and Brabantstad (Breda-Tilburg-Den Bosch- Eindhoven-Helmond)
Poland	‘Duopols’	Warsaw-Lodz; Toruń-Bydgoszcz
Slovenia	Cross-border (urban) regions Polycentric (national) urban network	Gorizia-Nova Gorica; Trieste-Koper; Graz-Maribor Ljubljana, Maribor, Koper (centres of international imp.)
Switzerland	‘vernetzte Städtesystem’, ‘polycentric system’	Northern part of the country (among which Zurich-Basel-Bern-Winterthur-Luzern)
United Kingdom	‘network of places’	West Midlands

¹ This concept is not specifically developed for polycentric urban regions, but in its elaboration it identifies also polycentric urban regions.

² see also <http://www.reseaux-de-villes.org>

³ see also <http://www.staedtenetzeforum.de>

2.5 Conclusions

Throughout this report, polycentric policies have been defined as policies addressing the distribution of economic and/or economically relevant functions over the urban system. In this section two main clusters of objectives linked with national (or regional) polycentric development policies have been identified. The first relates to cohesion and is the diminishing of urban disparities in terms of population development, economic development, employment, GDP and service provision within national urban systems. The second cluster of objectives, which is more common than the first, was to enhance urban competitiveness.

The first cluster of objectives related to cohesion could be considered a more recent version of traditional regional policy. It deviates from older interpretations of regional policy in that it focuses on cities rather than on industrial locations or lagging regions. Cities are now considered to be the engines of growth in regions. Obviously, the different objectives are based on different economic theories on how economic growth can be fostered. For instance, the focus on medium-sized cities in Italy is linked to the paradigm of industrial districts. Similarly, growth pole theories formed a basis for more traditional regional policies. Likewise, there is a whole set of theories, assumptions and arguments providing the theoretical underpinning for the current search for cohesion and competitiveness. Further research is needed to unravel this theoretical underpinning of polycentric development objectives.

Both clusters of objectives differ according to the initial perspective taken: a cohesion oriented polycentric development is inward looking (from the perspective of the central government policy-makers) as it focuses on the urban system within a country or region. Contrary, the second cluster of objectives is outward-looking: it takes an international, European or global perspective resulting in the perceived need for international competitiveness.

The ESDP's main objective is to achieve a balanced and sustainable development of the territory it addresses, which is elaborated in three fundamental goals of policy: economic and social cohesion, conservation of natural resources and cultural heritage, and, a more balanced competitiveness. Polycentric development can be considered the key substantive planning concept to achieve these goals. Interestingly, polycentric development policies in Europe are linked to two of these three goals (cohesion and competitiveness), but not explicitly to the overarching objective of sustainable development.

As is clear from the listings of countries applying policies for both main objectives of polycentricity, national governments may pursue polycentric policies that both try to diminish urban disparities and improve urban competitiveness at the same time. In fact, polycentric policies do not exclude each other. Rather, polycentric policies in a country often refer to combinations of these objectives. However, these objectives may also contradict each other. Enhancing the competitiveness of a certain part of the urban system (for instance the handful of major cities in a country) may lead to increased urban disparities. As such, pursuing cohesion and competitiveness can be a paradoxical affair. This brings us to the point that both clusters of objectives may also succeed each other in time. For instance in Poland, emphasis is on strengthening the competitiveness of urban regions, while it is intended that in a second phase the development of more spatial balance and equity (and thus a diminishing of urban disparities) will start to play a more important role. In first instance, the priority in Poland is to become competitive at all. When this goal has been achieved to a certain degree of satisfaction more emphasis will be put

on the distribution of prosperity (in the meantime, however, a certain distribution policy is being maintained). In this sense, Poland is exemplary for more eastern European transition economies. Interestingly, a similar development can be seen in Ireland. After a period of considerable economic growth and an improvement of the competitiveness of in particular Dublin, Irish policy-makers now turn to the issue of spreading development and prosperity. In that sense, Ireland seems a step ahead of Poland, although we would like to remain cautious in suggesting a type of policy development model.

By highlighting the objectives of polycentric policies in European countries we discussed more theoretical aspects of such policies. In the next chapter we will consider these kinds of policies as they turn out in practice, for instance addressing the instruments that are being applied.

3 Polycentric development policies in practice

3.1 Introduction

This chapter tries to shed light at the question how polycentric policies are brought into practice. An investigation is presented of policy instruments that are used in the context of polycentric policies and by whom. As table 3.1 shows we distinguish between three categories of instruments: (1) spatial implementation instruments; (2) non-spatial instruments and (3) strategic planning instruments.¹ Each category is discussed in its own sub-section.

Table 3. Overview of chapter contents: categories of instruments

Spatial implementation instruments (§ 3.2)	<ul style="list-style-type: none">- Investment programmes- Land use restrictions (zoning)- Location based taxes- Re-locating (national) administrative agencies- Covenants, contracts, agreements- Infrastructure development- Creating co-operation and partnerships- Project based approach- Territorial action plans- Providing minimum services of general economic interest- Territorial development monitoring system
Non-spatial instruments (§3.3)	<ul style="list-style-type: none">- Administrative reform- Budget equalisation- EU funding
Strategic planning instruments (§ 3.4)	<ul style="list-style-type: none">- Spatial vision- Regional economic development strategy- Planning guidelines- Policy subject- Horizontal co-ordination mechanisms- Vertical co-ordination mechanisms

However, before we continue we start with two more general observations. The first is that, although we have found many instruments and approaches that are used in the context of polycentric development, they were not very easy to find. The questionnaires did not reveal a range of policy instruments and approaches just on the face of it. Of the different parts of the questionnaire ‘policy in practice’ was clearly the hardest to answer. Apparently it is difficult, even for experts, to get a full grasp of how policies are applied. A reason for this may be the dynamics of policies and the difficulty to attribute developments to the application of policies. Another reason may be that polycentric development policies are relatively new in many

¹ This categorisation comes forth from empirical evidence gathered in this ESPON project and has as such no theoretical underpinning.

countries and that they are still in the process of defining the problem rather than implementing a solution. The second observation, or rather comment, is that we want to emphasise that this chapter is not an evaluation of various polycentric development policies, but only an investigation. Consequently we will not draw any conclusions regarding the effectiveness of policies.

Be that as it may, in this research the term 'instruments' has been given a broad interpretation. It refers to classical policy instruments (i.e. communication, financial and legal instruments), policy programmes and strategies. However, it also refers to agencies, or policy subjects in terms of this project, who pursue polycentric development. Moreover, also mechanisms are included in the definition which are used within the government of a country in order to co-ordinate policies. Policy subjects and co-ordination mechanisms appear to be especially relevant for the application of so-called 'strategic planning instruments'. So, instruments do refer to concrete policy measures as well as to the policy system that applies them.

Before we will discuss the three categories of instruments in more depth, it seems apposite here to start with a brief introduction on what we mean by them and how they relate to each other. The most straightforward type of instruments are the so-called 'spatial implementation instruments'. Spatial implementation instruments mostly have the form of a regulation, a programme or a budget. They aim to generate a direct impact on the spatial and/or economic development of a specified area. Often these instruments are the responsibility of just one government organisation (agency, department or ministry) which can operate in relative isolation from other government actors. The 'policy subject' therefore has relatively firm control over the application of the instrument. Its success nevertheless may highly depend on the extent to which the responsible actor can establish contact with the direct addressees (not necessarily public actors) of the policy. Examples of such instruments are investment programmes, contracts, relocation of (national) administrative agencies and programmes aiming at creating partnerships.

'Non-spatial instruments', may generate a direct impact on the spatial development, but were designed for different purposes in the first place. Their impact on spatial development is rather subsidiary or a derivative of their primary goal. Examples can be the decentralisation of government, which is happening in transition countries, and budget equalisation measures that require a relative equal geographical distribution over the country. Clearly, the policy subject here is not to be found in planners or regional development circles, but rather in the corner of the Ministries of Finance or Interior not to mention the prime ministers office. Although originating from other political concerns these instruments can be of considerable value for pursuing polycentric development.

Strategic planning instruments, finally, mostly have the form of a document or a report and impact in an indirect way upon territorial development (or intend to do so). Spatial visions, regional economic strategies and planning guidelines are three types of strategic planning instruments. It turns out that especially spatial visions, more than any other instrument that is discussed in this chapter, are connoted to the objective of polycentric development. Often they are non-binding or have an informal status, like the ESDP, and are considered 'soft' instruments. They aim at generating secondary decision-making processes by a wide variety of actors. What matters by the application of these instruments is the policy process rather than the policy document itself. The policy subject, which in many cases has only limited power, therefore has an extremely important role as a mediator and ambassador as it depends on other, more powerful actors, for the application of its policy. It is in this

context that we have looked to co-ordination mechanisms, which facilitate these processes of convincing and co-ordinating collective action.

In sum, the three categories can be distinguished from each other in terms of focus, which is directed at spatial development in the case of spatial implementation and strategic planning instruments, and type of application, which is direct impact in case of the first two types of instruments and secondary decision making in the case of strategic planning instruments.

In the following section 3.2 we present a list of spatial implementation instruments. Each instrument will briefly explained and we will indicate in which countries the instrument is applied at national or regional level (see table 3.2). Note that if an instrument is applied at the national level we have not further looked down whether it is also used at the regional level. Then the short section 3.3 discusses briefly the non-spatial instruments. Section 3.4 about strategic planning instruments starts with a brief explanation of what is understood under planning guidelines, regional economic strategies and spatial visions, then discusses their use in the context of polycentric development and finishes with some observations regarding the policy subjects and the co-ordination mechanisms that they have to their avail. The chapter ends with conclusions.

3.2 Instruments causing direct spatial impact

This section deals with what we call spatial implementation instruments, which have a direct impact on the spatial development. Most of the instruments that will be discussed in this section (see table 3.2) have only been mentioned occasionally in the country chapters in Part B. They can be found either in the second section of the respective country chapters which deal the general position of polycentricity in policies, or in the section discussing examples of polycentric policies. Only in a few cases respondents mentioned spatial implementation instruments as an example of a polycentric policy themselves. One such an occasion is the Austrian case on the relocation of the *Länder* government from Vienna to St. Pölten. Another quite similar example is the relocation of government authorities from Oslo to other Norwegian regions. The German chapter tells extensively about the territorial monitoring system as a policy instrument contributing to polycentric development. However, such examples are exceptions rather than a rule. In most cases there is not much to tell about the use of these instruments in terms of polycentric development. Mostly they are part of a larger package of instruments being used within the framework of a policy programme aiming at polycentric development (see the chapters on Estonia and Finland).

Table 3.2 Spatial implementation instruments and their use in Europe

Instrument	Use at national level	Use at regional level
1. Regional policy investment programme (focusing at lagging regions)	Finland, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, UK	Austria, Germany, Italy, Spain
2. Providing minimum services of general economic interest	France, Hungary (education), Norway, Slovenia (esp. before 1991), Sweden	
3. Developing Infrastructure	Bulgaria, Germany (in combination with regional economic policy), Greece, Hungary, Italy (as starting point for developing territorial development plans), Poland, Romania, Slovenia (most imp. Instr. Since 1994), Transition countries	Germany (joint responsibility of Länder and Federal government)
4. Location based taxes	Czech Republic, Poland, Slovak Republic, Slovenia	
5. Re-locating (decentralising) administrative agencies	Austria (incident), Norway	
6. Covenants, contracts, agreements	Estonia, France, Italy (with municipalities), Netherlands, Poland, Slovenia, Switzerland	
7. Creating co-operation and partnerships on territorial issues (not referring to institutionalised negotiating bodies)	Bulgaria, Czech Republic, Denmark (urban networks), Estonia (Network of centres), Finland (regional centres public private actors), France, Germany (urban networks), Greece (urban networks), Hungary, Italy, Luxembourg (cross border urban network), Netherlands (urban networks), Portugal (regional potential), Romania, Slovenia, Switzerland	Belgium (Flanders), Bulgaria, Hungary, Italy, Spain, UK
8. Project based approach and Territorial action plans	Estonia, France, Germany (competition), Italy, Slovenia (cross-border)	Belgium (Flanders: Strategic urban projects, Projects of Flemish importance), Italy (for areas dealing with a specific problem)
9. Land use restrictions (zoning)	Cyprus, Malta, Netherlands, Slovenia	Austria, Belgium (Flanders), Germany, Switzerland
10. Territorial development monitoring system	Denmark, Germany (Federal Spatial Planning Report), Lithuania (monitoring economic development strategy), Poland, Slovenia	

Regional policy investment programmes

Investment programmes in the field of regional policy mostly focus at lagging regions, similar to the EU regional and cohesion policy. In fact, although not all countries are listed in the table, most European countries have experiences with such programmes. They are valid for a specified period of time, mostly covering a few years, or follow the term of government. Programmes are run by sector ministries of economic affairs, industry or interior and have a quite narrow focus. The major focus is at restructuring the economy of regions where prime economic sectors have disappeared as for instance is the case in the German Ruhr Area and English mining industry, or where a sound economic structure lacks like in many rural and peripheral regions.

Although instinctively these regional policy based investment programmes may connote to the promotion of polycentricity and through that cohesion, unexpectedly perhaps, in the country chapters there has only been made little mention of them. There is no single case reported where a regional policy based investment programme has been presented as a prime mover for reaching polycentricity. This may have to do with the focus of such programmes, which is directed at the regional level and not at exclusively at the development of cities.

Providing minimum services of general economic interest

The provision of a minimum of services of general economic interest is has been mentioned in a few chapters as an instrument contributing to polycentric development. It serves the objective of cohesion (see chapter 2). Services of general economic interest refer to basic needs as possibilities for (higher) education, the availability of postal services, health care, fire brigades, police, energy supply, telecommunication and so forth. A number of countries, amongst them France, Norway and Sweden, put forward policies which guarantee a minimum level of services in each region. This must be seen against the background of depopulation in central regions in France and northern peripheral regions in Sweden and Norway. In the latter two countries policy makers hope to prevent an exodus of the younger population by offering higher education facilities. As such, in the first place the instrument seems to serve cohesion objectives.

The instrument is also known at the EU level as it was introduced in 1997 under Article 16 of the Amsterdam Treaty. In this article reference is made to 'territorial cohesion', for which providing services of general economic interest seems to be a first implementation tool. At the moment the discussion on territorial cohesion has widened and includes amongst others the issue of polycentric development.

Infrastructure development

Judging the country chapters dealing with the accession countries infrastructure development is deemed a very important instrument or requirement in the context of polycentric development. A well functioning and tightly netted infrastructure network is seen more or less as a condition for polycentric development. Transport or infrastructure policies as such have, however, not explicitly been brought to the fore as examples in the country chapters. For the EU-15+2 infrastructure measures have only been mentioned in the context or as part of territorial development projects. Also transport and telecommunications policies have only received minor attention. The need for good infrastructure as such, however, has been mentioned several times. In this respect there is a clear dividing line between the current EU-15+2 and the 12 accession countries where infrastructure networks are largely under developed compared to EU-15 standards.

Location based taxes

The instrument of location based tax differentiation is mentioned in the chapters on Poland and Slovak Republic. In both cases it seem to refer to 'older' policies which do not seem to form a core instrument in anymore. In the Polish context it refers to investment related tax relieves on income taxes and to special economic zones as based on a law of 1994. Anyway, according to the *Acquis Communautaire* such instruments are not longer possible to use within the EU. In conclusion, the

instrument seems to serve cohesion objectives mainly. Because of the European restrictions they seem not longer relevant.

Re-locating (decentralising) administrative agencies

The re-location and decentralisation of government agencies is mentioned as an instrument for polycentric development in only two chapters. Most European countries, however, do have experiences with it. The idea behind this strategy is simple. In a direct sense the settlement of government agencies in remote or lagging regions provides an increase of the number of jobs. Furthermore it is assumed that spin off effects will strengthen the regional economic structure and indirectly stimulate employment rates. Clearly, this instrument connotes to polycentric development as a cohesion policy (see chapter 2).

The Austrian case, where the *Länder* government has moved from Vienna to the provincial town of St. Pölten, showed according to the respondent that such a strategy can be successful. However, experiences in Northwest European countries in the seventies, when this instrument was relatively frequently used, show that the envisaged spin off effects do not always occur and that the agency often remains an oasis in a desert. Success factors for generating indirect effects are, amongst others, that a re-location strategy is flanked by additional policies helping to structure the economy, that the government agency fits the endogenous potential of a region and that the agency has a size in terms of jobs and importance which means a significant boost in the regional economic structure. Apparently, however, judging the country chapters and filled out questionnaires throughout Europe the instrument is deemed to be of minor importance for polycentric development, or only relevant under certain specific conditions.

Development covenants, contracts and agreements

Estonia, Italy, France, Switzerland, Poland and The Netherlands use contracts, covenants or agreements in their urban, spatial and regional development policies. Formally speaking, the prime difference between contracts, covenants and agreements is their status. Contracts have legal force under private law, whereas covenants and agreements do not. Covenants are agreements between public actors in which they mutually commit themselves to specific actions and the use of their competencies. Although covenants do not have the status of a contract the policy maker has of course the power to withdraw certain actions if an actor does not follow his or her commitments as laid down in the covenant, for instance subsidizing. Moreover, despite the term, parts of a covenant can be laid down in contracts and thus have legal force. Agreements, finally, lay down policy intentions, but can have various forms and may generally be regarded as the instrument with the lowest status of the three. Despite the judicial difference, the chapters probably put forward national instead of formal interpretations of concepts.

All countries mentioned above, except from Estonia and Italy, use contracts and covenants in combination with a spatial vision that provides a substantial framework. These spatial visions are national policy and indicative as regards development priorities. By means of contracts and covenants the detailed implementation of these spatial visions is left to the responsibility of lower tier authorities, like regions, provinces and cantons. In this way the use of contracts respects the subsidiarity principle.

In Italy contracts are used in a programme on urban development which seems to be organised in a sectoral way and is run by the Ministry of Public Works. In

Estonia contracts are used in the context of the 'Network of Centres' programme which subsidises target groups on a project base. For the actual implementation of this programme and the issuing of contracts a special state agency has been created, 'Estonia Enterprise'. Contracts, covenants and agreements are also a means for vertical co-ordination, to be discussed further below.

Creating co-operation and partnerships on territorial issues

The most mentioned instrument, or strategy, in the context of polycentric development is the creation of co-operation and partnerships on territorial development issues. Practically all country reports make reference to this instrument. The idea is to stimulate regional or local development by bringing important public and private stakeholders together, creating institutional capacity and making optimal use of endogenous potential.

Almost any national funding programme aiming at the urban or regional development, like those mentioned in this chapter, requires the creation of partnerships. In some cases the creation of partnerships is included as an instrument in spatial visions and linked to the creation of urban networks. On the face of it, the most common way to stimulate co-operation the creation of partnerships is incentive based. Examples can be found in The Netherlands, where many cities can only get funding if they jointly apply as an urban network, and in Germany, where a competition has been organised called 'regions of the future' which stimulates cities to apply for funding as an urban network. As an unexpected result, to exchange best practices and experiences the German urban networks have organised themselves in the 'Forum Urban Networks'.

Similar with contracts, covenants and agreements, this instrument also has to be viewed in the context of governments being aware of the limits of their powers. Especially in the field of territorial development, which is characterised by different interests and a complex division of power, the limitations of top-down policies become clear. Co-operation and partnerships fit in a trend in which public policies increasingly become more interwoven in society. A good example of a strategy that tries to deal with this situation is the Finnish regional centre programme. This programme aims to built institutional capacity by making private actors co-owners of the policy problem, which should lead to a more structural growth in peripheral regions.

Strategic projects and Territorial Action Plans

In some chapters a project based approach was mentioned as instrument for or contributing to polycentric development. In none of the cases it has been worked out in detail. What is clear though is that they focus at specified areas, mostly cities or city networks, and address a small selection of policy issues. Obviously, they address broader issues than for instance urban regeneration at neighbourhood scale or combat criminality. Although these issues may be part of the project, the public and private actors involved in such strategic projects rather take the whole area into account and select a limited number of crucial issues to be addressed in sake of the area's development.

In Germany and Italy the government uses 'trigger money' to stimulate co-operation and partnership between actors who can apply for funding on the basis of a project proposal. In Germany so-called 'Demonstration projects of spatial planning' are initiated by Federal spatial planners across the territory. Usually they stimulate networking between cities and contribute in that way to polycentric

development. The Italian case is interesting because of its scale, almost 2,3 billion euros are involved. With this money the Ministry of Public Works set up the Complex Urban Programme aiming at the development of middle-sized cities and including various smaller programmes, strategies and initiatives. In Flanders, in order to strengthen the internal structure and coherence of the Flemish urban networks, the government facilitates the set-up of so-called 'strategic urban projects' in which public and private actors can co-operate.

Territorial action plans are quite similar to strategic projects, be it that they aim at laying down policies in a kind of spatial vision and also take rural aspects into account. They are similar however in their bottom-up approach aiming at the creation of partnerships and involving public and private actors who jointly decide on strategies and are facilitated by the central government. Because of the visioning element, which is included in this approach it may contribute to further identification of inhabitants with their region. In France, where the development of territorial action plans is stimulated via the programme '*Projet territoire*' the approach seems to be more successful in dynamic areas than in weakly urbanised regions. In Italy the territorial action plan has been developed rather bottom-up and perhaps even unexpectedly, since it is being described by our respondent as the "highest stage of evolution of the 'complex programmes'". Apparently, a *Programmi Integrati Territoriale* (PIT) is a useful instrument in co-ordinating different urban development programmes.

Land use restrictions (zoning)

The instrument of land use restrictions at the national or regional level is generally speaking a rarity in Europe. In most cases only municipal authorities have the power to propose and decide on zoning measures. The relevance of this instrument in terms of polycentric development is not very high. Where a national competency exists, like in The Netherlands, Cyprus, Malta and Flanders, the instrument is primarily used in the context of preserving urban sprawl and valuable ecological systems. None of the cases described in the country chapters lists this instrument as being of high importance for polycentric development.

Territorial development monitoring system

The instrument of territorial development monitoring system is only mentioned in the chapters on Germany and Poland as being relevant for polycentric development. Of those two the Polish Spatial Information System is still under consideration as its set-up has been proposed by the National Spatial Planning Report. The German system, however, is in full swing and plays a key role in the pursuit of polycentric development and, in fact, in the German federal spatial planning system as such. Every four years a comprehensive Spatial Planning Report is published by the federal spatial planning agency and approved by the parliament. It gives a summary of the national spatial development and includes policy recommendations. The evaluation of spatial trends and policies is done against the background of certain policy aims, of which in the German case polycentric development is a major one.

In fact, a monitoring system can come in many different ways, some more explicit than others. In a number of countries the monitoring system forms an integral part of the process of drawing spatial visions. As such it may play an important role in the context of polycentric development.

Conclusion

We have identified all instruments with direct spatial impact that in the country reports in Part B of this report are associated with polycentric development. Between them it is important to realise that most of them were not exclusively designed or applied for the purpose of polycentric development.

Following the conclusions of the previous chapter about objectives of polycentricity, in Europe the concept is interpreted as serving both objectives: competitiveness and cohesion. Consequently, also the instruments that we have found seem to balance between these two objectives. Some explicitly aim at cohesion, like for instance the regional policy investment programmes, location based taxes and providing minimum services of general interest. As regards competitiveness especially the creation of co-operation and partnerships, which are also crucial in the strategic projects and territorial action plans approach, provide frequently used examples. These instruments have in common that they aim at creating institutional capacity by bringing public and private actors together in order to develop joint problem perceptions and policy strategies. Other instruments can serve both objectives like contracts, covenants and agreements, the re-locating of administrative agencies and developing infrastructure can be in the interest of both objectives depending on their implementation. Territorial monitoring systems and land-use restriction issued by national or regional governments, being pure spatial planning instruments, cannot easily be related to cohesion or competitiveness objectives.

3.3 Non-spatial instruments

Table 3.3 Non-spatial instruments

Instrument	National	Regional
Administrative reform	Greece, most transition countries, Latvia	
Budget equalisation between 'rich' and 'poor'	Belgium (between language communities), Germany (between Länder), Luxembourg (proposal)	
EU funding	Greece, Italy, Poland, Portugal, Spain, transition countries and Baltic States	Poland

A second category of instruments that we identified in the context of polycentric development are the so-called non-spatial instruments. Non-spatial refers to the circumstance that their application is not based on territorial concerns and that their application does not aim at territorial effects in the first place. The instruments listed in Table 3.3 mostly are the responsibility of policy makers outside the boundaries of regional development and spatial planning ministries and therefore less appropriate to focus at while designing a polycentric development policy. However, their application may very well support a polycentric development.

Administrative reform

Administrative reform has been mentioned by some respondents as contributing to polycentric development. The bottom line of administrative reform is that certain policy issues are related to a specific territorial scale at which there is no existing authority. The set-up of new authorities is expected to solve this. Administrative reform can refer to three situations: (1) the creation of a 'third' regional government

layer between the local and national policy level; (2) the merging of local authorities into larger more powerful ones and (3) the creation of a 'fourth' metropolitan government layer between the local and regional level. The country chapters give examples of the first two situations only. The third situation, however, has been subject of many academic publications and is therefore also mentioned here but not further discussed.

The creation of a regional administration is most apparent in the transition countries. During the socialist regime this policy level has been virtually absent in most Central and East European countries and if it did exist it was powerless in most cases as it acted as a middleman for the national government. Now, all transition countries are, or have been, in the process of creating a regional government layer with democratic power. Of course, apart from domestic concerns, a major force behind the creation of a regional government layer in transition countries are the EU accession requirements.

An example of administrative reform as the creation of bigger and more powerful municipalities by merging the smaller ones can be found in Greece. Although not mentioned in the country chapters many other countries also have experience with reforming the municipal level. In Greece however, the reform is strongly linked to the objective of becoming more polycentric. There are even proposals to organise a similar reform at the regional level and to bring down the number of regions from 13 to 9.

Administrative reform resulting in new government layers is often connoted to building institutional capacity. In this context the concept of institutional capacity is mostly used in a broad sense. In a narrow sense it refers to the set up of new administrative organisations and consequently the bigger capacity to deal with policy issues. In a broader sense, however, institutional capacity also refers to structural arrangements between public and private actors. Such structural arrangements may increase the awareness of a shared local or regional identity and in turn generate broad support and a joint basis for regional and urban development. Structural arrangements do not necessarily depend on the set-up of new administrative organisations but can also be created by already existing ones by adopting new ways of working. Obviously, the creation of institutional capacity can lead to a positive and development orientated attitude and as such contribute to polycentric development.

Budget Equalisation and EU Funding

Budget equalisation and EU funding are more remote from polycentric development as such. Although they have been mentioned in the chapters none of the respondents explicitly related them to polycentric development. They aim primarily at cohesion. In combination with other efforts they may be useful in the context of polycentric development also. The crucial element is that these instruments deliver money to lagging regions, and that there is certain freedom to allocate them to polycentric development purposes.

Potentially non-spatial implementation instruments can make an important contribution to polycentric development. In general, however, policy makers pursuing polycentric development lack the competency to decide about the application of these instruments. Nevertheless, they can contribute to the creation of favourable conditions for polycentric development.

3.4 Strategic planning instruments

This section deals with strategic planning instruments, which seems to be important instruments in the context of polycentric development policies. We distinguish between three different strategic planning instruments: (1) spatial visions, (2) regional economic strategies and (3) planning guidelines or principles. As we will see, especially the spatial visions and regional economic development strategies can play major roles in the pursuit of polycentric development. Planning guidelines appear to be somewhat less relevant.

Table 3.4 Strategic planning instruments and their characteristics

Instrument	Status and application	Contents
Spatial visions	Non-binding or partly binding policies that rely on their communicative power and address a wide range of actors	Spatial conceptualisation of the territory or attempts to come to such a conceptualisation, ideas on desired future development and general strategy
Regional economic development strategies	Narrow sense: implementation via financial investments. Broad sense: application via communication addressing horizontal co-ordination of public actors	Investment strategy based on a territorial conceptualisation and ideas on future regional economic development
Planning guidelines	Binding to lower tier authorities which are obliged to consider the guidelines in their own policies	Generic non-territorially specified guidelines on planning procedures and issues to address by spatial planning policy

In general the three instruments all apply to large territories, and aim to influence a wide variety of public and private actors and stakeholders relevant for the spatial economic development. So, generally speaking, they can be regarded as instruments to be applied via processes of secondary decision-making. One of the main differences between the three instruments, which may be of importance for polycentric development, is from which ministry they originate. Largely, spatial visions and planning guidelines, which are sometimes combined in the one and the same document, are both designed by the spatial planning agency of a country. Regional economic development strategies on the other hand will often be developed by so-called sector ministries like economic affairs, regional development, interior and so forth. A major difference between sector ministries and spatial planning agencies is, generally speaking, that the former have considerable more means and power to its avail. Table 3.4 summarizes the most important features of the three instruments, which will all be discussed separately below. As table 3.5 shows this category of instruments is widely known in Europe as all countries, except from Cyprus, Czech Republic and Slovakia, use at least one of the instruments that fall within this category.

Planning Guidelines

In many countries the national government issues generic planning guidelines to lower tier governments. Often these guidelines are an integrated part of spatial visions be it implicitly or explicitly. Some countries, however, issue independent guideline documents, sometimes because they do not work with spatial visions, like for instance the UK at national level, sometimes as obligatory complementary or

(partly) substitute document to spatial visions, like Finland and Denmark (see also: Wong et al. 2000). We focus our attention at this type of planning guidelines. In fact, they seem to be of minor relevance for polycentric development. Only in Finland an example of this instrument is found in which polycentric development plays a role. Nevertheless we think it is important to shortly discuss them since this planning guidelines may include polycentric development.

Table 3.5 The use of strategic planning instruments

	National level		Regional level	
	<i>Polycentricity as a major aim</i>	<i>Non-major aim</i>	<i>major aim</i>	<i>non-major aim</i>
Spatial vision	Bulgaria (draft), Denmark (National Planning Perspective), Estonia, Finland (Finland 2017), France, Germany (non-binding), Greece, Hungary, Ireland, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Switzerland	Austria (non-binding), Latvia, Malta (land use management), Romania, Sweden (national vision Sweden 2009)	Belgium (Flanders & Walloon region)	Austria (binding), Germany (binding), Italy, Spain, United Kingdom (most regions)
Regional economic development strategy	France (Schema Directeur – Economic development plan), Lithuania (long term economic development strategy), Netherlands (regional policy), Norway (regional policy), Slovenia	Slovak Republic (regional policy), Sweden (co-ordinating regional development policy)		
Planning guidelines	Denmark (National Planning Report), Finland (national land use planning guidelines), Norway (national planning directives), Slovenia, United Kingdom			

Planning guidelines issue generic principles to be applied by lower tier authorities. Differently from spatial visions and economic development strategies, guideline documents do not propose any development direction for a region or municipality since they lack attempts to spatial conceptualisation, selectivity and territorial specification. The actual implementation of the planning guidelines is left to the respective authorities. In planning systems that use guideline documents though, regional and/or local policies have to be approved by the central government whether general planning guidelines have been taken on board sufficiently or not.

Guidelines can come in different ways, as a single document like in Finland, or as a series of documents each addressing a specific topic, like in Norway (see the chapter on Norway) or the UK where throughout the years 25 so-called Planning Policy Guidance's have been issued. In Finland the 'National land use guidelines' contains national interests in for instance the quality of the environment, transport, ecological sustainability and natural and cultural heritage (French Presidency 2000). In Finland the ESDP objectives and policy options have been taken on board in the planning guidelines.

Spatial visions: a widely used instrument

Each country, except Norway, that pursues polycentric development as a major aim works with a spatial vision that expresses this policy objective. This does, however, not necessarily mean that at the same time spatial visions are always the leading instrument for polycentricity. In many countries they indeed are, but in Germany and Finland for example other instruments and policies are more dominant and important for the pursuit of polycentricity. Also not each spatial vision automatically includes the policy objective of polycentric development. Like table 3.5 shows a number of countries have spatial visions in which polycentric development just plays a minor role (Latvia, Sweden) or is even totally absent (Austria, Malta). Nevertheless, it is interesting to note that spatial visions are a very common instrument throughout Europe in general and for polycentricity in particular.

Obviously, in this research the concept of spatial vision has been given a broad definition. Although instinctively the terms vision, perspective, structural outline, scenario, diagram and so forth may connote to different types of policy documents, they are here used as synonyms and referred to as spatial visions. As a consequence, within this category there may be found a wide diversity between the spatial visions in the countries listed in the table. This may count not only in terms of substance, scope and design (i.e. use of maps), but also in terms of preparation, status and actual use. Although it goes too far here to discuss all characteristics of spatial visions in full depth, we continue with a brief elaboration on spatial visions as an instrument and then with a short impression of the role that spatial visions play in some countries.

Of all the instruments that are discussed in this chapter spatial visions are the most common but at the same time also the most difficult to understand instrument. This has to do with their role in policy processes, or more exactly, their sometimes rather vague role. Because visions often lack status, have a distant plan horizon, use abstract formulations, address a wide variety of actors and have only limited implementation instruments linked to them, their effectiveness (and with that their relevance) is questioned every now and then. This feeling of uneasiness comes forth from the difficulty to measure or evaluate spatial visions. As indicated in the introduction chapter, this is a case of performance rather than conformance which is why we prefer to speak of the application of spatial visions rather than their implementation. Be that as it may, much of the effectiveness of spatial visions seems to depend on such things as their development process and the involvement of different actors and stakeholders, their communicative power and ability to influence the actors' minds, and the organisations and institutions that have been created around them. Throughout Europe a wide diversity can be found with regard to these aspects. Also some countries do have fairly long traditions of working with spatial visions, whereas others just have started to work with them. This is why spatial visions play different roles with regard to polycentric development.

One of the key indicators expressing the role of spatial visions in policy processes aiming at polycentric development is the extent to which they include a spatial conceptualisation of the territory. In other words, whether they contain an interpretation of the territory that makes clear the functions of specific regions and cities and how they (can) contribute to policy objectives that apply to the whole territory. With regard to polycentric development it seems important to understand how regions and cities contribute to the economic performance of a country. Considerations may be whether cities make part of the national economic system or operate relative isolation, whether they take part in many economic sectors or

depend on niche markets and if these outcomes can be related to location or territorial characteristics.

Although we have not had the opportunity to thoroughly analyse each spatial vision a quick scan already reveals whether visions are outspoken or not on such issues. It takes little time to find out if cities in general receive special attention, whether the vision differentiates between them and envisages different development tracks and solutions. Especially the use of city hierarchies and schematic maps in spatial visions point at a certain degree of conceptualisation and possibly a large role in the context of stimulating polycentric development. Conceptualisations can at least be found in spatial visions of Belgium (Flanders as well as Walloon Region), Denmark, Estonia, France, Germany, Ireland, Luxembourg, The Netherlands, Poland, Switzerland and the UK regions discussed in Part B of this report. Generally this kind of policy expression seems more common in North than in South European countries.

The variety in the use conceptualisations in spatial visions may very well be explained from the stage of the policy process of which the spatial vision forms an expression. It makes a difference whether spatial visions form the outcome of a long process during which many actors and stakeholders have been consulted or whether they aim to start such a process. In the first case they will have the character of a broadly supported policy framework, in the second case they have the status of discussion document. In this respect there are other relevant factors too, such as planning traditions, competencies and the position of the planning subject. This is, however, not something to be discussed at this place. For now we would like to argue that a better understanding of the role of spatial visions in polycentric development processes requires further research to the extent to which spatial visions can act as a framework for other policies and under which conditions. In a following section in which we briefly address the topic of co-ordination mechanisms we will come back to this issue.

Regional economic development strategies

The last strategic planning instrument to be discussed is so-called regional economic development strategies. Although they also work with spatial conceptualisations they differ from spatial visions in many ways. For instance with regard to their contents, design, preparation and especially the instruments that are attached to them, being primarily budget allocation. Differently from spatial visions that for their application to a high extent depend on other (sectoral) actors, regional policies, which in about all cases originate from national 'spending' departments, have command over their own instruments which make their application a more straightforward affair. This is especially true if regional policy is understood in a narrow sense. Then it predominantly relates to investment regulations to stimulate (mostly) lagging and peripheral regions. In fact, this interpretation does barely differ from the regional policy investment programmes that we discussed above. So, we are interested in regional policy in a broad sense. In this interpretation regional policy is characterised by a strong function to co-ordinate all kinds of national policies like for instance education, transport and communication in order to stimulate economic development across the national territory. This broader sense interpretation makes the regional policy strategic and in a way quite similar to spatial visions. Amongst others, Norway provides an example of a regional policy with a strong co-ordinating role for other policies.

Regional policy in a broad sense carries communicative elements that firstly address how regional development can be stimulated and secondly is based on, be explicitly or implicitly, a spatial economic conceptualisation of the territory. In countries where the latter is the case regional policies seems a very powerful instrument for the pursuit of polycentric development, which may become even stronger when investment programmes are directly influenced by it. As table 4.3 shows this is (at least) the case in France, Lithuania, The Netherlands and Norway. Of these four countries Norway is the only one that does not work with a spatial vision and where regional policy is the major driver behind polycentric development. In the three other countries spatial visions exist next to regional policy and both contribute to polycentric development objectives. In France and The Netherlands throughout history this has led to an interesting relationships between the spatial planning agency and the ministries responsible for regional policy in which periods of tension alternate with periods of shared visions and ideas (for Lithuania we have no further information). Especially periods during which different opinions exist can be very interesting and result in a change of discourse. A fine example of this is provided by The Netherlands where during the mid-nineties the ministry of Economic Affairs pleaded for a policy called 'regions under their own steam', which broke with the traditional view shared by amongst others spatial planners that the national government should take care for lagging regions and proposed to concentrate on regions and especially cities that were considered to be important for the national economy and above all showed growth potential. Eventually this view of the Economic Affairs ministry became the dominating discourse and is in the recent Fifth National Planning Report (spatial vision) translated in a spatial conceptualisation that distinguishes between just six urban networks of (inter)national importance as opposed to thirteen in the previous planning report. Interestingly, a similar kind of debate has taken place during the making of the ESDP where one of the main questions became whether European competitiveness would increase by stimulating poor regions so that more internal competition will be possible, or, on the contrary, by stimulating the already strong areas (Zonneveld 2000). In Norway, on the other hand, the dominating discourse has been quite constantly focussed at combating over-concentration around Oslo and discussions are predominantly initiated by members of parliament, rather than departments and their ministers. This discourse has become so dominant that the supremacy of regional policy over other national policies seems to be generally accepted.

Policy subjects

Spatial visions seem to be part and parcel of polycentric development policies. Interestingly, all countries, except Norway, that pursue polycentric development as a major aim have developed spatial visions. Although, spatial visions are not in every case the dominant instrument, it is clearly seen as a useful instrument for polycentric development. In that sense it is important to note that almost each European country has some tradition with spatial visions at the national level, also when polycentric development is not an objective. In fact, together with regional economic strategies spatial visions are the only instruments in which polycentric development is an explicit goal. Also these instruments can potentially act as a framework for the application of other instruments, listed in the sections above. For this to become reality much depends on the abilities of the policy subject to communicate its ideas and to convince others of their relevance. This is especially true for spatial visions, which as we have seen are non-binding and as we will see further below are often

developed by planning agencies without much implementation powers to their avail. In the case of regional economic the situation is somewhat different, since the responsible policy subject here often has the control over significant budgets. Clearly, however, in both cases, that of a spatial vision and of a regional economic strategy policy application depends on more than just one actor and requires the collective effort of a whole range of public as well as private actors.

The successful application of regional economic strategies and especially spatial visions highly depends on their communicating powers in order to create policy discourses. In countries where regional policy and spatial visions both play a role in the pursuit of polycentric development this can lead to strong coalitions and dominating discourses. The development of discourses is not something that takes place after a policy has designed, but is part of the policy development process itself and is likely to occur through the involvement during an early stage of many potential stakeholders (see also chapter 4 of this report). It is at this point that one of the most important roles of the policy subject is located.

Table 3.6 Main policy subject(s)* at the national level

Spatial Planning Department	Regional Development Department	Other Sector Ministries
Belgium (Flanders, Walloon), Bulgaria, Denmark (MoE), Estonia (MoE), Finland (MoE), France, Germany, Greece, Hungary, Ireland (MoE), Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Switzerland	Estonia (MoI), Finland (MoI), France, Germany, Greece, Lithuania, Netherlands, Norway	Hungary (Transport, Education)

* MoE: Ministry of Environment; MoI: Ministry of Interior

If we want to say meaningful things about the practice of polycentric development policies in a country, we need to know which actor or actors within a government are the major advocates of polycentric development. This actor, or this combination of actors, is called the policy subject. In the case of polycentric development the main policy subject is the actor (or the combination of actors) that addresses the issue of “the distribution of economic development over the urban system”. In other words, the policy subject has the legal competency within a government to (potentially) deal with the question: “Where should economic development take place?” It therewith becomes the ‘policy owner’. Clearly, in the case of polycentric development the policy subject is to be found in the departments of spatial planning and regional development. There may, however, be made a distinction between actors that are important during the stage of policy development and actors that are important during the stage of policy implementation, which do not necessarily have to be the same. Later on we come back to this distinction. Now follows first an overview of policy subjects in the ESPON countries.

Table 3.6 shows, the policy subject for polycentric development for each country. Often this is the spatial planning agency, but sometimes the department of regional policy. For some countries a combination of the spatial planning agency and the regional policy department must be regarded as the main policy subject. In all countries where polycentric development is a major policy aim, except from Norway, the spatial planning agency can be regarded as part of the policy subject, which does not mean that they are always the most important part. Spatial planning agencies, which between countries show considerable variations in size, can often be found in

the Ministries of Environment, whereas regional economic development departments are often part of ministries of the interior or economic affairs. As indicated, other ministries that execute instruments with relevance for polycentric development mostly apply them isolated from each other and as far as we are informed not for the purpose of polycentric development as such. These ministries, although seldom part of the policy subject for polycentric development, nevertheless can be of importance in the total policy process as they can contribute to reaching the objective of polycentric development.

There seems to be a wide variation between countries as regards the dominance of the policy subject. In fact, in the case that the spatial planning agency forms the policy subject (or the most important part of it), the policy subject has dominance only in countries with a strong tradition of spatial planning like France, The Netherlands and Switzerland. It is in these countries that polycentric development seems to have a very high priority at the national political agenda also, which does not mean that this is not contested by other (economic affairs) ministries every now and then. In Germany, where polycentric development also has a prominent position at the national political agenda, the position of the federal planning agency is somewhat vague as it has little competencies of its own and has to compete with the much stronger federal ministry of economic affairs. In Germany, however, the institutionalised structures linked to the federal organisation automatically guarantee an ongoing emphasis at polycentric development. In Belgium the situation is changing in Flanders where spatial planning gains importance at the political agenda and with it the position of the spatial planning department. In Denmark such a process is already taking place for a longer period. For the Walloon region, Luxembourg, Ireland, Portugal, Poland and Slovenia counts that spatial planning is a relative newcomer and that the spatial planners still have to find their positions. Consequently in these latter countries polycentric development may until yet not have a very high priority at the national policy agenda. In Greece, where polycentric development figures at the spatial planning and national agenda since the 1960s it seems that the Ministry of Economy has gained importance at the expense of the spatial planning department due to the fact that the EU Common Support Framework (CSF) requires a Development Plan of Greece, which also carries aspects of polycentric development. In this sense, perhaps even the European Commission may be seen as part of the Greek policy subject. In Norway clearly the policy subject is the Ministry for Local Government and Regional Development and polycentric development as such has a major position on the national agenda. The same counts for Finland, where the Ministry of Interior occupies itself with the regional development project and the spatial planning agency just shallowly deals with polycentric development by issuing spatial planning guidelines. These guidelines, however, are based on a spatial vision, which was developed jointly between ministries and regional councils but does not seem to play an important role in Finnish politics. Nevertheless, there are some recent rumours that the planning agency tries to get a stronger influence, which has led to fierce debates with the Ministry of Interior. Estonia seems quite similar to the Finnish situation with regard to instruments in use, although the 'Estonia 2010 plan' by the Ministry of Environment and the 'Network of Centres' programme by the Ministry of Interior seem to operate more on a par. For Lithuania counts the same. Here a long-term economic strategy and a territorial masterplan exist next to each other and are respectively being implemented by the Ministry of Economic Affairs and the Central Government. In Hungary, finally, the objective of polycentric development is part of

a long standing national discourse and therefore high on the agenda of the Government. Although there is a National Spatial Plan the objective of polycentricity is not brought forward by one central actor (for instance the planning department). Its implementation seems to be scattered over several policy initiatives under the responsibility of just as much ministries, amongst them the ministries of Transport and Education.

Clearly, it is not easy to pinpoint the policy subject in each country. This has to do with the already mentioned possible distinction between policy subjects that respectively develop and implement polycentric policies. In some countries the implementing policy subjects seem far more dominant than those that try to develop or argue for the need of polycentric policies. In the archetype situation the former are the big sector or spending departments and the latter the tiny spatial planning department. Well, be that as it may, in these cases two questions become important. The first question, which will not be answered here, is whether within countries various actors pursue different types of polycentric development policies based on different problem notions and addressing different issues at the same time? This question addresses the more fundamental consideration whether polycentric policies are cross-sectoral by nature or not? The second question is how co-ordination between departments takes place and how they can all be attuned to the same objective of reaching a polycentric development? In other words, what options does the planning agency have to still become influential without much resources to its own avail? The following and last section therefore discusses policy co-ordination mechanisms.

Horizontal co-ordination mechanisms

If anything, the effectiveness of polycentric development policies seems to rely on a sound co-ordination of policy efforts. This seems a reasonable opinion at least from the (hypothetical) perspective that many policies influence urban development and that co-ordination between them would simply lead to more efficiency and effectiveness. Because of this, it is hard to think about effective polycentric development policies being promoted by just one ministry in isolation from other ministries and policies. Polycentric development, therefore, seems to be an objective which can only become reality when there is firm support at the level of the government, the parliament and ideally speaking also within society itself. It has, in other words, to be one of the overall goals to which most policy makers and executors should aspire. This should form the sound basis for a co-ordinated effort. The emphasis on co-ordination mechanisms also fits in a more general trend that is experienced in most democratic countries in which traditional government acting is increasingly being flanked by new 'governance' solutions. Governance as such represents a more flexible style of policymaking involving various actors with different competencies and possibilities for bottom-up initiatives. In such an environment co-ordination gains importance.

Most countries established a number of co-ordination mechanisms which should contribute to the implementation of spatial planning objectives in general and polycentric development objectives in particular. Table 3.7 lists the most important ones that we found in the country chapters.

A striking outcome is the involvement in most countries of the national, or where appropriate the regional, parliament, which approves polycentric development policies. Although parliamentary approval is not primarily seen as a co-ordination mechanism in a direct way, it offers mechanisms for both ex ante and ex post co-

ordination. After giving formal status to a polycentric policy, for instance a spatial vision, it may be expected that future decisions will be taken within this context and so contribute to ex ante co-ordination. In its task as a watchdog the parliament can ask the government why objectives are not reached. It then, ex post, may turn out that policies conflict with each other. In the case of spatial visions, however, objectives are often phrased in abstract terms and difficult to measure. Therefore, and because politicians tend to seize the opportunity of the day, the co-ordination power of parliaments remains to be seen.

Table 3.7 Horizontal co-ordination mechanisms

Mechanism	Countries using this mechanism
1. Parliamentary approval	Belgium (Flanders, Walloon), Bulgaria, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain (regions), Sweden, Switzerland,
2. Joint approval of sector policies by planning and sector ministers	Luxembourg, Netherlands, Slovenia, Spain (regions)
3. Strongly institutionalised policy objective	France, Germany, Greece, Italy, Norway
4. Central position in government (Dep. of prime minister)	France, UK
5. Standing interdepartmental co-ordination committee	Austria, France, Germany, Netherlands, Slovenia, Switzerland
6. Formal or informal project based partnerships and networks	Finland, Sweden

Perhaps more is to be expected from co-ordination mechanisms which enter the scene during the development process of policies and stimulate interdepartmental co-ordination. In the table we can find three of such mechanisms: (1) joint approval of spatial planning and sector ministers; (2) standing interdepartmental committees and (3) project based partnerships and networks. The common characteristic of such mechanisms is that co-ordination takes place at the level of officials during the preparation stage of policies, which offers good opportunities for mutual internalisation. Standing committees and joint approval mechanisms act as both policy preparing organisations and as filter to iron out the majority of political controversies. A standing committee, which meets regularly, also has a monitoring function. An example of such a committee is the monthly meeting Spatial Planning Committee in The Netherlands consisting of high level representatives of all sector ministries and chaired by an ex-minister. This committee formally prepares the national spatial planning reports (the actual writing is done by the spatial planning agency), but also assesses all sector policies with spatial impact and makes sure that they contribute to overall spatial planning goals.

The third type of horizontal co-ordination mechanism accounts to dominance within the government or major political discourse. Examples of these mechanisms are (1) the location of the spatial planning agency at the heart of the government under the Prime Minister and (2) a dominant position of polycentric development in the thinking of politicians. These mechanism rely largely on political power. In a sense that the prime minister has the last word in council discussions and a powerful political discourse pre-structures policies in such a way that they will

contribute to the polycentric discourse. A weakness of such mechanism may be, however, that they can be temporarily. A new prime minister may have very different opinions on polycentric development than his or hers predecessor, while also a political discourse shifts every now and then.

Vertical co-ordination mechanisms

Table 3.8 lists a number of vertical co-ordination mechanisms, but does also not pretend to be comprehensive. Often mentioned in the country chapters are the more traditional mechanisms, as referred to above as legal and financial instruments. It concerns (1) the ‘conformance principle’, which means that regional policies must comply with national objectives, and (2) the transfer of budgets. Next to these, but not explicitly mentioned though, communicative instruments will be used also in most countries. At least the wide use of spatial visions, which often rely on their communicative power, indicates this.

Also often mentioned is the communication process, which is not the same as a communicative instrument. Co-ordination through starting communication processes means a deliberate strategy to involve various actors and stakeholders during the policy preparation process. Similar to horizontal co-ordination mechanisms that stimulate interdepartmental official involvement, these communication processes aim at ‘co-ownership’ and early commitment of regional and other actors. At the same time national policy tries to profit from specialist knowledge which contributes to the quality of their policy. Such (governance) processes may lead to mutual learning processes and internalisation of the policy concerned. They work two ways, top-down and bottom-up and therewith generate a broad political support.

Table 3.8 Vertical co-ordination mechanisms

Mechanism for vertical co-ordination	Countries using this mechanism
1. Standing Committee involving national and regional actors	Austria, Germany, Switzerland
2. Formal or informal Partnership	Finland, Sweden
3. Contracts	France, Switzerland
4. Conformance principle (approval of national government)	Belgium (Flanders), Ireland, Luxembourg, Netherlands, Poland, Slovenia, Switzerland, UK
5. Financial	Estonia, Finland, Greece, Italy, Latvia, Lithuania, Netherlands, Norway, Portugal, Slovenia, Sweden
6. Communication process	Belgium (Flanders, Walloon), Finland, Germany, Greece, Netherlands, Portugal, Slovenia, Sweden, Switzerland

Such processes can also be organised more formally through the establishment of (1) standing committees involving national and regional ministers or (2) the creation of project based partnerships. Standing committees can, not surprisingly, be found in the all federal countries, except from Belgium where the national level has no planning competency at all. The latter also counts for the regionalised countries Italy and Spain. In Finland and Sweden examples can be found of formal and informal partnerships between national and regional actors organised around certain policy issues relevant to polycentric development. A common characteristic of these co-ordination mechanisms is that they provide a platform for bottom-up involvement, which may be seen as a key element of polycentric policies. Another co-ordination

mechanism that also carries this characteristic are contracts between national and regional actors, which only set the end goals but leave the regional actor free to decide how this goal will be reached.

3.5 Conclusion

The availability of data on how polycentric development policies are brought into practice is scarce and hard to get. An explanation for this can be that polycentric development is relatively new in many European countries and that policies are still in the process of maturing. In other words, in many countries a policy infrastructure around polycentric development still has to be developed. However, also for countries which have a well-developed policy infrastructure it was hard to get a firm grip on what instruments are used, by which policy subject and how co-ordination between them takes place. Even experts who filled out the questionnaires had difficulties to answer our questions. A first reason for this may be the dynamics of policies and the difficulty to attribute developments to the application of policies. A second reason may be uncertainty about what exactly a polycentric development policy is and a third reason may be that polycentric development policies are relatively new in many countries and that they are still in the process of defining the problem rather than implementing a solution.

Nevertheless one of the most important outcomes of this research is that polycentric development policies seem to go hand in hand with spatial visions. Each country that considers polycentricity as a major objective, except Norway, works with such a spatial vision. Consequently the spatial planning agencies can be seen as the main policy subject at least in an instrumental way, in order to formulate the policy. Sometimes they are the leading policy subject in a political way too. Often, however, sector departments seem to be more influential as regards the decision where economic activities should be stimulated or not.

Horizontal and vertical co-ordination mechanisms, which seem to be crucial for the implementation of polycentric development policies, can be found in most countries in various forms. The involvement of the national parliament in most countries is striking, but for horizontal co-ordination probably interdepartmental mechanisms are crucial at official level. As regards vertical co-ordination mechanisms we see a dominance of those with a traditional a top-down character. There is, however, in many countries increasing interest in policy implementation strategies focussing on the creation of partnerships and bottom-up initiatives. This may create institutional capacity at regional level.

As regards spatial implementation and non-spatial instruments, the inventory shows which are related to polycentric development in which countries. Between them it is important to realise that most of them are not exclusively designed or applied for the purpose of polycentric development. Following chapter 2, in Europe the concept of polycentric development is interpreted as serving both objectives: competitiveness and cohesion. Consequently, also the instruments that we have found seem to balance between these two objectives. Some explicitly aim at cohesion, like for instance the regional policy investment programmes, location based taxes and providing minimum services of general interest, whereas others aim at improving competitiveness like the creation of co-operation and partnerships, the strategic projects and territorial action plans approach. These instruments have in common that they aim at creating institutional capacity by bringing public and private

actors together in order to develop joint problem perceptions and policy strategies. Other instruments can serve both objectives like contracts, covenants and agreements, the re-locating of administrative agencies and developing infrastructure can be in the interest of both objectives depending on their implementation. Territorial monitoring systems and land-use restriction issued by national or regional governments, being pure spatial planning instruments, cannot easily be related to cohesion or competitiveness objectives. Monitoring systems are important for polycentric development in for instance Germany.

Also the lists of spatial implementation and non-spatial instruments says something about the familiarity of instruments in across Europe. Familiarity however, must not be confused with effectiveness and usefulness. It may say something about the flexible application possibilities of instruments. Since in most countries polycentric development as a policy aim is rather new and pursued under different conditions, also less frequently mentioned instruments may be very useful and effective. As mentioned above, it is difficult to draw conclusions as regards the way these instruments are applied in the context of polycentric development and if they generate success. In fact, although we cannot prove this, we have some doubts as regards the effectiveness of the isolated application of these kind of instruments in order to pursue polycentric development.

At the moment, most policies that claim to pursue polycentric development do not articulate a specific programme or strategy that explicitly indicates political choices about where, what, how and why certain developments should be stimulated. From this, we have to conclude that the concept of 'polycentric policy' in practice has a very broad, or perhaps not yet crystallised definition. Up to now, in Europe the concept of polycentricity has been used to characterise almost any policy which is included in the range from regional economic development policies to policies dealing with the location of very specific investments in urban areas.

On the whole there is at the moment throughout Europe no single definition of what a polycentric development policy is. Different policies are connoted to polycentric development by different experts from different countries. However, in many countries polycentric development policies can be said to be in the process of maturing. Because polycentric policies, where they exist, are often only in a preliminary stage it is very difficult to gather information regarding the instruments and processes around polycentric development policies. In most countries it is difficult to describe concrete polycentric policies as most policies which may be interpreted as contributing to polycentric development are not coined 'polycentric'. The planning expert therefore needs to reinterpret the policies based on their own understanding of what polycentricity corresponds to.

4 The embeddedness of national policies aiming at polycentric development

4.1 Introduction

One of the questions which this research project would like to answer is the level of embeddedness of policies aiming at polycentric territorial development. In the general introduction we have said that trying to answer this question can be considered more or less as the round-up of the answers to the questions to the previous two points. This chapter paves the way for the final concluding chapter. In terms of embeddedness we are in particular interested in the historic dimension of polycentricity policies: is there an established tradition for example or has the concept been applied in the past already? Another indication of the embeddedness of a policy approach aiming at a polycentric territorial development is the level to which policy subjects and public (and private) actors co-operate in putting the policy objectives into practice.

4.2 The application of polycentricity in the past

The concept of polycentricity, or more precisely the term as such, is a novelty. It stems from the European Spatial Development Perspective. Although it makes sense to attach the year 1999 to the concept, the year the ESDP was finally agreed upon, this is not correct. The first full draft of the ESDP was published two years earlier, known as the Noordwijk document (CEC, 1997b). A second draft discussed a year later, the so called Glasgow version (Meeting of Ministers responsible for Spatial Planning of the Member States of the European Union, 1998). But we have to go back in time a bit more. Main principles of the ESDP were agreed upon as early as 1994. They are known as the Leipzig principles, named after the city where they have been discussed (BMBau, 1995). It is important to keep this in mind because policy principles can already be influential before they are politically accepted. In this case we can see that a polycentricity approach was already advocated in Germany as early as 1993. The indicative, non-binding policy document which advocated the principle of polycentricity (BMBau, 1993) was prepared in the same ministry as the document discussed in Leipzig, which gave birth to the EU polycentricity concept.

Probably the earliest expression of polycentricity *avant la lettre* is the French concept of *métropoles d'équilibre* of the early sixties, part of a policy approach aiming at economic *équilibre* at the national level (in modern EU political language these principles would be referred to as counterweight metropolitan areas and cohesion). This approach of course had everything to do with the political sensitivities surrounding the economic and demographic dominance of the French capital. The *métropoles d'équilibre* were all located at the outer edges of the French 'hexagon'. The year in which this policy started, 1963, was the same year a powerful agency was being established which exists right up to the present day, namely DATAR (*Délégation à l'Aménagement du Territoire et à l'Action Régionale*). During the seventies the policy of

counterweight metropolitan areas was being replaced by a policy putting the emphasis on medium sized cities and rural areas. But a EU type of polycentricity concept, laying the emphasis on the larger French cities was moved back to the surface in the course of the 1980s in the wake of the European debate on the ESPD.

This research project has recorded other historic precursors of the present day polycentricity concept. A good example is Greece, with its concept of 'rival cities', formulated at the end of the 1970s. Five cities outside Athens more or less evenly spread across the territory, were earmarked as anchor points for future economic and urban development. In a later stage, during the nineteen eighties this concept gave way to an approach emphasising urban-rural relationships, by earmarking dozens of urban centres across the national territory. This may point at political sensitivities surrounding a national application of a polycentricity approach (or equivalents in terms of terminology used). What looks like polycentric development at a large scale (the EU scale for instance) might be considered as monocentric a few levels of scale downwards. Thessaloniki, for instance, designated as a rival city for Athens, is perceived as a large metropolitan area within its own region, which as a consequence became even more monocentric. Interestingly, the subsequent approach, based on so-called 'open cities to the countryside', which was the successor of the rival city approach, is nowadays replaced by an approach focusing on those cities which are considered the most competitive in an international context. Again, the top is formed by Athens and Thessaloniki. Next this policy addresses a class of urban centres which are each at least a factor 10 smaller than these two cities. This indicates a gap between polycentricity at the European and national or regional levels.

In several countries in the past a concept has been applied which is, to a certain extent, related to the concept of polycentricity. This is the well-known concept of central places. The political motivation behind the application of this concept has less to do with the territorial distribution of economic development but more with services. According to this approach urban growth has to be attuned to the level within the hierarchical system of centres. As such the central place approach is in most cases part of land use planning. Germany is an outspoken exponent of this approach, but also many of the accession countries, in particular the three Baltic Republics when they were under Soviet rule.

Nearly all countries in the ESPON area have been pursuing in the past some sort of regional policy that focussed on lagging regions by redistributing economic development. As this policy seeks to influence the pattern of economic development across a territory it is fairly obvious that regional policy has a lot to do with the aims and goals of a polycentricity approach. Although regional policy as such does not exclude the possibility of focusing concrete policy instruments on urban centres it is not the prime characteristic. Regional policy, as the term already suggests, follows a zonal approach: areas are designated as eligible for (financial) support. In contrast, the polycentricity concept follows a nodal approach: certain urban centres or classes of urban centres are identified as eligible for support by certain policy regimes. Both approaches can be mixed though as the French *métropoles d'équilibre* policy of the 1960s/1970s is showing. In fact in many cases the designation of industrial or employment centres has often been part of regional policy approaches as is shown by, for instance, the Netherlands during three decades of regional policy. We would like to suggest the dividing line between regional approach and polycentricity approaches is a matter of emphasis, i.e. the difference between a zonal and a nodal approach. This differentiation might not work in all cases. For instance in the

Netherlands in the late 1980s/early 1990s regional policy gave way to an approach phrased as spatial-economic development. Aims to redistribute economic developed were officially dropped. The new aim became to stimulate economic development in general, especially in those areas seen as the most competitive in an international context. This approach came with a territorial designation called the spatial-economic main structure. The structure is not made up of urban centres but is formed by a combination of metropolitan areas, development corridors and mainport areas. Nevertheless the principle used here is *territorial selectivity*.

In our research we have recorded examples of countries where the pattern of regional economic development across the country is a cornerstone of national policy in general, but where, nonetheless, the polycentricity concept is not explicitly referred to. Norway is the prime example here. The prime object here is the distribution of population, which is a politically sensitive subject in this sparsely populated country. There has up to recently not been any focus on urban centres in particular because it was thought that this could stimulate population decrease in certain regions.

All in all we have recorded some cases of the application of the polycentricity concept in the past. It is also clear that related concepts or policy goals have been pursued in the past. But in the majority of 29 ESPON countries the introduction of the polycentricity concept in national policies or in discussions about territorial policies is something of the last five years or so. The diffusion of the polycentricity concept across Europe is nevertheless striking. This does not mean that in all cases where the polycentricity concept has become used the concept has become influential in the sense of direction the application of concrete policy instruments. This is the subject of the next section.

4.3 The concrete influence of polycentricity

Does the polycentricity concept at the present have real, detectable influence on the use of concrete policy instruments? If we look at what at first sight would be the logical first line of such influence in 'real life' namely the European Union itself and more precisely the application of the structural funds than the answer is clearly negative. Is the situation in the various nations of the ESPON study area markedly different? Again, on the whole the answer is negative as well.

What we do see though are remarkable examples of application in spatial planning documents. But without exception these documents are non-binding. In general their main purpose is to stimulate discussion, to communicate novel policy approaches. The Danish planning report of 1997 with polycentricity as a central concept is a good example here. A planning report like this may become influential. The impact of non-binding documents should not be underestimated. But acquiring a direct impact on operational decisions could take some time. So one can say the concept of polycentricity originates from a spatial planning discourse on the European level. And what we can detect know is a wide use of the polycentricity concept on the national level but in the majority of cases this is within a national spatial planning discourse. This is in the majority of cases the first line of application within individual countries. In some countries spatial planning is or has become a well-respected policy domain among other policy domains. Although lacking in concrete instruments in these cases spatial planning has authoritative power. This counts for Denmark, Switzerland, France and the Netherlands for instance. This

might help the introduction and diffusion of new policy approaches as is shown by the country reports in Part B.

In other cases the position of spatial planning is more peripheral in the national administrative system. This is the case in countries such as Spain, Portugal and Italy, although polycentricity still can trickle down in operational decision making as shown by the example of Italy.

In unitary states it makes sense to look at the relations between different policy domains on the national level in order to explain differences in the application of a policy concept like polycentricity. In federalized unitary states, such as Spain and Italy, or federal states like Germany, Austria, Switzerland and Belgium one has to look at other institutional factors. Between the federal states there are striking differences. Although in Germany the national ministry of spatial planning has very limited powers it nevertheless is in a position to very effectively stimulate a discussion on the desirability of a polycentric development of the national territory. In the country chapters in Part B one can find a few striking examples. Although in Austria there exists a standing ministerial conference on spatial planning, just as in Germany, there are no other institutions able to disseminate planning reports and documents. This may explain why the concept of polycentricity is barely known and used in Austria. In Switzerland the related concept of urban networks is widely known in the administrations of the country and the regions. Although not a EU member state there is a lively discussion on the concept of polycentricity (phrased in 'urban networks', though), which is explicitly promoted in the federal spatial planning strategy.

In countries with established traditions in the field of spatial planning or, alternatively, territorially relevant traditions such as regional planning, polycentricity might compete with other, already accepted policy concepts. Tentatively we suggest that this situation is different compared with countries with no solid track record in the field of spatial planning. A novel policy approach like the ESDP notion of spatial planning might fill in a vacuum. The implication is that there is – at least potentially – a large role for a policy concept like polycentricity. We have the impression this might be the case in the three Baltic republics. This also might be or might become the case in other accession countries as well, although we have very fragmented evidence here.

4.4 Conclusion

Although the term 'polycentricity' is quite new there have been some cases of an application of the polycentricity concept *avant la lettre* in the past. It is also clear related concepts or policy goals have been pursued in the past. But in the majority of 29 ESPON countries the introduction of the polycentricity concept in national policies or in discussions about territorial policies is something of the last five years or so. The diffusion of the polycentricity concept across Europe is nevertheless striking. This does not mean that in all cases where the polycentricity concept has become used the concept has become influential in the sense of direction the application of concrete policy instruments. What we do see though are remarkable examples of application in spatial planning documents. And although without exception these documents are non-binding their influence might be considerable. But acquiring a direct impact on operational decisions could take some time.

5 Summary and conclusion

5.1 Objective and central question

This research that was carried out in the second work package (WP 2) of the ESPON 1.1.1. project has the aim to look at the use or *application* of the concept of polycentricity in the countries forming the study area of the ESPON 2006 programme. The European Union can contribute through its own policy measures and policy programmes to a polycentric development of the European territory, especially through its structural policies. Nevertheless the effectiveness of European policies aiming at such a polycentric development highly depends on national policies and the (potential) synergies between European and national policies. The prime objective of this research is therefore to determine if and how the concept of polycentricity is applied in the ESPON study area. The central question is as follows: *are there policies in operation or being promoted addressing the distribution of economic and/or economically relevant functions over the urban system?* The issue of policies aiming at polycentric development has not been studied before in an area as wide as the study area covered by the ESPON 2006 programme. The ESPON 1.1.1. project has therefore followed a selective approach. Its second work package focuses on the *national* level. Its fifth work package focuses on the *regional* level, on a selected number of urban regions, varying in urban structure, governance arrangements and organising capacity.

5.2 On application

The central concept in this report is application. It has been developed specifically in the context of European spatial policy. The starting point of the application concept is that the function of strategic planning lies in the provision of discussion contexts for operational decision-making and not in the programming of these decisions. In relation to European spatial policy frameworks (in particular the ESDP), *application* is indeed spoken of in this context. Spatial policy is not identified in the EG Treaty as a formal competence of a European institution. The use of a strategic 'plan' such as the ESDP can be described as influencing future policy actions without dictating their content. The prime function of a strategic policy document is not to prescribe future courses of action, but to enrich decision situations with conceptual frames. This is expected to improve the quality of final decisions. From this viewpoint it makes sense to describe the concept of polycentricity in a very loose way as was the case in the ESDP. In this way the ESDP pays tribute to the wide internal diversity in the EU, in terms of territorial organisation at, for instance, national or sub-national levels of scale, but also in terms of the political situation.

5.3 Key questions

The project at large was aiming at getting answers to the following three central questions:

1. What are the principle goals of policies striving for a polycentric development of the national (or sub-national) territory? We have to underline here that we did not expect the term ‘polycentricity’ would be used. This is the reason why we have formulated the above mentioned phrase in which the term polycentricity is absent and the (EU) concept of polycentricity is brought back to its basics.
2. How, in those cases where polycentricity goals are pursued, are these goals put into in practice? Which instruments are being used and is it possible to categorize these?
3. What is the level of embeddedness of policies aiming at polycentric territorial development? This can be considered more or less as the round-up of the answers to the questions related to the previous three points. In particular we are interested in the historic dimension of polycentricity policies: is there an established tradition for example?

5.4 Research outcome

5.4.1 Objectives of national polycentric policies

Two main clusters of objectives linked with national (or regional) polycentric development policies can be identified (see table 5.1). The first relates to cohesion and is the diminishing of urban disparities in terms of population development, economic development, employment, GDP and service provision within national urban systems. The second cluster of objectives, which is more common than the first, was to enhance urban competitiveness.

Table 5.1 Main objectives of current polycentric policies in ESPON countries

Cluster of objectives	Country
Diminishing urban disparities (cohesion)	Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Norway, Poland, Portugal, Slovenia
Enhancing urban competitiveness	Austria, Belgium, Denmark, Estonia, Finland, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, Sweden, Switzerland, United Kingdom

The goal of diminishing urban disparities is related to a political understanding within a given country that certain differences between cities or urban regions are undesirable. Such disparities are often coined in terms of population development, economic growth, productivity, average income development, accessibility to public and private services (education, medical facilities, cultural facilities etc.) and/or the number and diversity of jobs available. In other words: there are gaps in the (national) urban system urban system that national polycentric policies tries to bridge. In relation to this there are types of cities that these policies try to strengthen. This is summarised in table 5.2.

Table 5.2. Type of gaps in national urban systems and privileged groups of cities.

Country	Type of urban disparities the policy addresses	Type of cities the policy focuses on
Denmark	Gap between the capital Copenhagen and other major cities or urban regions in terms of economic development opportunities	'National centres'
Estonia	Gap between the capital Tallinn and other major cities in terms of socio-economic development	Smaller country centres
Finland	Gap between five most urbanized regions of Finland and other cities or regional centres in terms of population development, employment and GDP.	Regional centres (medium and small towns)
France	Gap between the capital Paris and cities in the rest of the country	Urban areas except for Paris
Germany	Gap between cities in former West Germany and cities in former East Germany	Cities in former East Germany
Greece	Gap between the two largest cities, the capital Athens and Thessalonica on the one side and the next group of cities in the hierarchy on the other, as well as the establishment of currently lacking rural centres	Major cities outside Athens and Thessalonica as well as rural centres
Ireland	Gap between the capital Dublin and cities in lagging regions	'Gateway cities'
Italy	Gap between cities in the North and cities in the South, in particular addressing medium-sized cities	Cities in the south of Italy, in particular medium-sized cities
Latvia	Gap between the capital Riga and the rest of the urban system	Not specified
Norway	Gap between the capital Oslo and other cities in the south on the one hand and other regional centres on the other in terms of population development, employment and GDP as well as service provision	A selection of regional centres
Poland	Gap between the capital Warsaw and more diversified cities (mainly in the west) on the one hand and less diversified, lagging or peripheral cities on the other in terms of economic development	Less diversified lagging and peripheral cities (east Poland)
Portugal	Gap between the capital Lisbon and Porto on the one hand and the next group of cities in the hierarchy (the level of medium-sized cities is lacking)	Medium-sized cities
Slovenia	Gap between advanced western and central part of Slovenia vis-à-vis eastern part. Gap between Ljubljana and other cities.	National (regional) centres, urban regions and cross-border regions

Table 5.1 illustrates that even though the countries mentioned share the same overall objective of diminishing disparities in the urban system, still a large variety exists in types of urban disparities and cities on which the policy focuses. The most common type of urban disparities addressed is the gap between the top-level cities (most often only the capital) and the next cities in the urban hierarchy. This applies mainly to countries in which a relatively monocentric urban system is present. Another gap addressed by these policies is the lack of a certain category of cities within the urban hierarchy or the limited representation of cities in that category. Finally, a third kind of gap in the national urban system is more of a geographical nature, following from differences between regions in terms of economic development. Consequently, the focus is often on the level of cities immediately below the top-level city or cities (often medium-sized cities), a more or less lacking level of cities (medium-sized cities or rural centres) or on cities in a certain region.

The political rationale behind the objective to reduce such gaps as mentioned above varies. These rationales explain why a certain objective is being pursued. The analysis revealed three main rationales behind such a policy:

1. political norms referring to principles of economic and social cohesion and solidarity;
2. counterbalance a situation of (over)concentration in one place and under-utilization of resources and potentials in another;
3. prevention of a rural exodus.

All in all the first cluster of objectives related to cohesion could be considered a more recent version of traditional regional policy. It deviates from older interpretations of regional policy in that it focuses on cities rather than on industrial locations or lagging regions. Cities and groups of cities are now considered to be the engines of growth in regions. Obviously, different policy objectives are based on

different economic theories on how economic growth can be fostered. For instance, the focus on medium-sized cities in Italy is linked to the paradigm of industrial districts. Similarly, growth pole theories formed a basis for more traditional regional policies. Likewise, there is a whole set of theories, assumptions and arguments providing the theoretical underpinning for the current search for cohesion and competitiveness. Further research is needed to unravel this theoretical underpinning of polycentric development.

A policy that addresses the distribution of economic development over the national urban system may also be based on objectives relating to competitiveness rather than, or next to, cohesion. In fact, a polycentric development of the urban system is more often linked with competitiveness than with norms relating to cohesion, solidarity, over-concentration or underutilization of resources or the prevention of a rural exodus (see table 5.1).

A very common elaboration of polycentric policy links the size and importance of cities to different spatial domains of competition. This then results in a classification of the national urban system based on the principle of hierarchy. This means that different classes of cities are identified, e.g. major centres that have to compete internationally, national and regional centres having to compete nationally or regionally and local centres. Often this classification is based on a desired future situation rather than a present situation, thus indicating the desired development. In many cases appealing metaphors are developed for the centres that have to compete internationally, for instance 'European Metropolitan Regions' (Germany), 'Europols' (Poland), 'gateways' or 'gate-cities' (Greece, Ireland), 'Centres de Développement et d'attraction' (Luxembourg), and 'anchor cities' (Portugal).

In another elaboration, emphasis can be put on the endogenous potential of cities or for instance spatial quality as a means to enhance competitiveness. Though most national governments focus their attention on the major urban centres and their international position, some countries, most notably Italy, pay more attention to the strengthening of the position of medium-sized cities. In this case there is a link with the notion of industrial districts and its competitive advantages.

In some countries, national governments do not identify a type or list of cities to be promoted. Instead, they try to promote urban competitiveness by increasing the local or regional organizing capacity by fostering inter-municipal co-operation. Examples here are France, Italy, Germany, Netherlands. Sometimes another route is taken: enhancing the competencies and enlarging the territory of regions and cities through administrative reform. Examples include Latvia, Greece, Spain and France.

Lastly, increasingly popular is the designation of so-called 'urban networks'. In many countries the concept of urban networks is explicitly referred to in policies. Again, like with the concept of polycentricity itself this does not necessarily mean that the concept of urban networks is understood in the same way throughout Europe. Such a policy stimulates the creation of more critical mass in letting two or more cities located relatively close together form a more coherent functional entity and by fostering co-operation between them. This may for instance be a means to improve the international status of such an urban region (together they can be placed in a higher category, for which the individual cities lack mass), but also 'classic' urbanization and planning goals may apply. These urban networks are the object of research in Work Package 5 of the ESPON 1.1.1. project.

Both clusters of objectives differ according to the initial perspective taken: a cohesion oriented polycentric development is inward looking, seen from the perspective of the central government policy-makers: it focuses on the urban system

within a country or region. Contrary, the second cluster of objectives is outward-looking: it takes an international, European or global perspective resulting in the perceived need for international competitiveness.

The ESDP's main objective is to achieve a balanced and sustainable development of the territory it addresses, which is elaborated in three fundamental goals of policy: economic and social cohesion, conservation of natural resources and cultural heritage, and, a more balanced competitiveness. Polycentric development can be considered the key substantive planning concept to achieve these goals. Interestingly, polycentric development policies in the ESPON countries are linked to two of these three goals (cohesion and competitiveness), but not explicitly to the overarching objective of sustainable development.

These objectives of cohesion and competitiveness are often perceived as contradicting each other. Enhancing the competitiveness of a certain part of the urban system – for instance the handful of major cities in a country – may lead to increased urban disparities on a level below the national level. In some countries, such as Poland and Ireland, both objectives are pursued, but at different times. The creation of an integrated strategy promoting both cohesion and competitiveness remains the challenge of polycentricity.

5.5 Polycentric policies in practice

Three types of instruments can be related to polycentric development policies. As table 5.3 shows we distinguish between: (1) spatial implementation instruments; (2) non-spatial instruments and (3) strategic planning instruments. The three categories can be distinguished from each other in terms of focus, which is directed at spatial development in the case of spatial implementation and strategic planning instruments, and they can be distinguished as regards their type of application, which is direct impact in case of the first two types of instruments and secondary decision making in the case of strategic planning instruments.

Clearly, in this research the term 'instruments' has been given a broad interpretation. Apart from traditional instruments it refers also to agencies (policy subjects in terms of this project) and co-ordination mechanisms and therefore to concrete policy measures and as well as the policy system that applies them.

The most straightforward type of instruments are the so-called 'spatial implementation instruments'. Spatial implementation instruments mostly have the form of a regulation, a programme or a budget. They aim to generate a direct impact on the spatial and/or economic development of a specified area. Often such an instrument is the responsibility of just one government organisation (agency, department or ministry) which operates in relative isolation from other government actors. The agency has therefore relatively firm control over the application of the instrument. The successful application of such instruments may nevertheless highly depend on the extent to which the responsible actor can identify and contact direct addressees (not necessarily public actors) of the policy. Also this may be a reason why polycentricity implies a need to add a territorial dimension to European sectoral policies. Examples of such instruments are investment programmes, contracts, relocation of (national) administrative agencies and programmes aiming at creating partnerships.

Table 5.3 Overview of chapter contents: categories of instruments

Spatial implementation instruments (§ 3.2)	<ul style="list-style-type: none"> - Investment programmes - Land use restrictions (zoning) - Location based taxes - Re-locating (national) administrative agencies - Covenants, contracts, agreements - Infrastructure development - Creating co-operation and partnerships - Project based approach - Territorial action plans - Providing minimum services of general economic interest - Territorial development monitoring system
Non-spatial instruments (§3.3)	<ul style="list-style-type: none"> - Administrative reform - Budget equalisation - EU funding
Strategic planning instruments (§ 3.4)	<ul style="list-style-type: none"> - Spatial vision - Regional economic development strategy - Planning guidelines - Policy subject - Horizontal co-ordination mechanisms - Vertical co-ordination mechanisms

Most of the spatial implementation instruments have only been mentioned occasionally by respondents (see Part B) and were in general not exclusively linked to polycentric development objectives. Only in a few cases respondents mentioned spatial implementation instruments as an example of a polycentric policy themselves, for instance in the Austrian case on the relocation of the Länder government from Vienna to St. Pölten. However, such examples are exceptions rather than a rule. In most cases there is not much to tell about the use of these instruments in terms of polycentric development. The instruments themselves do not result in polycentric development by nature. However, they can be helpful as part of a larger policy framework that explicitly aims at polycentric development.

It seems possible to link spatial implementation instruments to the two major about objectives of polycentricity in Europe: competitiveness and cohesion. Some explicitly aim at cohesion, like for instance the regional policy investment programmes, location based taxes and regulations concerning minimal provision of services of general interest. As regards competitiveness the creation of co-operation and partnerships, which are also crucial in the strategic projects and territorial action plans approach, are frequently used examples. Both types of instruments seek to create institutional capacity by bringing public and private actors together in order to develop joint problem perceptions and policy strategies. Other instruments can serve both objectives like contracts, covenants and agreements, the re-locating of administrative agencies and developing infrastructure can be in the interest of both objectives depending on their implementation. Territorial monitoring systems and land-use restriction issued by national or regional governments, being pure spatial planning instruments, cannot easily be related to cohesion or competitiveness objectives.

A second category of instruments are 'Non-spatial instruments'. The most well known example of such instruments is administrative reform, for instance the

creation of a third government layer as is happening in Central and East European countries. In general, these instruments can be highly relevant for polycentric development as they may stimulate institutional capacity. There are a few considerations, though, regarding the potential effectiveness of these instruments. The first consideration relates to their real life impact on the spatial-economic development. In fact, this remains to be seen as the instruments were designed for different purposes in the first place. A second, more practical consideration, is that the competency to decide on such issues falls outside the realm of planners or regional development circles, which normally feel most acquainted to polycentric development. Rather final decisions on these instruments are prepared in the corner of the Ministries of Finance or Interior not to mention the Prime Ministers' office. This makes 'non-spatial instruments', although probably extremely relevant for polycentric development, a difficult instrument to be applied by those actors who really try to promote polycentric development. Because of their often limited powers they can only hope that those who have the power make the 'right' decision.

Strategic planning instruments, finally, are the most relevant instruments for polycentric development. Especially the spatial visions and regional economic development strategies can play major roles in the pursuit of polycentric development. The main differences between spatial visions and regional development strategies are firstly their scope, which is often much broader in the case of spatial visions that take all kinds of spatially relevant issues into consideration whereas regional economic development strategies predominantly focus at economic development, and secondly their status, which is often low in the case of non-binding spatial visions that for their application primarily rely on their communicative powers and as such can be seen as 'soft instruments' whereas regional economic development strategies are often formal policies that have command over or are based on a range of policy instruments and as such have the character of a more powerful or strong instrument. Planning guidelines appear to be somewhat less relevant. Of the total of 18 countries that claim to pursue polycentric development as a major objective (see Tables 1.1 and 3.5), 17 make use of spatial visions. Only Norway does not have a spatial vision and works with a regional economic development strategy. Often spatial visions and regional economic development strategies are both used. The wide use of spatial visions does not automatically mean that spatial visions are in all cases the primary instrument for polycentric development, since other public policies may have a far greater impact on the national spatial structures. In most cases, however, spatial visions are the only policy instrument that explicitly voices the promotion of polycentric development. As such, through their communicative powers, spatial visions may be extremely important for polycentric development since they influence decisions of others.

One of the key indicators expressing the role and the communicative power of spatial visions is the extent to which they include a spatial conceptualisation of the territory. It should not be taken for granted that a spatial vision includes a conceptualisation of the territory either in maps or words. This counts especially for countries that do not have a long spatial planning tradition. Also we have seen that the ESDP itself barely contains a conceptualisation of the European territory. After all, it does not come much further than the 'pentagon'. A spatial conceptualisation is an interpretation, be it in maps or words, of the structure of the territory. With regard to polycentric development it is important to understand how regions and cities contribute to the economic performance of a country, as well as the identification of, amongst others, economic development axes, and gateways. Main

considerations in this regard may be whether cities are fully integrated in the national economic system or operate in relative isolation, and whether their local economy is diversified or depends on niche markets. It is also interesting to analyse whether these characteristics can be explained by the geographical location of the territory and if institutional or socio-economic factors play a role. Be that as it may, conceptualisations can at least be found in spatial visions of Belgium (Flanders as well as Walloon Region), Denmark, Estonia, France, Germany, Ireland, Luxembourg, The Netherlands, Poland, Switzerland and the UK regions discussed in Part B of this report. Generally this kind of policy expression seems more common in North than in South European countries.

In this research the concept of spatial vision has been given a broad definition. Spatial visions are non-binding or have an informal status, like the ESDP, and are considered 'soft' instruments. They aim at generating secondary decision-making processes by a wide variety of actors. What matters by the application of these instruments is the policy process rather than the policy document itself.

The status of the institution in charge of formulating and promoting spatial visions is extremely important. Often this status is rather weak. This is why such institutions, mostly spatial planning agencies, have an important role to play as a mediator between different interests with spatial impact and as an ambassador as it depends on other, more powerful actors, for the application of its policy.

It is in this context that we have looked to co-ordination mechanisms, which facilitate these processes of convincing and co-ordinating collective action. Horizontal and vertical co-ordination mechanisms, which seem to be crucial for the implementation of polycentric development policies, can be found in most countries in various forms. For horizontal co-ordination probably interdepartmental mechanisms are crucial at official level. As regards vertical co-ordination mechanisms we see a dominance of those with a traditional a top-down character. There is, however, in many countries increasing interest in policy implementation strategies focussing on the creation of partnerships and bottom-up initiatives. This may create institutional capacity at regional level.

At the moment, most policies that claim to pursue polycentric development do not articulate a specific programme or strategy that explicitly indicates political choices about where, what, how and why certain developments should be stimulated. From this, we have to conclude that the concept of 'polycentric policy' in practice has a very broad, or perhaps not yet crystallised definition. Up to now, in Europe the concept of polycentricity has been used to characterise almost any policy which is included in the range from regional economic development policies to policies dealing with the location of very specific investments in urban areas.

On the whole there is at the moment throughout Europe no single definition of what a polycentric development policy is. Different policies are connoted to polycentric development by different experts from different countries. However, in many countries polycentric development policies can be said to be in the process of maturing. Because polycentric policies, where they exist, are often only in a preliminary stage it is very difficult to gather information regarding the instruments and processes around polycentric development policies. In most countries it is difficult to describe concrete polycentric policies as most policies which may be interpreted as contributing to polycentric development are not coined 'polycentric'. The planning expert therefore needs to reinterpret the policies based on their own understanding of what polycentricity corresponds to.

5.6 The embeddedness of national policies

Two questions can be asked in relation to the embeddedness of national policies aiming at polycentric development of the national territory. First, is there an established tradition or has the concept of polycentric development been applied in the past already? Second, are there recognisable forms of co-operation between policy subjects and public (and private) actors with the aim of putting polycentric development policy objectives into practice?

The answer to the first question is that although the term 'polycentricity' is quite new there have been some cases of an application of the polycentricity concept *avant la lettre* in the past. It is also clear that related concepts or policy goals have been pursued in the past. Nevertheless, in the majority of the 29 ESPON countries the introduction of the polycentricity concept in national policies or in discussions about territorial policies is something of the last five years or so. The diffusion of the polycentricity concept across Europe is nevertheless striking. This does not mean that in all cases where the polycentricity concept has become used the concept has become influential in the sense of directing the application of concrete policy instruments. What we do see though are remarkable examples of application in spatial planning documents. And although without exception these documents are non-binding their influence might be considerable. However, acquiring a direct impact on operational decisions takes time. The latter is the main answer to the second question which may be asked in relation to the embeddedness of the polycentricity concept.

5.7 Concluding remark

In this report all sort of categorizations have been presented. For instance the main objectives of policies aiming at a polycentric development of the national territory have been identified and countries have been grouped according to the main objective which is being pursued. Similar exercises aiming at categorising have been carried out when reporting the concrete practice of polycentric policies. In a sense it would be tempting to try to develop some overall umbrella categorization of countries. For instance one can wonder whether shared characteristics concerning the organization of the national urban systems leads to similar policy trajectories. This would however deny the importance of the intervening political systems in operation. For instance the urban system of the Netherlands, Germany and Switzerland are more or less comparable. Nevertheless we are dealing here with a unitary state versus two federal countries. In the case of these three countries the broad objectives of policies are comparable but certainly not the policies in practice. Much more refined research is needed before some sort of categorization would present itself comparable with, for instance, the one produced in the context of the EU 15 compendium of planning systems (CEC, 1997a). However, it is doubtful whether it is possible to develop some sort of umbrella categorisation. In our view it is much more sensible to accept the present political diversity as it is. Broad categorizations often lead to the conclusion that policies which work in one country or region will also work somewhere else. Benchmarking effective policies is a useful exercise, hasty institutional transplantation is often counterproductive though.

6 Policy recommendations

6.1 Introduction

The ESPON 1.1.1. project has in total six work packages. The present report covers the second work package. The sixth work package deals with the overall policy recommendations concerning the ESPON 1.1.1. project. On the basis of the research carried out in the context of the second work package five important policy recommendations can be formulated which can serve as an input for Work Package six. These are discussed below.

6.2 Polycentricity: a territorial contribution to the Lisbon strategy

The term ‘polycentricity’ serves as a label for quite a variety of policy goals. This was to be expected since the document where polycentricity has been introduced, the ESDP, uses the concept in various meanings. Although the concept originates from a discourse on the desirability of the present spatial-economic structure of the European continent, and thus addresses the issue of Europe having just one (very) large economic core area as opposed to the United States, the writers of the ESDP also relate the concept to other spatial scales. Interestingly, the more one moves down the spatial scale, the more policy objectives are integrated in the concept. This is why the concept has become a container of all sort of policies, which the makers of the ESDP would like to become reality. Although this is all perfectly understandable the danger is that polycentricity becomes at the end less useful since it could mean anything. So, a first recommendation would be to disentangle the discussion by going back to the starting point of the polycentricity concept: where for instance the United States are characterised by several large zones able to compete on the global level this is not the case when looking at the European territory. We would like to relate the principle of polycentric development to the issue of the competitiveness of the European territory at the global level. It is in our view extremely relevant to relate the concept of polycentricity and to the Lisbon strategy and leave from the assumption that territorial policies can contribute considerably to this strategy.

6.3 Elaborating polycentricity: a case for selectiveness

To position the principle of polycentricity in the context of the Lisbon strategy requires a selective approach: selecting those areas (urban regions) which already have or are likely to have the greatest potential of becoming competitive. In many countries investigated in this report there is a tendency though to elaborate the principle of polycentricity in such a way that all sorts of smaller urban centres and regions are seen as playing an important role in bringing about a polycentric development of the national territory. It is clear moving down in these hierarchies of

spatial designations we leave the realm of competitiveness at the European and global scale and enter the realm of what is considered a fair distribution of wealth and income and a acceptable level of public services being available in all corners of the nation. Competitiveness and equity as two different (but nevertheless related) policy goals spark off different spatial designations, different portfolios of policy instruments and different agents. Potential conflicts can be cushioned by:

1. Elaborate substantiated discussions in which many stakeholders, agencies, organisations and individuals participate;
2. The drawing up of complementary policy instruments for those areas/regions not favoured by polycentricity policies (through, for instance, policies directed at the improvement of urban-rural partnerships etc.).

Once an approach is chosen persistency over time is needed specially in those cases where there is a big gap between the present situation and the desired situation (see below). Polycentricity has to become *embedded* in overall policy for some time, without becoming doctrinal, i.e. not being able to learn. The European Union can play an important role here. The framework of European cohesion policies lasts normally for a period of at least six years. Including phasing out periods territorial objectives often last for 10-12 years which is long enough to set things in motion.

6.4 Bridge the gap between the present situation and the desired future

The second policy recommendation support by the ESPON 1.1.1. WP 2 research deals with the *ambition* of polycentricity policies. In the entire ESPON project on polycentricity four levels of *centricity* in the urban system (irrespective of the scale) are discerned: integrated monocentrism, outcoming polycentricity, metropolitan polycentricity and integrated polycentricity. These qualifications are related to the present structure of the urban system within a country.

Similarly the main policy objectives pursued in a country can be distinguished, using the same categories. What can be noted is that in some cases there is a wide gap between the present state and the desired state of the urban system. For instance, in Ireland the ambition is to turn the actual situation (to be characterized as integrated monocentrism) into integrated polycentricity. Although there might be legitimate domestic political reasons behind this ambition it remains to be seen whether this policy might have a chance of becoming effective. For instance: the necessary available government resources at the long run are not available. More importantly market forces *which currently have produced integrated monocentrism* are unlikely to produce another urban pattern.

The general recommendation here could be – since spatial and/or regional-economic policies in no country have ever been capable of drastically alter the spatial-economic structure – a *phased policy* has to be pursued. For instance: countries characterized by persistent integrated monocentrism might benefit more from a moderate policy objective like metropolitan polycentricity.

In general it might be possible to design portfolios of relevant policy instruments if a country wants to ‘jump’ from one category of the present state of the urban system to another. For instance: in the case of integrated monocentrism it makes sense to invest in large scale infrastructure because otherwise no ‘distribution’ of economic development is like to occur at any rate. If, seen from the objective of polycentricity, a country or region has reached a much more ‘mature’ state (for

instance: metropolitan polycentricity), other, more soft policy measures are becoming highly relevant.

6.5 Polycentricity policies in practice: capacity building needed

In the context of chapter three the conclusion was reached that the effectiveness of polycentric development policies seems to rely on a sound co-ordination of policy efforts. At the present in many countries it is from national spatial planning that polycentricity is advocated. In most countries however spatial planning can only deploy regulatory frameworks, mostly concerning land-use. It is therefore of crucial importance to build bridges with and between sectoral departments with spending power. One can think here of infrastructure/public works or the regional-economic policy administration. There is a need for *horizontal capacity building*.

There is also a 'vertical' dimension. The success of any policy directed at a polycentric development of the national territory is highly dependent on the capabilities of lower tiers of government to act. Powerful local and regional players are needed. Genuine polycentric development is regionally led: capacity building at lower levels of scale becomes necessary. In those countries where there is no established tradition of strong regional government some sort of devolution is needed: *regional capacity building*.

But we can take the issue of governance further. It seems the concept of polycentricity is very much still a concept rooted in government administration (national/regional) and not taken up by the private sector. Spatial decision-making by the private sector – where to invest?; where to locate or relocate? – is highly decisive whether polycentric development will be brought about. It is therefore crucial to involve the private sector in polycentricity policies, for instance through the involvement of national business organizations. Needed are powerful economic argumentations in favour of polycentric development, such as long term advantages of using the economic potential of the entire national territory or the long term disadvantage of over-concentration.

6.6 Stimulate soft instruments: they often have considerable impact

Above we have stated that at present in many countries it is from national spatial planning that polycentricity is advocated. In terms of authority and power spatial (or territorial) planning is often a weak player. There are many examples though where spatial planning has proven to be highly successful in bringing about appropriate frames of references for policy decisions. In addressing a large and varied group of stakeholders (see the previous point) soft instruments like a policy document can become powerful instruments. Especially in those cases where indeed spatial planning is advocating the policy objective of polycentricity, but this objective is politically not accepted yet, this policy domain should use the maximum of its *communicative power* being available. This means:

- issuing documents with sound narrative qualities;
- investing in spatial visioning;
- investing in research and the dissemination of research results;
- starting a political discussion to put the subject on the agenda.

The previous chapters of this report have shown a remarkable widespread use of what is often referred to as spatial visions. There is no common definition of what constitutes a spatial vision. Related to the issue of polycentricity we would like to assert that a spatial vision is characterised by the ambition to unravel the *territorial structure* of a territory and to discuss the *territorial position* of this area seen from a geographically wider perspective. Ultimately this could lead to an image of what a polycentric structured area/country could look like. Not so much the vision or document itself is important but the visioning process organised around this particular document. If such a process is organised in a highly sophisticated way, meaning that large groups of *relevant* stakeholders are addressed and participate, a soft instrument like visioning could have a large impact. Such visioning – or whatever term seems to be appropriate or opportune – could be build in the future operations of the structure funds in the post-2006 period.

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The Application of Polycentricity in European Countries

Part B: Country Reports

**Work Package 2 of the ESPON 1.1.1 Project
on 'The role, specific situation and potentials
of urban areas as nodes in a polycentric
development'**

**Bas Waterhout
Evert Meijers
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This research has been carried out under the authority of the ESPON 2006 Programme and in co-operation with the ESPON 1.1.1 Transnational Project Group with Nordregio as leadpartner.

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1 Introduction

The research carried out in the second work package (WP 2) of the ESPON 1.1.1. project has the aim to look at the use or *application* of the concept of polycentricity in the countries forming the study area of the ESPON 2006 programme. The central question is as follows: *are there policies in operation or being promoted addressing the distribution of economic and/or economically relevant functions over the urban system?* The issue of policies aiming at polycentric development has not been studied before in an area as wide as the study area covered by the ESPON 2006 programme. The ESPON 1.1.1. project has therefore followed a selective approach. Its second work package focuses on the *national* level. This is part B of the report showing the results of the ESPON 1.1.1. second work package. It contains 23 chapters reporting on the countries of the ESPON study area individually. The final chapter (25) reports on six transition countries together.

The empirical base of this report (part A and part B) is largely formed by the results of a questionnaire sent out to key persons in all the countries forming the ESPON 2006 Programme area. In section 1.4 of Part A we have explained the use of this questionnaire. Appendix I presents the respondents to the questionnaire. Appendix II presents the full questionnaire.

Basing a research project largely on a questionnaire is, to some extent, a vulnerable research method. One is dependent on the level of co-operation among the respondents. We anticipated that there may be national cases extremely difficult to lay our hands on. In investigating territorial policies in the EU 15 the situation is, on the whole, fairly easy. The involvement in the ESDP process and the ESPON programme of these countries makes it possible, in most cases, to identify national governmental agencies and respondents. Some of the accession countries proved to be difficult to involve in the research. In this sense we have had an experience comparable with the Compendium exercise carried out in the context of the INTERREG IIC project 'Vision Planet' involving CADSES: Central European, Adriatic, Danube and South Eastern European Space. Where no national respondents were identifiable consequently as a proxy members of the ESPON 1.1.1. consortium stepped in. Nevertheless in some cases the results of the research are fragmentary, although considerable effort has been made to study secondary literature which could fill in gaps or could give more context to the results of the questionnaire. In general, the examples of polycentric policies presented in each country report are derived from the questionnaires. It is important to underline the entire WP 2 research project is based on the combination of the judgment of national experts, the research team's own interpretations of the questionnaires and the policy documents sent in plus the analysis of this secondary literature.

2 Austria²

2.1 Introduction

The geography of Austria is characterised by a long relatively narrow piece of mountainous land in the west (Tyrol, Vorarlberg, Salzburg) that stretches out into north-eastern direction far into the large bulb of land where the four larger cities are located. Because of the Alps and the large forested areas large parts (more than 50%) of the country cannot be developed. The bulb of land is characterised by, as indicated a central mountainous area, bordered by a low-land corridor in the north, which runs from Munich (Germany) in the West to Vienna in the East via Salzburg and Linz, and a second low-land corridor in the southeast that runs from Vienna into south-western direction to Graz and Klagenfurt. The fifth large city, Innsbruck, is the capital of the *Land* Tyrol in the West and located at the North-South Alpine transit route from Munich to Italy via the Brenner pass (see Figures 2.1 and 2.2).

Most people live in the two low-land corridors, with a dominance of the Vienna region. One out of five Austrians lives in the capital whereas one out of four lives in the capital and its hinterland. Other regions where the population density is higher than 150 inhabitants per square kilometre are those of Salzburg, Linz and Graz. The national average population density is about 100 inhabitants per square kilometre. In the nineties the sharpest increases in terms of population growth of 4 to 8% (and a national average of +3,5%) were found in the west in Salzburg and Tyrol and the region around Vienna. In terms of GDP the four regions with Vienna, Graz, Linz and Salzburg are the only with a score above national average. The northern and southern border regions generate the lowest GDP's below 70% of the national average, whereas the western mountainous and the central part note scores between 70% and 100% (Vision Planet, 1999; OECD, 2001).

² Authorized by Gabriele Tatzberger and Friedrich Schindegger of OIR.

Figure 2.1 Administrative structure Austria: *Länder* and capitals
 (http://europa.eu.int/abc/maps/members/austria_en)

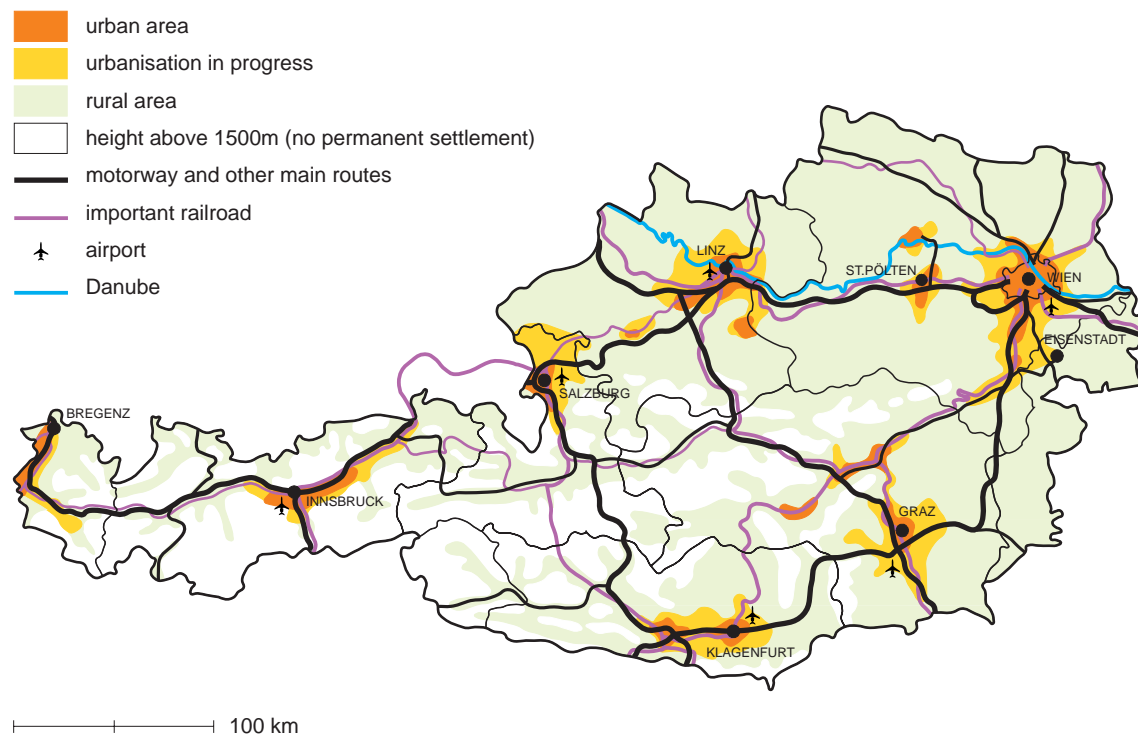


2.2 General position of polycentricity

In Austria there are no formal national (federal) policies that take polycentricity on board as an explicit goal. As usual in federalised countries, also in Austria there is a sharp division between policy competencies at the various policy levels. At the federal level there are only competencies for sectoral policies (with spatial impact) concerning the development and maintenance of roads, railways, waste and spatial planning issues related to forestry and water. Spatial planning is a competency of the *Länder* (states) and municipalities. In general spatial planning in Austria as regards levels and competencies is characterised by:

- Local level: strong autonomy on land-use, well equipped with building regulation plans, zoning plans and local development schemes;
- *Länder* level (autonomous states like in Germany or Switzerland): the main competence of spatial planning is with the 9 *Länder* by 9 spatial planning laws; regional plans (applying to parts of the states considered as the spatial frameworks of the local plans) are only partially in use (despite spatial planning laws of the *Länder* providing all the necessary regulations). Some regional plans (worked out and adopted by the respective *Länder* government) deal with issue of 'decentralised' or polycentric development.
- Federal level: no spatial planning competency, only competencies for sector policies, nevertheless there has been developed a non-binding "Austrian Spatial Development Concept 2001"

Figure 2.2 Spatial structure of Austria (Vision Planet, 1999).



The Austrian Spatial Development Concept 2001

While polycentric development does not seem to have a place in the general national spatial-economic development discourse, it is interesting to note that at the federal level a non-binding national ‘Spatial Development Concept’ (*Österreichische Raumordnungskonzept (ÖRK)*) has been developed in 2001 (replacing the concept of 1991). It is however, a consensus document between the so-called ÖROK partners (ÖROK being the Austrian Conference on Spatial Planning), being the federal government, *Länder*, municipalities and economic and social partners. Since there is no spatial planning competency at the federal level it thus has the character of a recommendation or communication to “...all parties involved in planning work with a spatial impact” (ÖROK, 2002, p.4).

Under ‘guidelines and principles’ the document lists its most important objective which is to “...make sustainability an inherent part of Austria’s spatial development policy.” (p. 9) and to contribute to “...economic and social cohesion, equal living conditions in the subregions and (...) social integration.” (p. 10). This is translated into spatial terms by stressing that economic activities and practices should be guided by the objective of a balanced spatial development in order to create harmony between social, economic, cultural and ecological functions of space. In more practical terms this comes down to a “...spatially well-balanced reinforcement of the competitiveness of the regions, securing equal access to infrastructure and knowledge, and the maintenance of the natural environment as the foundation of life and of the cultural heritage...” (p. 10). This makes the document fit in the planning discourse of the ESDP and in due time relevant in terms of polycentric development. The Austrian Spatial Development Concept 2001 is, however, no formal policy and its impact remains to be seen.

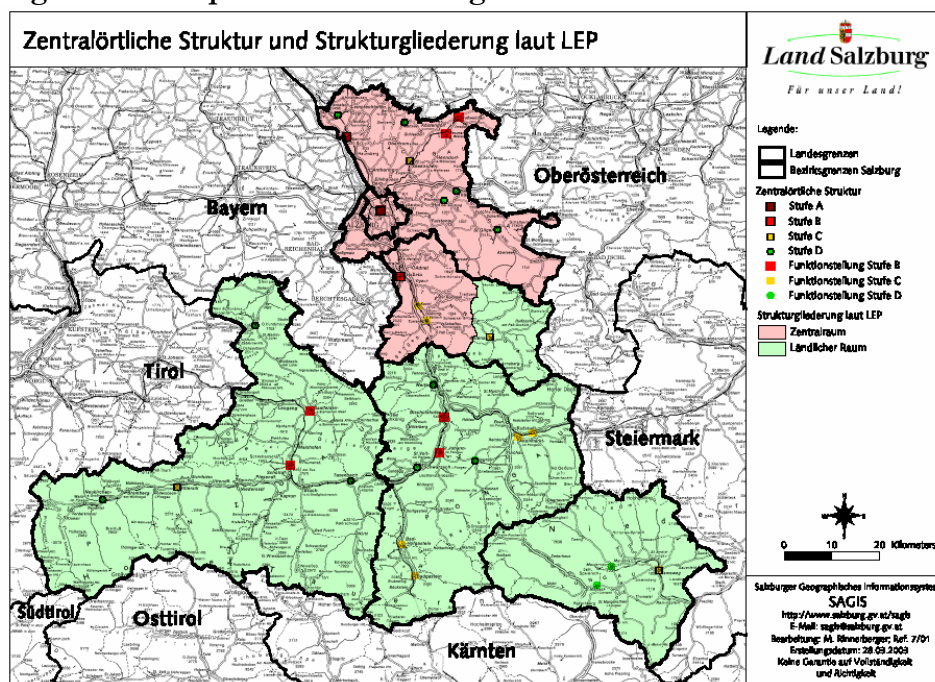
Although, as an Austrian study on polycentricity of 2002 (Schindegger and Tatzberger, 2002) states, polycentric development as such has never been the topic of debate in Austria, there are at the regional level examples of decentralisation strategies, which can be seen as an interpretation of polycentric development. In the following two examples of such decentralisation policies will be discussed. It concerns the ‘Development programme for the province of Salzburg’ that includes a strategy for new residential and business settlement developments and the re-location of the provincial government from Vienna to St. Pölten.

2.3 Examples of polycentric policies

2.3.1 Landesentwicklungsprogramm Salzburg

The Landesentwicklungsprogramm Salzburg (Development programme for the province of Salzburg) includes a specific programme “Siedlungsentwicklung und Betriebsstandorte im Salzburger Zentralraum” (settlement development and business locations in the central area of the province of Salzburg) which contains a strategy promoting the decentralised development of residential and business locations. It is developed by the spatial planning department of the provincial government and was introduced in 2001. The programme is binding for municipalities and spatially relevant sector policies of the provincial government itself (e.g. subsidised social housing). The term ‘polycentricity’ as such is not used, instead it talks, as of 1994, about promoting ‘decentralised concentration’.

Figure 2.3 The province of Salzburg and its settlement structure.



The main rationale behind the programme is to reduce the settlement pressure on the city of Salzburg and its immediate surroundings (which dominate the province) by promoting the development regional centres within the province. The province as such can be regarded as monocentric, which is mainly a result of morphological circumstances as just parts of the land are available for development because of the alpine character of the province. It is therefore that a functional division is made between the ‘Zentralraum’ (central area) and the ‘Ländliche Raum’ (rural

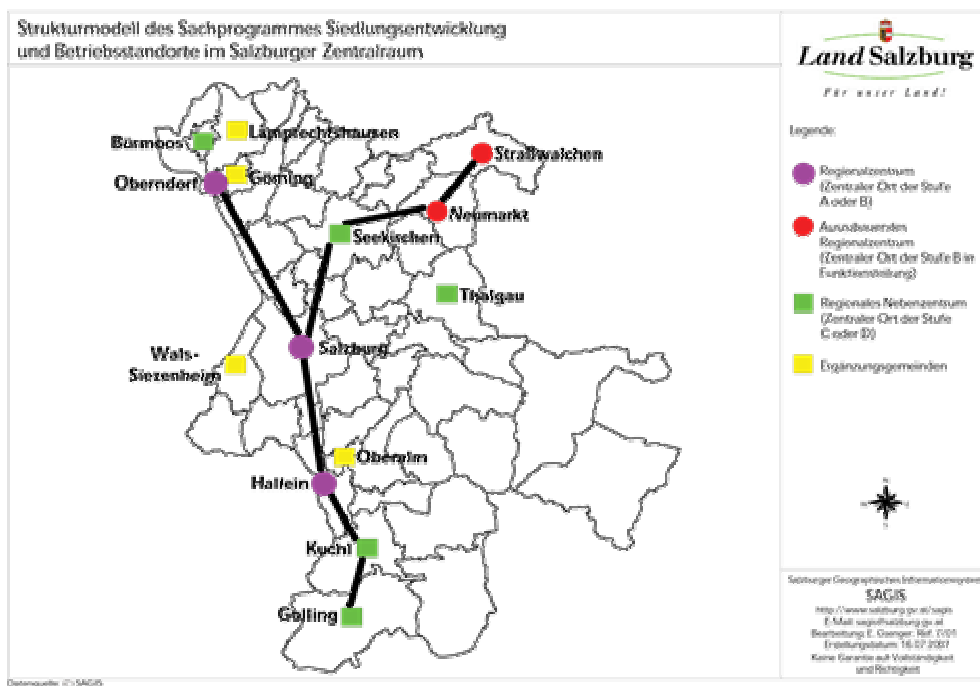
area), the latter of which is basically located in the southern Alpine part of the province. The policy under consideration therefore only applies to the *Zentralraum*, or central area (See Figures 2.3 and 2.4).

Within the central area a distinction is made between four types of cities and towns:

1. Regional centres, level A or B (according to central place hierarchy);
2. Regional centres to be developed, level B in terms of functional importance;
3. Regional sub-centres, level C or D;
4. Additional municipalities

The policy is implemented via financial promotion and municipal zoning and building plans for which the programme is binding. Only under certain conditions (determined by the programme) the government will subsidise housing development. The development and elaboration of binding zoning and building plans is the responsibility of the municipalities and the *regionalverbände* (association of several municipalities at the regional level). Clearly, the type of application is ‘programming’.

Figure 2.4 Decentralised concentration strategy for Salzburg central area



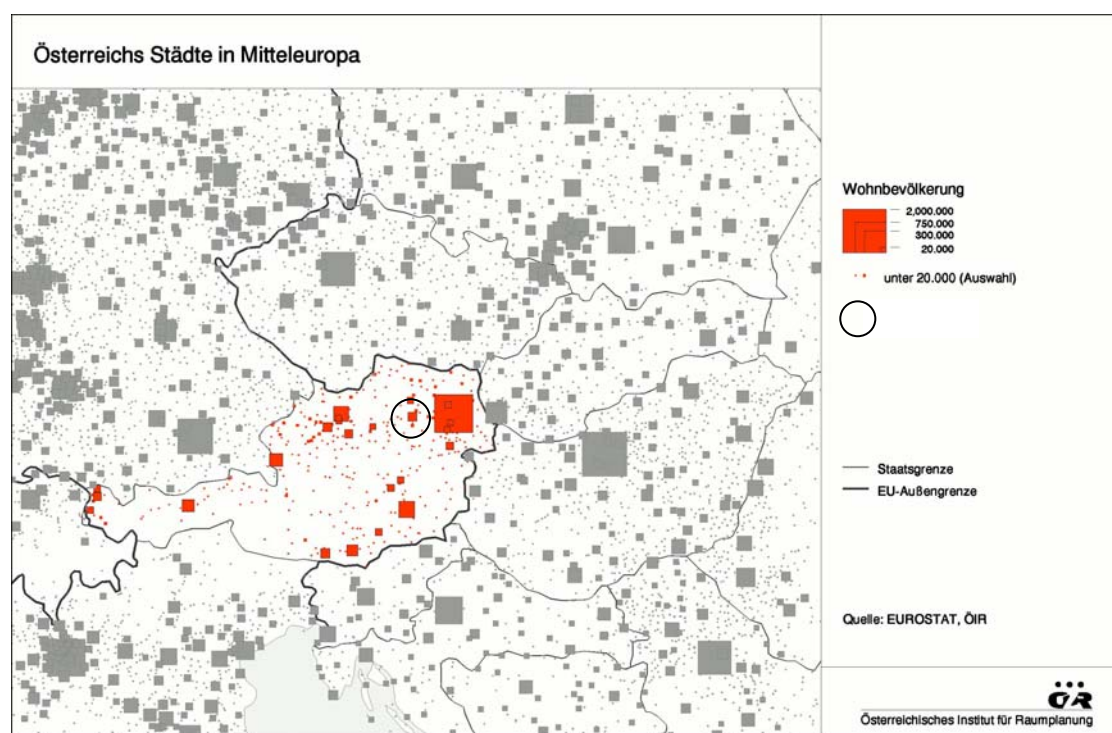
2.3.2 Lower Austria/ St. Pölten re-location of the government seat

In the mid 1990s the seat of the provincial government of Lower Austria, which until then was located in (the federal capital) Vienna, has been moved to St. Pölten, a medium size town 60 km west of Vienna (see Figures 2.1 and 2.5). The objective was to stimulate the development of the new provincial capital into a ‘growth pole’ and to take away some pressure from the suburban

area of Vienna. The initiative was taken by the provincial government and seems to be successful so far.

Lower Austria which is the province surrounding Vienna must be regarded as dominated by the city of Vienna (forming a province in itself). The settlement structure at the regional level may be called monocentric (Vienna: 1,8 Mio inh., next biggest city: St. Pölten: 50 000 inh.). There was a primary political interest to give the province of Lower Austria its own capital city. The political aim for the new capital was to demonstrate its autonomy and promote regional development but also to enhance the volume of tax income shares. After the political decision a referendum was organised for the people of Lower Austria. A majority voted positive and choose St. Pölten as the new residence of the government. The actual transfer of the government took place between 1987 and 1997.

Figure 2.5 Location of St. Pölten as against other Austrian and Central European cities



After
the

political decision and the referendum the realisation of the new city part in St. Pölten started – with location evaluation, competition etc. No specific spatial planning tools (i.e. maps and development schemes) have been used during the referendum and the decision for the new quarter in St. Pölten.

The ex-ante-analysis of the presumable effects of the project and the comparable evaluation of possible locations may be considered as a Territorial Impact Analysis -TIA (although never designated by that term). An ex-post-evaluation confirmed the predicted impacts.

In fact, at the time in the 1980s, there has been some discussion about ‘decentralisation’. The concept of ‘polycentricity’ was and is still largely unknown outside of a hand full of people behind the construction of the new capital St. Pölten. The major motivation was a pure political one, to strengthen the province of Lower Austria as a whole was the main rational argument. The big expectations connected with the establishment of the provincial capital – increased employment and economic value added - actually have proved to be realistic.

2.4 Conclusion

Although being implemented in specific ways, polycentric development as such is not a central aim in Austrian policies, be it at federal or provincial level. Being a federal country, there is no spatial or regional economic planning competency at the federal level. These are the domains of the *Länder*. As a consequence examples of polycentric policies, like for instance ‘decentralised concentration’ and the transfer of public administration agencies, can only be found at the level of states. Programming seems the dominant type of application for these kinds of initiatives. Also, because of morphological constraints it is not possible to pursue in every part of the country a polycentric development.

Interestingly, as in other federal countries, like Germany and Switzerland, an informal spatial planning document covering the whole country has been developed by the Austrian Conference on Spatial Planning involving the prime minister and his colleague ministers, the *Länder* and the social parties who all committed themselves to the Austrian Spatial Development Concept 2001. In this document one can trace elements of the ESDP discourse and in due time a focus at balanced development, economic and social cohesion, sustainability and competitiveness. Although this is the third of its kind (earlier concepts have been developed in 1981 and 1991) it remains to be seen whether the Concept will influence policies or not as it only can rely on communicative power.

2.5 References

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3 Belgium³

3.1 Introduction

During the last 30 years Belgium has gradually evolved into a federal state, consisting of three so-called 'Gewesten' or regions: Flanders, the Walloon provinces and the capital region Brussels. This transformation is the result of considerable social, economic and cultural differences within the country. Most important is the language difference. Belgium is roughly divided into a Dutch speaking community, Flanders with 5,8 million inhabitants, and a French speaking community, the Walloon provinces with 3,3 million inhabitants. Moreover, a small minority of the Walloon provinces speaks German. The Brussels' inhabitants (1 million) speak predominantly French. The capital region of Brussels is entirely enclosed by Flanders territory and there is a daily commuting flow of about 200.000 Flemish inhabitants to Brussels (De Vries, 2002; Albrechts, 2001).

There were still wide territorial disparities in Belgium in 1998. However, inequalities in settlement and productivity appear to have narrowed. This does not apply to employment growth, which is benefiting the Flemish region more specifically. By and large, however, the conclusion is that social and economic trends across the country are converging (OECD, 2001).

Most of Belgium is very densely populated with over 300 inhabitants per square kilometre. Only the south-eastern part of the Walloon region has lower densities. 10 percent of the Belgian population lives in Brussels. Apart from Brussels every region has seen its population increase the last decade, with the sharpest rise in the Walloon region. It should be noted that from 1997 the population of the Brussels Capital Regions also begun to rise again. (OECD, 2001) Flanders is characterised by a high number of inhabitants per square kilometre that are quite evenly distributed over the territory around the gravitation point in the middle area of Flanders marked by the cities Antwerp, Ghent, Brussels and Leuven, which form the cornerstones of the so-called Flemish Diamond.

As regards GDP the provinces of Brussels, Antwerp and West-Flanders have the highest per capita. This comes down to the services and main European Union institutions in Brussels, the large seaport in Antwerp and the tourism industry and port activities along the coast in West Flanders. The three provinces together produced 46 per cent of the nations GDP in 1997. During the past decade there was a slight decline of the concentration in the three most productive provinces whereas the productivity of the other provinces increased. Consequently the per capita GDP seems to become more evenly spread (OECD, 2001).

Spatial planning is a competency of the regions, which means that there is no competency at the federal level (Albrechts, 2001). Next to spatial planning also other policy domains with spatial impact are competencies of the regions, except for the construction of railways and the national Airport Zaventem, which remains a competency of the federal state. The national spatial planning law of 1962, which put much emphasis on spatial plans, has in the end of the 1990s

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been replaced by three regional spatial planning laws that leave more room for strategic planning in order to be able to better adjust to changing spatial development trends. Both Flanders and the Walloon region have recently produced regional plans covering their whole territory.

3.2 General Position of polycentricity

Although the regions all pursue their own spatial planning strategies one could say that via the concept of the Belgium Central Urban Network, to which cities of all three regions belong, they add together to a polycentric development at the national scale. The background of this is a strong recognition, especially in the Walloon region, of the central location of Belgium at the crossroads of the polycentric urban network of Northwest Europe between the metropolises of London, Lille, Paris, Sarre-Lor-Lux, Rhine-Ruhr and the Randstad. Also at the regional scale itself a more or less polycentric strategy is pursued (see section below).

As regards Belgium policy in general one can say that the evolution during the last 25 years of the political and administrative organisation was not specifically directed to a polycentric development objective. Due to the institutional administrative and political organisation it seems actually impossible to develop a national polycentric development strategy.

In this respect it is important to note that because of the two language communities (and thus territories) a so-called *wafelijzerpolitiek*, or ‘waffle iron politics’ is being followed, which implies that a financial contribution to the policies of one language community is automatically compensated with a similar contribution to the other. As a consequence, regions were sometimes confronted with an amount of money for which they did not have well considered purposes. In terms of budget, however, there are no differences between the language communities, which largely overlap with the Flemish and Walloon regions. Potentially, this leads to equal opportunities for inward investments in both parts of the country and does at least not negatively influence a possible contribution to a polycentric development.

3.3 Examples of polycentric policies

3.3.1 Spatial Structure Plan Flanders

The Spatial Structure Plan Flanders (*Ruimtelijk Structuurplan Vlaanderen*) was published in December 1997 by the Flemish government and covers the whole Flemish territory. The policy field is spatial planning. Polycentric development is the second most important objective, after combating urban sprawl.

Key objectives

A major rationale behind the structure plan is to avoid further urban sprawl and to keep the land, which until so far has not been used for urbanisation, open. This is a reaction at decades of unbridled building, which resulted in a linear urbanisation development of villages, towns and cities giving the impression that ‘open’ not-urbanised land hardly existed anymore.

The vision for the urbanised Flemish region takes sustainable development and the metaphor 'Flanders: Open and Urban' as its points of reference. This vision has been translated into four basic objectives, which in turn are operationalised into four spatial development guidelines:

1. Deconcentrated concentration
2. Ports as motors of development
3. Infrastructure as link between urban nodes and as location for activities
4. Physical system as territorially structuring element

Although avoiding urban sprawl is the most important rationale behind these four guidelines there is also a clear polycentric element in them. In the plan Flanders is considered to be already polycentric in a sense that the level of urbanisation and also the (air)ports are evenly balanced over the territory, with an emphasis on the western part of Flanders. The policy unfold in the 'Spatial Structure Plan Flanders' contributes to sustaining Flanders' present polycentric character.

The plan has a competitiveness objective as well. The polycentric urban region called the Flemish Diamond (with Brussels, Antwerp, Gent and Leuven as its cornerstones) is seen as an important asset for international competition with surrounding metropolitan areas, like Paris, London, the Randstad and the Rhine-Ruhr Area.

Policy concepts

The concepts of 'urban areas' and 'urban networks' play a central role in the conceptualisation of Flanders and the strategy to pursue. The concept of 'urban areas' is a policy definition for areas with a dense built up environment where many human activities take place in a more or less coherent way. In these kind of areas a so-called 'urban-areas policy' is pursued. Development, concentration and condensation of activities and buildings are the guiding principles here, but with taking into respect the capacity of the area.

Urban areas will be defined through whole Flanders and demarcated in joint discussion with the responsible administration. The borders of urban areas are being determined amongst others by indicators such as existing built-up area, the development vision for the respective area and accessibility.

Based on criteria as level of services, importance for Flanders and internal structure the policy distinguishes between four categories of urban areas:

- Large urban areas
- Regional urban areas
- Small, backbone supporting urban areas
- Urban areas at provincial level

'Urban networks' is another important policy concept of the structure plan and basically refers to the relation between 'urban areas', which themselves are conceived to be part of a bigger complex. An urban network is defined as a complementary and coherent complex of urban areas which structure is determined largely by open areas. The urban and open areas are linked together through infrastructure. In turn, urban networks structure the Flemish territory. Because of the existing situation and the wanted development urban networks have to be regarded and operationalised as a whole. Not all urban networks are equal. A distinction can be made between international, Flemish and provincial urban networks. On top of that there are also cross-border urban networks, which should be considered at supra national level.

The selection and demarcation of urban areas is based on, as the plan emphasises, scientific analysis. The capital, Brussels, which officially does not make part of Flanders is categorised as level 0. Then three other levels are distinguished:

1. Large urban areas:
 - Antwerp
 - Ghent
2. Regional urban areas
 - Brugge
 - Hasselt-Genk
 - Kortrijk
 - Leuven
 - Mechelen
 - Oostende
 - Sint-Niklaas
 - Aalst
 - Roeselare
 - Turnhout
3. Small, backbone supporting urban areas
4. Small urban areas at provincial level

As regards the first two categories of *urban areas* the spatial planning policy is directed at making optimal use of the present and future urban potential. These potentials clearly have a national and international dimension. The location of Flanders in Europe, the city network (which has not been mentioned until yet in the plan) the Flemish Diamond of international standard and the perfect infrastructure connections give the large urban areas serious international potentials. So, a clear rationale behind the structure plan is that of international competitiveness.

Regional urban areas also play an important role in Flanders due to their size and level of services, albeit a more modest one than the large urban areas in terms of quality and quantity. However, they also have potentials to make profit of the growth in terms of housing demands and employment.

As regards the selection of *urban networks* one network outranges all others which is the Flemish Diamond (Vlaamse Ruit). A polycentric region which is demarcated by the cities of Antwerp, Ghent, Brussels (which is a sub-national authority in itself and makes no part of Flanders, but is totally surrounded by Flemish territory) and Leuven. Also the regional urban areas of Mechelen, Aalst and Sint-Niklaas make part of it next to a bunch of small urban areas, which are all specifically mentioned in the plan. The structure plan places the Flemish Diamond at the same level as for instance similar kind of regions like the Randstad and the Rhein-Ruhr Area. The latter two together with Paris, London, Frankfurt and the Flemish Diamond form according to the structure plan the six structuring urban regions of North-west Europe. The Flemish Diamond is considered to be of international economic importance for Flanders. The policy is directed at making optimal use of the international potentials of the Flemish Diamond, which indicates a competitiveness approach.

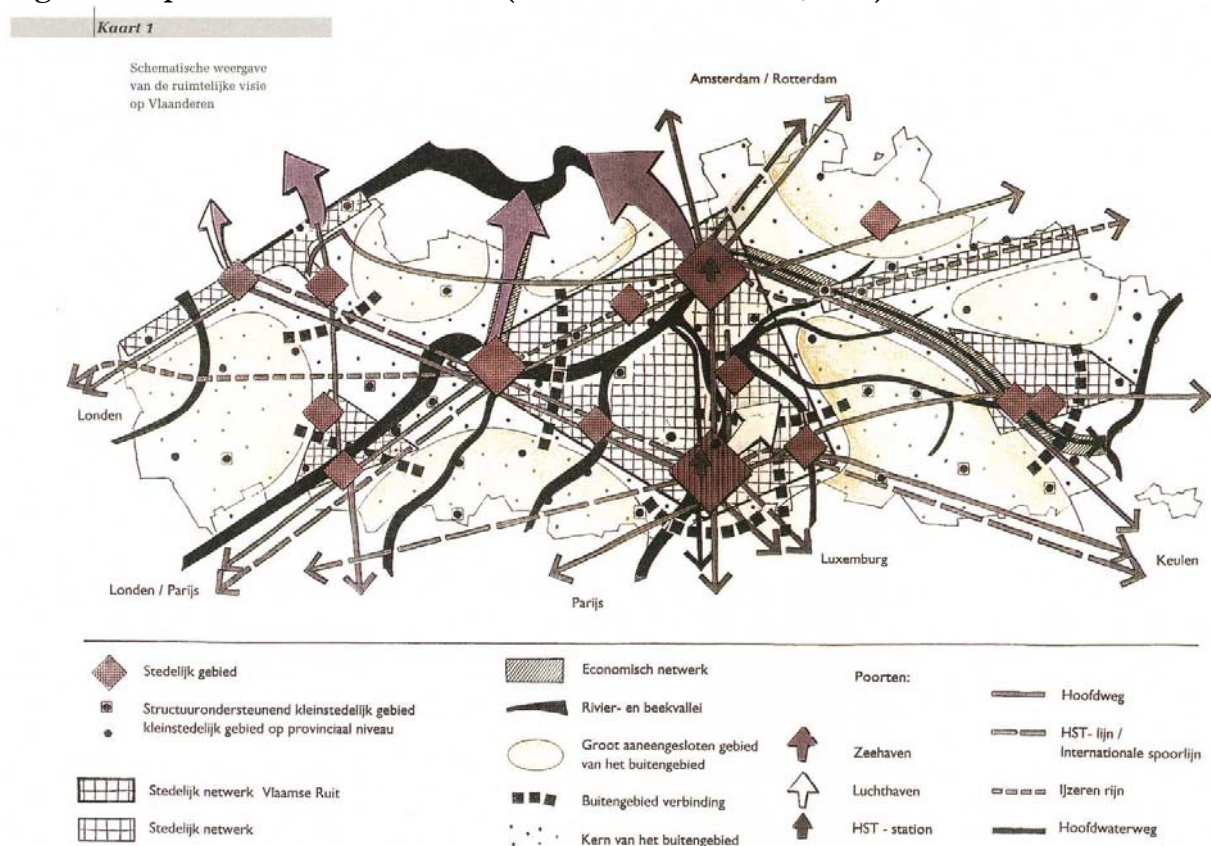
By no means is it the intention to create one large urban area from the Flemish Diamond. On the contrary, within the Flemish Diamond the contrasts between open area and urban area should

become more explicit, since this will add to the quality of life. In fact this is general policy also for networks at lower levels of scale.

Next to the Flemish Diamond four other national urban networks are appointed (see also Figure 3.1):

1. The Coast
2. The Kempische Axis
3. The Limburg Mining area
4. Region Kortrijk

Figure 3.1 Spatial Vision of Flanders (Flemish Government, 1997).



Cross-border networks are different in status and only indicative and recognised as being potentially a structuring element of the Flemish territory. Mentioned are:

- Kortrijk – Lille – Tourcoing – Moeskroen
- Maatsricht – Heerlen – Hasselt/Genk – Aken – Liège (MHAL)
- Ghent – Terneuzen

At a lower level provinces are allowed to appoint provincially relevant urban networks, which should comply with certain criteria as listed in the Flemish Structure Plan.

In sum we can conclude that the Flemish strategy directed at accentuating the division between open land and urban areas by appointing urban areas and urban networks will result in a increased polycentric development compared to the previous and present situation where urban networks did not play any role. Of course, the policy concept of urban networks implies a polycentric approach in itself, albeit at a lower regional level than the sub-national.

In order to stimulate the development and recognition of urban networks so-called 'strategic urban projects' are mentioned. The Flemish Administration will facilitate the set-up of public project groups and projects with logistic, administrative and financial means. Another instrument is urban renewal.

3.3.2 Walloon Regional Spatial Development Perspective

The Regional Spatial Development Perspective (*Schéma de Développement de l'Espace Régional*: SDER) was introduced at May 1999 by the government of the Walloon Provinces. It is very much inspired by the ESDP. Polycentric development is a subsidiary aim.

Principles

Three basic principles are formulated which have to be taken into consideration by spatial development policy, they look quite familiar with the ESDP principles:

- The territory of Wallonia is the common heritage of its inhabitants
- Sustainable development
- Economic and social cohesion

Objectives

In short, the SDER forms a totally new approach in Wallonia. The main goal of the plan is to contribute from a territorial angle to the conversion of Wallonia from a deprived industrial based region into a more diversified region which can offer a better quality of life to its inhabitants. Polycentric development is a subsidiary aim in this respect.

How the territory is perceived

North-west Europe forms the point of reference for the SDER. Consequently, the spatial structure of the Walloon provinces is conceptualised in terms of 'Metropolitan areas' and 'Euro Corridors'. (see Figure 3.2) The SDER states that Wallonia is characterised by a network of urban centres that support the regional structure and establish the rural-urban relationships. Four important centres are identified:

1. Liège
2. Charleroi
3. Mons
4. Namur

In the words of the SDER these cities "...possess a number of noteworthy and diversified assets which will have to be put into use to support the region's development." (p. 17) In this sense the strategy can be regarded as polycentric. However, the concept of polycentric development as such is not been mentioned in the plan.

Between the four cities the following subdivision is made. Namur is the 'regional capital', Liège and Charleroi are seen as 'major centres' and Mons is regarded as a 'regional centre'. Next to the four mentioned cities other centres are recognised. A subdivision is made between 'rural support centres', 'Cross-border support centres' and 'Tourism support centres'. (p. 17)

According to the SDER "...Euro corridors link the metropolitan areas and are fed by major communication routes. They are characterised as by an extensive flow of traffic and trade which support development dynamics." The SDER identifies four Euro corridors which are relevant for the Walloon provinces: (p. 18) (see also Figure 3.2)

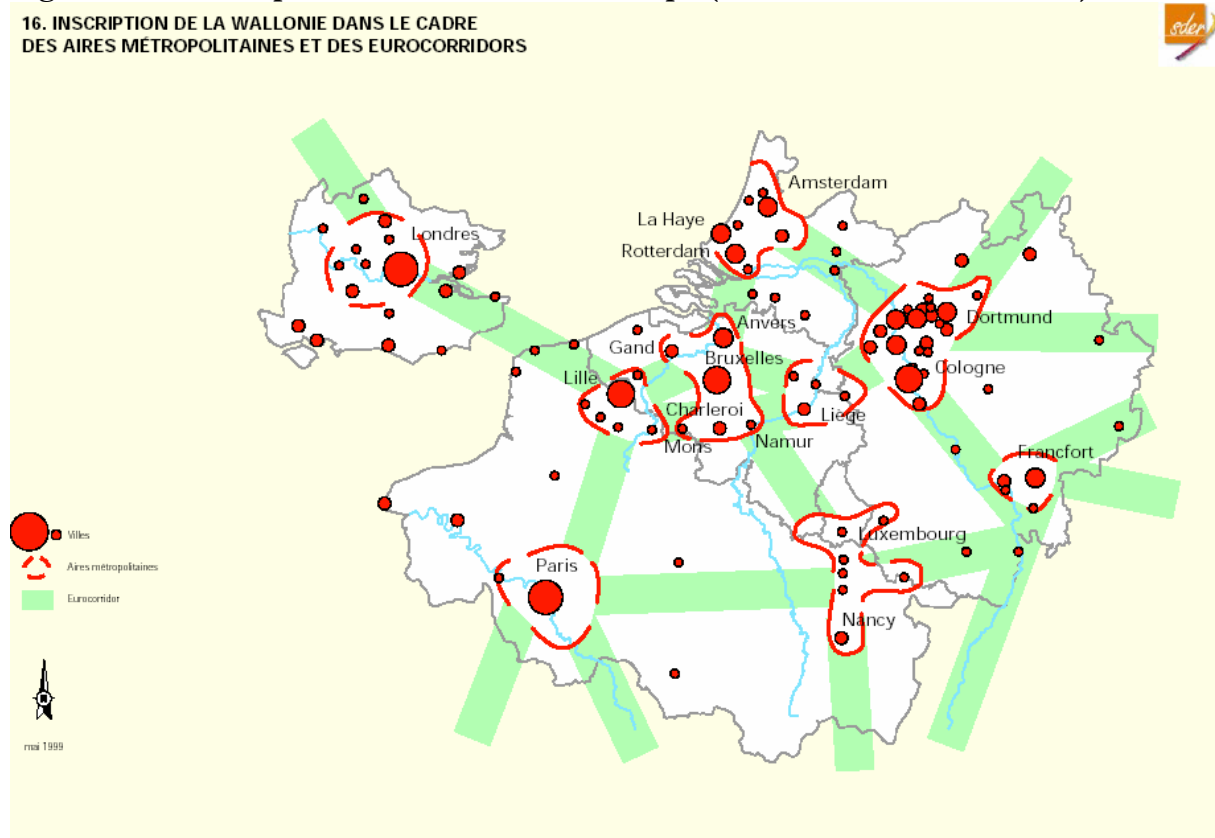
1. Euro corridor Lille – Brussels: connecting the London metropolitan area and Paris to Antwerp and the Randstad;
2. Euro corridor Brussels – Liège (MHAL): from Antwerp towards the metropolitan areas of Cologne or Frankfurt and eastern Europe;
3. Euro corridor Lille – Liège : connecting London and Paris to Germany and eastern Europe;
4. Euro corridor Brussels – Luxembourg: connecting London, Paris and the Randstad to the metropolitan areas of the Saar-Lor-Lux.

Besides the Euro corridor the region also possesses some ‘major transport routes’ that form part of the European road network:

- The E25 connecting Rotterdam to Milan via Liège and Luxembourg
- The link between Antwerp-Brussels-Charleroi-Rheims-Lyon-Marseilles.

Other important features of the transport and communication network are the missing links in the road network, waterways and railways. Then there are the two airports of Charleroi and Liège, which are respectively geared to passenger and freight transport and function as second order airports behind Brussels airport. River ports of Liège (the second river harbour in Europe), Charleroi, Namur and La Louvière are mentioned. Also High Speed Train stations in Liège, Charleroi, Mons and Namur ask for attention and imply adaptation of the existing infrastructure.

Figure 3.2 Walloon provinces in Northwest Europe (Walloon Government, 1999).



Application

The SDER is the first spatial planning document at the scale of Wallonia anyhow and in that sense it does not form a reaction to previous spatial planning policy, but to the lack of a spatial planning strategy at all. It takes an approach which seems to be inspired by both the regional

economic approach and a comprehensive integrated approach (see EU Compendium, 1997). The SDER itself says that it is “ a ‘perspective’, that is to say a conceptual planning instrument. Unlike a plan, which is binding in nature, the perspective offers development and planning guidelines. Its role is to put forward a territorial development project and then to formulate a strategy in order to implement the project. As a cross-sectoral tool, the SDER integrates objectives contained in other plans such as:

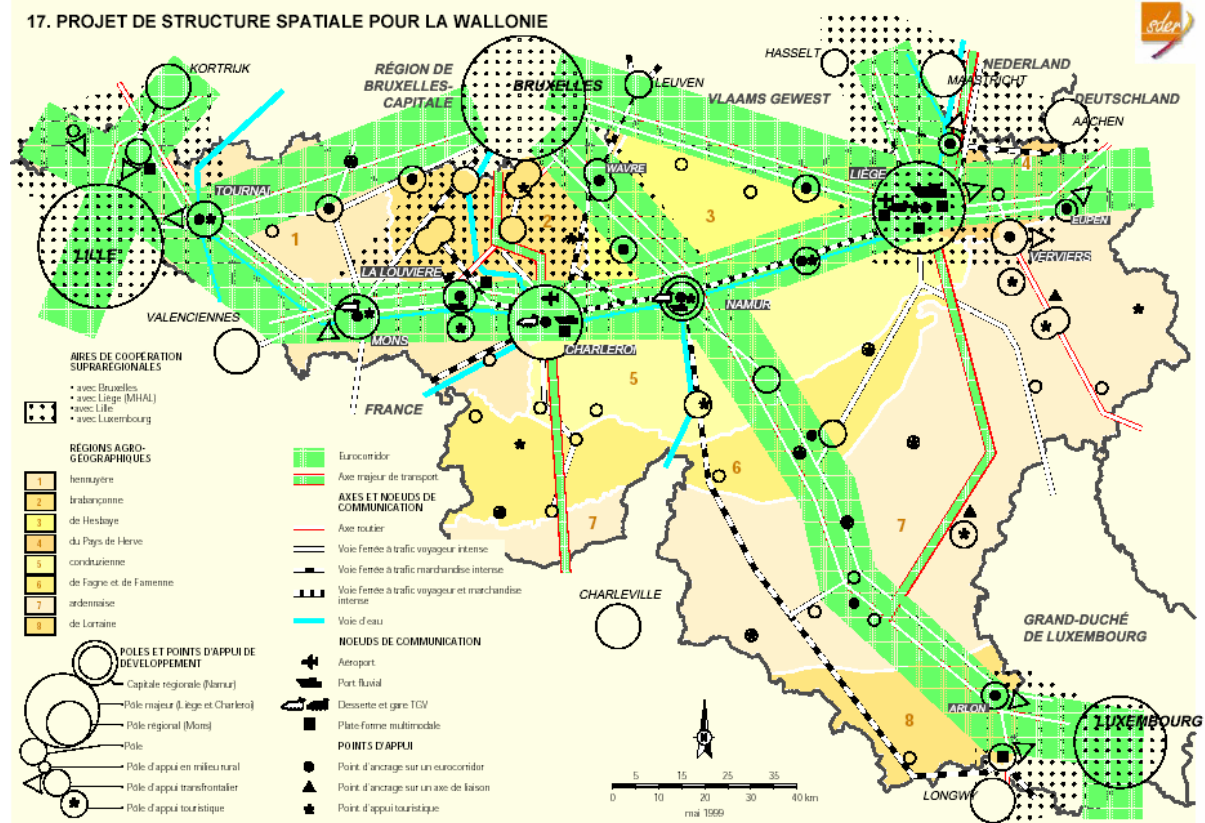
- The environmental plan for sustainable development adopted by the Walloon Government 9th March 1995
- The Walloon Transport and mobility plan adopted on 6th April 1995
- The management contract signed on 18th September 1997 between the Walloon Region and the Walloon Housing Authority.

Economic development, however, is not a subject to planning by the Walloon Region. Although the SDER takes account of economic objectives linked to spatial planning, it is clear that it cannot be considered as a substitute for economic planning.” (p. 12)

“All planning initiatives by public authorities, and particularly those involving the granting of planning permissions, must consolidate the structure of the region as laid down in the SDER. In addition, local authorities must advise private operators and encourage development and partnerships which will also help to reinforce the spatial structure.” (p. 24) There is no budget attached to the SDER. In fact, along the sectoral approach and with pursuing governance strategies, it tries to persuade other decision makers who have to allocate budgets, to invest their budgets along the guidelines of the SDER.

The SDER follows a ‘communication approach’ so to say. By introducing a territorial development scenario it wants to persuade other actors to adopt the SDER discourse. If this succeeds and the ideas of the SDER get institutionalised broadly in the Walloon public and private sectors, then it might generate a long term success. However, the SDER has no explicit budget or legal powers attached to it, which especially in the short term can be regarded as a weakness. If the SDER fails to influence ‘spending actors’ it may lose the support of politicians. However, all lower level spatial planning documents, that are binding, have to be in line with the SDER. So some effects may be expected, but then mainly in the field of reducing urban sprawl, not so much on the subject of polycentric development.

Figure 3.3 Walloon Spatial Structure Plan (Walloon Government, 1999).



The role of polycentricity

In the SDER polycentric development plays a role at two levels. The first level is that of the whole Walloon region, where it is recognised that the region has to adapt to the supra-regional spatial-economic dynamics and to try to make full use of its potentials. The potentials are to be found in the four designated centres and the four Euro-corridors crossing the Walloon territory, contributing the polycentric spatial-economic structure of the territory. It is a clear wish of the SDER that the benefits should be equally spread over the territory. Priority is given to the further development of the Euro-corridors Lille-Liège and Brussels-Luxembourg, both of which cross the Walloon territory. This should be accompanied by the further development of the cross-border polycentric regions around Lille and around Liège (the MHAL area). At the national scale the SDER proposes to attach the Walloon cities Charleroi, Mons and Namur to the Flemish Diamond and treat the area as the Central Belgium polycentric urban network with clear international potential (see Figure 3.3).

The second level at which polycentric development plays a role is that of the city region. It is recognised in the SDER that the functional living environments of citizens gradually increase from the city level to the city regional level. Although not mentioned in these terms the SDER proposes to follow a planning strategy that takes functional urban areas as its point of reference.

3.4 Conclusion

Belgium is a federalised country which results in spatial planning competencies for Flanders and the Walloon region (and the Brussels capital region, which is not considered here because of its small scale) and consequently in two different spatial planning policies.

Both, in Flanders and the Walloon region is polycentric development not a key, but a second most important objective. In both cases the regions are considered to be already polycentric and this feature is in the respective plans used to in order reach other objectives, such as improving the international competitiveness position by promoting the concept of ‘urban networks’ in the case of Flanders and to generate balanced growth and economic transformation in the Walloon Region.

Both spatial planning policies are introduced at the end of the nineteen nineties and do not built further on earlier policies, so their present embeddedness may be quite weak. However, both seem to further institutionalise quite rapidly and (especially the Flemish Structure Plan) affect other policy domains, which may also turn out in terms of application. The Walloon policy follows a communication approach. There is no budget or whatever other possible instruments linked to the non-binding plan. Spending departments are supposed to follow the development directions as indicated in the SDER. The Flemish plan follows an approach that bears elements of both, a communicative as well as programming approach. By means of the new Flemish Spatial Planning Act of 1999 projects of Flemish importance can be appointed by the Flemish government (just as project of regional importance can be appointed by the provinces and those of local importance by the municipalities) and subsequently be dealt with by the administration.

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4 Cyprus⁴

4.1 Introduction

In 1960 Cyprus became an independent Republic. Since 1974, following a Coup d'Etat by Greek army officers and a subsequent Turkish military intervention Cyprus is a divided country, having a Greek-Cypriot South and a Turkish-Cypriot North. The capital, Nicosia is divided as well between the two communities. The Republic of Cyprus refers to the Greek-Cypriot part, the other part is officially called the Turkish Republic of northern Cyprus since 1983. In 1999 both parts had slightly more than 750.000 inhabitants together. Nicosia (200.000 inhabitants; administrative centre) and Limassol (155.000; main commercial and tourist centre) are the main urban centres on the island, followed by Larnaca (69.000; airport) and Paphos (46.000). See Figure 4.1.

There is no such thing as a strategic spatial plan for Cyprus, though the 1972 Town and Country Planning Law, which was fully implemented in 1990 and revised several times since then, mentions four kinds of development plans among which the Island Plan. The Island plan is at the top of the hierarchy and determines the long-term strategy for the distribution of population, employment, the utilization of resources and the identification of development opportunities. It is intended to be a Structure Plan. However, the Republic of Cyprus did so far not publish such a planning document due to the present division of the Island. Another development plan is the Policy Declaration, which also refers to the entire area of the Republic, except for those areas regulated by Local Plans and Area Schemes (the other two, local development plans) and the area of the British Military bases. This declaration is concerned with distribution of the population, major land uses and major infrastructure relating to economic and social policy (ports, airports, hospitals, etc.) as well as areas of special historical, social, architectural, cultural and environmental value. A new "Policy Declaration" for the spatial development of the island (Republic of Cyprus) is now under preparation. Finally, Local Plans are drawn up by cities and their functional hinterlands to secure orderly development and urban expansion.

4.2 General position of Polycentricity

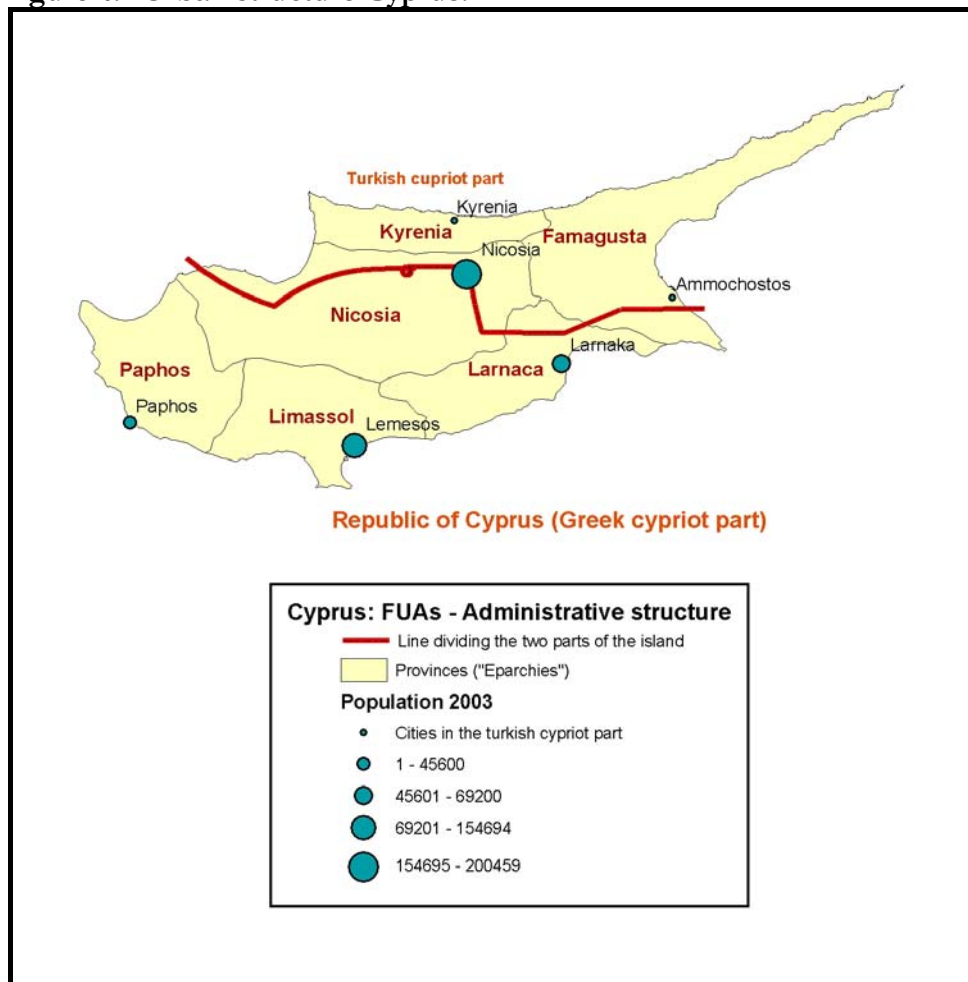
Planning in Cyprus is mainly concerned with land use regulation and urban growth management. Confronting regional inequalities is not a major concern in the case of Cyprus. More important is to confront the sprawl of the urban and tourism zones. However, also the problem of unequal development between the coastal towns and wider zones on the one hand and the inland capital city (Nicosia) and the inland countryside on the other hand has been on the agenda.

Characteristic for Cyprus is the leading role of the rapidly developing tourism sector. The dynamic role of the business sector, the reliance on its activities for national economic

⁴ Authorized by Minas Angelidis of the Department of Urban and Regional Planning, National Technical University of Athens (NTUA), Greece.

development and the slow process by which the public sector is able to introduce policies and regulations to limit or guide private sector development initiatives are typical for the practise of planning in Cyprus (Constantinides, 2001). The outlook of Government is permissive and committed to maintaining an “enabling” policy environment for continued economic growth (Constantinides, 2001). Obviously, a polycentric development of the Cypriot territory is not a major concern of the private sector.

Figure 4.1 Urban structure Cyprus.



Since 1990, with the planning law in action, planning comprises more than just providing basic building regulations and achieving conformity with public health regulations. With it came, amongst others, comprehensive planning strategies for the organisation of settlements and the requirement for submitting applications for planning permits on the basis of the provisions of land use plans.

In Cyprus, the polycentricity policy issue can be interpreted in more than one way. For instance, as a question of development of the coastal towns and settlements and their wider zones against the conservation of the physical and cultural resources of these zones. But also as a question of unequal development between the coastal towns and their hinterland on the one hand and the inland capital city (Nicosia) and the inland countryside on the other hand.

4.3 Examples of polycentric policies

There are no national or regional strategic planning documents at this moment. The current planning documents focus on land use regulation and urban management. Local plans, as for instance the Local Plan of Nicosia, do not refer to the spatial structure of the country. Polycentricity can be the result of other policies than planning policies. Cypriot economic plans to develop tourism and services has led to a considerable development of the coastal areas and the coastal cities (compared to the development of Nicosia). This trend is referred to as 'Coastalisation' and reflects the population and economic growth in the coastal regions.

4.4 Conclusion

At this moment, Cyprus does not have policies following explicitly the principle of polycentricity. Planning is foremost occupied with land use regulation and local urban growth management, a strategic planning document is missing. The role of the capital and the various regional centres in the national urban structure is unspecified.

4.5 References

Constantinides, G. (2001), *Urbanisation and Town Management in the Mediterranean Countries, Sub-regional study: Malta and Cyprus*, MCSD.

5 Denmark⁵

5.1 Introduction

With thousand years of existence Denmark is one of the oldest nation states. Of course, the territory has known various shapes. There is a strong national identity, which is reflected in Denmark's operating in the European policy context as well as in its approach to policy making (Böhme, 2002). This has resulted in a strong national level.

Denmark's territory is characterised by a dominance of the capital Copenhagen in the eastern part of the country. Nearly one quarter of the Danish population live in this metropolitan region. Population densities decline steadily on a gradient from east to west. Except of the island of Bornholm in the Baltic Sea, the population is growing everywhere. The increases are well above average in the Århus (the nation's second city) and Copenhagen regions. By and large Danish growth is relatively evenly spread across the country and irons out inequalities. Employment trends support this. However, as regards the distribution of wealth widening disparities show between the Copenhagen metropolitan region, where the high value-added jobs are located, and the rest of the country (OECD, 2001).

Spatial planning in Denmark is exercised at all three administrative tiers, national, regional and local. The Danish planning tradition is ranked under the so-called 'integrated approach' as identified by the EU Planning Compendium (CEC, 1997). A label that only applies to well matured planning systems. It works along the principle of framework control resulting in an interplay between the various levels. At the same time at the national level recent developments tend to claim a more co-ordinating role for spatial planning (Böhme, 2002). In this chapter we will only address the national level.

The main actor in the field of spatial planning is the Ministry of Environment and Energy, which is ultimately responsible for both environmental and physical planning and national policy. Regarding regional policies, which are rather weak in Denmark, the Ministry of Interior is responsible since 1999. Before that regional policies were a responsibility of the Ministry of Trade and Industry. With regard to urban policies, building and construction, the Ministry of Housing and Urban Affairs was until 2001 an important actor. Now it has been closed down however and its tasks have been divided between other ministries, amongst which the Ministry of Environment and Energy in the field of spatial planning. Other ministries with responsibilities relevant for spatial planning and developments are Transport and the Ministry for Food, Agriculture and Fisheries. (Böhme 2002) The most important planning instruments at the national level are the National Planning Report, the National Planning Perspective and the National Planning Directive (Table 1).

⁵ Authorized by Niels Boje Groth and Søren Smidt-Jensen of the Danish Centre for Forest, Landscape and Planning

Table 1. Main planning instruments Denmark at national level (CEC, 1999).

	National Planning Report	National Planning Perspective	National Planning Directive
Name	<i>Landsplanredogørelse</i>	<i>Landsplanperspektiv</i>	<i>Landsplandirektiv</i>
Contents	General spatial planning policy/strategy	spatial visions to inspire actors to pursue high quality development	On specific issues
Status	mandatory after each national elections, non binding	non-binding, include visions. National report of 1992 has been issued as perspective. Reports of 1997 and 2000 include visions: <i>'Denmark and European Spatial Planning Policy'</i>	optional, binding for regions and municipalities
Dates	1992, 1997, 2000	1992	1992, 1997, 2000
By	Ministry of Environment and Energy	Ministry of Environment and Energy	Minister of the Environment

5.2 General position of polycentricity

(Section based on: French Presidency, 2000, pp: 79-85)

In the Danish National Planning Report 'Denmark and European Spatial Planning Policy' by the Minister for Environment and Energy of 1997 much space has been given to polycentricity. Basically, this report translated the ESDP (the First Official Concept ESDP; CEC, 1997) to the Danish situation. Although a new report has been published in 2000 ('Local identity and new challenges') the 1997 report still forms the basis. The 1997 report has been subject to a public hearing. The outcome was that the regions emphasised the importance of a decentralised model and of the Øresund region as part of a transnational network.

In 1992 an approach was adopted to publish national spatial planning reports. Their purpose was to focus on policy and strategy, whereas previous reports did have the character of state of the art reports informing about the development of the Danish territory.

The co-operation with especially the Ministry of Industry has developed quite satisfactory whereas the co-operation with the Ministry of Transport (Traffic) has been less smoothly although through the years it has developed more satisfactory also. In general it can be said that the process of producing the national spatial planning reports has generated a greater acknowledgement of sector ministries for spatial planning issues.

As evidence of medium term progress on the issue of polycentricity the following is said. The Øresund Region is developing. It consists of the Danish island Sealand, the county of Bornholm and the county of Skaane in Sweden. Also in 2000 the Øresund tunnel and bridge have been opened and increased train transport between Malmø and Copenhagen. As regards car

and lorry transport figures are still not as high as forecasted (figures of 2000). In 2000 it was still too early to evaluate the effects on business development.

The National planning report of 2000 appointed two new national centres. The so-called Triangle Area and the North-West Centre, both in Jutland. They are 'city-networks' forming the basis for a new spatial planning concept 'Regions of Competence' (clusters of cities). These two national centres form a further development of the urban system as presented in the vision of 1997.

For several decades national spatial planning has aimed towards a balanced territorial development of the territory. This has been quite successful. Today Denmark has a balanced urban structure consisting of one metropolitan area (Greater Copenhagen), several national centres, regional, municipal and local centres all having specific tasks to perform in order to give the Danish population easy access to public and private services and job opportunities. In recent years the strategy proved to be too successful in a sense that the capital was suffering from it. Consequently the latest two reports emphasised to develop the capital area as a national motor for economic development.

Urban policies have been developed, which partly contribute to polycentric development. Measures are: (1) positive initiatives in deprived urban areas, (2) beautiful and exiting cities, (3) sustainable cities, (4) favourable conditions for business, (5) active citizens participation, (6) research and dissemination of knowledge on cities. Several inter-departmental committees have been set up to develop new initiatives for specific policy issues.

Transport policy also developed instruments and initiatives that (partly) contribute to polycentricity.

5.3 Example of polycentric policy: National Centres

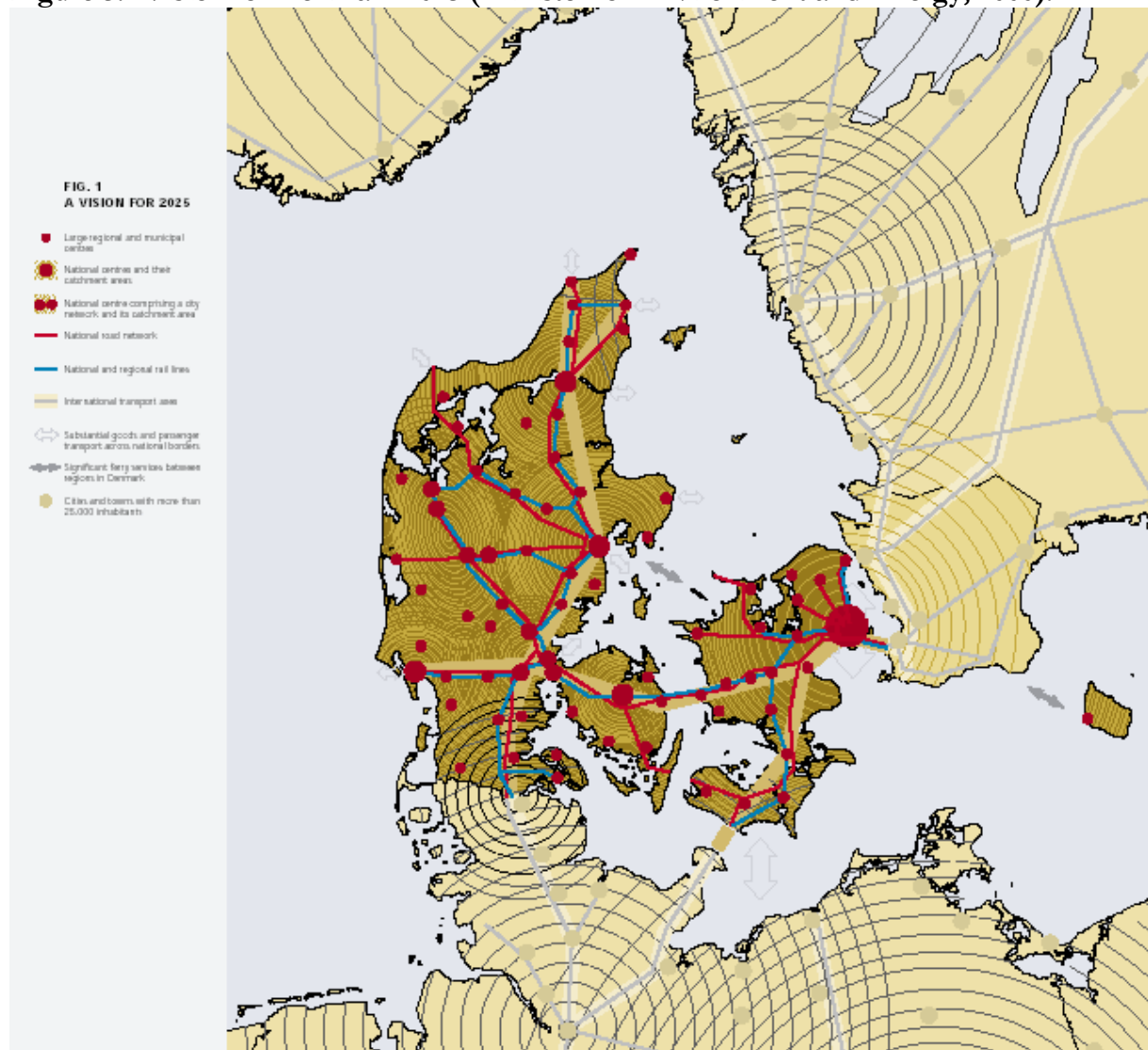
One of the core elements of the Danish national spatial planning policy is the development of an urban hierarchical system in which the highest ranking centres are called "National Centres". Before 2000, five cities were appointed national centres: the national capital Copenhagen and four regional capitals Odense, Århus, Aalborg and Esbjerg. When introduced years ago, the aim was to develop a hierarchical distribution of high-order service functions located in centres evenly distributed through out the country. Later, in the 1980s focus of spatial planning policies changed from the provision and evenly distribution of services to the provision of frame-condition for economic development based on local competencies.

This policy was developed in the framework of the overall objective to enhance the spatial qualities (e.g. frame conditions for development) of the regions. The idea is that co-operation between cities will be profitable for all cities since they can "reinforce on another". Polycentric development as such must be considered as a subsidiary aim.

New means were taken into consideration, one of which was co-operation between cities. In 1997 the government introduced the idea of appointing networks of medium sized cities – hence, not only the largest cities - the status of "National Centres". However, none of the established urban networks of that time were considered strong enough as "National Centres". The two city networks (1) Struer – Holstebro – Herning – Ikast and (2) Middelfart – Kolding – Vejle – Fredericia applied with much efforts successfully for the title and were ascribed the status as

“National Centres” in the next national planning report, submitted in 2000 (see Figure 5.1). Both networks were established years before 1997 and both even included neighbouring municipalities.

Figure 5.1 Vision for Denmark 2025 (Minister for Environment and Energy, 2000).



When announcing urban networks as “National Centres” also a change of political focus was introduced. Formerly, the key task of the National Centres was to provide service for the city and the region. From now on the National Centres should emphasise how the service apparatus can support business development and especially how it benefits the regions environmentally, economically and socially.

The policy is basically formulated in a national context. However, the shift in policy focus from service provision into (economic) regional development was inspired by the changing roles and responsibilities of cities due to globalisation and the idea of relying on local regional competencies rather than on national funding was introduced. Thus, the policy emphasises a bottom-up approach of regional development and that day-to-day actions need to be carried out in a regional rather than national context.

Strong relationships between the cities have been established in both city-networks. However, further investigations are needed to make explicit how and when these relations, formal as well as

informal, have been established. None of the urban networks are united in one labour market. Hence, commuting patterns do not provide for a functional rationality behind the concept of polycentric national centres. Also, the question on shared use of certain urban functions needs further exploration. Within the framework of both networks local development agencies have been set up, financed jointly by the cities in the network.

The policy enhances ongoing co-operation between cities, which in turn might further enhance functional polycentric development. However, the concept “polycentric development – or centres” has not been used explicitly. Rather, related concepts such as “urban networks“, “city networks” and “urban circles” have been introduced. These are concepts that seem to be familiarised with concepts such as globalisation, knowledge society, regional development and regional competencies.

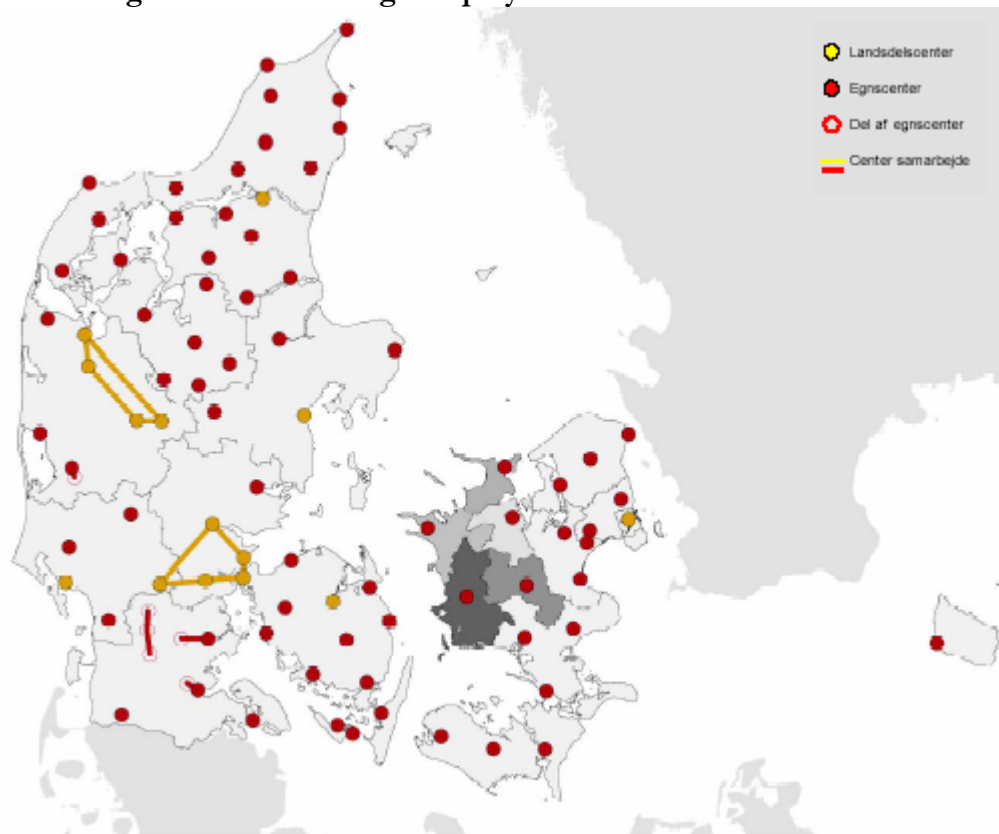
Both centres are strongly embedded in local formalised urban networks and local political commitments.

Type of application

The policy is non-binding. Neither the national government nor the local authorities involved are committed to follow-up actions such as e.g. budget-allocations, planning regulations or institution-building. The means are first and foremost of symbolic nature.

The policy uses maps and other forms of visualisation like pictograms. Figure 1 presents the “Vision 2025” for the spatial development of Denmark. The two polycentric national centres are indicated on the map by the symbols of the second largest cities jointly sharing the same catchment area, c.f. the legends. Figure 5.2, called Egnscentre in Danish, shows the two polycentric national centres by yellow dots linked together by yellow links. Next to maps also pictograms of the ESDP are being used in the national planning report in order to make clear the principle of polycentric development. Making the plan is largely a task of public authorities, although private actors, NGO’s and citizens are invited to comment.

Figure 5.2 'Egnscentre': showing two polycentric national centres.



Strengths and weaknesses

The policy mainly works with the launching and promotion of spatial visions. Measures are mostly of symbolic nature. Hence the weaknesses relating to budget allocation. However, symbolic measures may be quite effective in marketing the region and in attracting new stakeholders to the idea of regional development based on the appointed national centres. Another thing is that the policy of polycentric national centres and urban networking seems to be lead by visions (i.e. the vision of boosting regional development) rather than by specific problems.

5.4 Conclusion

Spatial planning at the national level is well developed in Denmark and influences policymaking at lower levels. EU interventions are best absorbed at the national scale, from which they trickle down to lower administrative levels. Spatial planning seems quite influential in Denmark, since the relationships with other ministries like the Ministry of Transport and of Food, Fisheries and Agriculture that influence spatial development are quite satisfactory. Regional policy is considered rather weak.

Polycentric development has become an important aim with the publication, after public hearing, of the national planning report of 1997. This report translated the objectives of the ESDP to the Danish national context. Without using the term 'polycentric development' as such, the next report of 2000 continued more or less the line of its predecessor of 1997 and designated 'national centres'. This concept is the result of a changing discourse from providing every region with a sufficient amount of general services, to shaping conditions for development. There have been seven national centres appointed, of which two are regional networks, consisting of several

smaller cities and towns that individually would not qualify as national centre. The centres are distributed quite evenly over the territory and should safeguard Denmark's already polycentric nature.

Spatial planning policies at national level are primarily meant as communicative instruments by means of non-binding visions. There is only a small budget. However, this approach may be quite effective in marketing the region and in attracting new stakeholders to the idea of regional development based on the appointed national centres.

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6 Estonia

6.1 Introduction

The republic of Estonia regained independence in 1991. Estonia has 1.26 million inhabitants (2003) on 45200 km², resulting in a density of 28 people per km². Remarkably, this figure has dropped considerably since 1989, when Estonia had 1.56 million residents. The largest city is the capital Tallinn, which has 379000 inhabitants (2003). The second largest city, Tartu, has some 100000 inhabitants. In the North-East of the country, close to the Russian border, are two other larger cities, Narva and Kohtla-Järve, with 60000 and 40000 inhabitants respectively. Except for Pärnu (38000), all other cities have less than 20000 inhabitants.

The administrative structure consists of two tiers: central government and municipalities/towns. Although there is also an intermediate level (the 15 counties) this county government is a state institution. At the national level, the Ministry of Environment has planning responsibilities (regulation, co-ordination and supervision). It issues a national plan in which the strategy and concepts for the development of the territory of the country is formulated. County government is responsible for the preparation of county plans and the supervision of local governments and should participate in the preparation of national planning guidelines, together with other authorities. The 42 towns and 205 rural municipalities of Estonia prepare comprehensive and detailed plans (Compendium of spatial planning systems in the Baltic Sea Region, 2000).

Preparation of the national planning document began in 1995. Different development scenarios of economic, social, environmental and territorial development were analysed for the coming 10-15 years. The Estonian parliament approved the plan, entitled ESTONIA 2010, in 2000. Though it is referred to as a plan, it is not a plan in the classical meaning. It is a policy document describing general principles, needs and guidelines of spatial development of Estonia. It contains no maps, only some illustrative schemes for spatial development (Compendium of spatial planning systems in the Baltic Sea Region, 2000).

6.2 General position of polycentricity

In the Soviet period, urban and regional planning was subordinate to economic central planning. The development of existing urban settlements became dependent on macro-industrial policies. This planning was characterized by large scale industry (in the 1970s, more than 60 percent of industry workers were employed in factories with more than 1000 employees, 12 percent of them were employed in factories with more than 10000 employees). The concentration of industrial production stimulated the development of large new urban settlements for industry and infrastructure. As a result, the urban population in the Baltic States increased by 81 percent in the 1960s due to immigration from rural areas to the cities. Citizens from other Soviet republics often immigrated to the Baltic States as employees of the new factories and residents of the industrial cities. Soviet economists believed that the bigger the city, the higher the labour productivity would be. The collectivization of agriculture was accompanied by a new settlement structure in the rural areas founded upon the classification of rural centres into prospective and

non-prospective villages. The prospective villages were further developed, while development of non-prospective settlements was restricted (Vanagas et al., 2002; Korcelli et al., 2001).

The Soviet socio-economic strategies of the 1960s en 1970s emphasizing production efficiency, more sophisticated technology and improvement of the competitiveness of products had an impact on the urban system as from then on, cities would have to develop in a proportional, balanced way according to their size. The growth of the largest cities was restricted and the potential of small and medium-sized towns was to be enhanced and networks of multifunctional urban and rural centers had to expand. According to these directives, subsequent programmes and schemes of manpower distribution and urbanization were elaborated in the USSR republics, among which the Baltic States were the first (Vanagas et al., 2002).

In Estonia, the former agrarian-industrial economic structure was rapidly replaced by an industrial structure subordinate to the political-economic system of the Soviet Union. Extensive economic development had a strong impact on the urban and rural settlement patterns, as the enforced industrialization policy was supported by the development of new urban centers, most of them in the north and east of Estonia. In particular two areas saw their population increase rapidly (mainly due to immigration): Tallinn and the northeast of Estonia (Narvan, Kohtla-Järve, etc.). The collectivization of agriculture and the subsequent migration of population to country centers and small towns resulted in a rural exodus. Tallinn has been considered too large for Estonia by local territorial planners. Attempts have been made to restrict its growth, but these were not successful (Vanagas et al., 2002). Now that Estonia is in a transition phase, the objective to develop a balanced system of towns has become more important.

6.3 Examples of polycentric policies

6.3.1 ESTONIA 2010 national plan

Rationales

While in the initial stage of preparation of the plan, the objective was to achieve economic growth throughout Estonia, this was later changed into the somewhat broader objective of satisfying the basic needs of people all over the country. The purpose of the plan is to provide a generalized treatment of the territory, outlining measures to guide and shape the spatial development of the country, and setting up tasks for subsequent activities. The document presents five general aims:

1. Safeguarding spatial accessibility of basic human needs;
2. Preservation and further development of the qualities of the settlement system and landscape;
3. Balanced spatial settlement;
4. Good spatial connection to Europe;
5. Preservation and improvement of the natural environment.

With respect to the settlement system, the following objectives are listed:

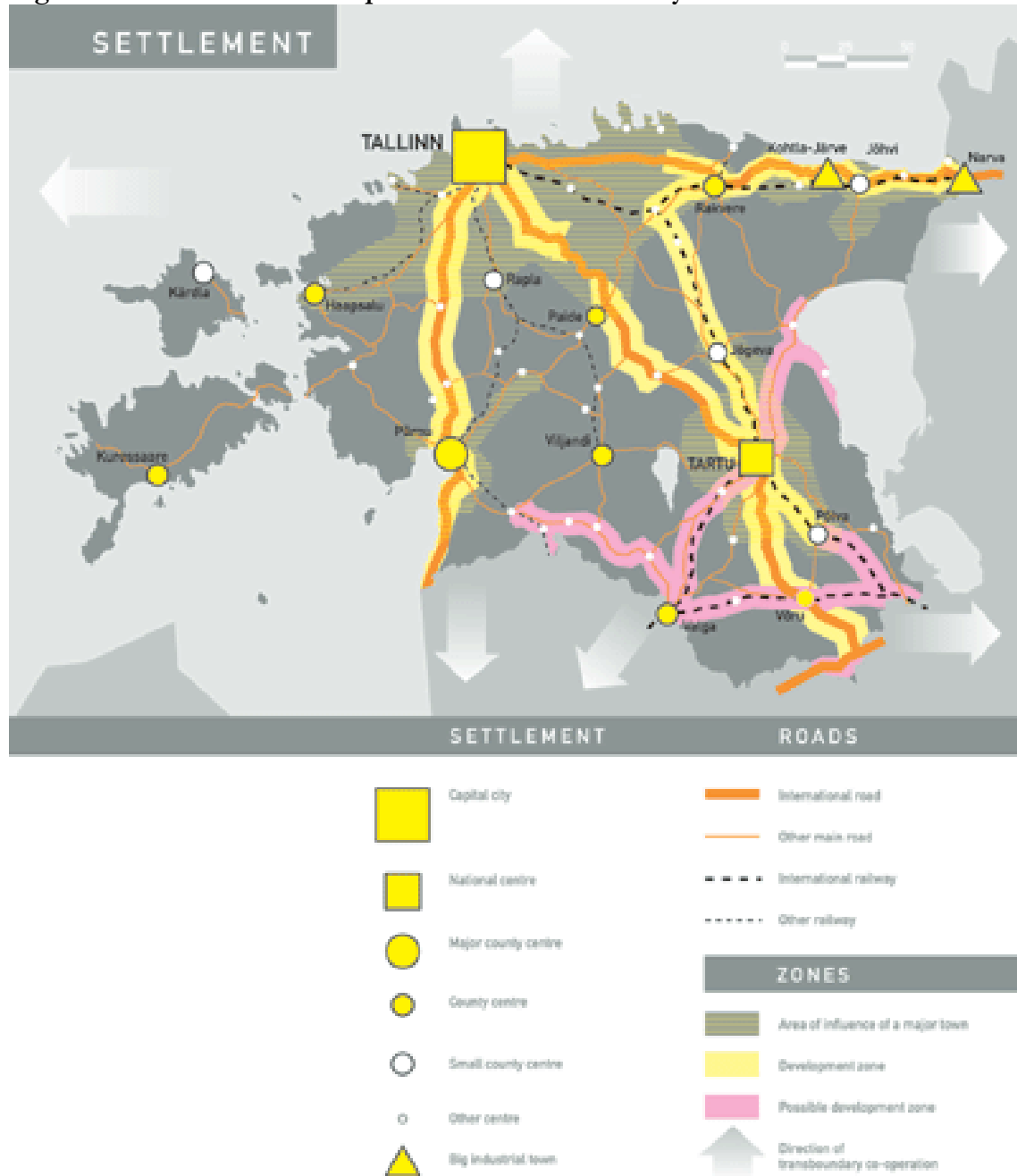
1. accommodation of Estonia's need for internationally attractive centers;
2. fulfillment of basic human needs throughout Estonia;
3. regional balancing of the settlement system.

In particular the last objective is linked to polycentricity. The document argues that settlement can be balanced by guiding the location of residence, employment and services and by improving their accessibility by means of transport and information technology. The policy provides for a further extension of Tallinn's urban functions as well as the empowerment of smaller, county centers. The city of Tartu is to become the major center for South-east Estonia. The establishment of urban networks (for instance between three towns in the Ida-Viru county: Jõhvi, Kohtla-Järve and Narva) is part of the aim to strengthen country centers. This should also prevent migration from rural to urban areas. In general, urban centers are encouraged to develop networking/co-operation with other towns on a complementary basis. The next figure illustrates the development of the settlement pattern (Figure 6.1).

Policy in practice

An action plan for implementation of the national plan was approved in 2000 to achieve the objectives mentioned in the national plan.

Figure 6.1 The desired development of the settlement system of Estonia.



6.3.2 Programme for the Network of Center

This programme applies to the 17 most important towns in Estonia and was introduced in 2001 by the central government. It addresses the economic and social development of these towns. Polycentricity is a subsidiary aim of the programme.

Rationales

The policy aims at the development of main towns in Estonia, in order to achieve a more balanced regional development in the country or, in other words, to minimize the gap between the capital region of Tallinn and other regions. Socio-economic problems deriving from unequal regional development are to be solved. This is elaborated in three objectives:

1. to develop co-operation within and between towns;

2. to stimulate functional specialization of towns;
3. to strengthen the innovation potential of towns.

Policy in practice

The policy is implemented by providing non-refundable aid for target groups on a project-basis. The use of aid is regulated by contracts between beneficiary actors and the state agency 'Enterprise Estonia'. The policy addresses a wide variety of actors, including municipalities, associations of municipalities, NGO's, development and training organizations, etc. The policy is evaluated by assessing the individual projects. Each actor receiving aid must submit financial and activity reports. These reports are evaluated by the Estonian Council of Regional Policy and reported to the Ministry of Internal Affairs.

6.4 Conclusion

Although there is no tradition of polycentric policies in Estonia, the 2000 national spatial plan presents a polycentric development strategy. However, it is referred to as balanced spatial development. This strategy has a broad focus. The settlement system receives most attention. Next to objectives relating to competitiveness, the strategy aims at the provision of services/needs to the entire population, also in rural areas, by empowering county centers. Much attention is also paid to co-operation between cities and to specialized roles they play. Urban networks are encouraged to develop.

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7 Finland

7.1 Introduction

“Finland is a young nation state perceiving its membership of the European Union as presenting it with the opportunity of a fresh start” (Böhme, 2002, p.102). Of course, this can be traced back to the Finnish history.

Finland is a sparsely populated country with an average population density of 16 inhabitants per square kilometre (5.2 million inhabitants). Forests have been the most important natural resource for centuries and pulp, paper and wood product industries represent one-third of Finland's exports during the last decades. Urbanisation started relatively late. In 1940 about half the population lived in rural areas. After World War II this changed dramatically, with its peak around the 1960s. Today some 81 percent of Fins are urban dwellers. The whole 20th century is marked by a growing concentration of population in the centres in the south and southwest. Currently, 25 percent of the population live in the county Uusimaa surrounding the metropolitan area of Helsinki. Here the population density is 131 inhabitants per square kilometre (Böhme, 2002).

Helsinki metropolitan area is home to roughly one-fourth of the country's total population, with its 1,300,000 inhabitants (including Espoo and Vantaa). Other important functional urban areas are Tampere (340,000), Turku (320,000) and in the north Oulu with 200,000 inhabitants. The main reason why Oulu is performing so well is because of the booming IT-industry, which is strongly present in this city. Regions along the Russian borders see their population decline and also their GDP is low and slowly growing (0,5 % between 1995-97), while the mentioned cities in the south and southwest see their populations expand and their GDP even faster (10,4 %). The three regions Helsinki, Turku and Oulu are becoming attractive to job-seekers, but cannot cope with the influx and see their rates of unemployment rocket (OECD, 2001).

There are three administrative levels in Finland, a national level, a regional level (which differs according to the policy field) and a local level (municipalities). When it comes to spatial planning the municipalities are the main actors. The regional level is becoming increasingly more active in this field, because of the mandate they have been given by the municipalities. Consequently, there is no national spatial plan in Finland (Böhme, 2002).

At the national level the division of labour between the Ministry of Interior, which is responsible for regional development, and the Ministry of Environment, which is responsible for land-use and environmental issues, seems to be crucial. The Association of Finnish Local Authorities is an additional third actor at this level, claiming the competence to mediate between both ministries on crucial issues. However, it is not a typical pressure group, but more a quasi official organisation having a co-operative relation to the state. At the regional level the Regional Councils, which are secondary municipal authorities made up of municipal officials or politicians, deal with both development and planning tasks that are merged by them. So the local level is very strong (Böhme, 2002).

7.2 General Position of polycentricity in policies

Polycentric development seems to hold a central position in many Finnish policies. The concept and especially the Regional Centre Programme, which will be discussed below, are rather strong embedded in organisations and political belief systems and they are becoming more and more embedded and explicit.

The Finnish urban structure is relatively polycentric. Finland used to have five growth centres in the 1994-2001 period. This is, however, perceived as a too small number nowadays. The idea of polycentric development is not new, but the label is. Before, polycentric development was referred to as balanced development.

In Finland a new Land-use Building Act came into force at the beginning of the year 2000. This law provides for a variety of plans and guidelines on different administrative levels, e.g. the regional land use plan, the local master plan and the local detailed plan. The national government can decide on national land use guidelines. These can contain significant national interests regarding the quality of the environment, transport and other major infrastructures, ecological sustainability, natural resources and cultural heritage. The implementation goes via the regional plans and is supervised by the Ministry of Environment and the Regional Environmental Centres. International agreements and programmes can be implemented by national guidelines (French Presidency, 2000). This instrument has been used to translate the ESDP into national policy and support polycentric development (Böhme, 2002).

A polycentric model and development zones are reflected in the non-binding *Finland 2017 Vision* of 1995. It has been prepared jointly between ministries and the Regional Councils. *Finland 2017* has been used as background material when preparing the national land use planning guidelines (French Presidency, 2000).

The potential of development zones and urban networks has been analysed in the report on national land use guidelines presented to the Finnish parliament. It emphasises that regions must specify the measures that can be used to promote the formation of interregional development zones (French Presidency, 2000).

Also polycentricity and balanced development are goals of national regional policy. The concept of urban networks is very much on the political agenda. A strong urban network covering the whole country is seen as an instrument for a balanced regional development. This is also the objective of Finnish Urban Policy, which aims at promoting the competitiveness of cities, towns and urban regions in an economically, socially, environmentally and sustainable way. The Government has appointed a Committee for Urban Policy whose objectives are:

- To create preconditions for developing urban regions through urban policy run by the State;
- To create action patterns with which urban regions are developed extensively by running an object-orientated urban policy that combines different administrative sectors;
- To take into account citizens' viewpoints and to promote civic involvement.

In short, this must lead to competitive and vital urban regions (French Presidency, 2000).

7.3 Example of polycentric policy: the Regional Centre Programme

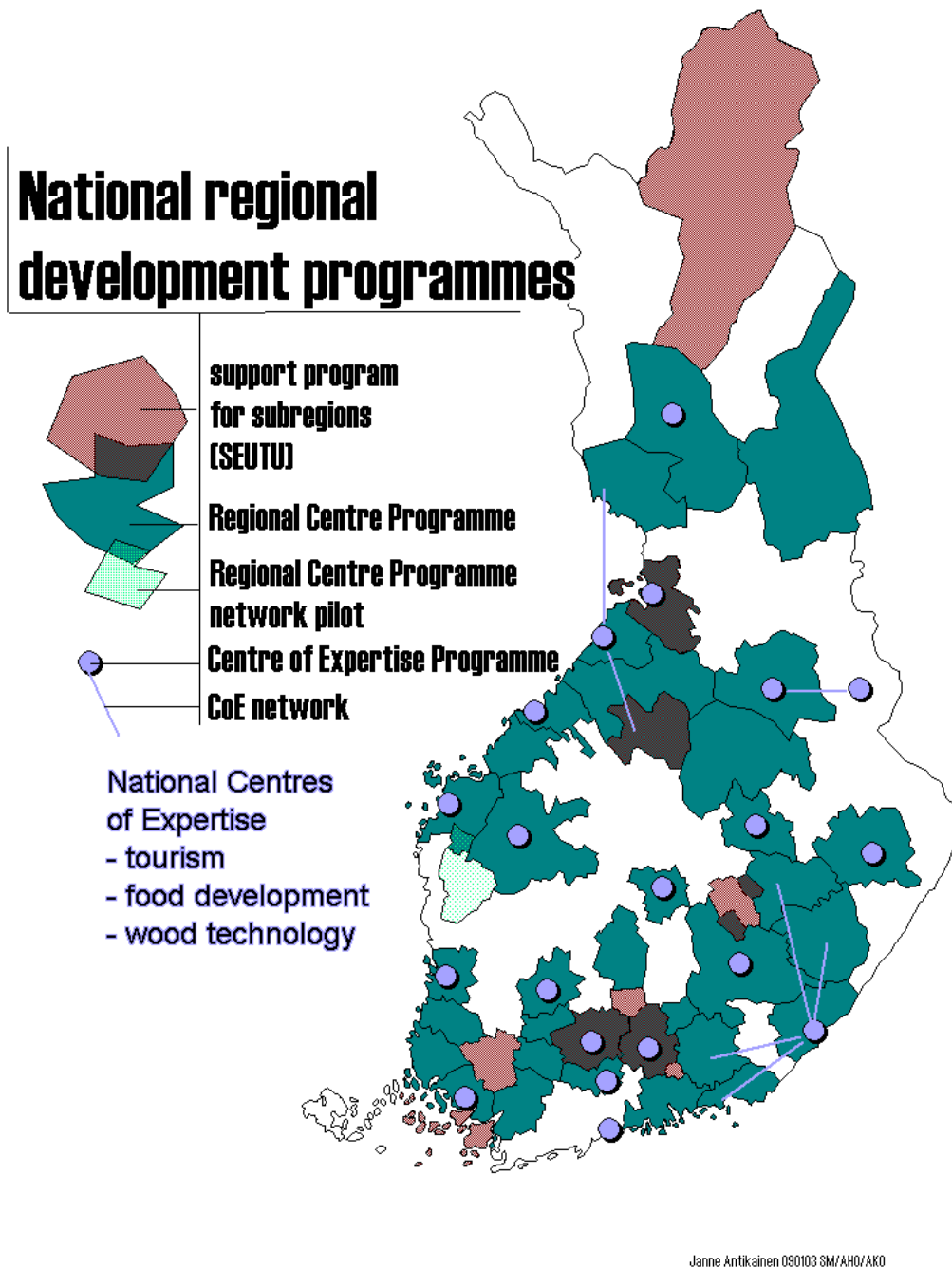
The regional centre programme is a national regional development policy initiated by the Ministry of Interior. It came in operation in 2000 and will run until 2006. The parallel with the EU structural funds programme period is on purpose. Polycentric development is a major aim.

The main concern of the policy is the losing of population in medium and small towns during the 1994-2001 period. Finland had only 5 growth centres. The regional centre programme tries to balance regional development. The desired situation is to have about 20 strong centres dispersed over the whole country (actually, policy-makers even speak of about 30 to 40 centres).

At the same time, the country's urban system is already considered to be polycentric. Long distances between the cities are considered a major challenge. Also, the economic and political context is changing. Finland is increasingly part of the global economy and the European Single Market economy. Today, regions have to compete not only on the national level but also on the global market. The move towards an informational economy has favoured only the largest urban centres (in fact, the regions that have NOKIA and subcontractor establishments). However, all urban regions have some expertise and export products that knit them into the "global economy". So far, only few strategic relationships between urban regions have been established. Of course, when the economy was heating up in the end of the 1990s economic growth of the largest urban regions dispersed also to near-by regions making them more functionally integrated. Transport connections (rail, motorways) seem to be determining factors in this dispersion process.

The Regional Centre Programme is an integral part of the national regional policy. The regional centre programme is mentioned in Law on Regional Development (as a special programme). The Programme is implemented in 34 regions (see Figure 7.1). The authority responsible for the national coordination of the Regional Centre Programme is the Ministry of the Interior. The Programme is based on partnership and teamwork between various Ministries, the government bodies responsible for regional administration, the Regional Councils and municipalities. On the basis of an agreement between the municipalities, responsibility for the Programme lies with the urban centres or the joint regional organisations of the municipalities, such as regional business service and development enterprises or regional federations of municipalities.

Figure 7.1 Regions of the National regional development programmes.



Successful work in the context of the Programme will strengthen the potential of the urban regions, and as a result the entire Finnish urban network will become more competitive. To strengthen regional vitality there is a need for genuine regional cooperation and partnership between actors in both public and private sectors. Networking of companies and educational institutions to build a foundation of expertise is needed as well as participation of citizens in order to develop a good environment and versatile services.

Monitoring and evaluation of the Regional Centre Programme will provide information on the progress and results of the project. So far, it seems that the Programme has provided for more embeddedness of the issue of polycentric development (including terminology, concepts and visuals) in the coordination units in each of the 34 centres. And, as the Programme is a highly political project, this causes some strengths and weaknesses at the same time.

7.4 Conclusion

Polycentric development is a major aim throughout policies in Finland. This is a reaction to the concentration of population, employment and GDP in the most urbanised regions. Regions along the Russian border and in the North are suffering decline.

Regional policy, run by the Ministry of the Interior, seems to be the most important entrance for promoting polycentric development, in terms of financing. Spatial planning follows a more communicative approach, by means of non-binding Land use Guidelines in which the ESDP has been incorporated, issued by the Ministry of Environment.

The national level is the most important in terms of initiating and financing policies. The municipal level is particularly strong as regards spatial planning and land use policy. The regional level is weak, it primarily exists because municipalities do want to co-operate at certain fields of common interest.

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8 France⁶

8.1 Introduction

France is an often cited example of a typical monocentric country, in which the primacy of its capital, Paris, is obvious. Related to this is the centralized system of government. Since 1983, the central government has narrowed its field of competences. As far as spatial planning is concerned, it still submits laws concerning spatial planning which implementation is left to the regions and sector ministries.

8.2 General position of Polycentricity

Because of the dominance of Paris France is considered to have a quite monocentric urban structure. Interestingly, without Paris the country would instantly look pretty much polycentric with a number of comparable cities (Lille, Nantes, Bordeaux, Toulouse, Marseille, Lyon, Strasbourg) in a ring around a rather 'empty' centre. Paris, however, does exist, which is why throughout the second half of the 20th century there have been voices that argue for policies and initiatives to reduce over-concentration in and around Ile de France. At the same time, other voices question the relevance of these arguments and do not make much of a problem of Parisian dominance. Moreover, they even promote centralisation. With mere reference to the French Revolution they are called the *Jacobins*, as opposed to the *Girondists* who favour decentralisation.

Shortly after the Second World War national polycentric policies depended on the dominance of *Girondists* in the government and were carried out by the *Commissariat Général du Plan*, which worked with indicative planning. This had been the case until 1968, when De Gaulle lost a referendum on decentralisation and retired. It took until 1982 before decentralisation was back on the national political agenda and started in earnest. DATAR, which had been set-up already under De Gaulle to co-ordinate actions of different ministries in the domain of territorial development and which reports directly to the Prime Minister, of course was involved in decentralisation and experimented with the so-called *Contrats de Plan État-Région*.

DATAR is concerned with *Aménagement du Territoire*, which has no direct English equivalent and deals with the spatial disposition of people and economic activities over the territory, but may not be confused with land-use policy. The immediate backdrop to the development of *aménagement du territoire* was to combat over-concentration. What DATAR did was co-ordinating public investments in the French regions. It did so, however, without a spatial vision and still does. Nevertheless, internationally the French are known for their use of scenarios and images, the Blue Banana being one of the most famous examples (Faludi and Waterhout, 2002). Still, while the French themselves regard scenarios and images as not much more than a mere instrument and consequently use them in a very loose way, also *Aménager la France de 2020* by Jean-Louis Guigou contains examples of maps that conceptualise the French territory and present policy

⁶ Authorized by Nadine Cattan and Sophie Baudet-Michel of CNRS-UMR, Géographie-cités, Paris, France.

objectives related to ‘netted polycentricity’. The concept of ‘netted polycentricity’ may be regarded as the latest invention in the evolution of French polycentric development policies.

8.3 Examples of polycentric policies

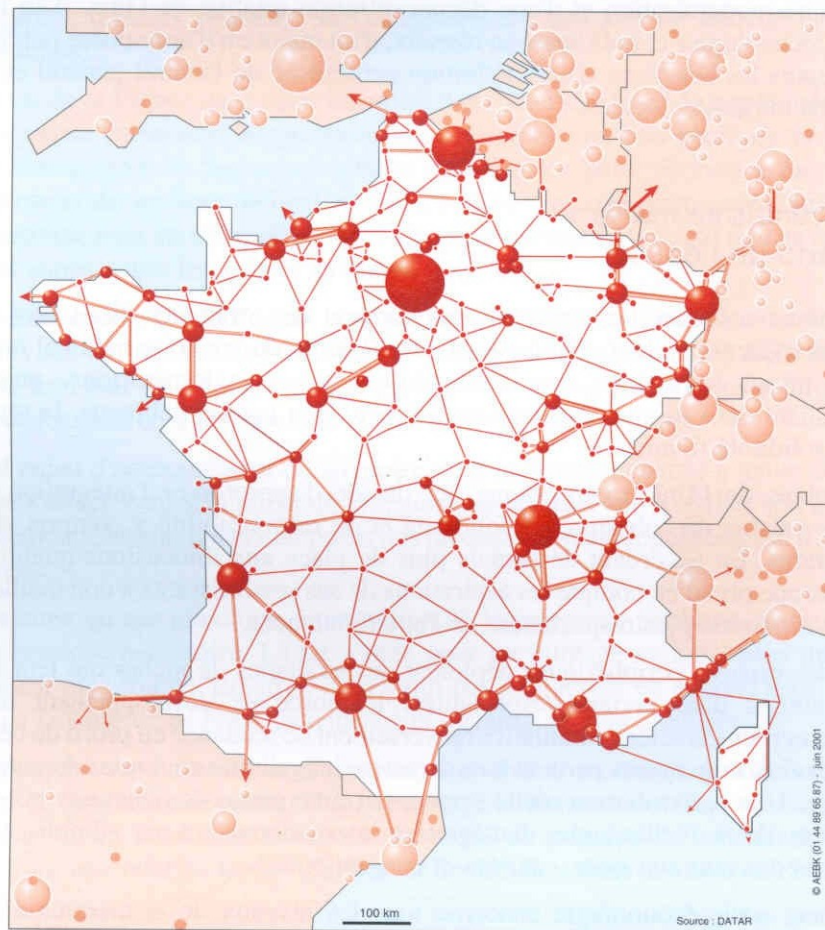
This section only discusses two recent initiatives that contribute to polycentric development (the Project Territory), or have polycentric development as its explicit aim (Netted Polycentricity). It is therefore that we do not discuss older, and perhaps better known examples of polycentric policies. One policy that springs to mind is ‘Métropoles d’équilibre’, which came into force in 1962 and stimulated the development of eight large cities as Toulouse, Lille, Lyon etcetera as counterweights to Paris. The policy can be seen as a forerunner of what we now would call a polycentric development policy. Also the recently introduced (2000) and still running policy named ‘reseaux de villes’ will not be discussed, although its prime aim is to contribute to polycentric development. In fact this policy stimulates metropolises to catch up in international competition and is a new strand to the Contrats du Plan policy. Instead, hereunder two recent policies indicated by the concept ‘netted polycentricity’ and ‘project Territory’ will be discussed.

8.3.1 The concept of ‘Netted polycentricity’ (*polycentrisme maillé*) in the national planning policy *Aménager la France de 2020*

The policy of netted polycentricity was introduced by Jean-Louis Guigou, the former Délégué à l’Aménagement du Territoire at DATAR⁷, in the first edition of his policy document *Aménager la France de 2020* (Paris, La Documentation française, DATAR, 2nd ed. : 2002). The focus of this national policy is on polycentric development. The document aims to give a guideline to planners and to open up new perspectives thanks to a prospective approach. In doing so, it refers to the ESDP and its objective of polycentric development. See Figure 8.1.

⁷ Délégation à l’Aménagement du Territoire et à l’Action Régionale

Figure 8.1 Impression of 'Netted polycentricity' (Guigou, 2002).



Rationales

The policy document clearly considers the French national territory in a classical way as monocentric. Insufficient polycentricity is seen as a source of economic weakness. The unbalance between Paris and the other cities is the dominant structure, but some regional or interregional urban systems are emerging and can be encouraged. Perhaps, the policy document argues, a trend towards a better balance can be witnessed since the population distribution has changed during the 1990s to the advantage of a more balanced pattern between Paris and some alternative urban growth poles.

The document points out several risks of having no national planning policy. These “potential territorial fractures” are the following:

- growing gap between the Paris area and the rest of the national territory;
- growing crisis in a wide “central depression” from the North-East to the South-West;
- possible dissociation between the “Eastern front” attracted by the economic centre of Europe and the “Western front” far away from these dynamics;
- risk of cultural identity conflicts between some peripheral regions and the central power;
- a general risk for territorial cohesion, economic results and environment.

The main concern of the policy is to achieve a better spatial balance and more equity (the two concepts are both used).

Polycentricity in the national planning policy Aménager la France de 2020

The central objective of a better balance and more equity can be achieved by developing a more polycentric national territory through the choice for a normative scenario called “netted polycentricity”. This means that new urban poles need to be developed, next to Paris. The adjective ‘netted’ associated to polycentricity refers to a triple pattern:

- a network of cities;
- a network of co-operating regions;
- a pattern of travel-to-work areas organized by planning and management structures which link cities to their functional hinterland.

‘Netted polycentricity’ can be seen as an official scenario drawing the ideal configuration for France in 2020. In sum, polycentricity is a major concept in the policy.

Implementation/Instruments

The document only presents guidelines, so it cannot have direct and immediate effects on other policies. It can only be taken into account by the periodically convoked *Comités interministériels d'aménagement du territoire*. But the central scenario suggests several means: building project territories, seeking a more balanced spatial development, tending to a European planning policy; and also multiscalar governance, voluntarist transport policy, institutional decentralisation, interregional cooperation, intercommunal cooperation, territorial covenants between the State and the regional and local authorities, etc. Generally, co-operation is regarded as a central strategy.

DATAR is mainly involved in implementing the policy. As this institution depends on the Prime Minister, integration with the other ministries should take place naturally. However, DATAR is not very powerful. Also, the policy document it has written does not engage the other institutions, it only gives some orientations. Consequently, methods for monitoring and evaluation are lacking. The fact that the policy document functions as a reference document without obligation is regarded as its principal weakness.

Embeddedness of polycentricity

Elements of the ‘netted polycentricity’ concept have been introduced in an earlier book of its conceiver, J.L. Guigou: *France 2015, recomposition du territoire national*, 1993 (La Tour d’Aigues, DATAR, L’Aube). So, the concept of “netted polycentricity” can be regarded as a very personal contribution to French policy, and its maturation refers to its conceiver’s intellectual evolution. The ESDP reinforced Guigou’s opinion. The conceiver has also developed a certain terminology and visual representations. It must be added here that the position of Délégué à l’Aménagement du Territoire at DATAR has a special status and that the person involved acts quite independently from DATAR.

The policy is quite strongly embedded in organisations that are likely to profit, while others are more reserved. Institutions, and - despite some mistrust in the DATAR - regions and cities located out of Paris agglomeration adopted the polycentric objective as a means for more balanced spatial development. At the moment, the concept is sometimes perceived as a technocratic and theoretical one and received some ironic comments. Central administrations, principal ministries and large public companies are more hostile or indifferent. For instance, the main public or semi-public investors in transport (Ministry of Transport, SNCF, Aéroports de Paris) do not take into account this very general objective in their plans and policies. On the other hand, regional and urban political leaders increasingly use this concept to build co-operative actions with their neighbours.

8.3.2 Project territory

The policy to develop ‘project territories’ originated in the period 1993-1995 when it was initiated by the Prime Minister and the Ministry of Planning with the DATAR. This national planning policy indirectly favours a polycentric development.

Rationales

Again, the monocentric structure of the French national territory, most notable the unbalance between Paris and the rest, provides the starting point for policy-making. At the beginning (1993-1995), this policy starts with the objective of assisting rural areas as was envisaged by the Minister of Planning Charles Pasqua. The fears were mainly about the rural areas of weak density and about their desertion and deepening crisis. So the solidarity between urban and rural areas needed to be strengthened at a local scale. Following this conservative Government, such a better interaction between the cities and their counter-urbanized and rural fringes would help to balance the territory. Polycentricity is not central. The Green Minister of Planning Mrs Voynet (1997-2001) who succeeded Pasqua had a more urban conception of the development and wanted to maintain the project to reinforce the solidarities between rural and urban areas, but with more consideration for the urban development.

A ‘project territory’ is a territory defined by a common project developed by local authorities and recognized by the central government, which supports it with funds. The projects aim at stimulating coherence, mainly between the agglomeration and its surroundings. To bring cities and the countryside closer to each other, the basic map that is used is the travel-to-work area. Such maps show that these areas are functionally unified and indicate the potential usefulness of institutional integration. In general the aim is to organize public management on the scale of such functional urban areas. The demarcation and recognition of such areas (also referred to as ‘pays’) follows initiatives of inhabitants and local politicians rather than technocratic criteria. Local actors take the first steps, then the central government becomes involved through funding. So, the project literally makes (or defines) the territory. The idea of governance is strongly present in this policy. The objective is that functional urban areas, or project territories develop a coordinated strategy.

Polycentricity in the project territory policy

During the Pasqua period, polycentricity was not a central theme, as urban-rural solidarity dominated. However, this changed after 1997 when polycentric development aims became more significant in the light of increased European competition between cities and as a means to counter-balance the development of Paris. By encouraging the local urban-rural areas to build strategic projects, the central power aims to stimulate regional governance and endogenous development. The idea is that the central government cannot take the sole responsibility for such a development, much is left to local initiatives. The policy will stimulate economic development and contribute to a polycentric development. Indeed, such policies seek to help medium-sized cities where such regional organizing capacity is easier to build. This capacity will, in return, grow their attractiveness and competitiveness.

Implementation/instruments

The policy of developing project territories is laid down in two Orientation Laws (Pasqua; Voynet). DATAR and the Préfets and Sous-Préfets (central government staff in the regions) encourage the local authorities to build projects and help them. The intercommunal associations, the *Départements* and the Regions play an important role. Covenants are used to link the local authorities to the central government. Local partnerships become eligible for funding when they

develop a project. Interesting is that in project territories also the civil society is involved. Monitoring and evaluation of the policy are weak developed.

Policy in practise

The “project territory” concept is a good instrument to stimulate local actors to co-operate and build strategic plans. But in practise, the non-compulsory process tends to strengthen the dynamic areas such as those of Western France and not the poor populated and weakly urbanized areas such as the Massif Central. Moreover, the Ministry of Inner Affairs regards the ‘pays’ building process as sympathetic but not as efficient. It has in 1999 initiated a policy by its own: the Chevènement Law. This seems a very attractive policy (thanks to considerable funds) to encourage the urban communes to co-operate through the forming of intercommunal institutions, which in turn are stimulated to locally unify the different local fiscal systems. This process contributes to polycentricity because it helps governance in all cities except the Paris agglomeration, which remains almost out of this process because of its size. Elsewhere, the economic development and fiscal policies of the communes belonging to a same agglomeration are unified: that contributes to their attractiveness for investors.

Though polycentricity is not the central objective, it is clear that the “project territories” concept, with its applications like the pays and the intercommunal fiscally integrated urban organizations, contributes much to a more polycentric development, as long as the Paris agglomeration does not take part in the process.

Embeddedness of the concept

The idea of project territories, stimulating partnerships between cities and their functional hinterlands, is not new in French policy. Some roots can be found as long ago as the 1970s with the first rural development policies named “contrats de pays” (*pays* covenants). The political Decentralisation laws of 1982-1983 generalized the covenant concept and practise. And, the roots of the attention given to proximity areas (functional urban areas) resulting in the 1995 Orientation Law can be found in the 1993 Great national Debate on planning.

Though the policy in general is strongly embedded in organisations, there are some important regional variations in its application. These relate to cultural differences: Western France is familiar to the “pays” concept, thanks to its urban network of medium-size cities. Southern France is less dynamic from this point of view and Ile-de-France is almost absent.

8.4 Conclusion

Throughout recent history polycentricity (or decentralization) has been a major theme in French politics and in particular in spatial planning and regional development policies. This is mainly a reaction on the over concentration around Paris. Nevertheless, the support for polycentricity and its translation into policies depends much on the sitting government and its respective ministers. National elections may result in new laws and considerable changes in policies. On the whole, however, polycentricity is an issue that is so strongly institutionalised in French thinking about the national territory that it is always apparent in policies, be it implicitly or explicitly.

DATAR, the French spatial planning agency, is one of the main actors in the field of polycentric development policy. Other ministries, like the one for Internal Affairs, however, do have their opinions on it too. Being located under the direct attention of the Prime Minister, DATAR operates more or less in between sectoral departments. As we have seen this does not necessarily

lead to joint agreed policies like netted polycentricity, but clearly puts DATAR in the centre of the debate. Its own instruments and means are however rather weak, so DATAR depends on the initiatives of sectoral departments and of lower level authorities. The latter are stimulated to develop bottom-up initiatives that are sponsored by the central government and duly co-ordinated via contracts and covenants.

Thinking about polycentricity never stands still in France. This is amongst others reflected by a recent report of the 'Comité Stratégique' of DATAR (2003) to the Prime Minister about decentralisation. Interestingly, the committee does only involve a very limited number of DATAR officials and exists mainly of stakeholders from other government agencies, regional and local authorities, private and non-governmental actors and universities.

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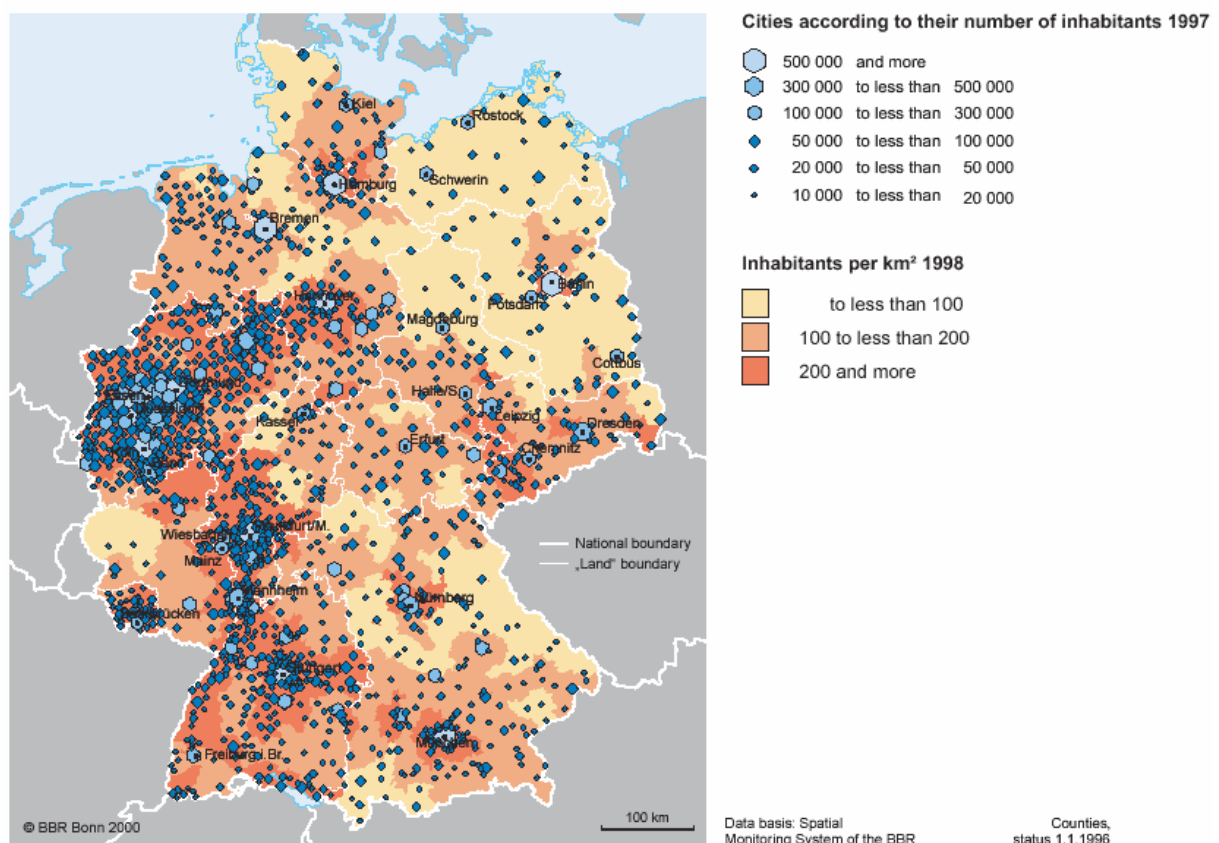
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9 Germany⁸

9.1 Introduction

Polycentric development is almost institutional to German spatial planning policy and other policies as well. In fact, due to historical developments the country has always known a polycentric settlement pattern. Due to the federalised nature of the German republic and the recognised advantage (at national as well as regional level) of a polycentric settlement in terms of environmental, economic and social concerns there is a *communis opinio* about the maintenance and safeguarding of the polycentric pattern. There are differences though concerning the operationalisation of the concept of polycentricity: what is considered as a polycentric pattern at the national level is sometimes interpreted as monocentric at the regional level of the *Bundesländer*. Characteristic for Germany is strong relation between the concept of polycentricity and central-place theory, the latter a hallmark of German *Raumplanung* for decades already.

Figure 9.1 The German urban system in Germany (BBR, 2000a)



⁸ Published under responsibility of Wil Zonneveld, Evert Meijers and Bas Waterhout of Research Institute OTB of Delft University of Technology.

With over 80 million inhabitants Germany is by far the largest European country measured in terms of population size. With an average of 230 inhabitants per square kilometre it is overall rather densely populated. In this respect there is also quite a well balanced structure, although the north in general has a population density of less than 120. Over fifty percent of the regions have a population density of 196. The regions with the highest density are the six so-called European metropolitan areas (*Metropolregionen*): Munich, Frankfurt-Main, Stuttgart, Rhine-Ruhr area, Hamburg and Berlin. Germany has no *primate city*, but a polycentric urban network of similar-sized cities and towns (see Figure 9.1). Regarding demography two trends stand out: decline in the east (apart from Berlin and Brandenburg) and growth in the west (OECD, 2001; Vision Planet, 1999).

As regards GDP per capita the new *Länder* (apart from Berlin and Brandenburg) are lagging some 20 per cent behind the national average. The wealthiest regions are generally speaking also the most densely populated. The gap between the richest and poorest regions increases. Also employment figures show a picture in which growth is concentrated in the west and employment rates are below national average whereas the east faces employment rates above 15 per cent (OECD, 2001; Vision Planet, 1999).

9.2 German territorial policies

9.2.1 General government principles

Any description of policy making in Germany has to start with emphasising the federalised nature of the country. For many policies the main competency is located at the level of the 16 so-called *Länder*, or states and not at the national level of the federal government, or the *Bund*. In fact, strategic spatial planning and regional economic development policies "...are almost exclusively in the hands of the *Länder*. Under the regulatory framework of the federal government they develop their own development programmes and agendas. Only roads, railways and waterways of national importance are planned, programmed, implemented and maintained by federal institutions." (Kunzmann, 2001: 155) The latter though does not take place without the full consensus of the state governments following long lasting consultation processes. With the new Federal Regional Planning Act, which came into force in 1998, the Federal government is entitled to define *models* of spatial development. However, the main planning competency remains at the level of the *Länder*. The planning authorities of the districts and the federal *Länder* are obliged to work towards the realisation of spatial planning goals through greater co-operation between all participants. There is no hierarchical and centralised decision-making system, and thus no national comprehensive spatial planning programme. The *Länder* are obliged to draw comprehensive planning programmes for their territory. The contents of these programmes is up to them to decide. It is up to them to take on board principles on spatial development formulated by federal agencies.

In order for a proper understanding of the German system of policy making it is important to mention the way the tax system operates. All three administrative levels, the federal, the *Länder* and the local level have their own sources of revenue. Half of the taxes goes to the federal state. The other 50 per cent are distributed between the *Länder* and the local communities, the latter receiving the full yield of land tax, 60 per cent of manufacturing tax and 14 per cent of income tax. Often this is insufficient and frequently the Land is asked for additional grants (Vision Planet, 1999: 327). "In addition there is an institutionalised mechanism of inter-*Länder*

equalisation taxes. A five-year contract in between the Länder regulates the transfer of finances (*Finanzausgleich*) between the richer and poorer Länder.” (Kunzmann, 2001: 156) This agreement results in support from for instance the prospering states Bavaria and Baden-Württemberg to the poorer states in Eastern Germany as well as Bremen and Schleswig-Holstein. Next to this there is the federal programme *Aufbau Ost*, which involves a yearly transfer of 25 billion euro to the five East German states.

As regards ‘regional policy’ a distinction has to be made between physical planning and regional economic development policy. The basic difference between the two is to be found in legal procedures and instruments and the different spheres of responsibility at the federal level. Physical planning regulations are highly normative and often understood as setting constraints to market-based development, whereas regional economic development policy works with incentives and tries to stimulate regional development within a market-economy context. At national level physical planning is the responsibility of the Federal Ministry for Regional Planning, Building and Urban Development. Regional economic development policy is the responsibility of the Federal Ministry of Economic Affairs (Vision Planet, 1999). The reader is warned there is basic difference between regional policy (*Raumplanung*) and regional economic policy.

9.2.2 Spatial Planning Policy

Spatial planning in Germany, like in The Netherlands, is understood as a cross sectoral coordination policy, often leading to conflicts between planners and sectoral policy makers. However there is a more hierarchical structure than in The Netherlands whereby lower tier plans have to correspond to those applying to higher scales. State planning is mainly concerned with control and protection of unwanted developments rather than with development aims (Kunzmann, 2001). Two concepts that have dominated German spatial planning at all levels are the ‘central place system’ and ‘transport corridors’. Basically, since decades these two concepts provide the main substantive input for German spatial planning, its main goal being to provide equal living conditions for all the inhabitants. Today this goal is phrased in modern concepts like sustainable development and quality of life. Sustainable development has become the official overall goal of German spatial planning since the new Federal Regional Planning Act came in force in 1998.

As regards polycentric development, physical planning at the federal level is one of the key policies. Especially since in 1993 the so-called Guidelines for Regional Policy – *Raumordnungspolitischer Orientierungsrahmen* (BMBau, 1993) – were adopted by the MKRO (Ministerskonferenz für Raumordnung), standing conference of Federal and Länder ministers responsible for this policy domain. These Guidelines can be seen a spatial vision in a sense that they describe a desired spatial development pattern for Germany. The document puts five sets of principles forward about settlement structures (predominantly in favour of polycentric development); environment and land-use; transport planning; Europe; and one entitled ‘General principles for planning and development’. It was the first time that the MKRO adopted such a non-statutory document, non-binding for the Länder (Faludi and Waterhout, 2002). This Guideline document, which is an unusual instrument for Federal planning, was followed in 1996 by the Spatial Planning Action Plan or *Raumordnungspolitischer Handlungsrahmen* (BMBau, 1996). The federal *Raumordnungsbericht* (BBR, 2000b), a four-annual spatial planning report, gives a comprehensive summary of national spatial developments and territory related strategies and programmes (Kunzmann, 2001).

The federal spatial planning frameworks (whereby spatial planning must be understood as strategic planning) are worked out in more detail at the level of the Länder, districts and municipalities via both specific Länder spatial planning laws and planning documents. The Länder laws and plans have indirect impact through a system of reviews and approval of local plans and public projects. Along with this at the Länder level also a monitoring system exists. Through this rather hierarchical system a polycentric development for the whole country is also stimulated by planning activities at lower levels.

Whether spatial planning is an effective instrument in Germany is a much disputed subject between politicians as well as academics. The plans and programmes of the Bund (the federal government) and the Länder are primarily communicative, since there are relatively few implementation tools at hand. Very important in the German system are the numerous State committees and sub-committees and the MKRO to connect the national with the State level. Although, state planning documents in general do not contain appealing spatial visions or break ground for innovative action, they still have persuasive power, which is further accentuated by the communication capabilities of the state officials taking part in the numerous committees (Kunzmann, 2001). Also important is the monitoring system that has been built up around spatial planning at federal as well as state level and informs on spatial development and the effectiveness of measures. Especially worth mentioning are the periodic spatial reports (the *Raumordnungsberichten*) which at federal level are approved by Parliament (Vision Planet, 1999).

9.2.3 Regional economic development policy

Regional economic development policy is seen as a part of national economic policy in general and is therefore a sectoral policy domain. In Germany regional development policy has three main objectives: 1) to mobilise growth potential in weak regions, 2) to stabilise regional fluctuations in case of structural conversion (i.e. transformation from industry to service economy), and 3) to reduce inter-regional disparities and - to a certain extent - to provide basic public and private services. In doing so, regional economic development policy pursues equal living conditions throughout Germany, which is in line with the Federal Regional Policy Act. The main instrument of the policy are incentives to stimulate private companies to invest in certain regions. In addition some economically relevant infrastructure measures may also be taken under this policy. It focuses on the mid and long-term development of regions. This is one of the few policies which has a shared competency between the Federal Government and the Länder (together with the municipalities), the latter of which are responsible for the implementation. Polycentric development does not seem to be a primary aim of regional economic development policy.

9.3 Examples of polycentric policies

9.3.1 The 2000 federal Spatial Planning Report

The Spatial Planning Report 2000, or *Raumordnungsbericht 2000* is officially not a real policy document but a monitoring document. The most recent federal planning document stems from 1993. The importance of the 2000 Report is therefore considerable. It delivers policy recommendations based on an analysis of spatial development trends and policies with spatial impact. The report 2000 has been produced by the Federal Office for Building and Regional Planning or *Bundesamt für Bauwesen und Raumordnung* (BBR, 2000b). This is not a policy making organisation but resides under the Ministry of Transport, Building and Housing. The report has

been approved by the national parliament., the *Bundestag* and the *Bundesrat*, the German federal parliament.

The provides an elaborate analysis of the structure of the national territory. It describes the spatial development in a number of thematic chapters:

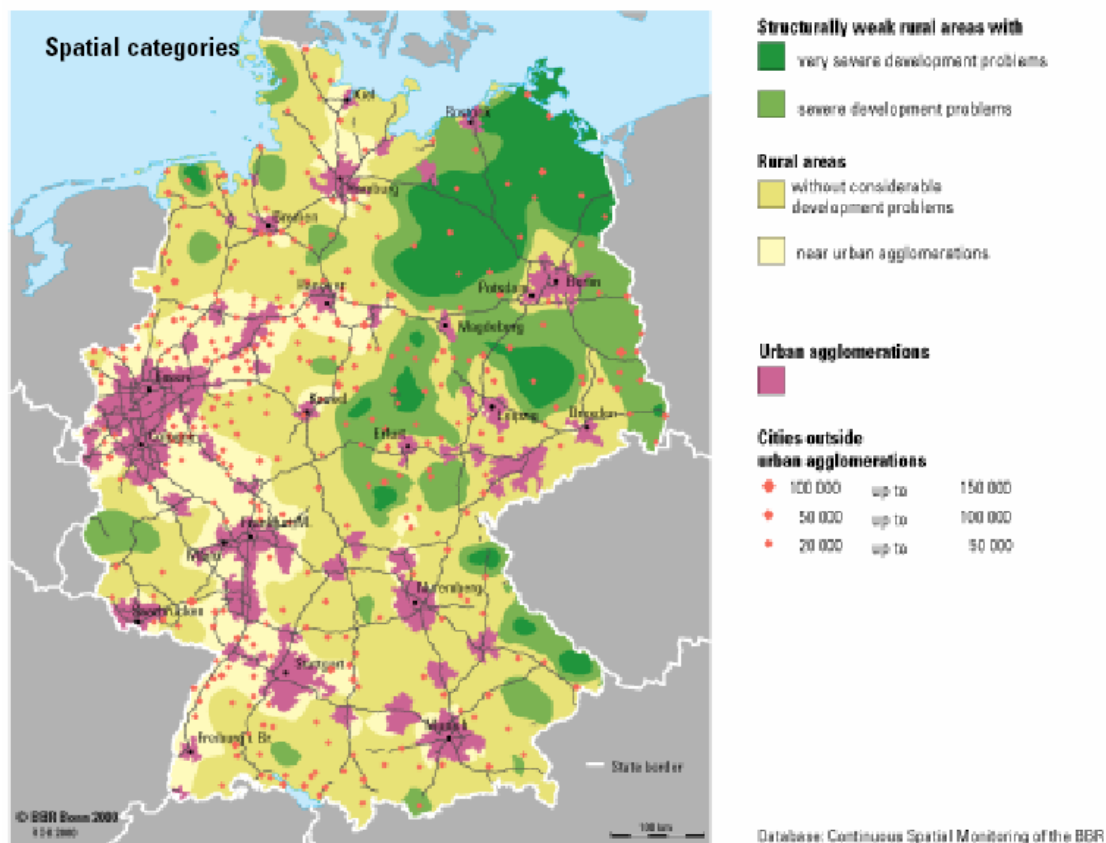
- Spatial structures: spatial categories, central place system, land use structures, spatial interconnections
- Regional problem Situations: Social and economic structure, infrastructure and housing, landscape and land use
- Trends of future Spatial Development: Urban system, rural areas.

Present situation, development and policy theory

The English summary (BBR, 2001) of the Raumordnungsbericht 2000 starts with saying that “the spatial structure of the Federal Republic of Germany distinguishes itself by a relatively balanced, decentralised concentration of the population, workplaces and infrastructure in cities, city regions and agglomeration areas as well as by large and coherent rural areas. These types of regions can be clearly distinguished with respect to their population density. Settlement and transportation corridors represent a special category. Their development is based on the close connection between settlement development and efficient transportation axes.” (BBR, 2001: 7) (see Figure 9.2)

Polycentric development is a major issue in the Spatial Planning Report. Coined in terms like decentralised concentration, the Report explains it “...means that the population, workplaces and infrastructure facilities are concentrated in cities of different sizes, which are relatively evenly spread over the whole country. In contrast to other European states, which are economically and culturally dominated by one big (capital) city whereas the remaining cities are smaller and less important, Germany is characterised by a more even distribution of the population and workplaces. It is a manifestation of the federal structure of Germany and has advantages with respect to economic efficiency, accessibility and the provision with services and goods. An important objective of German spatial planning policy is therefore to secure and develop ‘decentralised concentration’.” (p. 7) Also in this respect reference is made to the so-called ‘Central place system’.

Figure 9.2 Spatial differentiation in Germany (BBR, 2001: 8).

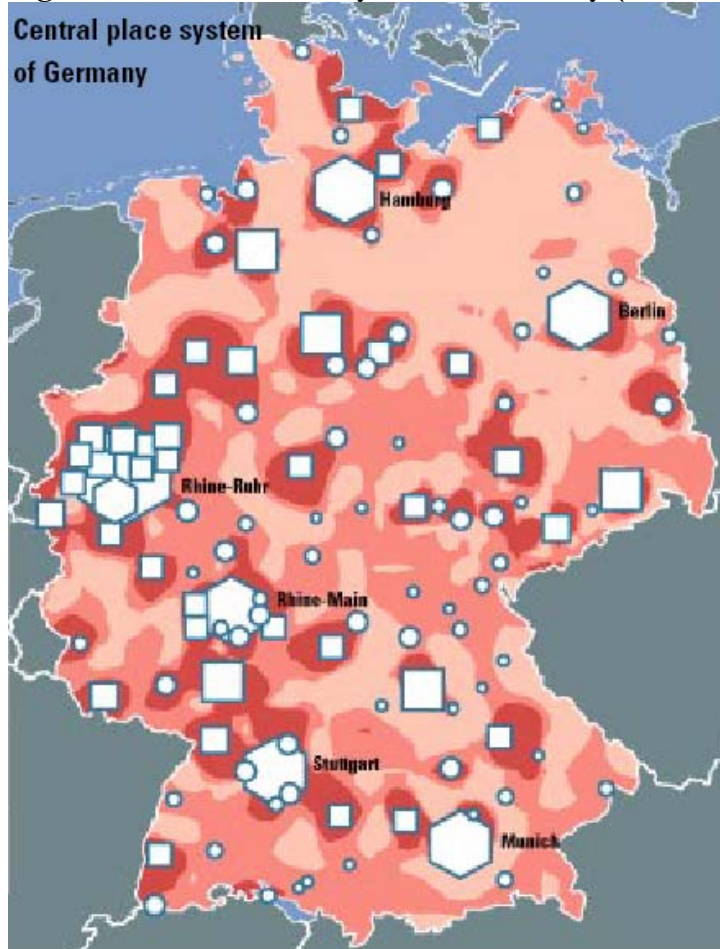


“The central places which have been designated by state planning (*Landesplanung*) are the foundation of the German urban settlement system. They support the decentralised settlement structure (...) by focusing [at] infrastructure and supply facilities. Higher-order and middle-order centres shape the spatial structure and provide the population and economy with:

- Jobs,
- Goods,
- Public and private services and
- Infrastructure services.

In the sphere of influence of cities, higher order centres are to provide goods and services for medium to long-term requirements, whereas middle-order centres concentrate on providing for the short- and medium-term needs. The higher order centres in Germany are usually central cities and large economic and employment centres with more than 100.000 inhabitants, which are of national importance. The spatial distribution of the 154 higher order centres in Germany enables virtually every citizen to reach the nearest higher-order centre by car within 60 minutes. The over 1000 middle-order centres generally have between 20.000 and 100.000 inhabitants. In rural areas, the system of higher-order and middle-order centres is supplemented by local centres or mini-centres which also provide the population in the respective area with basic goods and services. Even if all centres in Germany have not reached the same provision standards yet, the central place network provides a minimum supply of public facilities in sparsely populated rural regions and thereby reduces existing out-migration tendencies” (p. 14).

Figure 9.3 Central Place System in Germany (BBR, 2001: 13).



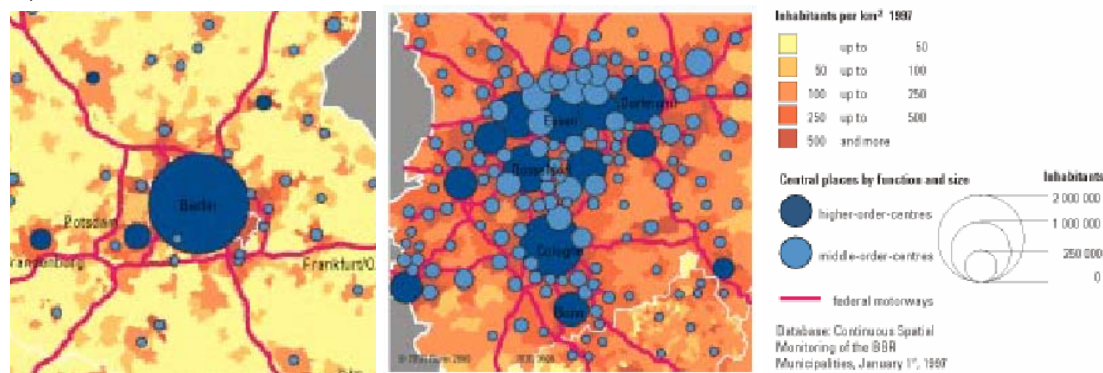
Next to higher and middle order centres six so-called urban agglomeration areas (Metropolregionen) are distinguished (Figure 9.3). A division is made into two categories (Figure 9.4):

- Monocentric agglomerations (...) Berlin, Hamburg and Munich are examples of this type of region
- Polycentric agglomeration areas (...) The regions Rhine-Ruhr (Cologne, Düsseldorf, Dortmund, Duisburg, Essen), Rhine-Main (Frankfurt) and Rhine-Neckar (Stuttgart) are examples of this type” (p. 15).

Interestingly the MKRO has appointed a seventh *Metropolregion*, which concerns the polycentric region Dresden, Halle and Leipzig, the so-called ‘Sachsendreieck’ (Saxony Triangle) in former East Germany (see also Vision Planet, 1999: 302). This seventh agglomeration area does not play a role in the Report however.

In metropolitan regions one can find: 1) international fairs and exhibitions; 2) company headquarters in industry, trade, banking and insurance; 3) high-ranking cultural and education services; and 4) production facilities of the press, film and television. All of the metropolitan regions has developed its own functional specialisation, which strengthens its competitive position. According to the Report “[t]his decentralised settlement structure not only proves to be an important location factor for Germany, but it also creates the preconditions for adjustment of living conditions in the most diverse sub-regions” (p. 13).

Figure 9.4 Monocentric Berlin-Brandenburg versus polycentric Rhine-Ruhr (BBR, 2001: 15).

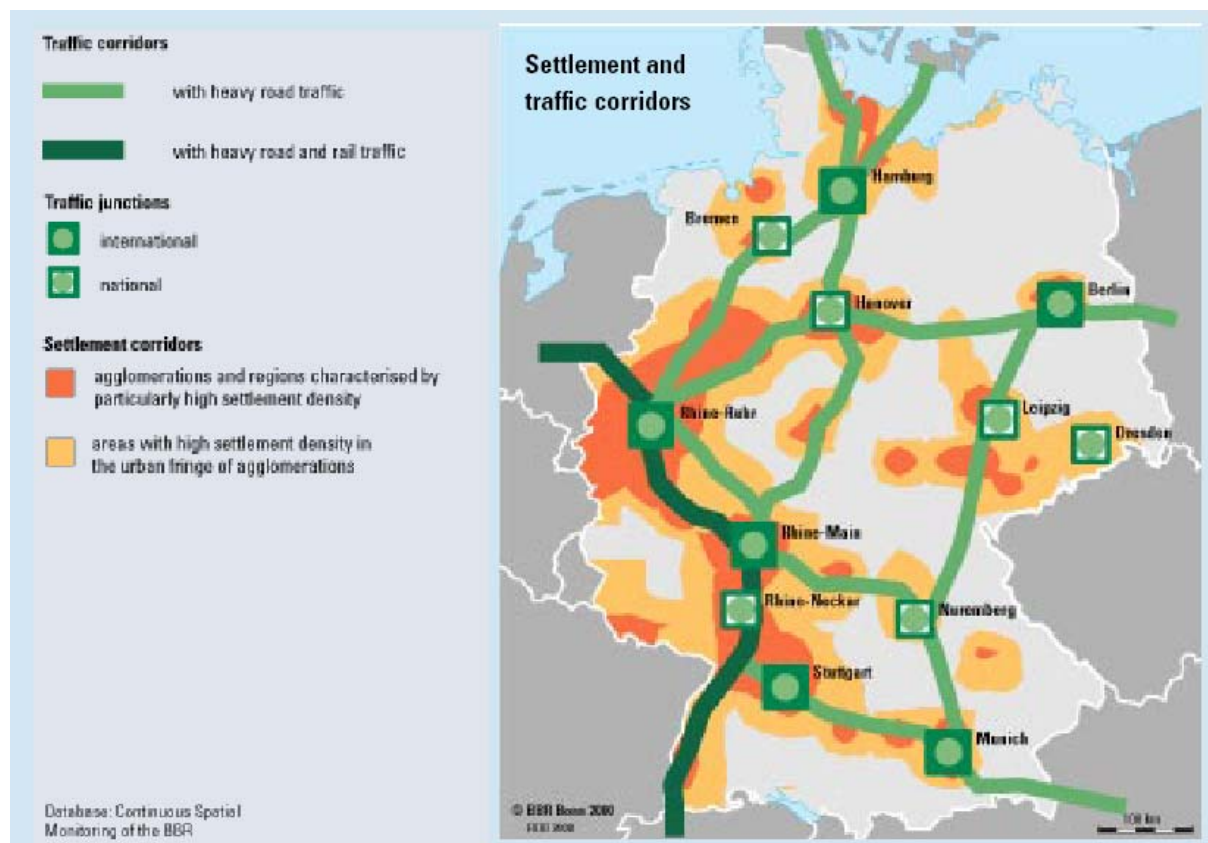


As regards future developments the Report starts with the assumption that the economic potentials of a society are concentrated in cities and urban agglomeration areas, their structure and efficiency being decisive factors for competitiveness of the national economy. Germany has no ‘Global City’ like Paris, London, New York or Tokyo, but a polycentric structure with international functions spread out over a considerable number of urban regions. This makes the German urban system more flexible to changes in the international economy. It is assumed that most of the densely urban areas will experience further growth, particularly in those cases where European transport axes are located (see Figure 9.5). “Examples of these growth areas are Hamburg, Munich, Stuttgart, Frankfurt, Cologne and Berlin. However, in some of these agglomerations growth can diminish if the demands for its economic specialisation in the world market declines. Apart from the large agglomeration areas, a positive development will also take place in some smaller and medium-sized agglomeration areas, which are characterised by modern production structures and efficient scientific and technical facilities (e.g. Karlsruhe, Hanover, Aachen)” (p. 37-38).

Agglomerations with a large share of old industries like mining, iron, steel, leather and textiles (Saarland, Ruhr area), will continue to face significant development problems, even though the restructuring process has been going on for years. A continuous and difficult adjustment process is therefore expected. This characterises also the agglomeration areas in the new Länder. In this respect the Report identifies several factors that are significant for the economic development of regions:

- High population density as a workforce and customer potential
- Active investment
- Innovative potential
- Good provision with infrastructure facilities such as schools, colleges, hospitals, roads, local public transport and energy.
- Favourable location, supply of housing, vocational qualifications of workers, research facilities, differentiated economic structure (p. 26).

Figure 9.5 Transport axes in Germany (BBR, 2001: 11).



Policy objectives

For Germany the most important developments are the unification, the extension of the European Single market and the enlargement of the EU. All these developments are being influenced by an ongoing globalisation of the world's economy. Against this backdrop three main objectives have been formulated for German national spatial planning strategy:

- Further reduction of spatial disparities
- The maintenance of urban functions
- Improving living conditions in rural areas.

Although the general aim is to provide equal living conditions all over the country especially the first and second objectives are of importance for polycentric development.

Further reduction of disparities largely reflects the imbalance which was created by the unification. The SPR gives an overview of policy effects (of the policy that has come into force since 1993) and concludes that spatial planning policy has positively contributed to a reduction of development disparities between rural and urban areas and East and West. The strategy aims at promoting differentiation of employment in the rural areas, providing a more spatially balanced provision of high quality infrastructure and stimulating housing construction in the new Länder. The decline of regional disparities is attributed to a great extent to the enormous amount of funding, which was 930 billion DM (465 billion euro) by the national government alone in the period 1991-1998 and largely spend in the new Länder. Although the equalisation policy is successful the issue of structurally weak regions is still considered to be highly urgent.

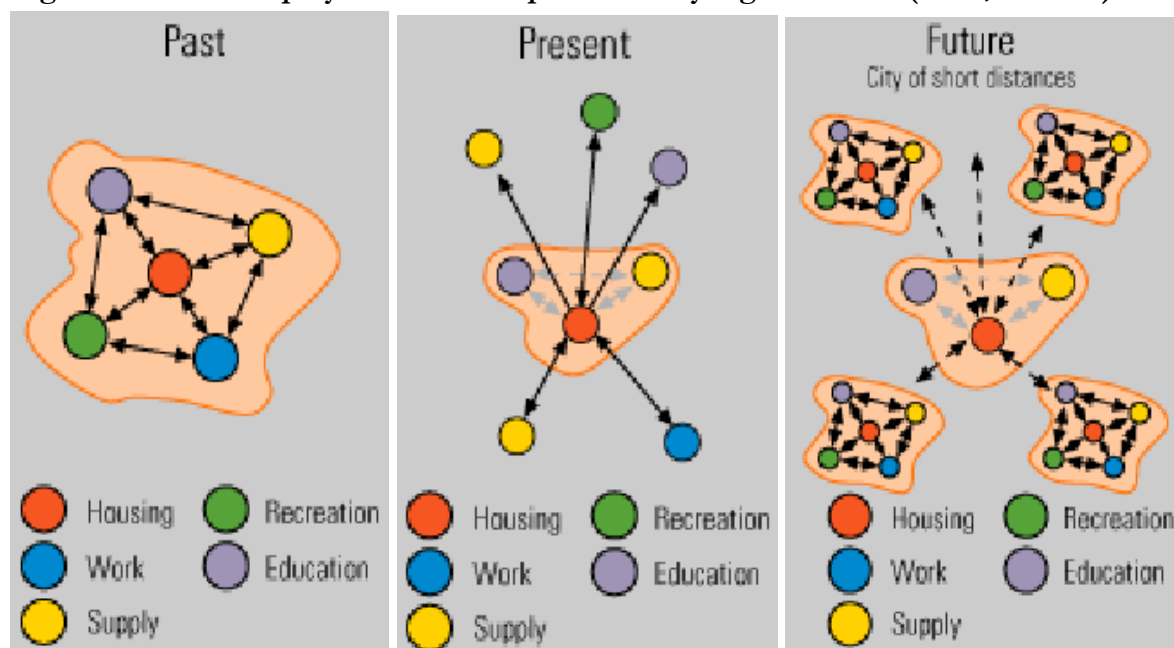
As regards the maintenance of urban functions it is argued that the polycentric structure of Germany is of decisive location advantage in the international competition. The centres of

growth are evenly distributed over the country. This makes the economy less vulnerable for economic crises and helps to establish equal living conditions in all parts of the country. For these reasons the maintenance of urban functions is deemed a central task of spatial planning. The main strategy is to keep cities attractive for work, trade and living. The strategies are focussed at:

- Protecting the environment and efficient land use
- Reduction of traffic strain
- Stopping urban sprawl
- Promotion of urban networks (see Figure 9.6)
- Strengthening the vitality of urban districts

Co-operation between cities is seen as an important strategy to improve competitiveness. “In a framework of urban networks cities and municipalities co-operate on a voluntary basis to become more efficient in concrete subject areas. These subjects include the organisation of public administration, land use planning, business promotion, marketing and publicity, tourism, the application for promotion funds and the improvement of cultural and social offers.” (p. 51) In this respect the following illustrations are informative (Figure 9.6).

Figure 9.6 Towards polycentric development at city regional scale (BBR, 2001: 51).



Application

The Report recognises that spatial planning cannot be limited to the preparation of plans. Planning must actively promote the realisation of its by initiating and supporting the co-operation between public administration and the private sector. Planning and acting in ‘networks’ is becoming increasingly important, especially at the regional level. The diversity of the problems and basic conditions requires regionally differentiated solutions to these tasks. It is therefore that the Report identifies the regions and co-operating cities and municipalities within it as crucial for realising spatial planning models and goals.

The new procedures and strategies that have been developed in recent years to complement the formal laws and plans as steering instruments of spatial planning, mainly have a voluntary and

informal character. They are implementation-oriented and project-oriented and strengthen the moderating and designing role of spatial planning. The Federal Government and the Länder promote these new procedures and strategies. A widely used instrument is 'Demonstration Projects of Spatial Planning', which are intended to support regional development initiatives (see Figure 9.7 for an overview of projects). These demonstration projects concentrate on new approaches of spatial planning such as regional conferences, renewal and development areas, urban networks and the competition 'Regions of the Future'. Their common characteristic is the promotion of regional co-operation in order to strengthen the region as an action platform for an efficient future spatial development. Emphasis is put on the role of local agencies, which are considered to be best qualified to judge what problems need to be addressed and how this can be done and by which coalitions.

The federal government has promoted several regional conferences. They have proven to be effective in producing a broad regional consensus on development goals and measures. In urban networks the political bodies and administrations of the cities of a region co-operate. They become the driving forces behind the development of the entire region. The goal of urban networks is to agree on common projects and measures. Subjects of co-operation are: marketing, public relations, economic support, education, settlement development and land use management, transport and tourism. "The urban networks regard their co-operation as being so successful that work is even continued after funding by the Federal Government has ended. In order to exchange their experiences, the networks have organised themselves in the 'Forum Urban Networks'." (BBR, 2001: 57).

3,5 million inhabitants has the status of a Land. It is totally surrounded by the territory of the predominantly rural Brandenburg State with a population density of just 86 inhabitants per square kilometre (as against the ca. 4000 inh/km² of Berlin) (See Figures 9.4 and 9.8). For German standards the contrast between the two Länder is unique in terms of urban-rural relationships. Sixty percent of the joint population lives on just three percent of the joint territory. Naturally, with a metropolis as a 'black hole' in the centre of its territory, Brandenburg's spatial development is heavily affected by urbanisation processes, especially in those areas that border the Berlin area. As regards a map of the BBR (2001: 8) this area, although under urban pressure, profits considerably from its location in terms of economic development. After a failed attempt to unite the two Länder into one Land (due to an unexpected negative outcome in 1996 of a referendum in Brandenburg (Kunzmann, 2001)) it was nevertheless decided to draw up a joint spatial development strategy. The non-binding Gemeinsames Landesentwicklungsprogramm der Länder Berlin und Brandenburg (Common State Development Programme of the Brandenburg and Berlin States) or in short LEPro was the result and came into force in 1998 (MUNR/SENSUT, 1998).

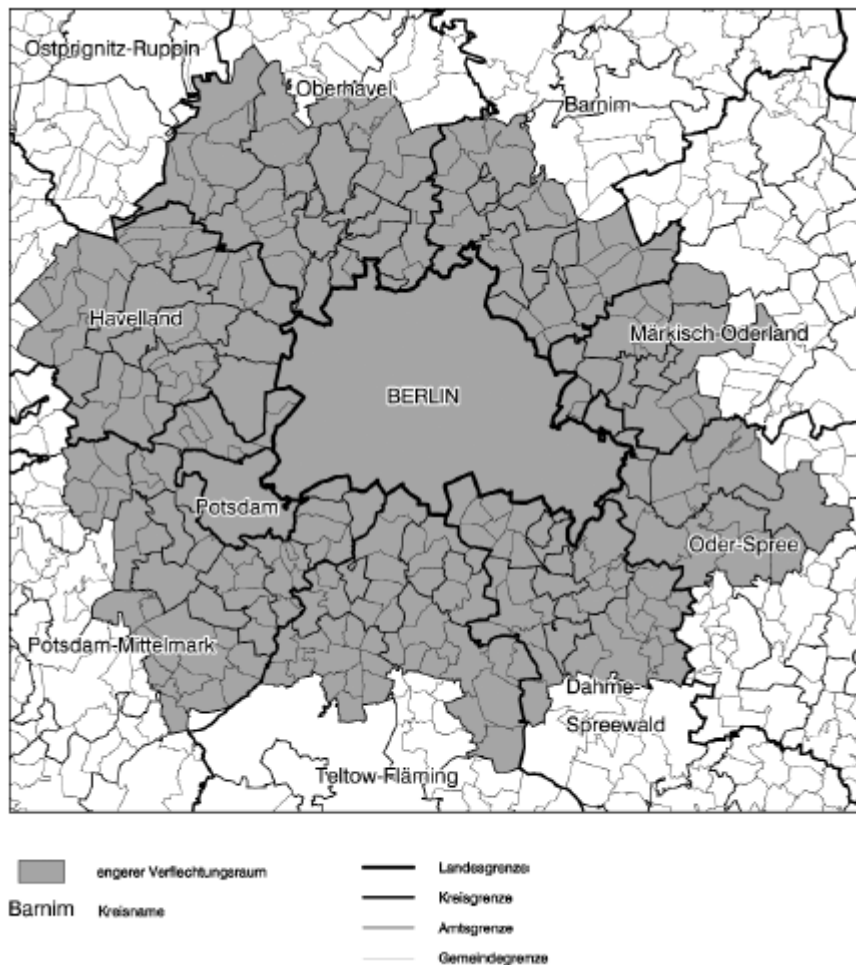
Polycentric development, in these exact wordings, is a major aim of the programme. A so-called polycentric development Leitbild or spatial vision (Figure 9.9) has been developed in order to represent and communicate this policy. An important element of the concept is the development of a ring of regional development centres (Regionales Entwicklungszentrum des Städtekranses) around Berlin. It concerns the cities Brandenburg, Neuruppin, Eberswalde, Frankfurt/Oder, Cottbus and Jüterbog/Luckenwalde in the so-called 'outer development area' (äußerer Entwicklungsraum) that have to be developed into strong cities in order to relieve the areas under pressure (Verflechtungsraum), which are located along the border of Berlin. (see figures 9.8 and 9.9) This in order to avoid urban sprawl and to provide more equal living conditions in all parts of Brandenburg. The overall aim is sustainable development. The basic ideas underlying the vision are:

- no single stimulation for further development of the metropolis;
- strengthening of the endogenous regional potential as a motor for a balanced settlement structure;
- diversified stimulation of regional development potential.

According to the website (http://www.brandenburg.de/land/mlur/g/b_g.htm) of the joint planning agency the results so far are positive. It is claimed that the vision amongst others has influenced politicians and administrations. Concrete results are for instance:

- new settlement sites and infrastructure planning follows the polycentric vision;
- the location of public services (schools for higher education, public administration agencies, hospitals) in the six regional development centres has created strong synergies.
- Central places (the regional development centres) together with their surroundings have become the key development areas for planning. (significantly more development is taking place in these areas than elsewhere in Brandenburg)
- In parts of the outer development area, especially in the areas of Frankfurt (Oder), Cottbus and Eisenhüttenstadt, strong inward migration is recorded due to increased inter-regional activities.

Figure 9.8. The Land Berlin with the Brandenburg areas under urban pressure, the Verflechtungsraum (Source: MUNR/SENSUT 1998, 60)



Also, the six centres have founded a co-operation network between them. Through this partnership, which involves a rotating presidency filled in by one of the respective burgomasters, a steering group, various project groups and an office located in Potsdam, the cities co-operate on several issues (<http://www.staedtekranz.de>).

From a more distant position Kunzmann (2001) also concludes that the spatial vision has become influential for lower tier planning authorities. He explains the success from the impressive efforts of the involved planners and politicians to communicate the vision in documents as well as at public occasions. A recent article by Hauswirth *et al.* (2003) on city-regional co-operation shows the institutional context in which the joint planning effort is taking place. Referring to the situation in which the two Länder try to co-operate a grim picture is drafted in which Berlin and Brandenburg seem to be competitors rather than collaborators. Also, a short reference is made to the spatial vision and the Joint Planning Agency, which as we know drafted the LEPro. Clearly the agency is doing its best, Hauswirth *et al.* argue, but since it lacks implementation power individual Länder interests prevail. The overall conclusion is that when money comes into play, co-operation seems impossible.

Figure 9.9. Polycentric development vision Berlin-Brandenburg (Source: MUNR/SENSUT 1998, 61)



9.4 Conclusion

Polycentric development is a major aim in German policies at all levels. Blessed with a polycentric settlement pattern from the outset, there is a tradition of pursuing polycentricity already since the end of WW II. In modern terms this tradition adds to the overall aim of German policy for sustainable development and equal living conditions throughout the country. Being a federalised country Germany's most influential policy level, at least as far as regional economic and spatial planning policies are concerned, is that of the Länder; the states. At the national level the Federal Government deals with relatively few national issues, amongst them European integration. The latter is important since the ESDP and EU Regional Policy provide some legitimacy for the Bund to become increasingly involved in national planning policies.

Spatial planning policy seems the most relevant for polycentricity concerns since it is understood in Germany as a cross-sectoral discipline, affecting other sectoral policies, including regional economic policy, as well. At the Länder level spatial planning is largely interpreted as a means to control (unwanted) development rather than promoting development. Nevertheless as the examples above show visuals and appealing maps are used in order to communicate planning ideas, which are certainly not restricted to control functions alone. Especially the idea at national level to appoint six and recently seven agglomeration areas (Europäische Metropolregionen) which should guarantee Germany's competitive position in Europe, indicates a clear future

development orientated approach. Also the 'Demonstration projects of spatial planning', which focus amongst others at the promotion of urban networks and co-operation between cities, can be seen as a development orientated initiative.

Both, at federal as well as state level, spatial planning has barely implementation tools. The dominant type of application is therefore communication. However, planning is assisted by an elaborate monitoring system causing considerable political impact and a negotiating system built up of various committees and sub-committees at national and sub-national level in which planning and sector officials meet. It is through these institutions that planners have a significant voice.

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10 Greece⁹

10.1 Introduction

Nearly 11 million people live in the Greek Republic, of which more than 3 million in Athens, indicating a relative strong primacy of the capital. The other large city is Thessalonica in the north of the country. Spatial development policy in Greece is stipulated in documents falling into two categories:

- Regional Development Plans / Programmes
- Spatial Development Plans – which contain directives and measures concerning spatial development as well as for land use.

At the national level the most important policy documents are the National Framework of Spatial Planning and Sustainable Development (NFSPSD) and the Development Plan of Greece 2000-2006 (DPG), which constitutes the background of the EU Community Support Framework of Greece 2000-2006.

10.2 General position of polycentricity

Polycentric development is a major aim of Greek spatially relevant policies and has been a major objective for several decades already. The intention to reduce inequality in all sectors between Athens and the rest of the country remains the basic aim of polycentricity policy in Greece since the '60s. However, we can distinguish between three successive polycentricity policies, each one having specific spatial objectives: the policy of 'rival cities' (late '70s), the policy of the 'open cities of the countryside' (1981 – 1996) and the policy of 'polycentricity in the European integration perspective' (1997 – yet).

The 'rival cities'

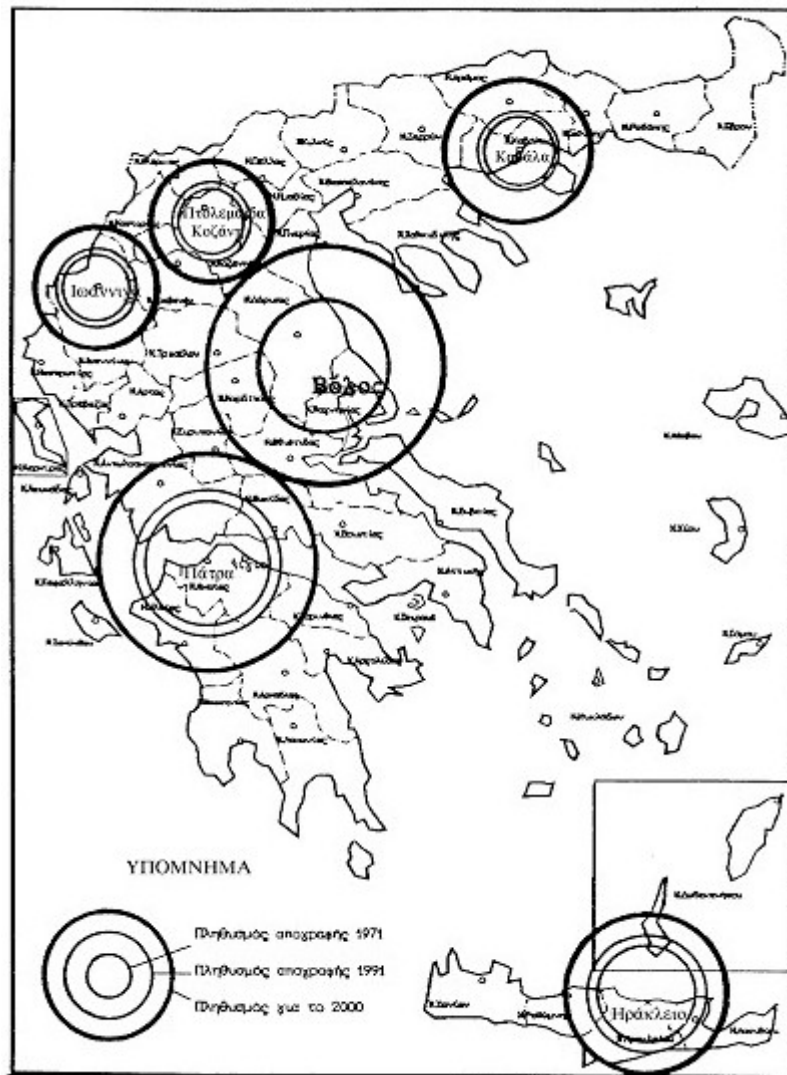
The policy of 'rival cities', which constituted the formal framework of regional planning policy exercised in Greece, was formulated at the end of the 70's. The policy's main objective was to support the development of certain regional urban centres, so that these may 'compete' with Athens. The following cities were chosen to act as such Centres of Intensive Regional Development (C.I.R.D): Kavala, the twin pole ('bipole') Kozani-Ptolemaes, Ioannina, the twin pole Larissa-Volos, the twin pole Patras- Egio and Heraklion (Figure 10.1). Thus, for the first time in Greece, regional policy was based on a specific policy for the urban system.

This policy, and to a great extent, all regional planning proposals that were formulated during this period are theoretically attributed to the scheme of growth poles. Specifically, it may be assessed that the Centres of Intensive Regional Development (C.I.R.D.) policy were influenced by the policy of regional metropolis development that was implemented in France.

⁹ Authorized by Minas Angelidis of the Department of Urban and Regional Planning, National Technical University of Athens (NTUA), Greece.

The policy of 'rival cities' remained basically at the declaration level, as no sufficient implementation means and procedures were formulated. However, its basic drawback was the anticipation that a significantly great part of population would be accumulated at the C.I.R.D.s. and thus, essentially the greatest part of the development potential of the respective regions.

Figure 10.1 Centres of Intense Regional Development (CIRD) - Location and Projected Population for the year 2000.



Note: The different circles refer to the projected population based on the census of 1971, 1991 and 2000.

The 'open cities of the countryside'

In the period 1981-1991, the framework for regional planning policy action changed considerably and a more comprehensive policy for the settlement network was formulated. As it is referred to in relevant texts¹⁰, the policy was based on the view that the settlement network is mainly characterised by the lack of settlement centres (with the size of 2.000 - 15.000 inhabitants and the respective services) that would serve their rural hinterland as local centres of services and manufacturing. The basic aim was to eliminate the inequalities between the developed central regions and the underdeveloped (agricultural-rural) regions of the country", through the promotion of middle and small settlements (semi-urban and villages) that would undertake an

¹⁰ See specifically in "Proposals for the spatial organisation of the Prefectures of Greece" that was published by the Ministry of Regional Planning, Housing and Public Works", 1984 (in greek)

intermediate functional role between the urban centres and the rural hinterland. For this purpose the "principle of the multicentric structure at every level" was adopted. This orientation may be classified, from a theoretical point of view, along the lines of the "centre-periphery" theory. More precisely, it was proposed to emphasize the provision, in the rural-provincial space, of services of equal quality to those of the urban centres and regions, mainly through the creation of 'unified centres of social infrastructure'. These centres were located in the nuclei of the settlement entity - system that were named 'open cities of the countryside'.

The settlement centres (nodes of the urban system) were classified in categories or levels according to their area of influence. Each settlement was defined as a centre of some level according to the type and number of functions and services it had, whereas its area of influence was defined according to the entire population of the region that it served (5.000 inhabitants for the open cities). See Figure 10.2.

Figure 10.2 Proposal for the organisation of the settlement network in Greece (Ministry of Regional Planning, Housing and the Environment, 1984).



A significant element of the implementation of the settlement network policy is the administrative decentralisation, especially as it concerns the authorities responsible for the

implementation of development and regional planning. Since 1981 major steps have been achieved in this field:

- The transfer of competences from the Ministries to the Regional Authorities.
- The institution of Self-government at prefectural level (level of “nomos”).
- The implementation (since 1997) of the Program "Kapodistrias" of union of the 5.000 small Greek Communities in 1.000 powerful Municipalities.
- The institution of incentives addressed to the small Municipalities cooperating between them etc – see for details in previous Chapters.

The 'polycentricity in the European integration perspective'

In the period 1997 – 2003 a remodelling of polycentricity policy was attempted to accommodate the spatial changes that had taken place by then, but mainly to address the concern of better integration of the Greek urban network into the broader European territory, which is becoming increasingly unified. The ESDP and the broader discussion that took place during its preparation and implementation played an important role in this. The European Spatial Development Perspective (ESDP) and more generally the discussion on its preparation as well as its application are playing an important role in this change.

More specifically, as Greek cities are integrated now in a much more competitive environment, the idea to give priority to the development of Athens and Thessalonica, the metropolises which can more easily compete with the greater European urban poles is emerging.

Of course, the development of the two metropolises should not take place at the expense of the remaining Greek urban networks, as it is stressed in the NFSPSD.

Other ideas that are connected with the European integration perspective:

- The need to appoint Thessalonica as an important centre of the Balkans;
- The need to give priority to the development of the Greek cities – gates;
- The need to give priority to the support of the mountainous and island regions, which will face still more important problems (compared to nowadays) in the most competitive environment of EU.

Obviously, polycentric development has been a major aim in Greece since the 1960's. During this period the ideas about polycentricity have changed. The next section presents the main elements of two policies that reflect the most current thinking on polycentric development in Greece.

10.3 Examples of polycentric policy

General

Two general spatial or regional policies, closely connected to each other, and both referring mainly to polycentric development will be discussed here:

a. The national policy of Spatial Planning – that is described in the “National Framework of Spatial Planning and Sustainable Development” (NFSPSD). The NFSPSD was approved in December 2002 from the National Council of Spatial Planning and Sustainable Development and its approval by the Parliament is expected. However, its objectives are already applied via the Region Spatial Plans, some of which were approved during the last months. The other Region Spatial Plans are expected to be approved during 2003.

b. The national policy of Regional Development - that is described in the Development Plan of Greece (DPG) 2000-2006, which constitutes the background of the Community Support

Framework of Greece 2000-2006. The Development Plan of Greece (DPG) 2000-2006 (which constitutes the background of the Community Support Framework of Greece 2000-2006) was approved in 2000. Its objectives have been applied via the 13 Region Operational Programs, which had been approved in the period of 2000-2001. The Development Plan of Greece 2000 – 2006 is the effective policy document for the current programme period (2000 – 2006). It defines the general orientation of development at national level and contains 11 Sectoral Operational Programmes and 13 Regional Operational Programmes (includes specific measures and projects or public works for the ‘urban development’ of the relevant region, as well as the desirable role of the region’s principal cities), for the 13 Greek regions.

Both the NFSPSD and the DPG are initiated by central government. Necessary proposals concerning the first Plan come from the Ministry of Environment, Spatial Planning and Public Works and for the second from the Ministry of Economy.

Rationales

Despite the tradition of polycentric policies since the 1960s/1970s, the extent of polycentricity in Greece is still considered insufficient by the central government. Both documents include a analysis of the present urban structure which provides a basis for both policies.

In the first three post-war decades, spatial growth in our country was focused in the metropolitan region of Athens, in Thessalonica and in the S-shaped "Patras – Athens – Thessalonica – Kavala". However, during the ‘80s and ‘90s the Greek urban system changed considerably. At present, the metropolitan region of Athens maintains its primacy, even though its administrative domination on the rest of the country is now limited. The population of its agglomeration, as initially defined, i.e. the so-called Basin of Athens, has stabilised, but the metropolitan region now extends to all Attica and maintains high rates of economic and demographic growth. The metropolitan region of Thessalonica has expanded and at the same time its influence over Northern Greece increased. This influence progressively spread over the wider Balkan territory. The development of other Greek urban centres is sharply differentiated, depending on size, location, economic characteristics and type of interconnection with other centres and with their respective hinterland.

In all these centres, the contribution of the rural, as well as the industrial sector, to the urban economy and employment is now limited, while the contribution of services, especially, in most cases, of tourism, has increased. Centres with an important regional and local role remain comparatively weak. Only Patras, Heraklion and the twin pole "Volos – Larissa" have reached a population size of 130,000 – 240,000. The remaining administrative regional centres do not exceed 80,000 residents. Most prefectural centres, i.e. the centres of the administrative division of nomos (prefecture), are even smaller. 40% of them have a population below 20,000. Their role as service centres for their countryside is limited.

Apart from changes in demographic size and economic importance, what should be emphasized is that *functional relations between cities (large, medium or small) or between them and their suburban zones and the countryside have grown considerably in intensity*. This intensification of flows / relations at local, regional, national or even European/international level is due to marked improvements in transport and communication infrastructure and to the development of a more open and "extrovert" economy, everywhere in the country. New and wider spatial entities are emerging, at all the territorial levels. For instance, if the Greek case is examined in a European perspective, it can be noticed that the Greek urban system disposes of two dynamic competitive poles, the metropolitan regions of Athens and Thessalonica, and several much smaller urban systems, of

inadequate cohesion and development, therefore of unsatisfactory competitive potential at a European level. The GFSPSD and DPG address these issues raised, as well as the challenges that the central government sees to strengthen the position of the major Greek cities in relations with the Balkan, Black Sea regions and the Middle East.

Elaboration of the polycentricity principles in the GFSPSD and DPG

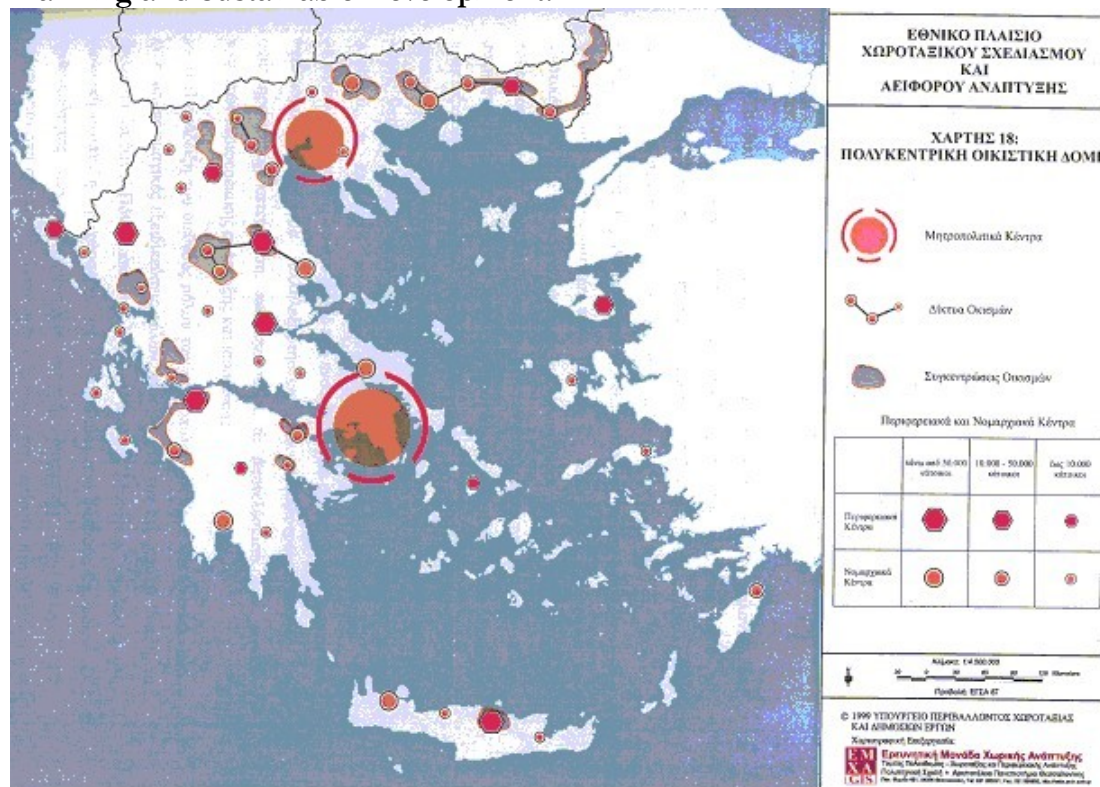
In the GFSPSD, the general objective regarding polycentric development is the following: “The new balance of the urban network combines the improvement of the competitiveness and the developmental dynamic of certain cities with the diffusion of the development and the decentralisation (polycentric structure). This means on the one hand supporting of the sustainable development of big regional urban centres (cities - gates, urban centres in development corridors, bi-poles) and, on the other hand, aiding the small and medium-sized urban centres, with the improvement of their infrastructures and the creation of new employment posts, in order to be able to retain an important part of the expected rural exodus. At the same time, stress is placed on the confrontation of the problems of the urban industrial centres which are in crisis (e.g. Lavrion, Patras, Syra, Chalcis, Volos, and Kozani)”. The DPG 2000 – 2006 formulates similar proposals.

This general orientation is translated in a number of more specific objectives. The new hierarchy of the urban system will result from *the supporting of the creation of collaboration / complementarity networks and their territorial specialisation*. The polycentric structure will be strengthened:

- a. on the one hand from *the amplification of the regional and transregional role of certain dynamic urban centres which consist appropriate rings in the perspective of sustainable spatial development of the country and “gates” or “nodes” of urban networks with other cities of the Mediterranean, the Balkans and the Black Sea countries* (Patras, Ioannina, Kozani –Ptolemaes, Kavala, Larissa –Volos, Igoumenitsa, Kalamata, Heraklion, Komotini –Alexandroupolis, Rhodes, Corfu etc) and,
- b. on the other hand, with the diffusion of the new dynamics developed by the metropolitan regions of Athens and Thessalonica, as focal points of the restructuring of the service sector, in their extended functional regions of influence. These exceed the administrative limits of the regions and include a lot of urban centres inside and outside the frontiers of the country.

The improvement of the particular identity of the urban system of the country and the remaining settlement network (small and middle-sized cities, small settlements) can be realized through the exploitation of the comparative advantages allocated in each city. At the same time, the planning of allied action and collaboration networks via the specialisation between Greek cities, as well as with other cities of Mediterranean and Balkans, constitutes a basic priority. Other objectives include sustainable urban development (focus on environment, transport and urban renewal), the restriction of urban sprawl, the further development of Athens and Thessalonica as entries/gates to the EU, and the improvement of the international metropolitan role and the international competitiveness of Athens and Thessalonica (see Figure 10.3).

Figure 10.3 Proposed polycentric settlement structure in General Framework of Spatial Planning and Sustainable Development.



Implementation/instruments

The policies for polycentric development are characterised by a wide array of instruments and policy options to implement them, showing the broad interpretation of polycentric development in Greece.

The improvement of the international metropolitan role and the international competitiveness of Athens and Thessalonica can be achieved, inter alia, with the disposal of sufficient financing resources from the 3rd Community Support Framework and the encouragement of private investments that are called to undertake a part of the interventions programmed. These include projects related to environment and public transportation, infrastructure development, safety, support of research, education and training, selective aid to important economic sectors etc. Moreover, metropolitan governance needs to be transformed. Simultaneously with the support of the new developmental dynamics there is a need to adopt actions of a redistributive nature, mainly on the intra-metropolitan level.

Concerning the urban expansion, it is considered fundamental to a) adopt the principle of the “compact city” adapted to the existing (in Greece) city sizes and to the other Greek conditions, b) diminish further classic City Plan extensions and c) promote new forms of built-up development that can function as examples offering new models of built environment. The development of non-urban space should be restricted, tools of land property policy will be developed and a location policy for certain economic activities will be implemented.

The implementation of this policy passes from the Regional Spatial Plans in policies for the urban system of each region, through the specialisation of its objectives. The financing of the required actions takes place via the "Operational Programs" for each one Region of the country, which is included in the DPG / 3rd CSF 2000-2006.

Central government (the Ministries) as well as the Regional and Prefectoral Authorities and Municipalities are the main actors implementing the polycentric development policy. The policy application involves also different schemes of collaboration between Prefectoral Authorities and Municipalities (Developmental companies etc), as well as private enterprises, professional bodies etc.

The main problem of application of polycentric development policy is still the weakness of its implementation mechanisms, particularly the weakness of many Municipalities to realize necessary spatial operations, due to their small size, and the lack of co-ordination between public Authorities of various levels. Several important efforts to confront this problem have been undertaken during the last years, the most important of which being the already mentioned merging into larger and more powerful municipalities. Also, in 2002 important incentives to inter-municipal co-operation were established, while some more changes are prepared, as (potentially) the restriction of the number of Regions (from 13 to 9) and the strengthening of the Regional Authorities at the expense of the Prefectoral (elected) Authorities, which are many in number and small in potential.

The European commission has played a role in improving policy implementation as well, as a result of the Community Cohesion Policy. The implementation of three successive Community Support Frameworks¹¹ being obligatorily connected to the application of National and Regional Development Plans and this cross-correlation being checked to a certain degree by the European Commission¹², forced the competent Greek Authorities to improve considerably the mechanisms of implementation of the regional development policy. Nowadays, the implementation mechanisms of the Greek Regional Development Plans are further improved as an obligatory response to stricter control mechanisms applied by the EU in the context of the current Community Support Framework 2000-2006 (but also other Programs).

10.4 Conclusion

The policies for polycentric development that have been in force in Greece since the 1960s/1970s have been adapted to the changing social, economic and administrative context. At present, the Greek polycentric policies clearly reflect the ideas about polycentricity as can be found in the European Spatial development Perspective. The rationales behind the pursuit of polycentricity did change in this period. First, concern about the dominance of Athens led to the promotion of 'rival cities', but in the 1980s there was more concern about the lack of rural centres. Later on, the prime objective became to better integrate the main Greek cities in the European urban system, also positioning them better in terms of international competitiveness.

¹¹ As well as the previous implementation of the "Mediterranean Comprehensive Programs"

¹² The entire Development Plan of Greece (associated to the 3rd Community Support Framework) as well as the 13 sectoral and the 13 regional Operational Programs are submitted to the European Commission which comments and proposes appropriate modifications

11 Ireland¹³

11.1 Introduction

During the past ten years, the Republic of Ireland experienced an unprecedented phase of growth, development and economic opportunity. The population and in particular the number of people at work grew considerably. The economic progress has given rise to new challenges for spatial planning relating to quality of life, national economic competitiveness and the physical environment. Against this background the national government of Ireland issued a National Spatial Strategy for Ireland in 2002. This document provides a strategic framework for spatial development in the years up to 2020.

11.2 General position of polycentricity

Having established a strong economic performance as a nation, the attention of policy-makers turned to how that performance could be maintained and geographically distributed within the country in a balanced and sustainable manner. Consequently, polycentricity became the fundamental principle in the Irish National Spatial Strategy, though it was referred to in different terms: balanced regional development. As such, polycentricity was present as a key element in the National Development Plan 2000-2006.

The National Spatial Strategy is a planning framework supporting the co-ordination of investment by both by the public and private sectors to underpin the future development of a more polycentric spatial structure. Policies in other policy-domains such as transport and infrastructure are supposed to build on the National Spatial Strategy. Therefore, polycentricity holds a very strong position in Irish policy.

11.3 Example of polycentric policy : the National Spatial Strategy

Rationales

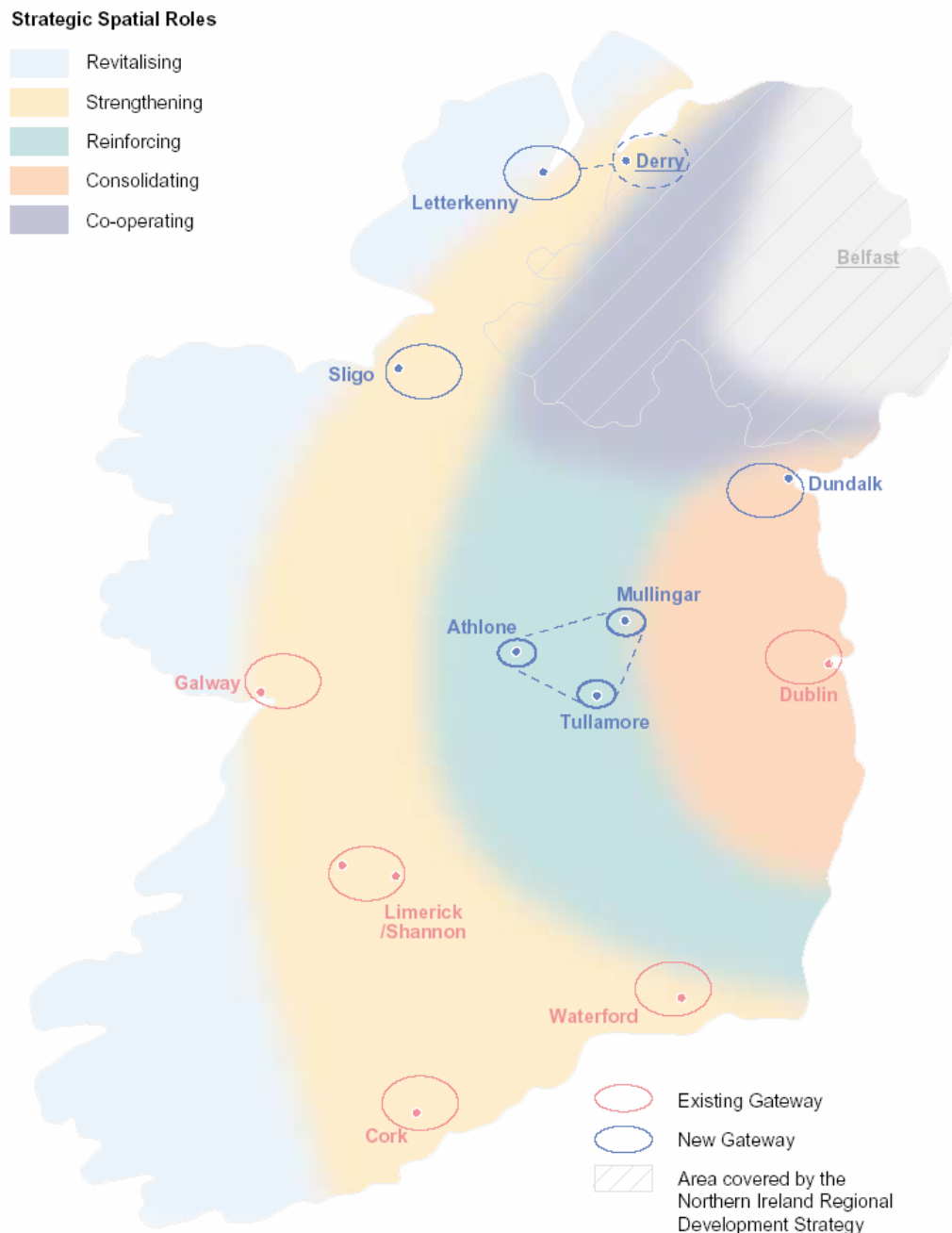
The aim of Ireland's national planning policy is to achieve a better balance of social, economic and physical development between the regions. This objective follows from a rather recent concern about the current monocentric spatial structure. In other words, the country is overly dependent on the capital region, the Greater Dublin Area. This monocentric spatial structure has been enforced during the last decade. Dublin witnessed rapid development, but underdevelopment continued in other areas of the country. This has led to problems such as congestion around the capital, rising commuting distances, environmental pressure as well as pressure on Dublin's housing market. At the same time, the development potential of other regions has diminished relative to that of Dublin, as for instance young people migrate to Dublin and employment opportunities and available services decrease. It is expected that this

¹³ Authorized by Michelle Wishardt and Simin Davoudi of the Centre for Urban Development and Environmental Management (CUDEM) Leeds Metropolitan University.

monocentric structure will continue to be enforced in the period to 2020. For instance, forecasts predict 75% population growth in Dublin.

The National Spatial Strategy is designed to counteract this trend, trying to achieve a better balance to correct the negative affects of growth in Dublin and under-utilisation of resources and potential in the other areas. A more balanced distribution of people and employment across the country and a better balance of regional development should be the major results.

Figure 11.1 Existing and new centres in the desired polycentric spatial structure for Ireland according to the National Spatial Strategy.



Elaboration

The policy will encourage polycentric development by attempting to support the development of urban centres other than Dublin, and encouraging their interaction. The idea is that these urban

centres, which are coined 'gateways' in the strategy, function as 'strategically placed engines of growth' by drawing together people, business activity, services, infrastructure and amenities. Next to five existing gateway-cities (Dublin, Cork, Limerick/Shannon, Galway, Waterford), four new national level gateways are identified: These include Dundalk and Sligo, as well as Letterkenny/Derry and Athlone/Tullamore/Mullingar (see Figure 11.1). The latter two can be considered as examples of the application of polycentricity on the scale of urban regions, as they form so-called urban networks or polycentric urban regions. The planning document refers to these urban networks as 'linked' gateways. A linked gateway requires two or more strong towns to work in partnership to promote social and economic development in their region. To assist the proposed 'polycentric type development', the policy document also identifies nine strategically located medium sized 'hubs'. These will support and be supported by the gateways and will link out to the wider rural areas. Despite the focus on these gateways and hubs, the document also makes clear that achieving a better balanced regional development does not mean that Dublin's growth should stop, as this would risk Ireland's development as a whole, but to emulate its economic role by increasing the drawing power of other urban regions.

Implementation/Instruments

Given the character of the policy as a strategic and therefore not operational plan, the policy itself is weakly equipped with instruments and other means to achieve its objectives. However, as a framework, it directs investments in for instance infrastructure, public transport, communication systems and energy. The implementation of the strategy therefore depends on the adoption of its principles by other policy sectors. The Minister of Environment and Local Government bears responsibility for this. As the 'Executive Authority' he will 'roll out' the implementation through regional and local authorities. This will begin with the preparation and adoption of regional planning guidelines.

11.4 Conclusion

Polycentricity is a fundamental principle in the Irish spatial planning and should give directions for investments in other public and private sectors. It is translated as 'balanced regional development'. Though the policy is rich in being bold, wide-ranging and ambitious – for instance claiming that the policy will be firmly rooted in 2006 –, specific for different kind of regions and rich in ideas, it is weak in terms of firm and feasible operational policy. Its implementation depends on its power to influence other policy domains to adopt its principles. Moreover, it appears to be rather top-down in telling regional authorities what they may and may not consider in planning terms.

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12 Italy¹⁴

12.1 Introduction

Italy is to some extent a divided country in social and economic terms. The North is more prosperous in terms of GDP and employment rates, while the South is more depressed. In 1997, the ratio of the wealthiest Northern region to the poorest, Calabria, was 2.3. Trends however suggest that territorial disparities in the distribution of wealth are slightly decreasing (OECD, 2001). The main urban regions are Rome and Naples in the South and Milan and Genoa in the North. These city-regions have over 350 inhabitants per square kilometer. In fact, the highest densities are generally found in the north and along the coast between Rome and Naples. The national average is about 200 inhabitants per square kilometer.

When the unitary state of Italy was formed in the 19th century it inherited a fragmented urban system. The North-south divide was present already then, as for instance the northern cities industrialized while the southern did not. The 1950s and 1960s were a phase of further urban concentration, followed by more or less reversal processes of counter- and sub-urbanisation in the 1970s and 1980s. In the 1990s then, the location of cities in the international networks became more important. Again, the northern cities have a better position in these, but in general, the Italian cities are rather peripheral from a European point of view (Dematteis, 1999). As a whole, the Italian urban system is characterized by polycentricity in terms of the existence of multiple large centres. However, in terms of development, it is rather unbalanced as the northern cities develop much better in economic and social terms than the southern ones. It should be mentioned that the stereotypical representation of an Italy divided in the rich north and the poor, agricultural south is challenged since research in the 1970s revealed a so-called 'Third Italy' composed of regions in the centre and north-east of Italy, which were characterized by specific forms of economic development and urbanization, a strong 'civic' tradition and a locally rooted political system (Bagnasco, 1977; Gelli, 2001).

Italy is to be categorized as a regionalized unitary state. The Italian government structure is characterized by four different levels: central government, the regions (20), the provinces (103) and municipalities (8102). In general the central government has programming power. Its main policy instruments are sectoral policies, the distribution of funds to the regions, the location of works of national interest and the formulation of framework legislation. The Regions were formed in 1970 and have a full competency for programming and planning their territory. The provinces have very little competence on the subject of territorial planning. Finally, the municipalities define programmes for development and transformation of land, but do not have ruling autonomy. They depend on the transfer of resources from the central government to the regions and finally to the municipalities.

The Italian planning system is a plan led system in which the *piano regolatore generale* (PRG) at the municipal level is the basic planning instrument for the whole country. It is very much based on

¹⁴ Authorized by Alberto Vanolo of Dipartimento Interateneo Territorio, Politecnico e Università di Torino, Italy.

the concept of zoning, though it covers also strategic policy. Sectoral policies developed and approved by the national government still need to be decided upon, or verified, by regional and municipal authorities as regards location details and urban and environmental impact (CEC, 2000).

Currently, Italy is in a process of administrative and institutional reform. There is increasingly less hierarchy between the four government tiers while the system used to be characterized by tendencies towards control and centralization. Moreover, the central government is devolving new powers to the region, is moving towards federal solutions for some limited functions and is considering the importance of bottom-up political and social demands (Gelli, 2001).

There is not a tradition of centre-led territorial policies in Italy (CEC, 2000). Faludi and Waterhout (2002) attribute this to the ‘urbanism tradition’, which emphasizes local planning and design. As exceptional deviations from the traditional locally-oriented spatial planning, two experiences are worth mentioning:

1. the first one is constituted by the so-called territorial projections of the ‘*Progetto 80*’, published at the end of the 1960s as the spatial policy declination of the centre-led economic planning document, committed by the Ministry of the Treasury, the Budget and Economic Planning (Ministero del bilancio e della programmazione economica); this report detected the main structural reasons of the unbalanced development of the country not only in the macroregional economic divide between the industrialised North and the underdeveloped South (the vision was strongly tributary of a dualistic model), but also in the disequilibrium between metropolis and small and medium-sized cities, urbanised areas and countryside, hierarchical metropolitan systems and the polycentric ones;
2. the second experience is more pertinent to the issues here discussed; it is strictly linked to the recent season of institutional reforms, characterised by a significant effort towards a decentralisation of administrative competencies from the central state to local authorities, inaugurated in 1997-98; in that occasion, the central government decided to rewrite the legal framework regulating the roles of central technical agencies – namely, the Ministry of Infrastructures and Transports – and of local authorities, maintaining as a unique central prerogative the definition of main lines of national territorial development and the launching and the management of special programmes on thematic issues, such as urban regeneration and so on.

Janin Rivolin (2003) points in this respect to the ‘Survey on the Transformations of the National Territorial Structures (ITATEN; 1994-1997), which was conceived as the first step towards the constitution of a ‘Permanent Observatory for the Monitoring of Territorial Transformations’, therefore claiming that national spatial policies were not completely out of the picture.

12.2 General position of polycentricity

The polycentric urban structure in Italy represents both the historical and cultural specificity of the country. It is roughly based on the historical urban identities and ‘vocations’, the good internal road structure of Italy, and, the capability of many medium-sized cities to position themselves internationally (culture, tourism, diffused entrepreneurial capabilities) (Presidence Française, 2000). It has been argued that the polycentric urban structure was one of the main elements supporting the development phase of the country during the period 1965-1990 when development concentrated in specialized industrial districts (often linked to a medium or small-size city).

Polycentricity constitutes an implicit but clear target in many national sectoral policies, for instance on education (the distribution of universities), economy (support to district development) and transportation. The main cities (Turin, Milan and Rome) have developed initiatives to develop into competitive economic integration zones. Currently, the Milan region – extending towards Piedmont, Liguria, Emilia and Veneto is often considered to be a global region. In relatively polycentric regions, such initiatives are taken by the Regional government, through Regional Development Plans (e.g. Emilia-Romagna and Veneto, to be discussed below). The Mezzogiorno region (south) so-far fails to exploit the potentialities of the urban system (Presidence Francaise, 2000). The regional development plans of, for instance, Emilia-Romagna and Veneto foster the development of city-networks (polycentricity at the regional scale).

The central government tries to enforce inter-municipal co-operation on territorial projects (PRUSST: urban restructuring and sustainable development programmes) through providing incentives and support for this. The next section presents the examples of PRUSST and other types of complex urban programmes and the Emilia-Romagna Regional Development Plan in more detail.

12.3 Examples of polycentric policies

12.3.1 Complex urban programmes (Programmi urbani complessi)

Under the header of Complex Urban Programmes a number of programmes are carried out. As table 12.1 shows, they include Urban recovery programmes (PRU), Urban requalification programs (PRIU), Neighbourhood contracts (Contratti di quartiere) and Urban requalification and sustainable territory development programmes (PRUSST). Though launched and co-financed by the central government, they apply to the local (municipal) or supra-local (inter-municipal) level. Complex urban programmes have been in force since 1993. These programmes were initiated by the Ministry of Public Works, now the Ministry of Infrastructures and Transports.

Rationales

These programmes start from the general observation that the territorial backbone of Italian economic development is the system of medium-sized cities. These systems are well-established in some regions, particularly in the North and in the Centre of the peninsula, but weaker in the so-called Mezzogiorno. This is a quite stereotypical view of the Italian territory, but it is grounded firmly in the conceptual frame of planning professionals and policy makers.

On the other hand, empirical evidence shows that not only the major dynamic and open systems (in terms of specialisation and range of international functions), but also dynamic and specialised systems of medium-sized cities are concentrated or more numerous in northern-Centre regions. This seems to indicate, despite the rise of industrial production systems even in the Southern Italy, that the dualistic image of the Italian territorial development is not so far from reality.

Table 12.1 - Objectives, actors and territorial frameworks of the principal urban and territorial programmes

Programmes	Objectives	Partnership-levels and actors	Territorial frameworks
PRU <i>(Urban Recovery Programs)</i>	Recovery of public residential building heritage	- local authorities - other public bodies - private operators	- urban and neighbourhood contexts - areas of public residential building
PRIU <i>(Urban Requalification Programs)</i>	Building and urban-planning requalification	- Ministry of Public Works - Local authorities - Private actors	territorial frameworks in urban areas characterised by conditions of building, environmental, social and economic deterioration
Contratti di quartiere <i>(Neighbourhood Contracts)</i>	- experimental interventions in public residential buildings - building renovation - interventions in services, public parks and gardens, and infrastructure works - improvement of dwelling quality	- local and central actors and public institutions - third sector and volunteers - private operators	- urban and neighbourhood contexts - areas characterised by physical and social deterioration
PRUSST <i>(Urban Requalification and Sustainable Territory Development Programs)</i>	- interventions in infrastructures - sustainable development; - expansion and implementation of industrial, commercial and artisanal enterprises - tourist promotion - requalification of deteriorated zones	- Ministry of Public Works - local authorities - other public institutions - private actors	Territorial contexts at the sub-regional, provincial, supra-local- authority- and local-authority levels, identified on the basis of physical, morphological, cultural and homogeneous productive characteristics

On this base, since 1993 central government has tried to stimulate the reinforcing of intermediate level of urban systems, with a special emphasis on those in southern regions. In 1998, the government published a white book entitled *Per restare in Europa. Le infrastrutture che servono, sono quelle che servono* (In order to remain in Europe. Infrastructures needed, only those needed). It was prepared by technical officers and advisors of the Ministry of Public Works, where this key-

concept of the intermediate level of urban systems is developed, to some extent, with policy indications.

At the moment up to 870 urban regeneration actions, in addition to the 28 PIC Urban Pilot Projects launched under the umbrella of the EU, have been or are being implemented throughout Italy with a national investment of almost 2.3 billion euros. The highest stage of evolution of the 'complex programmes' is now represented by the PIT, *Programmi Integrati Territoriali* (Territorial Integrated Programmes). They are being invoked as specific tools for urban policies within the CSF 2000-06. Table 12.1 summarises the main objectives, actors and territorial framework of the four complex urban programmes.

'Integration' as guiding concept

The guiding principle adopted is that of integration. Integration refers to intervention-sector multidimensionality (functions, economy, local societies), co-ordination among various institutional levels and to co-operation between public and private actors. There are, however, significant differences among the various instruments of this kind. It is possible to identify a progressive evolution towards the explicit adoption of a contractual approach, as well as towards the concrete integration of various forms of action, particularly among infrastructure and territorial policies.

The principle of integration is often translated, in Italy, into residential-type urban improvement interventions, while interventions in services and infrastructures have traditionally been planned and managed in a strong sectoral framework. A similar situation seems to have been avoided, at least as far as intentions are concerned, by the PRUSST. PRUSST is the most recent of the new instruments for intervention in the city and on the territory, within the framework of local development and of sustainability. In this case, the infrastructure interventions are assumed to be occasions for the creation and promotion of territorial-scale development strategies, intended to respond actively to current demands for efficiency and competitiveness in urban and territorial systems. In addition, the government decree establishing the PRUSST provides for the setting up of coalitions and partnerships among the actors involved in the process. This requires both strong integration of public and private capital and direct participation of private actors in the financing of interventions, for a share equal to at least one-third of the overall cost of the programme.

Polycentricity in the complex urban programmes

The idea of polycentricity largely underlies this policy and affects, although indirectly, the 'philosophy' of the approach for the Urban Complex Programmes. Therefore, polycentricity is an indirect, but significantly pervasive objective. By the strengthening of medium-sized centres, in particular those in southern Italy, a more polycentric urban and development pattern is being pursued.

Policy in practice

In general terms, the innovations evolving from the complex programmes may be summarised by the following observations:

1. the recognition of new forms for the representation of interests. This means the positive acceptance of the plurality and diversity of the actors and of the interests involved in urban and territorial transformations. This plurality and diversity is now considered a resource rather than a constraint;
2. the opening up of the decision-making arena, towards forms of negotiation and joint planning among the various actors, in the form of both public/private partnership and of

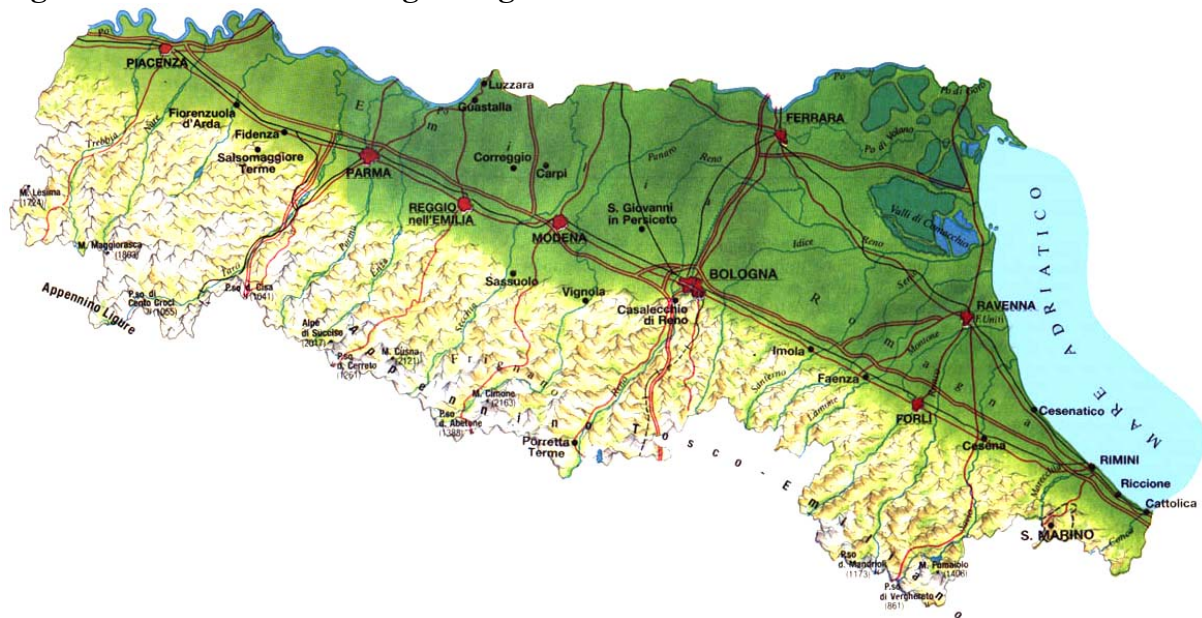
inter-institutional co-operation. Public/private partnerships, for the most part, intended to activate the resources - and not only economic resources - of the various involved actors. Inter-institutional co-operation aimed at co-ordination of and co-operation among the various institutional actors;

3. the growing importance attached to specific local authorities for the implementation of actions in integrated territories, with the intention to strengthen the position of the city or territory in question in the international competition and, concurrently, to oppose social-exclusion phenomena;
4. finally, the generalised adoption of competition procedures in the assigning of financial resources provided by government programs for the “best local practices”.

12.3.2 Scenarios and strategic options for updating the Regional Development Plan – Emilia Romagna Region

The Regional Development Plan for Emilia Romagna (not finalised yet, as of August 2003) was prepared by the Emilia Romagna Region’s Government. This case is chosen because of the traditional sensibility of Emilia Romagna for territorial development, and in particular for issues of polycentricity and polycentric strategies. Therefore, this specific experience reveals itself as an interesting ‘good practice’ in the Italian context. The document is called ‘Scenarios and strategic options for updating the Regional Development Plan’ and was prepared in 1997. It was initiated by the Economic-Territorial Planning Service of Directorate General 7 (Urban Planning), a section of the Emilia Romagna Region's Department of Territory, Planning and Environment. Polycentric development is one of the main objectives in the document.

Figure 12.1 The Emilia-Romagna Region.



Present situation

The polycentric structure of the Emilia Romagna’s territory is unanimously recognised by scholars and policy makers, who even indicate it as one of the paradigmatic examples of polynuclear development in Italy (see Figure 12.1).

In the recent past, Emilia-Romagna has been deeply affected by two contrasting phenomena:

- a) the very intense and very wide dispersion of population and production facilities;
- b) the concentration of functions and of qualified and rare services in the provincial capitals, especially Bologna.

While, in general terms, the population is stagnant, the most evident aspect of land use in the region is the persistence and extension of sprawl phenomena. The exploitation of the region's near-evenly-distributed network of basic services, population and enterprises has spread out over ever vaster areas.

The phenomenon of dispersion is of such nature that it cannot be interpreted merely as de-centralisation, or a natural redistribution of business and residences. It has been driven beyond all expectations and now entails ever higher costs for the organisation and management of network services (water supply and purification, natural gas, transport, waste disposal) and other public services (social, welfare, cultural), and in negative impacts on the environment and natural resources. Moreover, these social costs are gradually becoming individual costs as well (travel time, utility prices, etc.).

Work-related travel inside and outside the home municipality may act as an example of the 'disorder' in the present situation. Taking the latest census data available (1991) and assuming a baseline of 50% (at least one of every two trips ends or starts outside), the proportion of municipalities above it is 42% in the province of Reggio Emilia, 80% in the province of Bologna (the most 'mobile'), 40% in the province of Ferrara, 38% in the province of Modena, 57% in the province of Piacenza, 55% in the province of Parma, 40% in the province of Forlì (taken together with Rimini), and 17% in the province of Ravenna (the least 'mobile'). From these data, it is easy to imagine the pressure on the mobility networks and the resulting amount of traffic.

The urban system

The territorial relations evidenced by migratory flows, job distribution and work-related travel delineate a highly variegated and 'chaotic' picture. It is very hard to see what clearly predominant directions they may take. Today each municipality has a multiplicity of relations with its neighbours and its provincial capital, and no longer feels pulled in a single direction. Nonetheless, it is possible to identify some flows that are intense enough (as measured through reciprocal relations) to stand out from the 'entropic' background and express the region's strong urban structure.

The provincial capitals are still the major generators of social and economic relations in their respective territories. Each has its own hinterland, larger or smaller, reaching out along the Via Emilia. Compared with the situation registered a decade ago during the preparation of the Regional Development Plan, the pattern has not altered in any significant way; if anything, it is the intensity of some relations that has changed.

Between the main cities there are apparent functional interdependencies. This interconnected structure is partly due to the historical legacy of the urban polycentricity and partly induced by regional policies, which have envisaged in this spatial pattern an important resource to be exploited. Relationships among the various parts of the region began recently to change. Interrelationships and forms of integration increased, which is well shown in table 12.2 which presents phone communications among the main Region's cities. In particular, certain parts of Romagna (the region part facing the Adriatic sea coast) developed very close relationships with structures in Bologna. Bologna became the principal services platform for Romagna and the province of Ferrara. The self-sufficiency of the manufacturing heartland (Modena and Reggio)

eroded as this area entered global manufacturing networks and built new relations with Bologna and Parma. Parma won positions of excellence in certain functions (the food processing industry, the university, the airport) and is now the part of the region where job creation is fastest, though Parma has not yet managed to make itself known as the strong centre of western Emilia, in a position to rival with Bologna.

At the end of the 1980s, forms of decentralisation and integration began to appear in the most saturated and congested situations. Bologna University decentralised some of its courses to cities in Romagna, with good results in terms of numbers of students registered and effects on the local settings; the Bologna Trade Fair Corporation provided co-ordinated management of fairgrounds in Bologna, Modena and Ferrara; the Bologna Opera House and the region's traditional theatres began to co-operate to improve their services and reduce costs; public and private medical facilities started working together at the regional level to improve services to patients and shorten waiting time for particularly complicated treatments.

Bologna is thus positioned at the centre of wide-area equipotent networks; moreover, it hosts certain specialised functions which are relatively independent of the urban context, in that they act as nodes in networks that inter-link the major European and world marketplaces.

This situation is the most visible aspect of urban excellence and the city's major asset for innovation, but brings with it a whole set of real or potential tensions. The advanced functions, with their international points of reference, operate with relative independence from the local setting:

- business ideas take shape in relation to international partners and competitors (trade fairs, logistics, research and development projects, industrial and financial groups, major cultural events, etc.);
- the relationship with the local setting is highly selective because local suppliers are compared with international concerns (e.g. for industrial subcontracting or for joint technological or commercial ventures);
- the extensiveness of the equipotent networks makes it possible to mobilise specialised resources wherever they have been or can be organised (e.g. through investments or acquisitions, or the enhancement of local natural or cultural resources).

At any rate, there is another point of capital importance, especially for a medium-sized area like Bologna, and it concerns the possibility of linking development of the Bologna metropolitan area to regional metropolitan development. The presence of advanced functions and of overall environmental quality are not the only metropolitan opportunities available to a given area. Going back to the network metaphor, we can define functions or activities whose essential social role is to enable operators in a particular catchment area to communicate with the highest levels of networks polarised at the international level. For instance, a large part of mobility functions belong to this category. An airport well connected to an intercontinental network offers end service to only a moderate extent (due in part to the relatively low frequency of connections), but it does offer multiple and even intermodal connections that serve the purposes of a very wide range of users. A High Speed Train station appropriately served by regional transit systems enables users in wide catchment areas to access services with national or supranational scope.

The presence of an organised and well-established network of financial services may not configure an area as an international financial marketplace, but it can give local operators access to the primary financial network. In short, a city's role and rank depends not only on the number of functions of excellence it hosts - the ones that enable a metropolitan area to define itself as a primary provider to global networks. What counts even more is the depth and complexity of the

functions for which it is the primary interface between the local and the global. The idea of Bologna as a 'gateway' to specialised (and thus rare) functions seems fundamental in describing this city's role in the regional Multicentric Metropolitan System.

Table 12.2 - District-by-district phone calls to other Emilia-Romagna districts (%).

	BO	MO	PR	RE	PC	FE	RM	FO	RA	Others	Total
Bologna	-	22	8	10	2	10	8	4	7	29	100
Modena	29	-	4	19	1	2	3	1	2	39	100
Parma	17	7	-	26	7	1	3	2	1	36	100
Reggio E.	23	32	22	-	3	1	2	1	1	15	100
Piacenza	19	6	24	10	-	2	7	2	6	24	100
Fidenza	6	4	63	4	15	1	1	0	1	5	100
Fornovo	5	5	61	8	9	0	2	0	1	9	100
Ferrara	32	6	2	3	2	-	4	1	4	46	100
Comacchio	17	5	1	2	1	53	3	2	6	10	100
Porretta	85	4	1	1	0	2	1	0	1	5	100
Mirandola	20	53	2	5	0	8	2	0	2	8	100
Sassuolo	13	56	2	19	0	1	2	0	1	6	100
Rimini	28	3	1	3	1	1	-	15	8	40	100
Imola	52	4	2	2	1	3	3	4	5	24	100
Forlì	21	3	1	1	0	2	13	-	19	40	100
Ravenna	28	3	1	2	4	3	9	16	-	34	100
Lugo	13	5	2	2	1	3	2	4	45	23	100
Faenza	19	3	1	1	20	2	4	18	22	10	100
Cesena	17	2	1	2	1	2	26	26	14	9	100
S. Marino	10	2	1	1	0	1	69	4	3	9	100

Source: Emilia Romagna Region's Department of Territory, Planning and Environment.

The region's position in the national, transnational and European context

Emilia Romagna's position within the wider European spatial context mirrors the general features of the Po regional systems: in terms of centrality, density and continuity, the region rivals the parallel and symmetrical ones on the other side of the Alps. The Po macroregional system, together with part of the upper Thyrrhenian, appears as a more articulated and cohesive region than those of the Western Mediterranean Arc (Catalonia and French Midi). The metropolitan area of Bologna is a true node of physical exchanges between northern Italian regions and the Adriatic corridor: this is particularly significant, if you consider the great density of dynamic local production systems (large industrial concentrations, industrial districts, specialised clusters) which characterise those two areas of the country.

Policy objectives

The main objectives strictly linked to the policy options for enhancing the polycentricity are the following:

1. Construction of the Multicentric Metropolitan System
 - 1.1 Restoring identity to multicentrism
 - 1.2 Relationship between hierarchies and system: The role of Bologna
 - 1.3 Urban qualification as a policy tool for redesigning the spatial system
 - 1.4 New conditions for enhancing the rare-services network
2. Governance of environmental vulnerability
 - 2.1 New relationships between urban and rural space
3. Economic development policies
 - 3.1 Appropriate policies for district evolution

The identification of these policy objectives derives from an in-depth discussion of some key-concepts, among which that of the Multicentric Metropolitan System is a crucial one. It can be read as a basic reference on which to inaugurate new kind of regional policies with a high degree of integration among the sectors of transportation, environment, location and development control.

Implications for polycentricity

The policy tries to return a sense of identity to the historical sites of regional multicentrism. It is oriented to encourage the formation of an 'opportunities differential' (measured in terms of real estate, public services, commerce, junction points, etc.) to the advantage of medium-sized cities.

New cities have come into being in the region - or rather, the old cities' boundaries have changed considerably, and the roles of some of the inner cities are tapering off because of the altered relationship between centre and periphery. The reuse of abandoned areas, the enhancement of areas around railroad stations and other transport junction points, the location of certain functions requiring high accessibility all should be seen as opportunities to work towards an urban design that brings order to the 'new' cities.

The implementation of new projects in the area of specialised services is subject to the logic of competitiveness imposed by the relevant global network. Global networks should be evaluated not only as competitive frameworks but also in terms of their potential for developing regional functions.

The specialised services present in Emilia-Romagna should increasingly be thought of as links in complex value chains. Regional policies (e.g., in the fields of transportation, business services, scientific and technological research) should encourage the inclusion of Emilia-Romagna's structures in global networks.

Implementation of the policy

The implementation of territorial policies is delegated to a complex framework of actions, within which we can recognise three main tools' families:

5. the current means and tools of the sectoral intervention (e.g. transportation and telecommunication policies, the industrial policies, etc.);
6. some relatively new instruments of spatial planning, such as the *Programmi speciali d'area* (*Area Special Programmes*), devoted to solve specific issues in sub-regional areas (e.g. 'Basso Ferrarese', 'Città della costa' etc.);
7. negotiated policies in the socio-economic field, where the local development issues are inextricably linked to the territorial ones (e.g. *Patti territoriali*, *Territorial Pacts*).

The funding mechanism is defined in the Documento di politica economico-finanziaria, Financial Economic Policy Document, valid for the period 2003-2005, and in other planning documents, such as the Quadro di riferimento per la programmazione coordinata degli interventi strutturali dell'Unione Europea 2000-2006 (the Framework of Reference for Co-ordination of European Union Structural Interventions 2000-2006).

The implementation process of the policy is progressing. At the moment, a public forum on the Region's website has been organised in order to collect remarks, suggestions and critical comments by various actors (local authorities, public agencies, citizens).

History of polycentric policies

The document has been conceived as the first step in up-dating the Piano Territoriale Regionale (Regional Territorial Plan), which has been in force since 1990. The question of polycentricity has been historically taken into account in Emilia Romagna Region's territorial policies, but we can argue that special attention to it is paid in the current political reflection and territorial action by the Region's policy community (Region, local authorities, professionals in urban planning, but also industrial employers' associations and other relevant stakeholders)

Moreover, a clear awareness of the key-role of the concept of polycentricity in the policy documents of EU is diffused among political elites and decision makers. References to ESDP policy options about polycentricity are frequent in the policy rhetoric and the Region's officers have been among the more sensitive actors of the Italian debate about the reception of ESDP in the Italian spatial policies, within the Regions' Conference. Unfortunately, the current central Government is not particularly attentive to the question. On the other hand, if we exclude the period of the left-centre Governments (1997-2000), the central administration of the state did never play a significant role in this field.

12.4 Conclusion

Despite the lack of national strategic planning, the national level is involved in polycentric development through many sectoral policies (for instance with respect to education, economic districts and transportation), even though polycentricity is only implicitly referred to. However, the idea of a strong north-south divide within Italy in terms of social and economic development is clearly present in the minds of policy-makers at this level. Several policies are pursued to diminish this divide and special attention is therefore paid to economic districts and medium-sized cities. As part of the complex urban programmes presented in section 12.3.1, recent attempts to foster bottom-up inter-municipal co-operation are another example. The national urban system can well be described as polycentric, and this polycentricity is mainly explained by historical development pathways. This polycentricity is considered as positive. Also at the regional level, which has competence over spatial planning, polycentric urban systems are identified. The Emilia-Romagna and Veneto regions are the most well-known examples. For these regions, explicitly polycentric policies are designed.

12.5 References:

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13 Latvia

13.1 Introduction

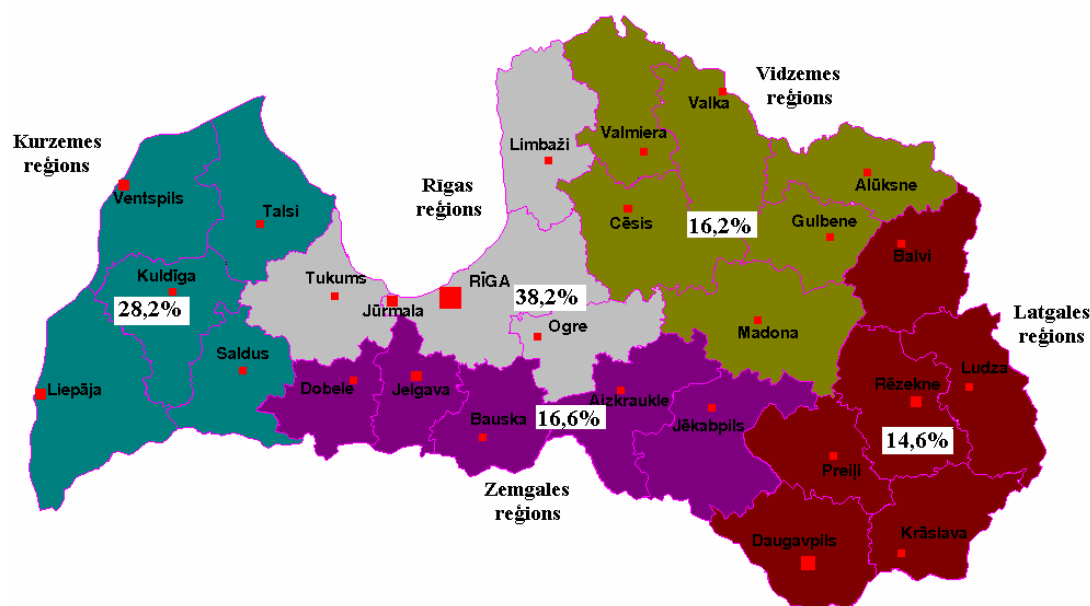
The Republic of Latvia has about 2.5 million inhabitants of which the most (800.000) live in the capital, Riga. 69% of the total population lives in urban areas, but on average, population densities are low with 38 people per square kilometer. The urban system is characterized by a strong primacy of Riga, which has about 7 times more inhabitants than the second largest city, Daugavpils. 33% of the national population and 55% of the economic production are concentrated in Riga and its wider metropolitan area accounts for about half of the population. Figure 13.1 presents the urban structure of Latvia. Figure 13.2 demonstrates that Riga is also the more wealthy part of Latvia in terms of GDP.

Figure 13.1 Main urban centres in Latvia.



There are three administrative tiers in Latvia: central government and two levels of local government: districts and municipalities. The seven largest cities, the so-called national cities, have a special administrative status, they have the function of both the district and the municipality in one. These cities are: Riga, Daugavpils, Liepāja, Jelgava, Jūrmala, Ventspils and Rēzekne.

Figure 13.2 GDP per capita according to the purchasing parity standard in 1998, % of the average level of the European Union.



The central government has a strong position in territorial planning. The Ministry of Environmental Protection and Regional Development is responsible for the preparation of the National Development Plan, as well as methodical guidance, control and co-ordination of the physical planning process in the country. The Cabinet of Ministers makes decisions about producing spatial development programs on the national level, decides about their contents and the adoption procedure. Spatial development plans of the national level refer to the whole territory of the country. Furthermore, the Ministry of Economics is responsible for preparing the State Economic Development Programme. The Centre of Spatial Development Planning (implementing body) under the authority of the Ministry of Environmental Protection and Regional Development is responsible for the preparation of the National Plan of Latvia and preparation of spatial development plans for Special Territories (such territories can be determined by the Cabinet of Ministers – upon necessity) (Committee on Spatial Development in the Baltic Sea Region, 2000). The regional level (the 26 districts and 7 national cities) may appoint so-called planning regions (of which there are five covering the whole territory of Latvia) and are responsible for drawing up the District plan. The district plan co-ordinates the interests of state institutions, town and rural municipalities of the district as well as general territorial, social, economic, environmental and cultural interests at the territory of the district. Besides this District Plan that is a more or less zoning plan, districts also draw up economic programmes. At the higher regional level of the planning regions also more strategic development strategies relating to urban structure are starting to be developed.¹⁵ The municipalities shall have a physical plan in force. This general plan depicts the existing use of the territory and determines the planned and allowed use of the territory of the municipality with a perspective of at least twelve years. Furthermore, the Act on spatial planning allows for regional plans jointly elaborated by neighboring municipalities.

¹⁵ So far only the Latgale Urban Development Strategy was adopted.

13.2 General position of polycentricity

The current urban structure of Latvia is rather monocentric given the primacy of Riga. At this moment, the principle of polycentricity is not officially adopted in public policy. In fact, few of the adopted political documents are linked to spatial development objectives. However, there have been some research projects on polycentricity in Latvia and the wider Baltic Sea region, of which the most significant was ‘The Baltic Palette’ project. This project aims to establish a co-operation network between the major urban cores in the Baltic Sea region. A draft of the major document presenting the national spatial strategy, the National Development Plan (NDP), was adopted in the Cabinet of Ministers in December 2001. It, however, does not reflect on the territory in terms of mono- or polycentricity. Still, polycentricity, albeit in other terms, plays a role as a balanced and sustainable development of the territory is one of the objectives of the NDP. It refers mainly to the five planning regions composing Latvia.

In the Soviet period, urban and regional planning was subordinate to economic central planning. The development of existing urban settlements became dependent on macro-industrial policies. This planning was characterized by large scale industry (in the 1970s, more than 60 percent of industry workers were employed in factories with more than 1000 employees, 12 percent of them were employed in factories with more than 10000 employees). The concentration of industrial production stimulated the development of large new urban settlements for industry and infrastructure. As a result, the urban population in the Baltic States increased by 81 percent in the 1960s due to immigration from rural areas to the cities. Citizens from other Soviet republics often immigrated to the Baltic States as employees of the new factories and residents of the industrial cities. Soviet economists believed that the bigger the city, the higher the labour productivity would be. The collectivization of agriculture was accompanied by a new settlement structure in the rural areas founded upon the classification of rural centres into prospective and non-prospective villages. The prospective villages were further developed, while development of non-prospective settlements was restricted (Vanagas et al., 2002; Korcelli et al., 2001).

The Soviet socio-economic strategies of the 1960s en 1970s emphasizing production efficiency, more sophisticated technology and improvement of the competitiveness of products had an impact on the urban system as from then on, cities would have to develop in a proportional, balanced way according to their size. The growth of the largest cities was restricted and the potential of small and medium-sized towns was to be enhanced and networks of multifunctional urban and rural centers had to expand. According to these directives, subsequent programmes and schemes of manpower distribution and urbanization were elaborated in the USSR republics, among which the Baltic States were the first (Vanagas et al., 2002).

In the 1960s, the concept of equal development of regions and the hierarchical settlement network was adopted. The ‘Scheme of regional planning’ of 1976 proposed the development of eight regional group systems. In 1978 a ‘Scheme of a united settlement pattern’ was elaborated. These schemes aimed at the establishment of a hierarchical system of centers located evenly across the territory to provide for services, all very much in line with Central Place Theory. This often meant a restructuring of the existing settlement pattern. The restructuring was carried out by sectoral policies including those dealing with the location of new industrial and agricultural enterprises, housing, and services, transport infrastructure, and delegation of new administrative functions to those settlements. Lonely at the top of the national hierarchy is Riga, which dominates the urban system.

Latvian policy-makers tend to think of their country as being located at a central point in the Baltic Sea region, being at the crossroad between Finland and Russia on the one side and western Europe on the other. This position may be used in development policies. As such, Latvia, more particularly the Riga capital region, may be positioned as one of the centers in a polycentric Europe. However, at the same time, polycentricity within Latvia could be of crucial importance with respect to the rather high spatial unbalance within the country (as was shown in Figure 13.2).

Though polycentricity is not a specific major objective in the NDP, the next section presents this policy document and tries to identify the polycentric elements in it. Brief attention is also paid to an administrative restructuring programme that incorporates some elements of polycentricity as an example of one of the few sectoral policies having a spatial impact.

13.3 Examples of polycentric policies

13.3.1 National Development Plan

The National Spatial Development Plan, of which a draft was adopted by the Cabinet of Ministers, was initiated by the Minister for Special Assignment for Cooperation with International Financial Agencies. Polycentricity is a subsidiary objective in this draft document. The NDP as well as the Rural Development Programme (RDP), which was adopted in 1998, are supposed to provide a basis for the Single Programming Document (SPD) and the Rural development plan of Latvia (RDP), which will be prepared in 2003 and provide access to Structural Funds. These documents will come into force after the entering of Latvia in the European Union.

Rationales

The long-term objective of Latvian policy is to reach the welfare level of the developed European countries. To achieve this, policy focuses on the continuous increase of the life standard of the population of the country, ensuring rapid and stable economic development and promoting the development of an educated, cultural and healthy population. This overall objective is translated in two main objectives:

1. to promote sustainable development of Latvia increasing welfare and social security for each inhabitant;
2. to encourage regional development decreasing and avoiding unfavourable regional differences and developing favourable differences.

The latter objective clearly hints at a polycentric development of the country. This objective also returns in the last priority in a row of three the policy document presents:

1. promotion of the economic development and competitiveness;
2. development of human resources and promotion of employment;
3. balanced and sustainable development of the territory of the country.

Policy in practice

The three priorities in the document are elaborated in a numerous number of detailed planned actions. These actions are split in such a way that each action can be easily allocated to the responsibility of a specific Ministry. The third priority of a balanced and sustainable development is elaborated as follows:

1. To develop purposeful support policy for the state planning regions (and separate parts of the territory of the country)
 - 1.1 *To ensure development of the coastal territories paying special attention to the development of the ports and territories next to the ports (including quays for fishing ships and boats);*
 - 1.2 *To implement the state aid according to Latvia's regional support map;*
 - 1.3 *To eliminate the factors hindering the development of the especially supported territories and to promote further development of the especially supported territories;*
 - 1.4 *To promote development of the trans-boundary cooperation between the border zone territories of the country and other states;*
 - 1.5 *To develop and implement programmes for improvement of the business activities in the regions paying special attention to development of the especially supported territories.*
2. To promote balanced development of cities and countryside ensuring polycentric development of Latvia
 - 2.1 *To promote diversification of the countryside economy;*
 - 2.2 *To promote development of cities solving the problems of the quality of urban environment;*
 - 2.3 *To promote development of industrial centres in the planning regions, which would stimulate development of the whole region.*
3. To ensure sustainable use of natural resources of Latvia
 - 3.1 *To promote sustainable development of Latvia's forests;*
 - 3.2 *To develop balanced use and renewal of resources in fishing industry;*
4. To develop the social infrastructure and services
 - 4.1 *To improve the health condition of the population and to reduce mortality through implementation of the health promotion and disease prevention measures ensuring qualitative health care services available to all inhabitants as well as safe, effective and qualitative drugs;*
 - 4.2 *To ensure qualitative and accessible social and alternative care services;*
 - 4.3 *To create the possibility for the inhabitants to receive an appropriate dwelling;*
 - 4.4 *To develop the cultural infrastructure and to provide the inhabitants with qualitative and available cultural services (especially, in the regions and countryside)*

The variety of detailed planned actions relating for instance to regional support, trans-border co-operation, economy, urban environment, sustainable use of natural resources, and, social infrastructure and services, indicates the variety of themes a balanced and sustainable development can refer to.

The detailed planned actions addressing the other two priorities also include actions that may be considered polycentric. The first priority is mainly elaborated in sectoral objectives and instruments, but includes also the development of transport infrastructure and the promotion of connections with other countries. The second priority includes for instance actions relating to the improvement of the accessibility of institutions for education, unemployment centres, health care, libraries and cultural services etc., in order to provide for equal access for all of the Latvian population. In general, however, the three priorities are elaborated in a general way, and thus not in a spatially differentiated way.

The funding of all these actions is derived from the State Investment programme, pre-accession funds, as well as other means.

13.3.2 Administrative division reform of municipalities

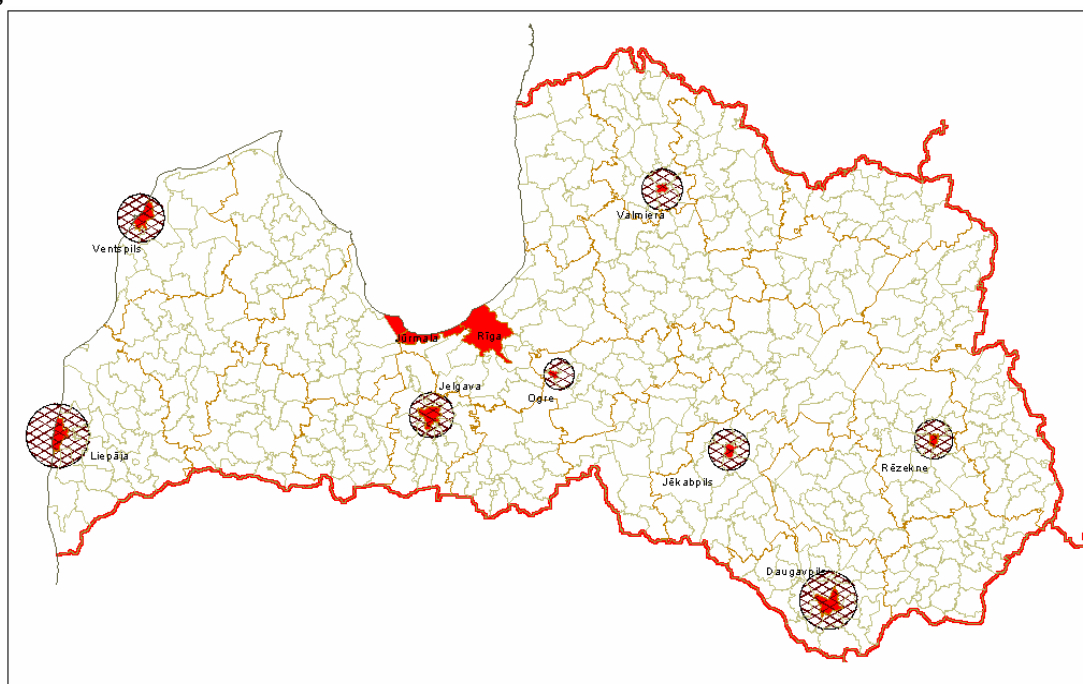
The Appanage establishment project (AEP) is a national policy that follows from the Law on administrative and territorial reform. The policy is about unifying and reforming smaller

municipalities in larger ones. This policy was adopted in the Cabinet of Ministers as a draft for further proceedings on the 31st of March, 2003. The policy was initiated by the Ministry of Regional Development and Local Governments.

Rationales

Currently, there are over 500 municipalities in Latvia of which most have limited resources, a lack of service centers and service quality and a low capacity to perform tasks and functions they have to perform according to the Law on Municipalities. The policy on administrative division reform is to solve all these problems by unifying and reforming municipalities, thus establishing 102 larger municipalities. The objective is to establish economic efficient and sustainable economic development territories and municipalities and to provide the inhabitants with better services. Figure 13.3 presents the old situation, Figure 13.4 the new administrative division on the local level.

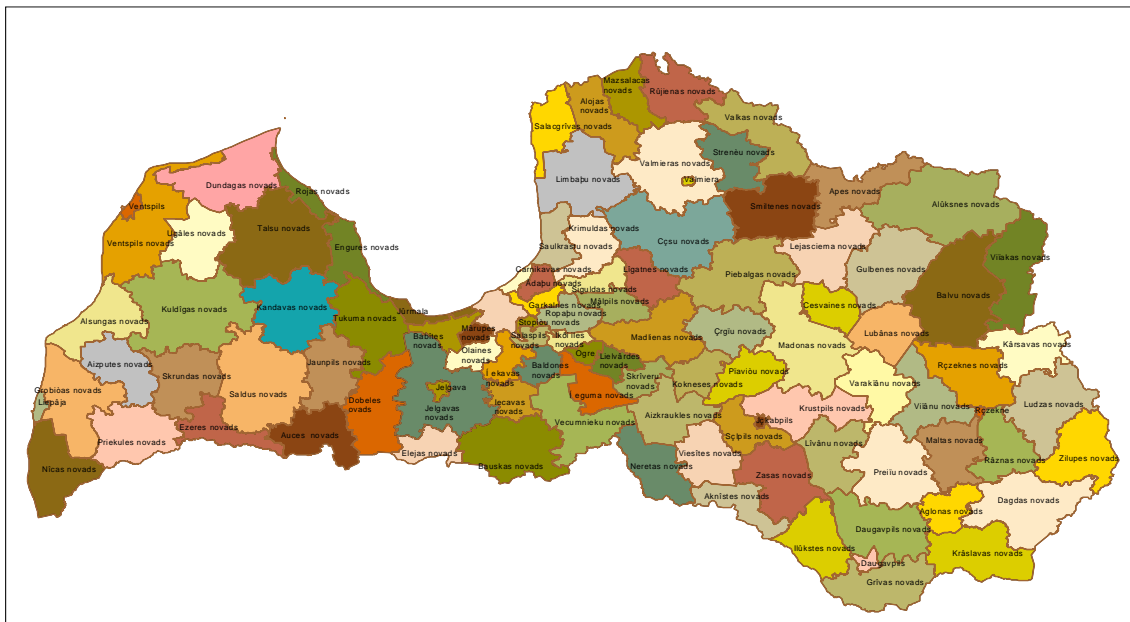
Figure 13.3 Local administrative division before the reform.



Polycentricity and administrative reform

The impact of the administrative division reform on the spatial structure is not analyzed in the policy document. However, it can be anticipated that there will be an influence as the political and financial structure changes, while also public services, employment and connectivity will be concentrated at the new main centres of the municipalities. This could lead to indirect effects as well, for instance the moving of people, changes in land use etc. Important is also that the lowest administrative level will become more powerful, enabling a better positioning of them in the regional, national or even international context. However, the current proposals for administrative reform are not informed by objectives related to spatial planning, nor with sectoral regionalizing processes. It is also not linked with ideas on administrative reforms on the regional level, which will start after completion of the local level reforms.

Figure 13.4. Administrative division at the local level after the reform.



Policy in practice

A major problem that arose with the development of the policy is to establish the criteria on which the reform is based. These criteria are linked to economic efficiency:

- Population not less than 5000;
- Development centre with 2000 – 25000 population;
- Road connectivity to new administrative centre;
- Distance from administrative center to border less than 30 km;
- An individual special approach.

Another problem is the instability and uncertainty rising from the long period of implementation (1998-2005) of the reform, undermining the power of certain administrative institutions. Therefore, it has an impact on local planning processes.

The reform is funded from the State Budget special programme by the national government. The local governments, who carry out the reform, are granted an extraordinary grant of 1-5% of the total annual budget of the State Budget for the reform, to be decided upon by the Cabinet of Ministers.

13.4 Conclusion

Polycentricity is not a major objective in national spatial policy in Latvia, despite being mentioned as a subsidiary aim in the National Development Plan (draft). The latter is a rather general policy document that provides a basis for the Single Programming document that relates to the Structural Funds-application. The policy identifies policy priorities of which the balanced and sustainable development of the territory of the country is the one most clearly linked with polycentricity, but the other priorities and their elaboration have a spatial impact, though limited, as well. In general, these priorities are elaborated in sectoral sub-objectives/instruments. In fact, policies that differ in spatial impact between regions or cities are rather non-existent. Some sectoral policies may be identified having an impact on the spatial structure, the most prominent

of them the policy on administrative reform of municipalities, establishing more efficient and powerful local authorities. Finally, policy-makers acknowledge the significance polycentric policies could have, given the rather large spatial differences in development within the country. A possibly relevant step towards such a policy may be the development of a settlement classification as is currently being processed by Latvian Statistics.

13.5 References

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14 Lithuania

14.1 Introduction

The Lithuanian republic has some 3.5 million inhabitants on 65300 km². The capital Vilnius is also the largest city (543000 in 2003), followed by relatively nearby Kaunas (380000 in 2003). The third city is Klaipedia on the coast with nearly 200.000 inhabitants. Two other cities have more than 100.000 inhabitants. Given the limited primacy of the capital and the relatively large number of cities, the Lithuanian urban system is characterized by a certain extent of polycentricity.

There are three administrative tiers in this Baltic state: central government (state), counties and municipalities. However, county government is appointed by central government. At the national level, the Ministry of Environment is responsible for the regulation, co-ordination and supervision of planning as well as performing the functions of an organizer of national plans. The country governor is responsible for drawing up a county plan and at the local level there are comprehensive plans and detailed plans.

Preparation of a national plan started in 1995 when the parliament demanded it, and the plan was adopted in 2002. The Master Plan for the Territory of the Lithuanian Republic presents the long term strategy for the use and management of the national territory.

14.2 General position of polycentricity

In the Soviet period, urban and regional planning was subordinate to economic central planning. The development of existing urban settlements became dependent on macro-industrial policies. This planning was characterized by large scale industry (in the 1970s, more than 60 percent of industry workers were employed in factories with more than 1000 employees, 12 percent of them were employed in factories with more than 10000 employees). The concentration of industrial production stimulated the development of large new urban settlements for industry and infrastructure. As a result, the urban population in the Baltic States increased by 81 percent in the 1960s due to immigration from rural areas to the cities. Citizens from other Soviet republics often immigrated to the Baltic States as employees of the new factories and residents of the industrial cities. Soviet economists believed that the bigger the city, the higher the labour productivity would be. The collectivization of agriculture was accompanied by a new settlement structure in the rural areas founded upon the classification of rural centres into prospective and non-prospective villages. The prospective villages were further developed, while development of non-prospective settlements was restricted (Vanagas et al., 2002; Korcelli et al., 2001).

The Soviet socio-economic strategies of the 1960s and 1970s emphasizing production efficiency, more sophisticated technology and improvement of the competitiveness of products had an impact on the urban system as from then on, cities would have to develop in a proportional, balanced way according to their size. The growth of the largest cities was restricted and the potential of small and medium-sized towns was to be enhanced and networks of multifunctional urban and rural centers had to expand. According to these directives, subsequent programmes

and schemes of manpower distribution and urbanization were elaborated in the USSR republics, among which the Baltic States were the first (Vanagas et al., 2002).

These main elements of the Soviet planning doctrine were elaborated within Lithuania as well. This means that planning provided for a forced rural resettlement policy, quick industrialization and the construction of large industrial complexes. However, the prime schemes of regional planning that were prepared in the early 1960s also aimed at balanced development of cities and towns and a process of (relative) deconcentration of new industry. The 1964 planning scheme introduced the concept of a 'united settlement system', which was based on the interaction of centers of different rank, evenly spaced across Lithuania's territory and fulfilling definite economic functions in a coordinated way. The size, profile and territorial distribution of these centers were determined by historic evolution and existing economic, social and cultural factors, the current network of settlements, conditions of nature and features of the landscape. A system of ten regional centers was established. In 1980, this policy had led to a more polycentric settlement pattern as the growth rate of Lithuania's largest cities – Vilnius and Kaunas – had been less than the growth of lower-level regional centers. Centers representing the highest level of services were dispersed quite evenly across the territory. The lack of very large fast growing urban centers made Lithuania less attractive to Russian migrants.

Compared to processes of urbanization in Latvia and Estonia, Lithuania's policy to develop industry not only in the large cities but also in small and medium-sized towns resulted in a more polycentric urban system. However, in the transition period, the disadvantages relating to the character and location of the country's capital Vilnius have become more significant given the new orientation towards Western Europe. To compensate for the geographical drawbacks of Vilnius eccentric location and its distant location from the seashore, planners launched the concept of a *dipolis* Kaunas-Vilnius, an urban network of European size (see also below).

Though other terms are used (balanced development), polycentricity has been an indirect, but major aim in regional and urban planning in Lithuania in the Soviet years and the last decade. The current relative polycentric urban system has been more or less the outcome of sectoral policies (mainly industrial planning).

14.3 Examples of polycentric policies

14.3.1 Master Plan for the Territory of the Lithuanian Republic

Preparation of a national plan started in 1995 when the parliament demanded it, and the plan was adopted in 2002. The Master Plan for the Territory of the Lithuanian Republic presents the long term strategy for the use and management of the national territory.

Rationales

The Lithuanian territory is considered polycentric in this policy, and this is seen as positive from a competitiveness point of view. However, it also mentions trends weakening this polycentric structure. Currently, a disproportionate amount of the population, investment and economic activity are concentrating in Vilnius. Vilnius attracts 64% of Foreign Direct Investment and 40% of capital investment in Lithuania. This means that smaller centers and rural areas develop at a much slower pace. This increases regional disparities.

The main objective of the document is to integrate Lithuania's territory in the European spatial structure in an integral way and provide for the necessary social, economic and ecological links. This main objective is elaborated in five other objectives, among which polycentric development:

- Sustainable social, economic and ecological development of national territory;
- Polycentric development of the urban system;
- Formation of a new urban-rural relationship;
- Increasing the accessibility to infrastructures and information;
- Protection and rational use of natural resources and cultural heritage.

Moreover, the presence of a European-scale centre is an important factor for integration in the EU. It is considered a basis for the emergence of European institutions and other formations, as well as for creating a direct connection to the European urban system. Therefore, the policy proposes to develop an urban network between Vilnius and the relatively nearby second city of the country, Kaunas. This Metropolis Vilnius-Kaunas has about 1 million inhabitants and co-operation between the two municipalities has started. Next to this envisaged metropolis, which is to become the national and international centre, the policy distinguishes regional centers (the centers of the 10 counties and other bigger cities) as well as local centers (centers of current municipalities and new local service centers). Moreover, axes for urban development are identified, including five centers: Vilnius, Kaunas, Klaipėda, Šiauliai and Panevėžys.

Policy in practice

The central government elaborates investment programmes based on the policy document. They also provide the means and instruments. Though the development possibilities of the whole of the territory were evaluated, the main policy concepts to pursue polycentricity address only the Metropolis Vilnius-Kaunas (centre European scale), Klaipėda (centre at national scale) and Šiauliai (centre of regional scale).

14.3.2 Long-term economic development strategy of Lithuania until 2015

This document is part of Lithuania's long-term development strategy, addressing issues as economic trends, acceleration of the process of economic restructuring and adaptation to (inter)national economic changes as well as maximizing the use of national economic potential. It was prepared by the Ministry of Economy and the Lithuanian Academy of Sciences.

Rationales

The general strategic objective is to create the environment favourable to the development of the country's material and spiritual welfare, which is generally described as:

1. Stable economic development,
2. Healthy natural environment at present and for future generations,
3. Personal safety in terms of physical, legal and social aspects,
4. Development of the human capital,
5. Development of the civil society.

The policy regards the Lithuanian territory as polycentric and tries to enhance this polycentric structure in an indirect way. The regional development of the whole country is envisaged. Attention is paid to improve specific spatial functions of regions in an administrative and economic sense. It aims to foster polycentricity by providing locations for development to all economic sectors. The geographically even arrangement of cities and towns allows for a diversity of development locations economic actors can choose from.

Policy in practise

The central government elaborates investment programmes, providing also financial means. Much emphasis is put on monitoring and evaluation of the implementation of the strategy as well as external environmental changes. As the economic policy is seen as part of a 'trial-and-error' process, this may lead to a periodic updating of the strategy.

The policy will serve as a basis for preparing and reviewing national development plans. These plans will perform the function of application for EU funds. A weakness is that the strategy is somewhat fragmented. A large variety of programmes, concepts and strategies covering various objectives and various time-periods exist. Often, these objectives do not reflect the financial possibilities of the state.

14.4 Conclusion

The current urban structure of Lithuania can be characterized as relatively polycentric. Next to the capital Vilnius there are a number of other larger cities. Policy aims to strengthen the polycentric urban system and assigns different roles to the cities. The capital Vilnius and the nearby city of Kaunas are encouraged to develop into an urban network of international standing. Other cities play a more national or regional role. The polycentric system is more or less anchored in legal frameworks. In political terms it is still weakly embedded. Despite the fact that Lithuania is a transition economy and the awareness that this may lead to increased regional disparities, the policy aims to correct for this trend.

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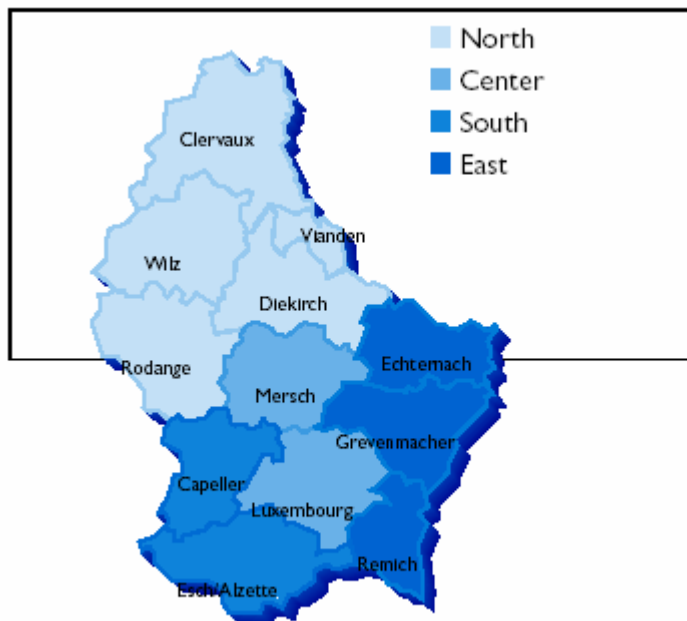
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15 Luxembourg¹⁶

15.1 Introduction

Luxembourg is in terms of GDP per capita, which is more than 31.000 euro, by far the wealthiest country in Europe and even of the world. With an unemployment rate of just 3,6% the less than 450.000 inhabitants, of which more than 150.000 are from abroad, seem to live in a small paradise in, literally and metaphorically, the heart of the European Union. The population density is about 165 inhabitants per square kilometre. Most people live in the capital and the area south of it. This is also reflected by the proportion of the number of deputies from each constituency in the national Chamber of Deputies. The eastern, northern, central and southern constituencies (see Figure 15.1) are represented by respectively 7, 9, 21 and 23 deputies each (Government Grand Duchy of Luxembourg, 2000).

Figure 15.1 Four constituencies of Luxembourg (Government Grand Duchy of Luxembourg, 2000).



15.2 General position of polycentricity and spatial planning

Although a national spatial planning strategy had been issued in 1974, spatial planning in Luxembourg does not have a very strong position compared to sector policies. However, with

¹⁶ Published under responsibility of Wil Zonneveld, Evert Meijers and Bas Waterhout of Research Institute OTB of Delft University of Technology.

the approval at 21 May 1999 of a new spatial planning law and the Programme Directeur, which will be discussed below, spatial planning got a strong impulse. Although the administrative structure consists of four tiers, only the state and the municipalities have considerable planning competencies. The new law foresees in regional plans, which will be formulated by the national government in close co-operation with the municipalities. At the national level the law introduced sector plans (*le plan sectoriel*), wherein sector policies are viewed from a spatial perspective. These sector plans have to take the Programme Directeur into consideration and are subject to approval under joint responsibility by the sector as well spatial planning minister (De Vries, 2002).

15.3 Example of polycentric policy: Programme Directeur de l'aménagement du territoire (PD)

As mentioned above the Programme Directeur was adopted in 1999 as the Luxembourg national spatial planning policy. It has been developed by the Ministère de l'aménagement du territoire (the spatial planning ministry) and issued to the Chamber of Deputies on behalf of the national government. Polycentric development is a major aim in this plan.

Spatial positioning

The PD considers the city of Luxembourg as the clear centre of the small nation. East- and westwards from the capital the land suffers from urban pressure. This also counts for the areas further to the north and south of this monocentric central city, which are considered polycentric urban agglomerations. All together, the area in a ring around the city of Luxembourg is seen as an urbanised agglomeration, with a development axis running from North to south via the capital. As against this, the areas in the north and the east are considered to have a weak structure with a stabilising demographic development. Clearly, the capital forms the dynamic heart of the country (See Figure 15.2).

Luxembourg is located (literally and metaphorically) at the heart of European integration. Three levels of co-operation are mentioned in the PD:

- EU
- SLL+ (Sarre-Lor-Lux+) and Benelux
- Cross border

The transnational co-operation network SLL+ (Sarre-Lor-Lux+) is the area with which Luxembourg identifies itself most. The international context in which Luxembourg sees itself and the SLL+ is best described by the CCC-study area as put forward in the Europe 2000+ report (CEC 1994), to which explicit reference is made in the PD. At the CCC-maps the SLL+ region is represented as one of the seven structuring metropolitan areas, with corridors to Paris, the Central Belgium City Network and the Rhine-Mainz region (i.e. Frankfurt) and to Basel outside the CCC-area.

At the moment, however, within the Programme Directeur a trend is identified in which Luxembourg and the SLL+ region is considered to become less important in the Northwest European area. Most economic dynamics are thought to be located in urban areas surrounding the SLL+ region (Figure 15.3). This is considered as a threat.

Furthermore the Interreg NWMA/NWE and IRMA Areas provide an international co-operation context. The same counts for the work on the Second Benelux Structure Outline (see for

instance: Zonneveld and Faludi, 1997), the SLL+ (Sarre-Lor-Lux+) co-operation and the Interreg A cross border co-operation initiatives.

Figure 15.2 Spatial development trend scenario (MAT, 1999).

TENDANCE DE L'EVOLUTION SPATIALE

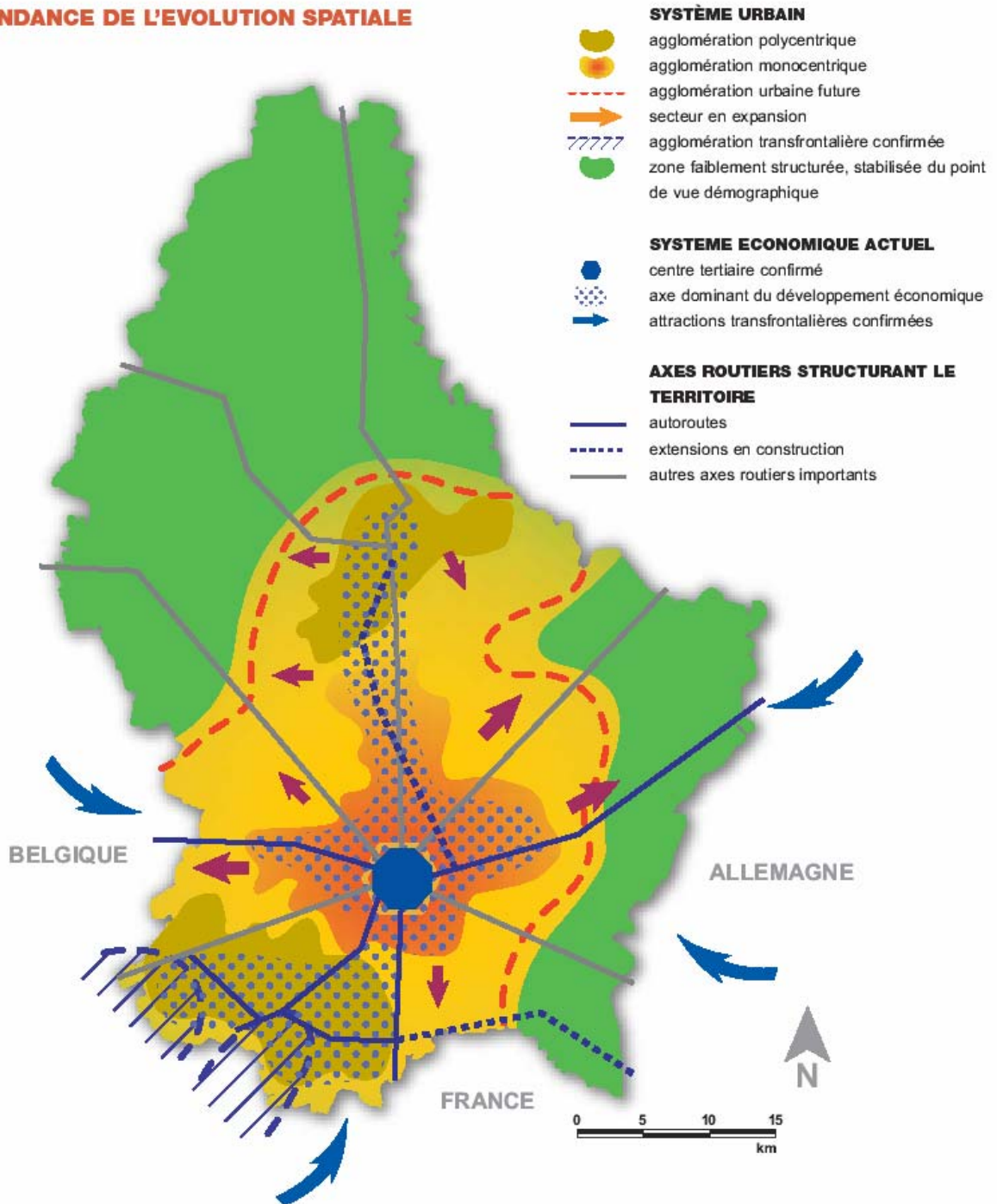
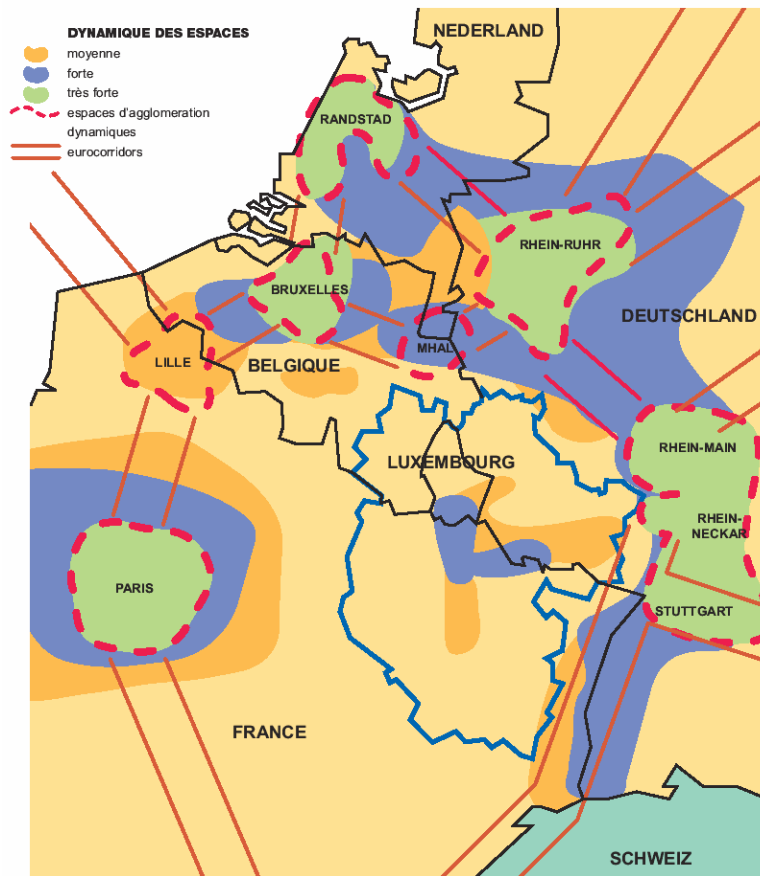


Figure 15.3 Trend scenario: position SLL+ in Northwest Europe (MAT, 1999).

EVOLUTION TENDANCIELLE DE LA STRUCTURE URBAINE DE L'ESPACE «CENTRE DES CAPITALES»



Competition oriented policy

The economic potential of cities and towns depends, according to the PD, largely on their ability to adapt to present economic restructuring tendencies at a global scale. These involve a decline of industry, a more service oriented economy, technical evolution and a change in function. Especially the industrialised southern part of the country faces difficulties to cope with the new circumstances, whereas the city of Luxembourg and its agglomeration already participates well in the service economy. This leads to a new position of the cities in a national and international context. For the development of urban and rural areas the following objectives have been formulated in the PD:

1. create and maintain dynamic, attractive and competitive urban regions.
2. pursue a diversified, or multi-based, economy in the rural areas respecting the sustainability principle.
3. develop an urban structure that is compatible with the demands of the environment, in terms of a sustainable spatial development (functional diversity, density and short travel distances)
4. create towns and villages that comply with social demands and offer high quality of life.
5. encourage polycentric development and decentralised concentration.
6. develop a sustainable urban-rural relationship

7. encourage co-operation between communities at the intercommunity, regional and cross-border level in order to develop the existing complementarities between them.

A division can be made between objectives that relate to urban-rural partnerships like 2, 3, 4 and 6, and objectives that relate to a polycentric development like: 1, 5 and 7. The objectives are worked out in policy guidelines that in turn are worked out in possible policy options.

Objective 1 relates to the notion that cities are the motors of development. A number of policy options or guidelines is listed in the PD. Amongst them guidelines that advocate a balanced development, maintain and further strengthening of the present characteristics of the cities and to develop cultural tourism as well as congress related 'tourism'. Most of the guidelines relate to urban policy, more than spatial or polycentric policies. The polycentric element is involved in the aim of balanced development.

Especially objective 5 is interesting in terms of polycentricity. It reacts to the observation that the country is characterised by a mono-centric spatial structure by introducing the concept of a 'système des centres de développement et d'attraction', or in short C.D.A.'s. CDA's should make it possible to create favoured regional territorial poles with a well distribution of human activities and concentration of traffic and transport streams.

The PD distinguishes between three levels:

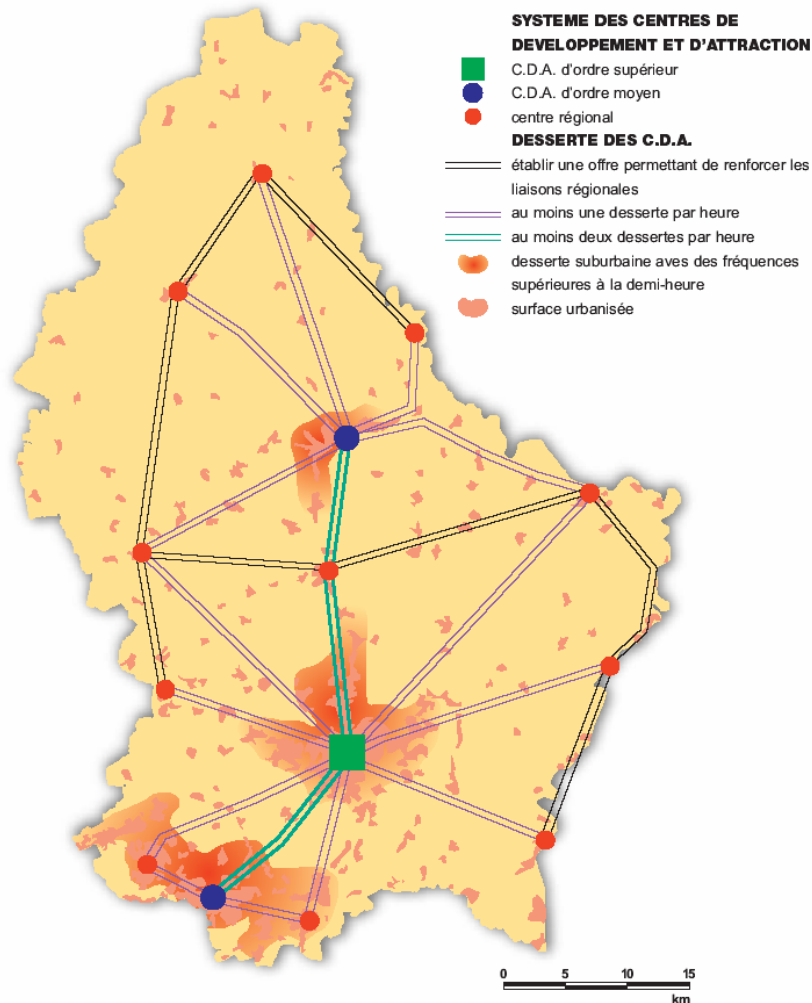
- CDA superior (City of Luxembourg)
- CDA medium (Esch/Alzette and the bi-polar city of Ettelbruck-Diekirch)
- CDA regional (Clervaux, Wiltz, Vianden, Redange, Mersch, Echternach, Steinfort, Grevenmacher, Differdange, Dudelange and Remich)

Together the three levels of CDA's form a hierarchical national urban system (see Figure 15.4). The system should facilitate a satisfying level of services in each region, especially the more peripheral ones. This is the first out of three general policy guidelines that make up Objective 5. This first guideline involves maintaining the different existing regional 'antennas' like administrations etc. Improving the quality of service by guaranteeing a standard equipment for each region and modernise the existing services. No explicit measures or instruments are mentioned how to operationalise this.

A second guideline involves an active decentralising policy, which should be focussed at the development of the CDA's. It is worked out in policy options like relieving the pressure on the capital and regrouping infrastructure, activities and 'quality employment' in the service sector in the CDA's of regional and medium level. A third guideline addresses the distribution of the population now and in the future which should be directed to the functions of CDA's.

Figure 15.4 Urban System of CDA's connected to public transport policy objectives (MAT, 1999).

DESSERTÉ DES C.D.A. PAR LES TRANSPORTS EN COMMUN

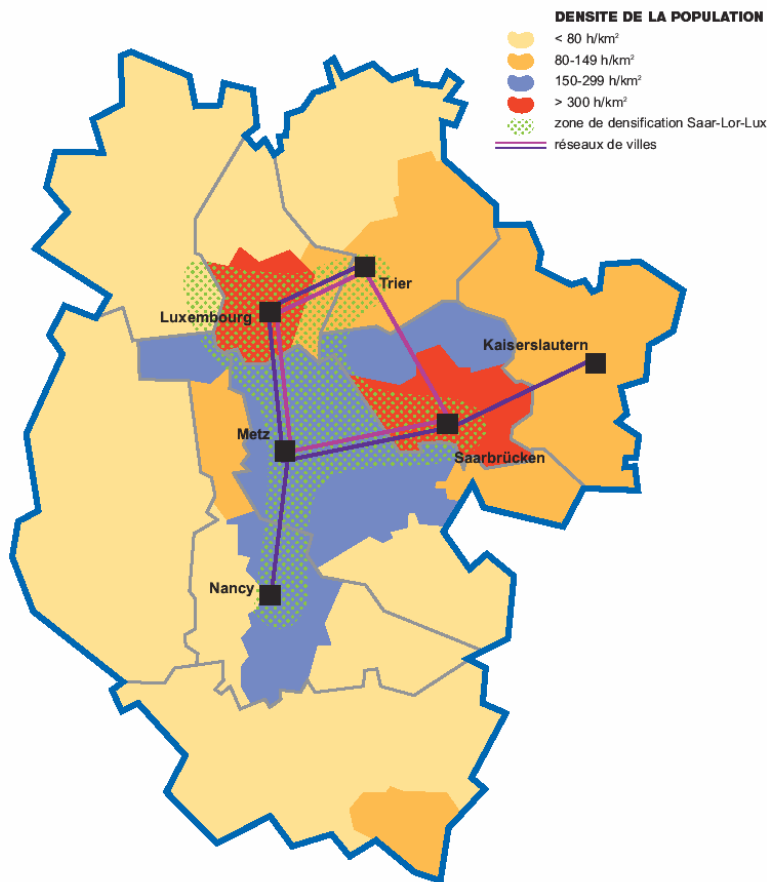


Objective 7 is worked out in policy guidelines like: promoting and reinforcing the co-operation between municipalities and regions for amongst others the redistribution of financial means and assuring the participation of economic actors, the *forces vives* of the nation and the population in the development of regional strategic plans and projects. It is proposed to pool municipal money in regional funds in order to apply it at a regional scale in favour of regional needs. The exact status of these kind of proposals is not clear.

As regards the cross border co-operation the PD proposes to create a well connected network between the main cities within the 'Grande Région' (SLL+): Luxembourg, Arlon, Trèves, Metz, Nancy, Trier, Kaiserslautern and Saarbrücken (see Figure 15.5).

Figure 15.5 Policy objective Sarre-Lor-Lux (MAT, 1999).

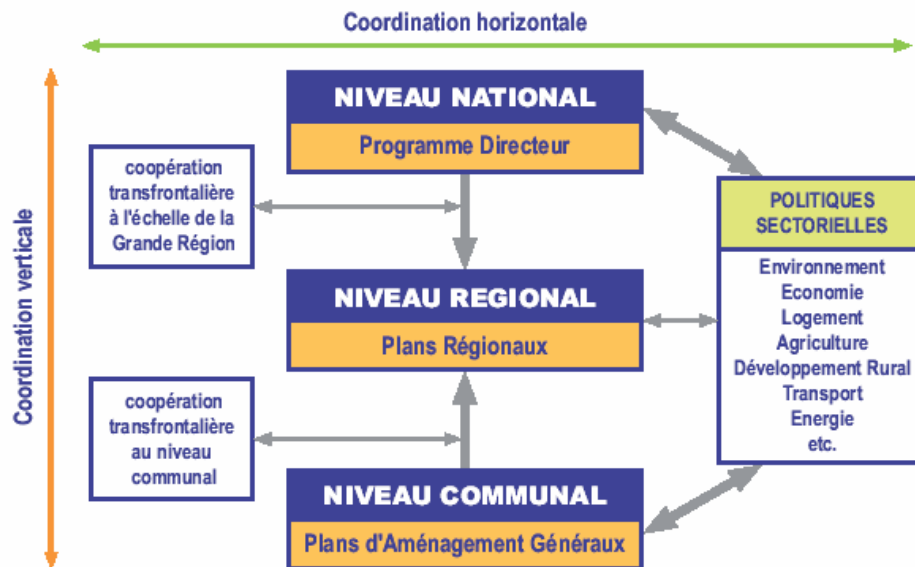
RESEAU DE VILLES: ORIENTATION VOLONTARISTE



Application by communication

The PD itself does not name very concrete instruments. The plan is meant as a strategy and less as a programme that has to be carried out. It introduces however spatial planning concepts of which the CDA's are the most profound example. The relation envisaged between spatial planning and sector policies is represented in Figure 15.6. As of yet it is still too early to draw final conclusions regarding the position of spatial planning policy and whether it has become more influential. The PD addresses spatial planning as well as sector administrations at all levels (and across frontiers) and also private parties in order to engage in public-private-partnerships.

Figure 15.6 The organisation of Spatial Planning policy in Luxembourg (MAT, 1999).



15.4 Conclusion

For polycentric development policies in Luxembourg the national is the most relevant. Since 1999 a polycentric strategy is followed via a typical spatial planning policy aiming at influencing sector policies and administrations at lower levels. The policy is carried by the Luxembourg's ministry of spatial planning and it remains to be seen to what extent this policy can influence other stakeholders. Before 1999, when a new spatial planning law was introduced, spatial planning policy as such did not have a strong position. Now, with the new law and the Programme Directeur this may change. The dominant type of application is communication, no legal or budgetary instruments have been created.

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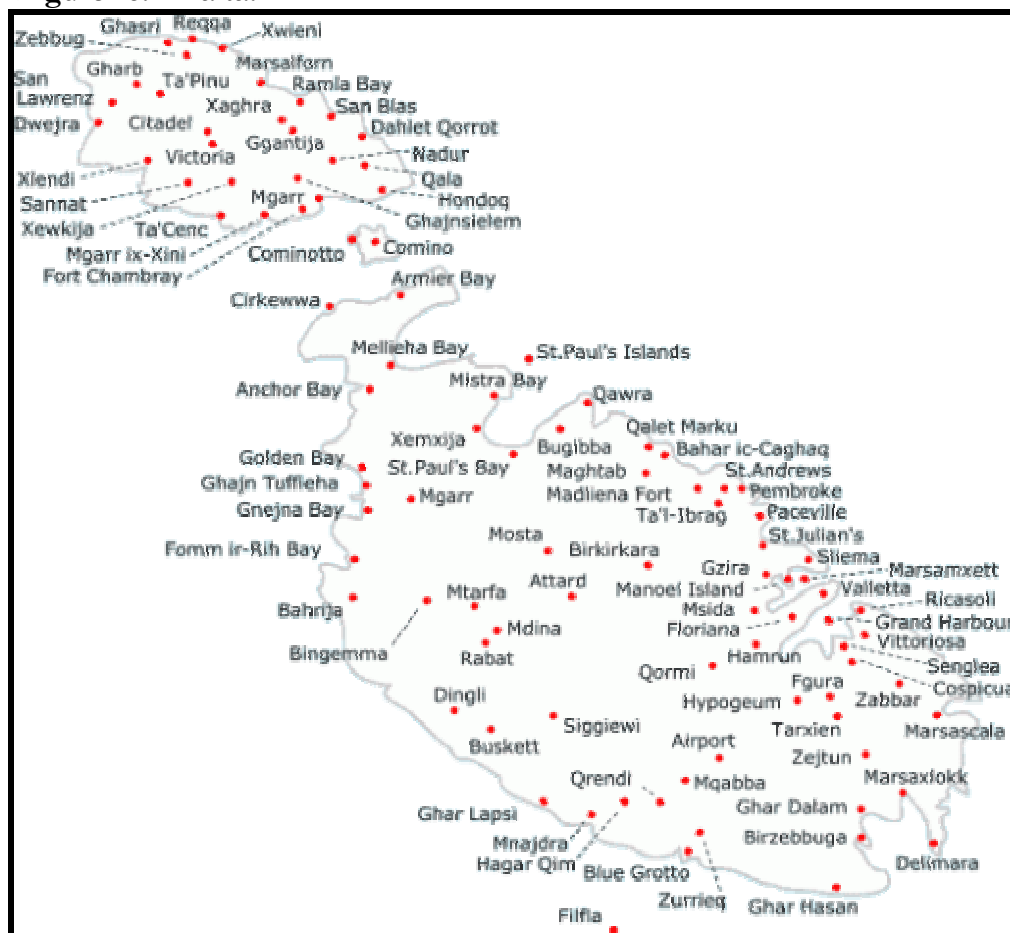
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16 Malta¹⁷

16.1 Introduction

The Maltese Islands Malta, Gozo and Comino as well as two uninhabited islands together form the Republic of Malta. In 2000, the population of Malta amounted to 388.500. The Maltese Islands are not very urbanized, the capital Valetta only has 7000 inhabitants and the largest city, Birkirkara, 21500. The planning system in Malta is based on the Development Planning Act of 1992. This Law provides for a Structure Plan that addresses the whole of the territory of Malta, next to a number of different types of local plans.

Figure 16.1 Malta.



¹⁷ Authorized by Minas Angelidis of the Department of Urban and Regional Planning, National Technical University of Athens (NTUA), Greece.

16.2 General position of polycentricity

The current Structure Plan dates from 1990 and is currently being revised. The structure Plan formulates the national planning policy and general proposals for development and the use of land including measures for the improvement of the physical environment and the management of traffic. Moreover, it aims to integrate sectoral policies (economic, social, environmental). In this sense it is basically a coordinating plan.

Although many of its analyses and recommended policies are non-physical, its basic concern is with land: essentially what should be developed, where, when, and how. It is essentially an enabling plan. The inclusion of some forecast or proposal does not mean that it will happen, particularly if applicable to the private sector. Rather the Plan says, “If and when this particular demand arises, this is where and how it should be accommodated”. It is not a static instrument. Changes in the various sectors of activity with which it deals will be monitored, and amendments to the Plan will be made when this seems appropriate.

In practice, the Structure Plan is a land use plan. Similar to the situation in Cyprus, the rapidly developing tourism sector plays a leading role in spatial development. The dynamic role of the business sector, the reliance on its activities for national economic development and the slow process by which the public sector is able to introduce policies and regulations to limit or guide private sector development initiatives are typical for the practise of planning in Malta (Constantinides, 2001). The outlook of Government is permissive and committed to maintaining an “enabling” policy environment for continued economic growth (Constantinides, 2001). The private sector is not occupied with ideas about polycentricity.

The principle of polycentricity is not present in the Structure Plan. The whole of the territory is treated in a standard way, no particular urban areas are defined as development poles and/or incentive zones. This clearly relates to the absence of large urban areas and to the small size of the Maltese Islands, meaning that distances between (small) cities/towns are small too. In fact, the towns on an island could be considered as being part of the same Functional Urban Area. Spatial planning in Malta is predominantly concerned with land use regulation and urban growth management. The sprawl of urban and tourism zones is the major issue.

16.3 Examples of polycentric policies

No policies that foster direct or indirectly a polycentric development pattern are present.

16.4 Conclusion

Polycentricity does not play a role in policies. Malta is not very urbanized, in fact, no one prime urban area can be distinguished and as such it can certainly not be characterized as monocentric. However, distances are small and towns are strongly functionally tied together. A polycentric development of the Maltese islands seems not a rational objective.

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17 The Netherlands¹⁸

17.1 Introduction

Compared to many other European countries it is obvious when one looks at the Netherlands: there are no backward regions and therefore there is no regional policy anymore. In the Dutch situation the mere term regional policy has become obsolete, although it was in use until the mid-nineties. But since 1995 the policy addressing the distribution of wealth and employment at the national level – which according to the division of labour within the national administration falls under the authority of the ministry of Economic Affairs – is known as spatial-economic policy. It covers the entire country and does not favour a limited number of privileged regions. So the Netherlands does not seem to be a case where policies directed at polycentric economic development are deployed. This is, however, not true. So, apparently, there are other objectives than equal distribution of wealth and employment to reach with polycentric development strategies as well. How has this come about? The following section briefly discusses half a century of regional policy, which is characterized by well recognizable phases. These phases to a certain degree reflect all the policy versions either present or being discussed at the moment in Europe. The next section focuses on present policies and policy discussions.

17.2 General position of polycentricity

Classic regional policy: redistribution

The spatial-economic structure of the Netherlands is the object of two policy domains, national economic policy, the policy sector in control of the main policy instruments and budgets, and national spatial policy, the policy domain often advocating new approaches which are sometimes endorsed by economic policy, and sometimes contested. Like in so many other European countries the story starts immediately after the Second World War, with the country in tatters and with sharp economic differences between the regions, above all in terms of employment. Especially the north of the country sticks out: in 1952 unemployment in the two northern provinces of Groningen and Friesland is twice as big when compared with the three western provinces of North- en South-Holland and Utrecht, where the economic core of the country is situated. Figures in the northern province of Drenthe are even three times higher (Bartels, 1980). National government, the ministry of economic affairs in the driving seat, started to address this complex of problems with an industrialization policy, based on an image of a division of labour between the various parts of the country: the western part of the country with its large seaports was to specialize in basic industries, like steelworks and petrochemistry; the remaining parts of the country were to devote themselves to other industrial branches. Because in these latter regions unemployment figures were very high compared with the western part of the country, national government took the decision to stimulate industrialization, focusing on so called

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industrialization centers, a kind of polycentricity *avant la lettre* albeit a very peculiar one. The idea was industrialization without urbanization so to speak. In the so called 'development areas', together covering about 10% (roughly 3.500 km²) of the country, national government identified 42 centres where certain subsidies were available. These centres were nicely distributed so every workman could reach work on his moped without being forced to move from the village where he was born. So this phase in Dutch regional policy had two central aims: modernizing and strengthening the economic base of the country as a whole and addressing the regionalized problem of unemployment, which for a considerable part was related to the modernization of agriculture. This modernization was heavily supported by central government through all sorts of policy measures which were comparable with those used in the first phases of the common agricultural policies. This was not a coincidence. The architect of Dutch agricultural policy of this period was the same person as the European commissioner in charge of the first period of the common agricultural policy: Sicco Mansholt.

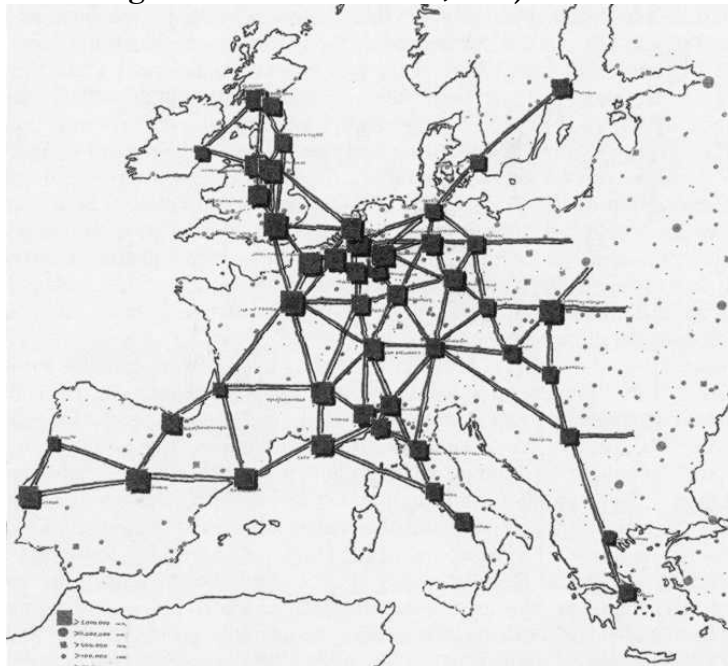
In the mid Fifties a new policy goal appeared at the horizon: to change the distribution of the population over the country. This goal was put on the national policy agenda by spatial planners. Their main worry was that the urban structure of the west of the country would change from being polycentric into one large uninterrupted urban agglomeration if the current speed of migration would continue. This issue became known as the 'The West and the Rest of the Country', a description that bears more than a superficial resemblance to 'Paris et le désert Français'. Government reacted quickly though refused to deploy a particular class of policy instruments advocated by stakeholders in the 'Rest of the Country', namely so called negative instruments aiming at a slowing down of the economy in the 'West'. The main instruments available from 1958 onwards consisted of subsidies to make areas outside the West more attractive for companies to (re)locate, amongst them investment subsidies, subsidies for infrastructure and schemes for the improvement of housing. The size of the eligible areas has multiplied compared with the previous period. The selection of eligible centres was thought out better but still mounting to a considerable figure (44). As naming often reflects a (re)framing of policy this new policy strand became referred to as regional policy instead of industrialization policy. For the next quarter of century it is legitimate to speak in terms of an integration of national spatial policy and regional-economic policy: these two policy domains had overlapping key policy aims.

A competitiveness discourse takes over

Government in 1983 formulates a new spatial economic doctrine. The new credo is that, being the core area of the country, in future optimal use would be made of the economic potential of the Randstad (Faludi and Van der Valk, 1996). Other regions have to exploit their own potential without relying on dispersal policies pursued by national government. This policy shift is paralleled by a shift in industrial policies around the same time, with national government abandoning schemes subsidizing industrial companies facing severe difficulties (like ship building). The new credo is to focus on those sectors which have the greatest potential to safeguard the future role Dutch industry could play on the international scene. So also here a competitiveness discourse takes over, marking the dismantlement of the post-war welfare states with its important redistribution goals. These developments appear to be particularly influential when, in 1988, government publishes the Fourth Memorandum on Spatial Planning. In here the term 'spatial-economic main structure' is coined, referring to those areas and urban regions playing the most important role when it comes to the competitive position of the country as a whole. Important are the so-called urban nodes: a limited number of cities is expected to play an important role in the expected increase in competition between countries and regions in Europe. Central government should strengthen the position of these urban nodes by concentrating

investments, for instance in education, culture and accessibility. Initially nine of such urban nodes were distinguished, more or less evenly distributed over the country, so every region would be catered for.

Figure 17.1 Inspired by the new adopted policy on the Dutch territory Dutch planners advocated this image of an integrated polycentric structure of the EC (Minister of Housing, Physical Planning and the Environment, 1991)



Interestingly, the National Spatial Planning Agency, preparing the third European meeting of ministers introduced the new Dutch discourse on the European level. At these early days of European spatial planning (see for instance Faludi and Waterhout, 2002) there was much discussion on what should be the object of territorial planning at the European level. Many countries thought that the main policy issue was the contrast between the European economic core situated in the north-west of the continent, attracting all major economic development, and the periphery. The Dutch National Spatial Planning Agency wanted to overcome this antagonism and introduced the idea of an urban network encompassing the entire European Union. An image was drawn which was supposed to give the impression the European territory is fully integrated (Zonneveld, 2000). One can say that this European urban network image announced the ESDP concept of polycentricity, although the ESDP clearly rejects the idea of a fully integrated Europe.

In the Netherlands itself, the concept of the urban nodes seemed to steal the limelight (Faludi and Van der Valk, 1994) when in 1988 the Fourth Report was discussed and published. There was a general feeling the urban node concept would be accompanied by a considerable transfer of funds from national government towards this selected group of cities. Also the label of being an urban node was considered a recognition of economic importance and thus would have considerable marketing value, nationally and internationally. So several municipalities not being selected as such fought heavily to acquire this promising label, rallying with members of the Parliament. According to spatial planning law the latter has the final word in the content of any national report on spatial planning. The parliament decided there should be thirteen urban nodes

in stead of the original nine. So the concept was watered down. More importantly the urban node did not exactly 'program' government investment in the years to come. Every spending department still followed its own investment rationales. Only the department of Economic Affairs supported the concept by means of a regulation stimulating the development of business sites in urban nodes financially. This was a surprise since Economic Affairs opposed the Fourth Report when it was still being written by the national spatial planning agency: the department did not favour spatial planning approaches being selective about those areas and cities having the strongest competitive position internationally. Market forces would determine this, not (central) government. Economic Affairs revised its policy very soon though, in 1995. A new grant scheme was introduced and made available for the whole of the country, providing proper plans would be handed in. This can be interpreted as a clear indication the remaining regional differences within the Netherlands do not justify a policy domain dedicated to what in the EU is referred to as social and economic cohesion. Again we witness a new naming and thus framing of policy. What used to be regional social-economic policy became rephrased and reinterpreted as *spatial-economic policy*. This is the term still being used at the moment. The urban node concept though has become entirely obsolete. With hindsight its most important function is seen as making local (city) government aware of the competitive edge of cities and regions (Zoete, 1997). Williams (1996) calls this spatial positioning: the capacity to conceptualize or think about one's location or situation within the spatial structure of a large area. This clearly is part of the dimension of planning as communication.

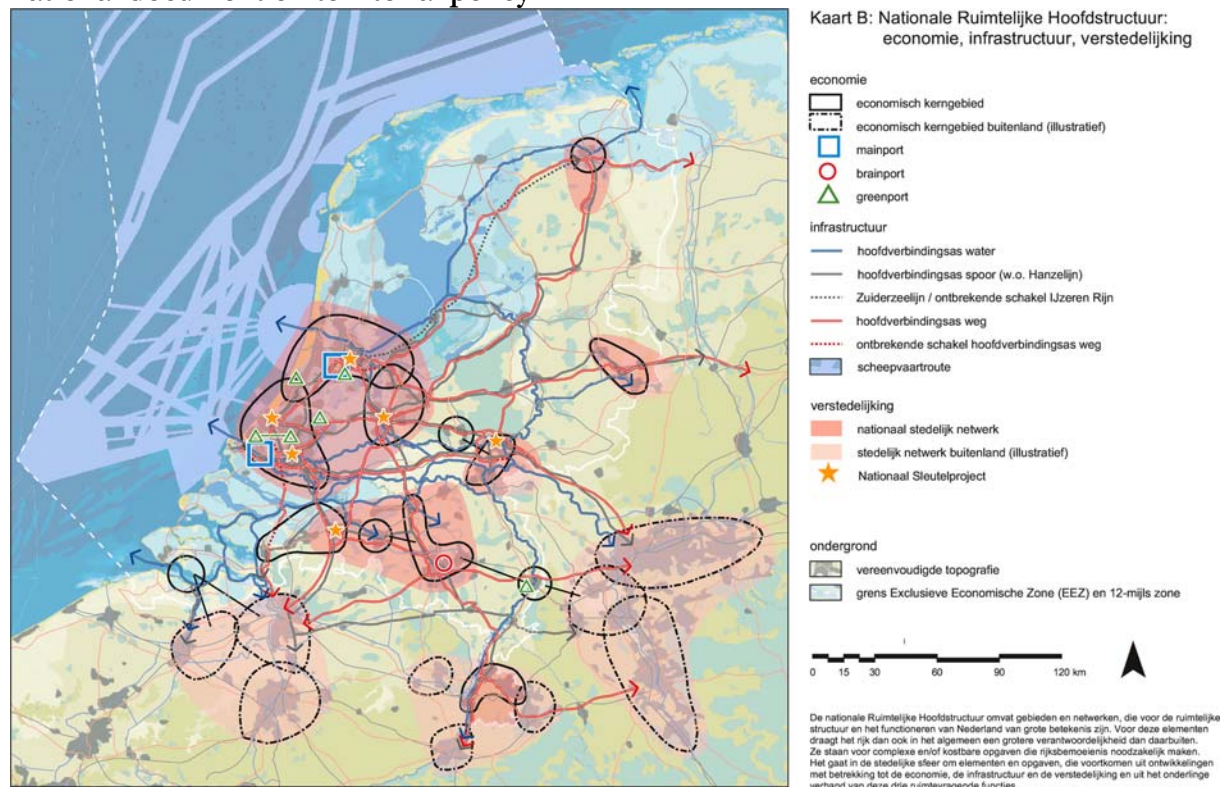
17.3 Example of polycentric policy: the draft national territorial spatial strategy 'Nota Ruimte'

The content of Dutch national spatial planning is under revision. A couple of years ago the government then in power, a centre-left wing government, started a decision procedure which ultimately should have produced a new report on spatial planning, the fifth since 1960. The government did publish a first version of such a report (VROM, 2001). It entailed a new interpretation of the Dutch urban system, a national network made up of urban networks at the sub-national level (the Randstad, re coined as Deltametropolis) and regional level. Six so-called national urban networks were considered particularly important. Also eight 'regional' urban networks were identified.

The new planning concept of *urban networks* pays (at least partially) tribute to the idea of the network society. It abandons current ideas about urban structures and urban form under the heading of the compact city. The new element, which marks the Fifth Memorandum as a watershed in nearly three decades of national urban policy, is the fact that, from now on, the whole region of the urban network forms the search area for new urban areas.

Urban networks are also expected to play a major role when it comes to the competitive position of the Netherlands as a whole. So currently it seems the polycentricity concept is very much alive in the Netherlands, the concept being deployed at two spatial levels: the national level, where the competitive edge of the country is the main issue, and the regional level, where through co-operation local government are expected to flesh out future urban policies, if successful financially rewarded by national government.

Figure 17.2 The spatial-economic main structure of The Netherlands according to the new national document on territorial policy



The urban network concepts clearly mixes various discourse: one on the spatial-economic main structure of the country, the other one on the classic issue of the desired urban morphology. Spring 2004 the centre-right wing government, in office for nearly two years, has revised the proposals of 2001. The concept of urban networks is maintained (see Figure 17.2), but the approach is more selective. The only ‘class’ of urban networks which are distinguished are national networks, six in total: Randstad Holland, Brabantstad, Maastricht-Heerlen, Twente, Arnhem-Nijmegen and Groningen-Assen. The concept of urban networks is not described as just a spatial concept, dealing with how the actual territorial organization of the Netherlands can be perceived. Through this concept central governments calls for co-operation within the networks but *without* the creation of new administrative and governmental organizations. Central government itself seems to focus its own involvement on the prime *economic core areas* located within the six national urban networks. Together with the infrastructural main axis these economic core areas form the *national spatial-economic main structure*.

17.4 Conclusion

Often when new political documents are prepared on the Dutch territorial policy operational decisions are taken during later stages. This also counts for this new document which is due to be published in April or May 2004. Probably some important operational decisions will be part of other strategic policy documents which are being prepared at this stage. An important document will contain the revised spatial-economic policy, the working domain of the Ministry of Economic Affairs. On the level of policy in practice many questions have to be answered yet. The notion that the national urban system is polycentric and that the major urban regions themselves are characterised by polycentric structures will be highly influential in the years to come.

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18 Norway¹⁹

18.1 Introduction

The Kingdom of Norway covers an area which is larger than Italy and almost the size of Germany. However, with a population of only 4.5 million inhabitants it is regarded as a small and sparsely populated state. The population density is 14 inh/km² whereas the EU average is 114inh/km². Just over 1 percent of the country has been built up, but it should be noted that only 4 percent can be cultivated at all. Because of the long distances and (the shortest North-South distance is 1,752 km) and the fact that the country is covered mainly by mountains, transport has always been a major issue. Traditionally, transportation meant sea-transport, and only since modern times it has changed from sea to land and later also air transport. This has influenced the settlement pattern. The population is concentrated in the South around a number of larger municipalities located at the coastline although the highest population densities never exceed 80 inhabitants per square kilometre (Oslo). Oslo (508,000), Bergen (230,000), Trondheim (150,000), Stavanger (109,000) and Bærum (101,000) are the only municipalities of a total of 435 with more than 100,000 inhabitants. About 45 percent of the total population lives in the three main urban areas of Oslo, Bergen and Trondheim (Böhme, 2002; OECD, 2001).

In the north the population is declining, whereas the south records the highest increases, particularly in the Oslo and Stavanger region. Furthermore the population has become more concentrated in the three main cities. Oslo and Stavanger also have the highest GDP per capita and are the only regions with a GDP above national average. In general it can be said that the south, apart from some fairly un-urbanised regions, is more prosperous than the north. Thirty percent of the GDP is produced in the Oslo region, while half of the nations GDP is produced in the three main urban regions in the South – Oslo, Bergen, Trondheim. Unemployment rates show a similar picture. While the average is below 4 percent, the highest rates can be found in the north and the lowest in the three urban regions in the south. Also the unemployment decrease is relatively better in the south than in the north (OECD, 2001).

According to Aalbu et al. (1999; quoted from Böhme, 2002) are the regional problems mainly the result of vulnerability of communities and local economies to population loss, the lack of diverse economic activities and the small size of local markets. Unemployment and low per capita income levels have been less critical in their effects. They remain, however, serious concerns for regional policy because of the traditionally extensive support for public services from the national government. The key to growth and development has been the efficient exploration and exploitation of natural resources, especially those of the sea, such as: shipping, fishing, and more recently, oil and gas industries (Böhme, 2002).

¹⁹ Authorised by Olaf Foss and Bjorn Moen of NIBR.

18.2 General position of polycentricity in policies

Norway is subdivided in 19 counties and 435 municipalities. Oslo combines the county and municipality status. In terms of governance Norway may be characterised as being both decentralised and centralised. In general, "...the central government formulates policy objectives and influences public development programmes through central government budgets." (Mønnesland and Naustdalslid, 2000: 61) The delivery of many of these policies is, however, shared between the central and local levels of government. Regional development and spatial planning take place in a close interplay between central and local governments, with most of the practical activities carried out at the local level (Mønnesland and Naustdalslid, 2000). The number of counties is being discussed at the time. In general the counties are considered too small and proposals have been made to reduce their number to a number in between 15 and 5, or to rescind them all together (Böhme, 2002).

Spatial planning is concentrated at the county and municipal levels, with each having its disposal of a professional and administrative apparatus with technical responsibility for planning. At both levels 4-year plans are being made with respectively non-binding and binding status. Also at county level yearly regional development plans are made, which is being approved by the Ministry of Local Government and Regional Development, whereas the 4-year County Plan is being approved by the Ministry of Environment. At the national level National Planning Directives and National Policy Guidelines are formulated, which have an advisory status. Spatial planning is considered important at the national level since it is instrumental to reach certain environmental objectives. However, also other national interests and policies influence spatial development. For instance, the Ministry of Local Government and Regional Development encouraged local development initiatives by giving financial support, National Guidelines for Co-ordinated and Use and Transport Planning have been issued in order to make sure that local and sector plans comply with national priorities and several sector plans are being formulated concerning for instance national parks, the utilisation of natural resources such as oil and hydroelectric power resources. Basically the Planning and Building Act (1985) provides for a *unitary system of planning*. However, the local plans neither add up to nor derive from any kind of national or regional plan. Despite the unitary framework, flexibility is considerable and municipalities and counties have fairly wide powers to follow their own agenda (Mønnesland and Naustdalslid, 2000). Spatial planning policy does not seem to have a clear polycentric development agenda and seems to be focussed at land use more than development.

Regional policy is partly integrated with and partly separated from the spatial planning system as regulated by the Planning and Building Act. Regional policy is the concern of the Ministry of Local Government and Regional Development, whereas spatial planning is a task of the Environmental Ministry. The objective of national regional policy is to make sure a balanced development of employment and production throughout the country, in order to maintain the main structures of the settlement pattern. In general a distinction is made between two approaches being pursued by Norwegian regional policy (Mønnesland and Naustdalslid, 2000; Böhme, 2002). Regional policy in a narrow sense corresponds with investment regulations in order to stimulate lagging and peripheral regions and compensate them for their location disadvantages. Regional policy in a broad sense co-ordinates all kinds of national policies, like education, transport, communication and health policies in order to stimulate regional development in general.

The broadly orientated regional policy can be seen as contributing to a polycentric development since its "...principal objective is to maintain demographic distribution patterns and to ensure

robust and sustainable development in all regions of the country.” (Böhme, 2002: 169) The focus is on strengthening the competitiveness of all regions. Main instruments are direct assistance by means of subsidies, loans and start-up grants. Regions that have a weak and narrowly based economy are eligible for additional support aiming at restructuring. As regards embeddedness of this regional policy (and thus polycentric development) it is interesting to note that Aalbu et al. (1999; quoted from Böhme, 2002) come to the conclusion that due to this comprehensive approach regional considerations shape most aspects of central government policy in Norway. Next to the Ministry of Local Government and Regional Development, also other ministries pursue policies with strong regional elements. According to Amdam (2001; quoted after Böhme, 2002) we may even speak of a widely accepted ‘doctrine’ as regards the supremacy of regional policy in national policy in general, although the risk is run that it develops in mere rhetoric.

18.3 Examples of polycentric policies

18.3.1 The localisation of State supervising authorities

This section concerns a very new national policy which is introduced at January 24 of this year (Report to the Storting no. 17 2002-2003). The object of the policy is the localization of so-called State supervising Authorities (examples of the 11 most important authorities are: The Norwegian Competition Authority, The Norwegian Food Control Authority, Norwegian Labour Inspection Authority). It will be implemented during the period 2003 – 2004. The initiating body is the Ministry of Labour and Government Administration.

Objectives

Polycentric development is a subsidiary (but some will say major) aim. Anyway, the key concern of this policy is to strengthen a selection of regional centres and create a functional division of labour among several potentially vigorous centres, in stead of enhancing the dominance of the capital in a more monocentric development. This may lead to a slightly more polycentric pattern. The subsidiary aim is to ensure the best competence base for the respective institutions by embedding them in historically developed localised professional environments, or in other words make use of the available regional endogenous potential. In that respect it is important to emphasise that the cities involved are regional centres with quite diverse profiles. They generate wide commuting areas and are partly centres in larger integrated residential, service and labour market regions. The centres have universities or colleges with a certain division of labour between them, partly connected to industrial traditions (aviation, maritime sector, technical functions and research/competence, commercial traditions etc.). The regions nursed by the different centres vary according to industrial basis, natural geography, population and settlement etc. The policy tries in other words to make use of the traditionally developed relative specialisation of regions and further enhance this specialisation in order to generate a functional regional division of labour with regard to important government functions/organisations. This will possibly result in a break down of the present dominance of the capital region over other urban centres. The policy is a reaction to the piling up of important functions in the capital and the decreasing competence of other regional centres.

Application

Momentarily, the policy is in its initial phase. Negotiations, which may further modify the policy, are still taking place. A gradual implementation is envisaged in which consensus about for instance personnel concerns is considered important. No specific instruments, like budget, regulations, policy concepts, maps or other visualisations have been developed. In fact, the policy

is a parliamentary decision and has now to be turned into operation through negotiations between the various stakeholders, amongst them a number of ministries. A problem that this policy faces is the strong resistance of current employees of the respective institutions. Several compensating measures have to be offered to reduce the conflict. Also new recruitment in the new locations may take time.

Embeddedness

The present approach is new in the sense that it is oriented towards strengthening a network of larger cities/city regions. Earlier efforts to relocate central government institutions have been based on a wish to create employment in rural areas/smaller rural centres. The focus on cities makes the policy somewhat contested. Especially the sparsely populated regions show resistance since they fear a centralisation at the regional level as a result of the concentration of functions in regional capitals. These regions have always had strong political influence. However, the relocation idea – moving things out of Oslo – has strong traditions in important segments of Norwegian political life. As a consequence, the policy is controversial in the respective regions (outside Oslo), but has strong support among large political parties and segments in Norway. It has to be noted though that recently also within some political segments doubts have been raised because Oslo now is loosing manufacturing industries and jobs.

18.3.2 National Policy Guidelines for Coordinated Land Use and Transportation Planning (NPG-CLTP)

The National Policy Guidelines for Co-ordinated Land-Use and Transportation Planning (NPG-CLTP) entered into force as of 20 August 1993 after a prolonged preparation, cooperation – and occasionally a certain amount of tension - between the Ministry of Environment, which is responsible for municipal and county (land use) planning, and the Ministry of Transportation, which is responsible for the planning and building of transportation infrastructure as trunk roads and regional, county roads²⁰. The national guidelines²¹ get their legal status from the planning and building Act of 14 June 1985, § 17-1, first paragraph which states: "The King may define general objectives and frameworks and issue guidelines for physical, economic and social development in counties and municipalities which shall form the basis for planning pursuant to this act".

Objectives

Polycentric development is certainly not a major aim, but rather a subsidiary or perhaps even incidental aim. The policy aspires to reduce the dependency on motorised transportation, especially cars. The dream situation would be a settlement pattern that would allow people to walk or use cheap and efficient public transport when living their daily lives in Norway. In this respect, the main objective of the policy can be said to be sustainable development. The idea is that more compact and energy efficient cities and towns (i.e. reducing urban sprawl) can help to achieve these objectives.

²⁰ These guidelines can be looked upon as a supplement to the guidelines which the Ministry of Environment (MoE) and the Ministry of Transportation (MoT) issued in cooperation when it was decided to change the planning process for roads in Norway. The act regulating the planning of roads (Vegloven) was changed in 1989, and as of 1 July 1994 all road planning in the country is done according to the procedures of the planning and building act (pbl) of 14 June 1985 (with subsequent changes).

²¹ NPG-CLTP is one among several such guidelines introduced in 1989 and the early years of the 1990'ies. The others are NPGs for "children and planning", for "planning in coastal and marine areas in the Oslofjord region" and "planning in connection with the main airport at Gardermoen", for "development along protected rivers and water courses".

The polycentric development aim, which is a subsidiary aim at most, comes more to the fore when we look at specific cases where the policy is being implemented. Implementation takes place at the local and regional level. In fact, most of the areas where the guidelines have been in use are polycentric. Most road and (a few) rail projects are located within or connecting cities and nodes of different sizes. Most projects aim at enhancing accessibility. In so doing it could be argued that the policy contributes to a further development of centres and nodes and the connections between them, and thus to a more polycentric development.

Application

The guidelines usually take effect when the road (or rail) authorities are starting to plan a new or enhanced stretch of road. In this respect, criteria and guidelines for good planning solutions in regional and local settings can be found in the NPG-CLTP.

An important element of the policy is the mandate for integrating land use planning and the planning of new transportation infrastructure. This is being worked out further in § 4.1 of the NPG-CLTP that states that “[c]ooperation should be established in towns and urban areas to ensure that the planning in each municipality takes place within coordinated regional frameworks in accordance with these guidelines. It is necessary to clarify the principles for a development structure, including limiting town and urban areas, a centre and service structure, a green structure and the different types of main systems of transport. These principles should be embodied in a county plan and should be followed up in the municipal master plans.”

There are no special, specific means, instruments or budgets attached to the guidelines. There is however, one exception to this; § 4.3 stipulates that “...state subsidies and loans for development of large development areas and communication services ... shall be based on adopted land-use plans according to the guidelines.” (This stipulation has, however, been a ‘sleeping’ regulation so far). Implementation of plans according to the guidelines is done via the normal planning instruments according to the Planning and Building Act (of 1985) including regulations for environmental impact assessment. The regional state authorities (the “Fylkesmannen”) are given special responsibility (and mandates) to oversee that the planning fulfils the ambitions of the guidelines.

The Guidelines themselves do not contain any maps or visualisations. Of course, during the implementation of the guidelines into county and municipality land use plans such visualisations are produced.

The main actors during implementation of the guidelines are the (regional) road authorities, the planning county officers and local/municipal planning departments. Affected citizens, interest groups, land owners etc. are consulted participating according the regulations in the Planning and Building Act.

Aside of periodic revisions (of which one is presently nearing completion), there are no specific monitoring or evaluation of the guidelines. The actual plans that are implemented according to the guidelines are monitored and evaluated according to the normal stipulations of the planning and building act (incl. EIA regulations).

Whether the policy is effective, is subject to subjective judgement. It could be argued that there is a serious shortcoming with respect to the rather unbalanced cooperation structure between the road planning segment and the environmental/local planning system. The roads tend to be built (more or less like before) even though the guidelines argue for balanced

development and sustaining public transport and reducing the need to own and use a private car each day. Also, a number of lost opportunities can be recognised, such as for instance: better/harder 'green taxes', more efficient road pricing, more efficient and better financed public transport, stronger instruments for regional coordination and cooperation etc.

Embeddedness

This is not a relatively new approach. After all it is well over 50 years since the labour party campaigned for the parliamentary elections under the slogan "City and region – hand in hand". In the context of this general discourse it seems that the NPG – CLTP is strongly embedded in the relevant organisations and at the same also in 'political belief systems'. At least, the policy has led to a certain professional language in a sense that people talk about for instance 'compact development', 'development near transport nodes or junctures', 'cities in cooperative competition', 'mutually dependent urban systems' etc.

18.4 Conclusion

In Norway regional policy, which is designed at the national level, is the most relevant policy for pursuing polycentric development. Physical planning policy is mainly interpreted as land-use rather than strategic planning and carried out at county and municipal level, the authorities of which have disposal of quite strong powers to follow their own agenda.

Although the lower government levels have clear responsibilities and autonomy, generally the national government that sets out the overall strategy and policy directions. This is at least the case for what could be described regional policy, which can be divided into a narrow regional policy focusing at lagging regions and a broad policy focussing at regional development. The latter can be considered a polycentric policy, which is broadly embedded in Norwegian politics. This widely accepted 'doctrine' must be viewed in relation to a territorial organisation in which the capital region has a strong dominance over the other, mainly thinly populated, regions.

The process of turning national policies into operation is characterised by consensus seeking between the various policy levels through co-operation and negotiation. Although, most ministries issue policies that somehow contribute to regional development the Ministry of Local Government and Regional Development can be considered as the central actor.

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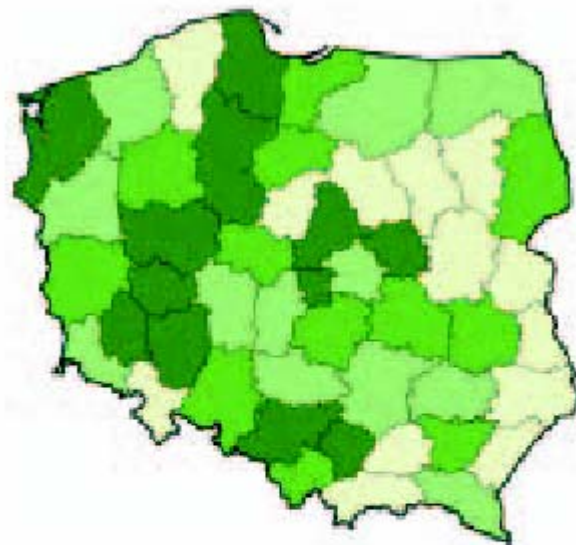
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19 Poland

19.1 Introduction

With a population of 39 million inhabitants Poland is more or less as big as Spain, but with 125 inh/km² it has a higher population density. With 62 percent of the population living in urbanised areas Poland still has a quite rural character. According to the OECD (2001) the characteristic feature of Polish population distribution is its homogeneity. No region is really dominant. Highest population densities can be found in the central range of the country from the South to North. The East and West part show lower densities. Population growth (which was 1,2% for the whole country) is quite equally spread over the regions with slight advantages for the Northern regions. There are no concentration tendencies recognisable.

Figure 19.1 GDP per capita 1996 (Gorzelaak, 2000).



Regional GDP per inhabitant, 1996
(national average=100)

■	113,7 to 239,7 (12)
■	92,5 to 113,7 (12)
■	80,1 to 92,5 (12)
■	66,3 to 80,1 (12)

In terms of GDP three regions (Mazowieckie including the capital Warsaw, Slaskie including Katowice and Wielkopolskie; see Figures 19.1 and 19.2) noted the highest shares in the total GDP and together accounted for 43 percent of the total GDP generated in 1997. The distribution per capita GDP over the population showed a clear division in 1997 between the richer West and the poorer East. Only the Mazowieckie region, the richest in the country disturbs this symmetry. Overall GDP per capita increased with 13 percent in the period between 1995 and

1997. Not all regions did equally profit from this and the gap between the richest and poorest regions increased with a clear advantage for the Mazowieckie region, which produced 20 percent of the national GDP in 1997. As regards unemployment, figures show a positive record with a 18,2 percent decrease and employment increase of 3,8 percent in 1995-1998 for the whole country. Almost all regions north of Silesia experienced an increase in the number of jobs (OECD, 2001).

Figure 19.2 Administrative organisation Poland, sixteen Voivodships (Gorzalak, 2000).



The East – West divide marks Poland’s history since the 13th century when urbanisation processes took place in the West but not in the East. The period in which Poland was divided between Germany, Russia and the Austrian-Hungary Monarchy has further accentuated this divide. After Poland’s unification in 1918 the WWII blocked the process of getting rid of the deep traces that were left behind. After the war investments in the People’s Republic of Poland mainly were directed to areas that already received some investments before and thus seldom reached the areas in the east of Poland, which continued to be referred to as ‘Poland B’ (Gorzalak, 2000). The East-West divide present results in different different chances to become integrated in Europe’s economy, with a clear advantage for the West (Gorzalak, 2000; Petrakos, 2001). In a paper which has been published a year later, Gorzalak (2001) makes a distinction between regions influenced by the Romanesque style and those by the Gothic style of government and culture. He claims that the eastern part of Poland is located at the transitory zone between the two styles while the western part belongs to the Romanesque style. The same applies to other Central and East European countries, of which those regions that are within the Romanesque style can be seen as western European (Figure 19.3).

Figure 19.3 Romanesque – Gothic divide through Europe (Gorzelaak, 2001).



The East-West divide is also visible in terms of foreign investments in Poland, although the main part goes to large urban areas. Although in the early 1990s investments, of mainly German companies, tended to concentrate in the western regions (see: Gorzelaak, 2000) there is now a clear tendency to invest in the large urban centres that along this way get integrated in Europe's economy (Domanski, 2003; Gorzelaak, 2001). By and large, however, investment still remains more intense in the west than the east. According to a map produced by Domanski (2003: 108) indicating foreign investments in the period 1990-1998 most investments were done in decreasing order in the large urban centres Warsaw, Katowice, Wrocław, Poznań, Cracow, Lodz, Gdansk, Mielec and Bydgoszcz. Along the western and eastern borders significantly less investments have been identified.

In general foreign investment is seen as an important (though not the major) factor for the further economic development of Poland (and other Central and East European countries). Foreign investments typically have the effect of "...an increase in the volume of production. (...) but the general impact of foreign investors on the modernization of Polish industry and the narrowing of the technological gap between Poland and developed countries is unquestionable" (Domanski, 2003: 101). At the same time it is widely claimed that this also results in higher

productivity of domestic companies. Interestingly also, is the observation of Domanski that metropolitan areas “...get more technologically advanced production with better long-term prospects, while the non-metropolitan ones have relatively more jobs, which may be of low quality.”

Spatial economic dynamics

The present settlement and economic system of Poland has a polycentric character (which is also recognised in the National Spatial development concept discussed below). This spatial pattern has developed in the historical process. It originated from the period of the partition of Poland in the 19th century, when each of the parts of the country, occupied by Russia, Prussia or Austria, developed within the respective state organisms and formed own regional centres. On January 1st, 1999, a reform of the administrative system was implemented, resulting in the division of the country into 16 voivodships (provinces) (see Figure 19.2). The administrative functions are fulfilled in them by 18 centres, since the provinces of Lubuskie and Kujawsko-Pomorskie have two capitals each (the separate seats of the province governors and of the province assembly). During the 1990s there has been a renewed concentration of a part of economic functions, first of all in Warsaw, and in some other large centres. Given the relatively low intensity of internal migrations this was one of the reasons for the increase of regional differentiation in the standard of living of the inhabitants and of the emergence of the structural unemployment zones. The agglomerations of Warsaw (roughly 2 million inhabitants), Poznań (0.6 million), Gdansk (0.9 million), Wroclaw (0.7 million) and Krakow (0.8 million) all feature the poly-functional character, this fact enhancing their chances in the transformation period. The economic base of the Upper Silesian conurbation (some 3 million people) and the agglomeration of Lodz (0.9 million) had been primarily based upon the traditional branches of industry, which constitutes a limitation to their development capacities.

At present time, Warsaw has no internal rivals in terms of political functions and of economic management. There is, on the other hand, a definite competition between individual regional centres concerning, in particular, attraction of foreign investments. The most intensive competition takes place between the towns being the twin capitals of provinces – the provinces of Lubuskie (Zielona Góra – Gorzów) and Kujawsko-Pomorskie (Toruń – Bydgoszcz). An analogous rivalry between the towns of Kielce and Radom during the preparations for the recent administrative reform resulted in the incorporation of the region of Radom to the Mazowieckie voivodship and in the cutting down of the Świętokrzyskie province, with the capital in Kielce, being nowadays one of the smallest and economically weakest provinces. The co-operation between the large towns is limited. It is more frequent between the lower rank towns, which are linked through the local interests (like in the tourist regions).

During the decade of the 1990s there has been a decrease of intensity of job commuting. This applies, in a particular manner, to job commuting related to industry in the middle-sized centres. Simultaneously, commuting at longer distances appeared, directed to the largest agglomerations, including the new phenomenon of commuting between the agglomerations. Job commuting to the agglomeration of Warsaw is here the primary example. A significant number of inhabitants of Lodz commute every day to work in Warsaw (despite the rather inconvenient transport connections). This was exactly one of the factors making the concept return to the older plans of establishing in the future a dual agglomeration (a duopolis) of Warsaw-Lodz (with the planned connection through a high speed transit railway and the construction of a common international airport mid-way between the two towns). It is assumed, though, that such an agglomeration would not develop earlier than in the middle of the 21st century.

19.2 General position of polycentricity

Poland is a parliamentary unitary republic. Next to the central government there are lower tier governments at provincial, county and local level, with increasing powers of self-control, although all legislative powers remain at the national level, as well as a large part of the executive power. With regard to planning at the national level the Housing and Urban Development Office (H&UD) is responsible for the co-ordination and standardization of physical planning. However, with regard to national physical or spatial development policy the responsibility lies with the Government Centre for Strategic Studies (GCSS). The Ministry of Environment is responsible for so-called 'protection plans' for national landscape parks. These plans, however, are not referred to in the Physical Development Act of 1994 and are thus not seen as spatial plans aimed at development.

The sixteen regions (provinces), or voivodships, consist of a parliament (Seymik) and an executive body headed by the Marshal of Voivodeship. Regions have full responsibility for strategic (comprehensive, social-economic) and spatial (physical) planning. Also the state has some spatially relevant powers at this level, executed by the regional representatives of the central government. At the level of the regions it is mostly the Marshall's office and its department for strategy and development that is responsible for planning. Counties do not have any significant planning responsibilities. Communities, which have an average population of 15.000, do have clear responsibilities. However, with exception of the 68 large cities that combine the status of community and county, communities often lack the institutional capacity to execute their responsibilities. Summarising the above, the national and regional administrative levels are most suitable for implementing a polycentric development strategy.

Judging the Planning Act one of the basic objectives of spatial planning in Poland is to establish a balanced development throughout the country and at the level of the regions. Hereby the settlement pattern as well as the infrastructure development should be taken into consideration in both, national as well as regional plans. The plans at these administrative levels deal with economic, social, cultural, natural and spatial trends and strategies and thus have a reasonably comprehensive character. They have a non-binding status and are drafted in quite open processes during which a range of actors and stakeholders is consulted.

As regards regional policies it can be noted that, according to Gorzelak (2000), only since the beginning of the 1990s some initiatives were taken to formulate really development orientated policies. Although it should be noted that in the early 1990s the liberal discourse left little room for such initiatives. The initiatives that were employed were marginally successful and showed little efficiency. Before this period regional policy can be characterised as formal rather than 'real', whereas in the 1980s regional policy did not have priority since every policy was directed at keeping alive the collapsing socialist regime. In 1995-1998 a national spatial planning document has been formulated (to be discussed below). Important is to note that it allows differentiation as regards economic growth and development, indicating that the few metropolises of the country should become centres of accelerated growth and innovative production and should assume the role of gateways connecting Poland with the global economy. The Ministry of the Economy takes a similar approach while working on a national strategy for regional development. According to Gorzelak, the focus slowly moves from a redistribution orientated doctrine to a more efficiency-orientated approach. The policy is formulated in the context of being able to meet the requirements of EU Regional Policy. In general, however, Gorzelak observes a government practice in which sectoral departments that allocate substantial resources tend to go their own

way and invest money without horizontal co-ordination, leading to a situation from which poor regions profit and richer regions don't.

Government decentralisation processes

Decentralisation processes, aiming at amongst others the creation of a democratic regional government, take place in Poland as well as in other former Socialist countries (Illner, 2000; Marek and Baun, 2002). Although in some states decentralisation processes were already underway before 1989, devolution became really important in the 1990s when states had to transform to a market economy. Additionally, to qualify for European Union structural funding a regional level was a requirement, at least within time.

A regional government is seen as influential for regional development. According to Gorzelak (2000) a regional government (provided that it has reasonable economic and political power), which has to take care of various responsibilities, will work on for instance regional development strategies, implementation of labour policy, provision of services of regional importance, arrange international contacts (with assistance and within a framework of the national government). When decentralisation continues and matures the new institutions will also carry out tasks which presently do not exist, such as creating regional systems of innovation, technology transfer centres, international promotion etc. With this in mind it is important to note that as off January 1st 1999 there are 16 voivodships, which have a strong self-government, are directly elected, are presided by a so-called Marshall and equipped with proper budget and property.

19.3 Examples of polycentric policies

19.3.1 National concept for spatial development

The National Concept for Spatial Development was adopted by the Council of Ministers (who also took the initiative) in October 1999, and by the Parliament in November 2000, and was published in August 2001. As the title indicates it is the national strategy for 'spatial organisation'. Polycentric development is one of the main goals of the Concept.

The Concept describes the geographic and economic position of Poland in the European context, formed by the definite external conditions, among which the key position of Poland in the new European space, between the Western and Eastern Europe is emphasised. This location creates advantageous conditions for enterprise development, and stimulates the increase of spatial mobility. The Concept envisages also the rising importance of the regional centres located in eastern Poland, the potential gate-cities, in the vicinity of the future boundary of the European Union. This applies, first of all, to Lublin and Białystok, and thereafter also to Olsztyn and Rzeszów.

Objectives

One of the main strategic objectives of the country's development, defined in the Concept, is "equilibration of the regional development". This objective should be attained by the conduct of policy addressing:

- polycentricity and moderate degree of concentration; it is assumed that the polycentricity is historically rooted in Poland and that it constitutes a persistent feature of the spatial and economic structures; at the same time, it is assumed that the polycentricity must, though, be conditioned by the real capacities of the state;

- acceptance of a certain degree of polarisation, as well as its liquidation in a long-term perspective through upward equalisation;
- eco-development.

With respect to the polycentric pattern, the Concept assumes that the settlement system of Poland in the first decades of the 21st century should be based upon:

- (a) one capital metropolis of Warsaw, having on the European scale the rank comparable to that of Vienna, Prague, Budapest or Naples;
- (b) the centres being the growth poles, ready for the international competition (Europols), including the ones with the biggest opportunities: the Tri-City (Gdansk), Poznań, and Krakow, and in a farther perspective also Szczecin, Wrocław, Łódź, Katowice, Lublin, Białystok, and the bi-polar agglomeration of Bydgoszcz-Toruń;
- (c) the network of the national supra-regional and regional centres of growth equilibration, created in the zones requiring activation through outside assistance (because they are otherwise threatened by peripheralisation).

Within the latter group five national centres were distinguished (Olsztyn, Kielce, Opole, Zielona Góra and Częstochowa), 17 supra-regional centres and 51 regional centres (including all of the 49 voivodships capitals from before the administrative reform of 1999). It was assumed that this network might constitute the basis for the formation of the “Polish pole of Central Europe”, located in the polygon spanned by Gdansk, Bydgoszcz, Poznań, Wrocław, Krakow and Warsaw.

One of the primary issues, whose solution is postulated by the Concept (in the context of polycentricity) is the prevention of peripheralisation of some of the regional centres, which are not the leaders of transformation. Besides, liquidation of the ecological hazard on some of the urbanised areas and restoration of the spatial order are also mentioned in the Concept.

Application

The instruments mentioned in the Concept are meant to serve the attainment of all its objectives. No specific tools were indicated for the drive towards polycentricity. The Concept distinguishes the legal, economic and public investment instruments. The first ones are founded upon the law on spatial development of July 7th, 1994 (*Dziennik Ustaw*, 1999, No. 15, item 139). On the basis of the Concept the planning documents are being elaborated on the level of provinces, including the strategies of voivodship development, the plans of spatial development of the voivodships, the long-term voivodship programs, and the international co-operation priorities of the voivodships. These documents have to be consistent with the Concept and, simultaneously, must not infringe on the competence of the communal self-governments. The economic instruments are constituted by the investment-related tax reliefs on income taxes and existence of special economic zones (based on the law of 1994, mostly envisaged to last 20 years; currently the preferences for these zones have been limited as a consequence of the EU accession negotiations). Public investments are either of a centralised character or will have the form of the so-called regional contracts between the central and the provincial self-governmental authorities in a given province.

The highest authorities of the State, including the Council of Ministers and the Parliament, were involved in the preparation and enactment of the Concept. The direct work was done by the Governmental Centre of Strategic Studies (Polish acronym: RCSS). The Concept is addressed at all the public and private entities interested in the designs of the Government in the sphere of

spatial development policy for the country. The Concept does not play the role of the superior spatial development plan. It is assumed to provide the prerequisites for the elaboration of the more detailed programs containing the government-defined tasks. In this context the Concept is meant for the regional authorities as the basis for the preparation of the more detailed documents (which have to be consistent with the Concept).

The Concept envisages the organisation of a Spatial Information System (SIS), which would fulfill the task of monitoring the structural changes, taking place in the process of transformation of Polish space. The Concept sets the obligation for the President of the RCSS to elaborate the design for such a system. The respective document is now under preparation.

A threat to the realisation of the objectives of the Concept may arise from the emphases in the document on defining the desired situation rather than describing the feasible instruments for implementation. These instruments are described in a very general manner. There is no precise indication of which objectives might be achieved with the support from the European funds.

Embeddedness

All the designs for the regional development of Poland built on the polycentric development of the country in the past (both during the period of the socialist economy, and also before the World War II). Individual designs differ only by the number of the key centres and the functions assigned to them.

The Concept is very strongly imbedded in the structures of authority. The duty of its elaboration resulted from the law on spatial development of July 7th, 1994. The ultimate version of the Concept was elaborated over a couple of years, during the terms of two central administrations and two parliamentary terms. It can be assumed that the Concept was in some of its points a political compromise. The adoption by the Council of Ministers and the parliament took place during the rule of the coalition of the Election Initiative “Solidarity” and the Union of Freedom (centre-right). The Concept was consulted with the scientific centres and the non-governmental organisations. Various kinds of protests are still flowing in, originating mainly from the self-governmental units and ecological organisations.

The spatial concepts, which appear in the Concept, and which have not been used in the earlier documents of a similar kind are the already mentioned Europols (the towns having already or potentially the supra-national significance), and the duopols or the binary agglomerations (Warsaw-Lodz, Toruń-Bydgoszcz).

19.3.2 Strategy of development of the Kujawsko-Pomorskie province

This example handles the development strategy (called henceforth the “Strategy”) of the Kujawsko-Pomorskie province, which is located north-west of Warsaw. The strategy applies to the regional level and was introduced at the 20th of June 2000, by the assembly of the Kujawsko-Pomorskie province, acting on the basis of the law on province self-government and the law on spatial development. Polycentric development is a subsidiary or even a major aim. At least what can be said is that the document often makes reference to the concept of polycentric development.

General information on the policy and province

The Strategy is composed of three parts – the *Prospective diagnosis*, the *Vision of development until 2010*, and the *Strategy of development of rural areas and agriculture*. It describes the initial state of the voivodship as of the end of the 1990s, and assumes the strategic objectives and prerequisites to be fulfilled until 2010. Special attention is paid in the Strategy to the general prerequisites for the voivodship's development, to the changes in the social and economic domains and in the technical infrastructure, to the development and protection of the natural environment, the development of the capital centres as well as the medium sized towns, as well as the activation of the multi-functional development of rural areas.

As regards the present settlement structure of the province the Strategy emphasises very frequently the dual setting of the towns of Bydgoszcz and Toruń, with the complementary functions of the three other larger towns of the province – Włocławek, Grudziądz and Inowrocław. The settlement system of the province features a significant hierarchical character. The highest level is constituted by the two capital centres (Bydgoszcz, Toruń), fulfilling the regional administrative functions (the seats of the President of the regional assembly and of the province governor), being also the locations of universities, specialised health care units, cultural institutions of national rank, business environment institutions, research centres and regional media. The second tier is occupied by the towns of Włocławek, Grudziądz and Inowrocław, fulfilling the functions complementary with respect to the two previously mentioned capital towns. These three towns dispose of a significant demographic potential, their areas feature a significant concentration of specialised services, and they are important production centres. All the five towns mentioned account for 43% of the voivodship's population, and for 69% of the urban population. The third tier is constituted by the remaining county seats, equipped with higher than primary education facilities, hospitals, courts, etc.

According to the text of the Strategy, the voivodship is located within the bridge area between the East and West of Europe, and the territory of the province is crossed by important transport corridors linking the countries of the European Union with the countries of central and eastern Europe. In reality, though, the province is situated peripherally with respect to the most important East-West corridors, while being advantageously located inside the country, mainly in terms of the North-South connections. With regard to the economic development level the province takes the medium position among the voivodships of Poland, with a higher rank taken in agriculture and pulp-and-paper industry. The province is characterised by the intra-regional differentiation of the development levels and potentials.

One can speak certainly of a definite rivalry within the province between Bydgoszcz and Toruń. Yet, to an increasing degree the relations between the two towns can be referred to as collaboration and complementarity – for instance: the bigger economic significance of Bydgoszcz, with simultaneously a bigger cultural, tourist and scientific significance of Toruń. The Strategy assumes that the remaining regions take advantage of the higher order service and development of these two urban centres, but to the extent possible the sub-regional, local centres are being developed, servicing the local population in the domains of the lower order service.

Objectives

The superior objective of the Strategy is to improve the competitiveness of the region and to raise the standard of living of the inhabitants, with observation of principles of sustainable development. The more detailed objectives include, first and foremost:

- improvement of the educational level of the inhabitants;
- creation of the opportunities for the equitable development of individual counties;

- expansion of the communication and transport infrastructure (connection with TENs and air transport);
- broadening of the tourist offer and strengthening of its promotion;
- strengthening of the cultural position of the region;
- development of the metropolitan functions of the capital centres of the province (Bydgoszcz, Toruń);
- and securing the development of the remaining towns, and in particular – of Włocławek, Grudziądz and Inowrocław.

Other objectives, which seem to be less relevant for polycentric development, are protection of waters, air and soil surface, prevention of extraordinary hazards, improvement of the health status development and modernisation of the commercially-oriented farms, as well as construction and growth of the modern agricultural market.

The desired situation for the year 2010 would include an increase in the educational level of the society, the enhanced transport accessibility of the voivodship, and emphasis is also placed on the development of Bydgoszcz and Toruń, through strengthening of complementarity of their functions and transport-wise integration. The functions of Włocławek, Grudziądz and Inowrocław should be strengthened, rural areas should be activated through the establishment of business incubators in the county seats, tourism ought to expand, the unemployment rate should decrease, and technical infrastructure should be expanded, which ought to lead to the improvement of the state of natural environment.

The association with the polycentric development is emphasised many times over, both in the general adoption of the idea and its significance, and in terms of the priority objectives of development. Thus, for instance, the development of higher order service in both Bydgoszcz and Toruń is indicated. On the lower hierarchical level the strategy assumes activation of the rural areas through activation of small townships and rural centres, which are meant to become the local growth centres.

Application: Putting the strategy into practice

One of the strategic objectives is constituted by the promotion of the Bydgoszcz-Toruń conurbation to the rank of a dynamic metropolitan area. The means envisaged include improvement of transport connections by road repair, establishment of a rapid railway connection, and promotion of the settlement dynamics in between the two towns. All this is meant to raise the mobility of the inhabitants and, owing to the polycentric type of development, enhance economic growth. Other measures refer to the postulates of the development of the scientific functions in Bydgoszcz (establishment of a full-fledged university, development of the research institutions), in Toruń and Włocławek, or of the cultural ones in the two former towns (promotion of the events already existing and organisation of the new ones). Besides, the development of the business environment should be supported, the tourist infrastructure ought to be expanded, a fair and exhibition centre is to be constructed, and the Kujawsko-Pomorskie Centre of Information Technologies is to be established in Toruń, disposing already of the scientific background for such an undertaking.

The Strategy does not provide the details on the legal and financial instruments to be made use of in realisation of the objectives mentioned. A mention is made, though, of the potential possibility of using the funds from the European Union (PHARE, ISPA, SAPARD).

The institution responsible for the implementation of the prerequisites of the Strategy is the Board of Kujawsko-Pomorskie province. In view of the fact that the analysis of conditions for development suggests a low level of interest from the side of the central authorities in the territory of the province, the development, and thus also the implementation of the Strategy, will depend exclusively upon the self-governmental authorities.

Within the framework of the Strategy very detailed goals are defined, such as individual investment projects. The supervision over these projects is to be entrusted with the lower level units of the territorial self-government, on whose area a given investment project is being carried out. Yet, through the intermediary of the superior position of the province self-government over the county and communal units, it is the provincial level, and on its behalf – the Board of the Kujawsko-Pomorskie province, that will wield control over all the investment projects within the voivodship. The method of evaluation of implementation would consist in the preparation of the annual reports on the state of realisation of the Strategy and the procedure of acceptance of the reports by the Monitoring Committee, specially established by the province board, with the President of the provincial assembly as the head.

The advantage of the Strategy consists in the fact that it does not replace the strategies of development of the counties and communes. Its task is only to determine the field of activity associated with the competence of the provincial self-government, and its implementation should ensure the improvement of functioning of the province as a whole and the enhancement of its competitiveness. A similar principle ought to be applied in the elaboration of the strategy of the EU. A weak point of the Strategy is certainly constituted by the insufficient number of cartographic elaborates.

Embeddedness

In the case of the Kujawsko-Pomorskie voivodship we can speak of a definite historical continuity of the polycentric development, not concentrated in one location. As it is stated in the Strategy, the voivodship does not constitute in terms of cultural identity a compact and homogeneous region, but is a resultant of the superposed geographical factors and material development, having taken shape over the centuries in the processes of the administrative and state divisions, and different paths of economic and social development. These facts have also been perceived before in the concepts of spatial development, elaborated during the period of the People's Poland. Thus, at the occasion of the previous administrative reform, in 1975, the old voivodship of Bydgoszcz got divided into three units, with the capitals in Bydgoszcz, Toruń and Włocławek. They were united again in the framework of the administrative reform of January 1st, 1999. The existence of the dual agglomeration of Bydgoszcz-Toruń is also marked in the currently valid Concept for the Spatial Development Policy of the Country.

The Strategy was widely discussed and consulted with the Social Consulting Council, in which various entities were represented, including the mayors of towns, the heads of counties, the heads of communes, the representatives of political parties, of chambers of commerce, associations and social organisations, as well as scholars from the universities (altogether 250 persons).

In fact, a certain language has been created around the Strategy. The bipolar nature of the setting of towns of Bydgoszcz and Toruń is emphasised many times over, along with the wish of developing this dual setting into a conurbation. The settlement units of a lower level are hierarchically ordered conform their decreasing significance and the shifting nature of the functions fulfilled.

19.4 Conclusion

Polycentric development strategies have a long tradition in Poland. So, without using the present day (ESDP) terminology, goals resembling the polycentricity principle have been pursued before. All previous regional development policies have been directed at further development of and sustaining the polycentric development of the country (both during the period of the socialist economy and before World War II). The various policy stages differed only by the number of the key centers and the functions assigned to them. As such, Polish' policy-makers have always regarded the relatively polycentric structure (compared with the spatial structure of some of the other Central and Eastern European countries) of their country as beneficial.

This view on the benefits of polycentricity has not changed in the present transition phase. On the contrary, the 'National Spatial Arrangement Policy' of Poland, which came into force in November 2000, takes polycentric development on board as one of its main objectives. The policy combines two main objectives focusing at balanced regional development and providing equal quality of life to all the inhabitants on the one hand, and increasing the international competitiveness of its larger urban areas on the other. In reality these objectives often contradict with each other. The policy therefore developed a short term and a long-term strategy, respectively focusing at the acceptance of increased polarization between the various regions and its fading away in the long-term perspective through upward equalization. The historically rooted polycentric pattern plays a major role in this strategy.

The policy demonstrates awareness of the fact that increasing disparities between regions seems to be intrinsic to being in a transition phase, as western regions and metropolitan areas in general perform better in Eastern European countries (Downes, 1996, Petrakos, 2001). Allowing a certain degree of polarization between the respective regions in terms of growth and development at the short-term can therefore be interpreted as a pragmatic choice. This awareness is present in other transition economies in Eastern Europe as well. For instance, the VISION PLANET working team that was occupied with drawing a spatial vision for the Central European, Adriatic, Danubian and South Eastern European Space (CADSES)-Area is of the opinion that: "[an] equity-oriented approach must be implemented cautiously: considering that in most countries only a few regions and cities are the carriers of competitiveness, foreign investment, export and growth, their support in creating better conditions for efficient business is of vital interest to the national economy as a whole."(VISION PLANET working team, 2000: 9). In other words, these countries tend to be happy to have competitive regions at all. Nevertheless, the long-term strategy is concerned with bringing greater balance and equity between regions.

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20 Portugal²²

20.1 Introduction

The Portuguese Republic has slightly more than 10 million inhabitants on 92391 km². Population density is, however, not equally distributed over the country. There are strong contrasts between the densely populated north and the south (excluding the Algarve), as well as a contrast between the coastal areas and inland regions along the border with Spain. Portugal is to a large extent bipolar, as the Lisbon and Porto metropolitan areas dominate the urban system in economic and cultural terms. About half of all Portuguese live in these areas, with Lisbon having 2.9 million inhabitants and Porto 2.4 million.

The administrative system is essentially two-tiered, with the national government and a local government. The regional tier of government is absent. However, for planning purposes, the regional planning is performed by central government agencies operating at the regional level (CCRs). At the national level, the Ministry of Public Works, Planning and Territorial Administration is directly involved in spatial planning issues. Groups of municipalities may obtain the status of municipal associations if common problems justify joint action. More or less similar are the Junta Metropolitana in the metropolitan regions of Lisbon and Porto. Planning in Portugal has traditionally been dominated by a restrictive stance based on zoning principles. However, strategic development is increasingly seen as crucial for strengthening the urban system across the national territory (CEC, 2000).

20.2 General position of polycentricity

The uneven distribution of people over the country has increased during the last decade, as population in the coastal regions grew while the rest of the country saw its population decline. Also industry and services are concentrated in the coastal regions. There are large differences in GDP per capita per region, with a regional minimum of 5938 and a maximum of 17350 in 1997. However, this difference in GDP has been narrowed. This makes the OECD conclude that

“Portugal’s success in making up economic ground appears to be benefiting most of its regions. Although wide territorial disparities persist, the gaps have been closing over the past decade. This would indicate that Portugal, a cohesion country, has passed the initial stage of economic transition – when growth benefits the most successful urban areas – and entered the next phase of development, when efforts focus on the most depressed regions” (OECD, 2001: 96).

Though policies addressing regional disparities have not played a major role so-far, they do exist. The community support framework 1994-1999 contained a programme to promote the ‘regional development potential’. The main aim of this programme was to strengthen the economic basis of less-favoured areas (80% of Portuguese territory) with specific schemes supporting economic

²² Authorized by António Figueiredo of Quatenaire, Porto.

initiatives of a diverse nature. Other support schemes are the Regional Incentives Scheme and special projects (CEC, 2000).

In the same period, there was increasing concern for the weaknesses in the urban system. The two main cities of Lisbon and Porto dominate the country, but in an international context, despite their considerable mass, they play a rather modest role. Next to concern for the international and national position of the main cities and their interrelations, the lack of medium-sized cities got increasing attention. There is a large discrepancy between the two main cities and the cities that occupy the level immediately below in the urban system. Compared to other European countries, Portugal's limited number of medium-sized cities play hardly a role in an international context. These medium-sized cities are however conceived as crucial nodes for social, economic and territorial cohesion. Policies enhancing the polycentric structure are therefore pursued (see the two examples below).

According to official and academic reports, it is possible to identify two metropolitan regions and several medium-sized cities/urban axes/urban constellations that are fundamental in structuring a polycentric urban network (see also Figure 20.1):

- Lisbon Metropolitan Region;
- Porto Metropolitan Region;
- Anchor cities (Viseu; Évora);
- Urban Axes
- Urban constellations (\approx urban networks)

This polycentric strategy aims to solve the following problems:

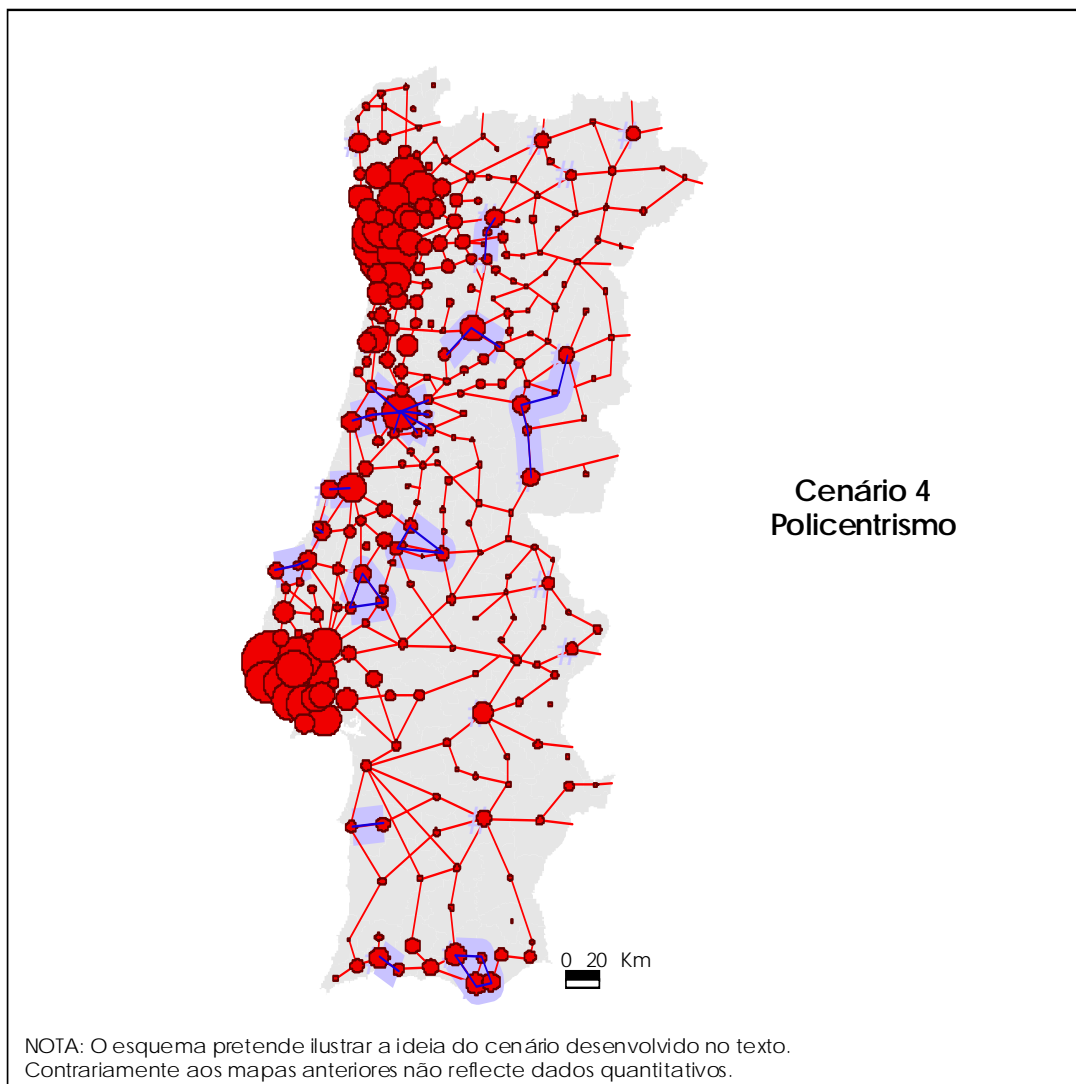
- increasing bipolarization of the national urban system;
- difficulty in getting different players to consult with each other;
- the lack of coordination between public policies;
- limited institutional and administrative models for metropolitan or urban management.

However, an implicit key issue remains to establish a political discourse directed at territorial development.

This is translated into the following objectives:

- Reinforce the role of medium-sized cities as structuring elements in the urban system;
- Reinforce the relations between cross-border urban systems (Porto/Galicia and Algarve/Gualdalquivir);
- Improve the main infrastructures (railways, roads, ports and airports) that support inclusion in the European and Iberian space.

Figure 20.1 Elements for structuring a polycentric urban network in Portugal.



20.3 Examples of polycentric policies

20.3.1 Programa de Consolidação do Sistema Urbano Nacional e de Apoio à Execução dos Planos Directores Municipais (PROSIURB)

The Programme to Consolidate the National Urban System and to Support the Implementation of Municipal Master Plans (PROSIURB) was initiated in the 1994-1999 period.

Rationales

The PROSIURB Programme was essentially aimed at the development of urban centres that could play a strategic role in the organisation of the national territory, providing them with facilities and infrastructures that supported their economic and social dynamic. The programme considered that medium-sized cities, due to their (potential) concentration of resources, should become strategic hinges between the area they centred and the external world. The policy addresses the problems related to medium-sized cities and the urban system as mentioned in the

previous section. Polycentricity is a subsidiary aim of the programme. In fact, this programme represented an entirely new approach, as so-far, nothing had been done with the purpose to contradict the tendency towards monocentricity (in fact, duocentricity).

Policy in practise

The policy addresses a wide variety of issues in medium-sized cities (defined as having over 10.000 inhabitants). This all-embracing character and the obligation to provide a strategic plan in order to be able to take advantage of the benefits foreseen, made it a decisive urban intervention programme whose results were far from those expected. The key actors were involved in the strategic coordination, and to facilitate this, a special agency was created. However, in terms of investment, only city halls benefited from financial support.

Probably the major strength of the programme was the strategic coordination between key actors, which was unprecedented. The policy is therefore considered as successful. For instance, a large majority of the medium-sized cities elaborated the respective strategic plan, which were approved by municipalities as well as the influential key actors in these cities.

The principal weakness of the policy is the lack of financial support, which did not correspond to the expectations created by the actors concerned. Central government started a process and then was not able to accompany and support it in financial terms when it became increasingly successful.

In the end, given the programme's lack of financial resources, the actions implemented were limited and only executed by local public administration, not by key actors which had taken part in the strategic coordination of development.

20.3.2 Áreas de Intervenção de Base Territorial

Rationales

Policies on the 'Territorial-based intervention areas' in the 'Regional Operational Programmes' are defined by the central government. These policies show some concern from the government in the territorialisation of policies (overcome structural strangulation, raise quality of life standards, create employment and maintain current population levels), as well as concern for the need to overcome difficulties in development or in taking advantage of insufficiently explored potentialities. The measures directed at urban areas concerned the "qualification of cities and metropolitan re-qualification". As was mentioned in the second section, not critical mass seems to be the problem of the metropolitan regions, but rather their (inter)national position.

Policy in practice

The policies are directed at municipalities and not-for-profit actors. The strong points of the programme concern its relatively detailed definition of the resources and problems in the territories concerned and its elaboration into a strategy that takes into account territorial specificities. The programme's main weakness is that it does not foresee joint action by municipalities and other stakeholders. In fact, participation from other organisations besides the municipalities is limited. Moreover, the project is not sufficiently recognised as a 'Territorial Project'.

This policy had some precursors and in that sense its 'formula' evolved from similar activities in the past. However, it is still far from being considered a sort of 'tradition' of polycentric

development strategies. The main results of the policy are the encouraging of the development of inter-municipal and inter-institutional co-operation. This has led to permanent frameworks for the articulation and promotion of debate on development and the definition of development objectives.

20.4 Conclusion

Similar to other cohesion-countries such as Ireland, Portugal has passed the initial stage of economic transition. This means that issues of regional disparities get increasing attention. In Portugal, the main concern is for the perceived weaknesses of the urban system: the modest role the cities of Lisbon and Porto play in an international context and in particular the lack of medium-sized cities playing a significant role. Strategic planning is still in its infancy, but receives increasing attention, which means that cities increasingly think about their position in the (inter)national urban system. Efforts are made to widen the use of the polycentricity concept, which is so-far very limited, by means of a series of regional debates planned in 2004. This may lead to a further dissemination of the polycentricity terminology.

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21 Slovenia²³

21.1 Introduction

The Republic of Slovenia is a small Central European state with a total surface of 20.256 sq.km and a population of 1.9 million (2002). Slovenia is a democratic parliamentary republic with a Parliament consisting of the National Assembly and the National Council, a President of the Republic, the Government, and an independent judiciary headed by the Supreme Court. Slovenia borders with Italy to the west, Austria to the north, Hungary to the north-east and Croatia to the south-east. Its short coastline of only 46 km provides access to the Adriatic Sea. Geographically Slovenia is located at the crossroad between the Alpine, Pannonian, and Mediterranean regions. More than half of the territory is covered by forests, and only 10 percent represents high quality agricultural land. The variety of geographical formations is also reflected in economic development, distribution of population, size and settlement structure (5992 settlements), morphology, and architectural heritage and regional development of Slovenia.

According to the macro-economic indicators Slovenia is the most advanced Central and Eastern European country close to the level of the EU-15 member states. The most important foreign goal after independence (1991) was the fully-fledged membership of the EU (achieved in May 2004), not only for political, economic and security reasons, but also due to cultural heritage of Slovenia as a European country.

With an average population density of 98 inhabitants/sq.km Slovenia is relatively densely populated country. The capital city, Ljubljana, is the largest city with population of approximately 270.000 inhabitants followed by Maribor with about 100.000 inhabitants. In addition there are also twelve towns with more than 10.000 inhabitants and twenty towns with more than 5.000 inhabitants. Ljubljana is located at the cross-road between Central Europe, Mediterranean and South-East Europe, in the gravitation zone of Vienna (395km), Munich (413km), Milan (500km), Venice (260km) and Zagreb (134km).

Under the legislative arrangements (from 1955) cities/towns do not exist as specific administrative territorial units. According to the Law on Local Self-government (1994) "town" is a larger urban settlement which differs from other settlements by its size, economic structure, population density and historical development. There are 51 towns in Slovenia. Among 193 local authorities nowadays in Slovenia, only 11 have the status of urban municipalities: Celje, Koper, Kranj, Ljubljana, Maribor, Murska Sobota, Nova Gorica, Novo mesto, and Ptuj, Slovenj Gradec, and Velenje. Until now (2004) no administrative regions or provinces were established in Slovenia, due to disagreements about a desired number of regions (i.e. 3-6-8-12-14-24) between the interest groups (i.e. politicians, experts, policy makers, and local population). For spatial planning (and other) purposes twelve (12) i.e. 'statistical' regions (NUTS 3) have been used since 1970s until 'new' regions are to be established.

²³ This chapter is written by Nataša Pichler-Milanović of the Urban Planning Institute of the Republic of Slovenia.

21.2 General position of polycentricity

The relatively low primacy rate of the capital city of Ljubljana (15 percent of total population in Slovenia) is directly related not only to the specific settlement system of Slovenia (5992 settlements), but also to urbanisation (or regional) policies, which are known as the *concept of polycentric development* since the 1970s. These policies have been a reaction to the introduction of the 'self-management system' by the *Federal Constitution* (1974). The constitution emphasised the role of local communes (authorities) in individual republics of the former Yugoslavia (Socialist Federal Republic of Yugoslavia) in housing provision, industrial development and services (i.e. elementary and secondary schools, health and social services, local roads, communal infrastructure, etc.). In 1973 the parliament of the Socialist Republic of Slovenia adopted the *Guidance's for Polycentric Development* (1973) and the *Polycentric concept for urbanisation* (1975). Therefore in Slovenia the application of the concept of polycentricity has been based on the principle of equal distribution of jobs in industry and services (central place theory), not favouring the growth of Ljubljana, but other regional and municipal centres (medium and small towns). The objective of this instrument was to eliminate regional disparities, diminish rural-urban migrations and curb pressure for provision of housing in largest urban areas.

The specific characteristic of Slovenia is the settlement system based on 5992 settlements. For the census (1991 and 2002) purposes, only 182 settlements (3 percent of the total) were defined as 'urban settlements' based on size, morphology, density and employment structure, comprising half of all inhabitants in Slovenia (i.e. official level of urbanisation was 50.5 percent in 1991 and 49.0 percent in 2002!).²⁴ A new definition of 'urban areas' was formulated for the purposes of the last census (April 2002) encompassing up to approximately 60 urban areas. The rather low rate of urbanisation in Slovenia needs to be taken in comparison with the low number of agriculture population. In 1991 less than 10 percent of the population in Slovenia was employed in agriculture, while in 2001 this number was even less than 5 percent. The difference means that Slovenia is a country with one of the highest proportion of *deagrared* population (i.e. population living in rural areas but employed in industry and services in near-by urban centres) - in the world. This phenomenon, which leads to relatively long distance commuting, is one of the negative consequences of the 'polycentric development' of Slovenia - most notably implemented at the local (municipal) level.

Slovenia, as one of the six former republics of the Yugoslav Federation has applied the so-called 'comprehensive planning system', which contained, in addition to a economic and social aspects, also a spatial (territorial) aspect of the overall development, implemented at the national (e.g. republics) and local (e.g. municipal) levels. Polycentric development was one of the major objectives of Slovenia's (but not in order republics of the former Yugoslavia) 'comprehensive planning system' mirrored in a legal document - 'The long-term development plan of Slovenia for the period 1986-2000'. When Slovenia gained independence in 1991 a special law cancelled this planning system. Only spatial components of the national and local comprehensive plans have been officially in force (and not necessarily implemented) until the adoption, in 2001, of the new spatial planning and management system.

During the transition period in 1990s when the comprehensive planning system was abolished the *Spatial Planning Act* (1984, 1989, 1993) could not solve numerous open and new questions in the field of spatial planning, management and development. It was therefore important to update the former statutory regulations, in terms of objectives, goals and

²⁴ In settlements with less than 500 inhabitants (92 percent of all settlements) lives 34 percent of the total population of Slovenia, while in 15 settlements (towns) with more than 10.000 inhabitants lives 32 percent.

instruments of implementation. The formal rather rigid spatial planning documents and plans were frequently prepared in too much detail at the local level. Such inflexibility resulted in frequent changing of these documents and a number of long-lasting, costly and demanding administrative procedures. In practice, it meant that many spatial development activities and projects were not implemented at all.

The absence of an effective development control and monitoring system, caused ineffectiveness as regards achieving the spatial development goals, including polycentric development, at the national and local level. Some of the most important problems in relation with the inadequate implementation of the (former) polycentric development concept in Slovenia (1970-1990) and the laissez-faire ad-hoc development during transition reforms in 1990s are the following: uneven urban and regional development associated with the lack of effective land policy and housing policy instruments, suburbanisation pressures along motorways and uncontrolled dispersed building construction (some of them) without planning and building permission, inadequate infrastructure provision in settlements (e.g. water supply and sewage system) and waste management system, decline of old industrial towns, unplanned and inefficient renewal of old city centres, extensive forestation of the agricultural land and insufficient protection of agricultural land (urban sprawl). Some problems are also related with the lack of effective development control, the absence of regional level as an intermediate level of administration between the state and local authorities, lack of qualified staff and inefficient coordination between various sectors (e.g. ministries).

21.3 Example: polycentricity in a new planning system

The changes that Slovenia experienced during the transition period, such as independence and sovereignty, introduction of parliamentary democracy, market economy, private property rights, local government reforms, accession to EU, and globalization, require a different attitude to spatial planning, management and development. Despite some criticism that polycentric development policies which have been implemented in the past (1970-1990) did not achieve the goals of “balanced” urban and regional development at the national level, the transition reforms of 1990s and a lack of adequate (new) spatial planning system contributed even further to regional differentiation of Slovenia. According to some indicators i.e. ‘index of polycentricity’ developed in the ESPON 1.1.1. project, Slovenia is one of the most ‘polycentric’ countries in Europe.

The renewed concept of polycentricity is still actual now in the new strategic planning documents of the Republic of Slovenia: *Spatial Management Policy* (2001), *Spatial Planning Act* (2003), *Spatial Development Strategy* (approved by Parliament in June 2004), *Spatial Order* (to be adopted by the Government in 2004) - but slightly modified in the concept of ‘urban networks’, ‘decentralised concentration’, and ‘cross-border (Euro)regions’.

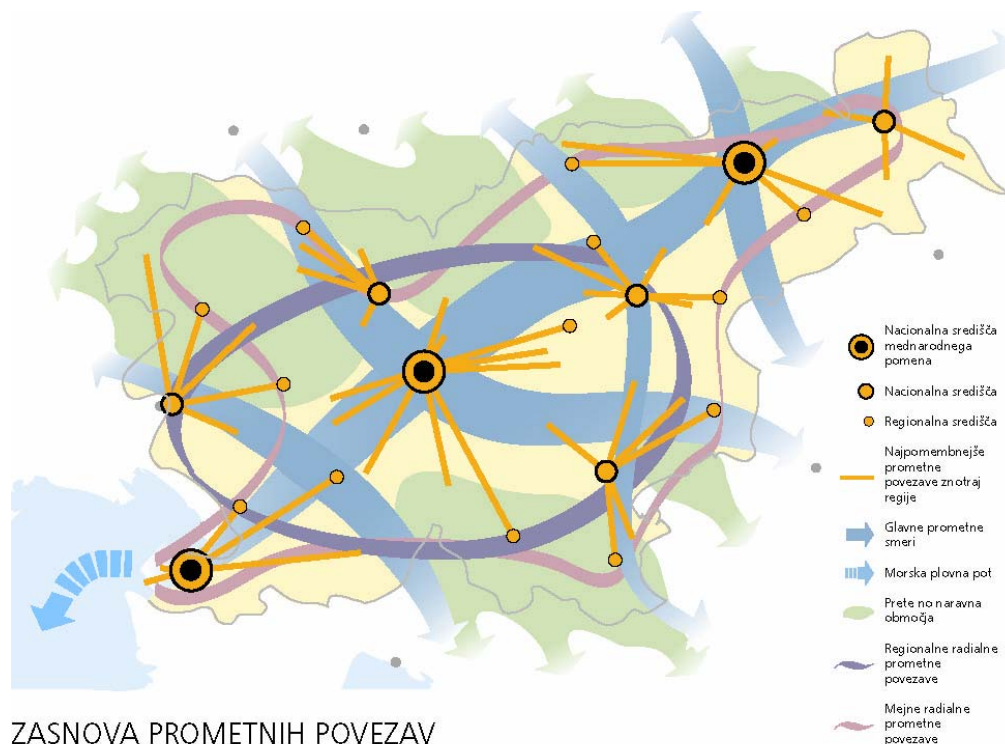
The *Spatial Management Policy of the Republic of Slovenia*, and the *Assessment of Spatial Development in Slovenia* that were adopted first by the government of Slovenia (December 2001), represent the basic premises for the preparation of the new spatial planning and management system in Slovenia. The *Assessment of Spatial Development in Slovenia* contains the description and assessment of the principal territorial characteristics and the factors that influence the development of the spatial planning system. The *Spatial Management Policy of Slovenia* is a long-term policy that issues a number of guidelines, amongst others on *polycentric* development. The main emphasis is on sustainable spatial development. It defines the basic principles and objectives of spatial planning and management system with the aim of creating a high quality living and working environment and harmonizes spatial development activities with other European countries. Its most important aim is to outline the further development and institutionalisation of

a new spatial development and planning system in Slovenia. It does not specify trends and policy options or attempts to conceptualise the Slovenian territory and to attach policy guidelines to it. Together with the *Slovenian Economic Development Strategy* and the *Slovenian Regional Development Strategy*, it is the basic policy document for national development. At the same time *Spatial Management Policy* has been the starting point for preparation of the *Spatial Development Strategy of Slovenia* (2004).

Some of the policy objectives in relation with *polycentric development* are to:

- enforce comparative advantages of Slovenia, cities and regions in the process of European integrations, and to protect the national identity;
- promote a balanced and sustainable development of all regions, lagging regions and border areas, and to promote transnational, inter-regional and cross-border (urban and regional) cooperation;
- (re)introduce and define polycentric development of urban network(s) in relation with the integrated transport and other infrastructure links, and access to knowledge (see figure 21.1);
- redefine and implement the concept of polycentric development of cities and other settlements in their hinterland (urban-rural partnerships), and ensure the competitiveness and integration of these functional urban areas into the European urban systems;

Figure 21.1 The Concept of Transport Infrastructure Links and Connections in Slovenia (National Office for Spatial Development, 2004a).



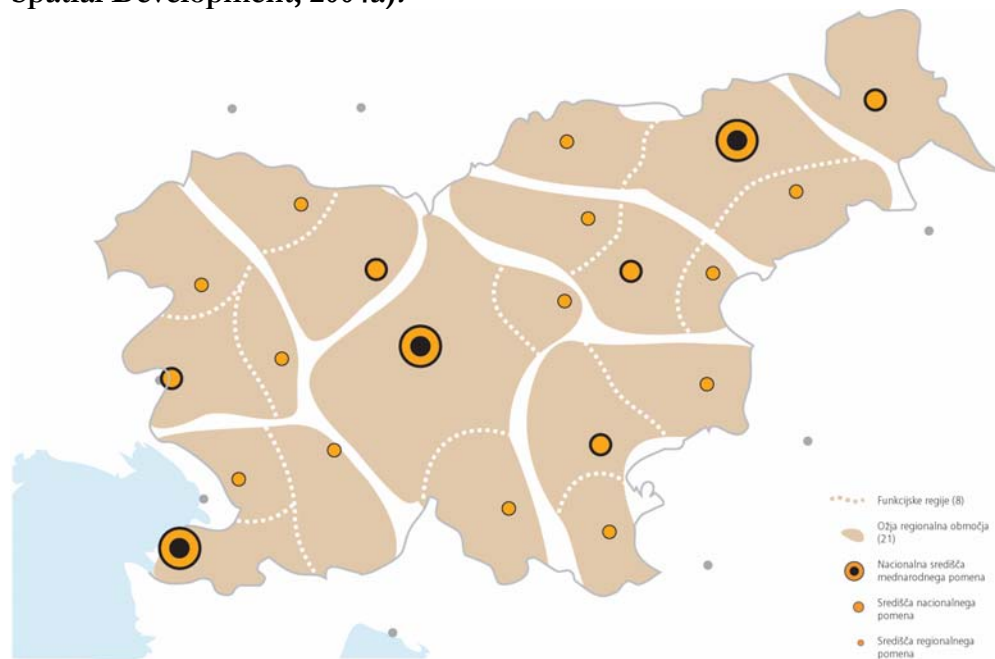
ZASNOVA PROMETNIH POVEZAV

The new *Spatial Planning Act* was adopted by the National Assembly in December 2002 (and came in force in January 2003). It defines the types, contents, and hierarchy of documents and the method of their preparation. It also defines instruments for implementation of spatial development activities. It provides two types of spatial documents: national and local (municipal). Both national and municipal spatial planning documents define guidelines and present the basis for more detailed planning (or permitting) spatial development activities. The *Spatial Planning Act*

is complemented by the (revised) *Construction Act*, which now defines, in a more modern and user-friendly manner, the methods and procedures for obtaining building permits. The *Spatial Planning Act* also introduces the possibility of planning at a regional level of the agreement between local and national levels. It regulates spatial planning activities and the enforcement of implementation measures for planned spatial arrangements, ensures building land development, and keeping of the spatial data system. It also determines conditions for performance of the spatial planning activities, and defines violations in connection with development control and implementation of spatial planning activities.

At the beginning of year 2004 the National Assembly received the final draft of *The Spatial Development Strategy of the Republic of Slovenia*. This document presents principal national planning guidelines and a conceptualisation of the Slovenia's territory, which also elaborates on the principle of polycentricity at the national and the local i.e. city-regional level (see figures 21.1 and 21.2) The *Spatial Development Strategy* contains priorities and strategic guidelines for achieving spatial development objectives and measures for implementation. In connection with the international (UN, Council of Europe, EU) policies and recommendations ensuring sustainable development, the document sets out the concept and strategic guidelines for sustainable spatial development of activities at the national and more detailed local levels, and basic premises for the coordination of spatial development policies and instruments with requirements for environmental protection.

Figure 21.2 The Concept of Polycentric Urban System of Slovenia (National Office for Spatial Development, 2004a).



ZASNOVA POSELITVE

The application of the concept of polycentricity in practice is discussed more precisely in the *Spatial Order of Slovenia*, which is a new document that will be approved by the Government in July 2004. *The Spatial Order of Slovenia* sets the rules for spatial planning and management (i.e. spatial rules) with the aim to provide the basis for a uniform method of urban and landscape planning in connection with the allocation of land use for activities and spatial arrangements, and in connection with the architectural and landscape design with respect to characteristic features

of individual regions. Spatial rules represent mandatory contents to be taken into consideration when preparing detailed spatial planning documents, and particularly when making decisions on the enlargement and renewal of settlement development areas, new construction of buildings outside these areas, and other spatial development activities where public benefit needs to be enforced. The *Spatial Order* also defines criteria and conditions for planning and construction of national significance, when no (national) detailed plan is made for a spatial arrangement of national significance, or if such a plan has to be revised. *The Spatial Order of Slovenia* together with the *Spatial Development Strategy of Slovenia* set basic regulations for spatial planning and management system, and for the preparation of other spatial planning documents at the national, regional, and local levels.

The Detailed Plan of National Importance is an implementation document related to the performance of spatial development activities of national importance at the local level. It determines planning conditions for the preparation of design projects to obtain building permits. *The Detailed Plan of National Importance* contains detailed plans of built structures, infrastructure, environmentally protected areas, conservation of natural and cultural heritage, specific land use, etc. It is intended for implementation of public services, particularly national and regional infrastructure, and for the needs of defence. Under certain conditions, it also enables the use of mechanisms representing interference with ownership rights to ensure construction and modernisation of public infrastructure at the national, regional, and local levels.

Slovenia has not yet formally established the regional administrative level. The only spatial planning instrument at the regional level is the *Regional Concept of Spatial Development*, which is being prepared jointly by the state and the interested municipalities according to the principle of partnership. *The Regional Concept of Spatial Development* is a non-binding spatial planning document. The state and municipalities on the basis of an agreement and partnership prepare it jointly. The interested municipalities, Regional Development Agency, or ministries can initiate its preparation. *The Regional Concept of Spatial Development* was introduced with the purpose to guide spatial development activities of national and regional importance in agreement between the state and the municipalities. The 'spatial planning area' is not defined in advance but depends on the nature of the subject matter and the interest of the state and municipalities. *The Regional Concept of Spatial Development* determines land use, planning guidelines for location of economic activities, and other spatial development activities, which are planned by the *Detailed Plan of National Importance*. When the *Regional Concept of Spatial Development* is adopted, it is binding for both the state and municipalities: the state is obliged to make detailed plans of national importance, while the municipalities also have to take into consideration agreements on spatial planning activities as the basic premises for spatial development of their territory. If the *Regional Concept of Spatial Development* is prepared in sufficient detail, it can replace spatial development strategies of all municipalities, which have taken part in its preparation.

At the local level (municipality), the *Municipal Spatial Development Strategy* has a similar role as the *Spatial Development Strategy of Slovenia* at the national level. The municipality uses this spatial planning document to determine long-term goals for the spatial development of its territory. The *Urban Development Concept* and the *Landscape Development and Protection Concept* are constituent parts of the Municipal Spatial Development Strategy, but it is not necessary for their preparation and adoption to take place at the same time. *The Municipal Spatial Order*, together with the *Local Detailed Plan*, is an implementing document, since it determines land use areas within the municipal territory with such accuracy that their boundaries can be defined on the site, and shown in the land cadastre.

21.4 Conclusion

Polycentric development in Slovenia was from 1970s embedded in spatial planning system, social and economic policies for urbanisation, industrialisation, regional development, through a distribution of economic activities and services in urban settlements in lagged and peripheral regions. In the 1990s, during transition reforms in Slovenia, spatial planning and polycentric development was rather neglected, due to the independence of Slovenia (centralisation), the importance of macro-(and micro) economic reforms, privatisation and restitution processes and local government reforms (de-centralisation). Hence new concepts of polycentric development built further on earlier policies, whilst taking into account these changes. Also a new objective has been added, striving for integration of Slovenian cities and regions in the European urban system(s), enhancing their competitiveness and cohesion through 'balanced regional development', promotion of 'accessibility' and 'urban-rural relations' – with development of 'urban networks' at the European level (cross-border, interregional, transnational), national level (network of 'centers of (inter)national, regional and (inter)municipal importance'), and local level (functional urban areas and/or conurbations as a network of cities and other settlements in their hinterland). Therefore the spatial planning and policy discourse in Slovenia combines both objectives of competitiveness and cohesion.

Sustainable development, polycentric ('balanced') urban and regional development and integration into European networks are the three most explicit aims in the new spatial planning system in Slovenia. Spatial policy formulation in Slovenia is also influenced by recommendations from international organisations such as: *UN Habitat Agenda* (1996), *European Spatial Development Perspectives* (ESDP, 1999), Council of Europe *Guiding Principles for Sustainable Spatial Development of the European Continent* (CEMAT, 2000). At the same time Slovenia is actively participating in formulation of some of these policy documents at the global, European and cross-border level - i.e. *UN Habitat Agenda* (1996) and UN "Istanbul +5" (2001), *VISION PLANET: Strategies for Integrated Spatial Development of the Central European, Danubian, and Adriatic Area* (2000), *Spatial Planning Instruments of the Alps-Adriatic Working Community* (2002), *Ljubljana Declaration on the Territorial Dimension of Sustainable Development* (CEMAT 2003), Alpine Convention and amongst others the Interreg III Programme.

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22 Spain²⁵

22.1 Introduction

The Kingdom of Spain is the largest country on the Iberian Peninsula which it shares with Portugal and the British dependent territory Gibraltar. Its territory also includes the Balearic Islands, Canary Islands and the cities of Ceuta and Melilla (North Africa). Since 1986, Spain has been a member of the European Union. The Spanish population numbers approximately 41.5 million people on 504842 square km. The Spanish Constitution (1978) provides the basic principles of the political system. The country is divided in 17 Autonomous Communities, each with its own Parliament and Government. These are: Andalusia, Aragón, Asturias, Balearic Islands, the Basque Country, Canary Islands, Cantabria, Castilla and León, Castilla-La Mancha, Catalonia, Extremadura, Galicia, Madrid, Murcia, Navarre, Rioja, Valencia. Ceuta and Melilla have a similar status. Even though the Constitution defines Spain as unitary and indissoluble it also recognizes and guarantees the principle of autonomy of nationalities and regions. Next to the central government and the autonomous communities, there are provinces (52) and some 8000 municipalities, which are often very small.

The autonomous regions have the main competencies in territorial and spatial planning. This does not withstand that the national level does not develop policies with a spatial impact. For instance, the *Plan Director de Infraestructuras* (PDI) lays down the main structural axes for national development, leaving the rest of the country to be dealt with by the corresponding regions. Furthermore, there are some sectoral policies regarding environmental matters, telecommunications and energy. Interestingly, the Law provides for drawing up a *Plan Nacional*, a strategic planning document. However, so far it has not been prepared (CEC, 1999).

22.2 General position of Polycentricity

Polycentric development of the urban system is considered as one of the objectives in most planning documents of the various autonomous communities. At other levels (national and transnational) the elaboration of prospective visions concerning territorial development are still in the start-up phase, but foresee in any case in some coherence following the principles and objectives of the ESDP (French Presidency, 2000: 86). We have not looked for further evidence as to see whether at the moment (April 2004) there has been made any progress in this field.

Regional imbalances within Spain have been attracting attention from policy-makers for a long time yet. The late 1970s saw for instance the inter-territorial compensation fund and by 1985 a policy on regional economic incentives was established. Such a policy is in line with the provisions of the Spanish constitution, namely promoting a fair distribution of income; trying to guarantee the implementation of the principle of solidarity; and establishing a fair economic balance between the different parts of Spain (CEC, 1999: 112). National policies for economic development are applied to three types of areas:

²⁵ Authorized by António Figueiredo of Quatenaire, Porto.

- areas of economic promotion (ZPE);
- industrialised areas in decline (Asturias, Cantabria, Ferrol, Extremadura) (ZID);
- special areas.

Policies for regional incentives for the location of industries are also elaborated by the various autonomous communities. Moreover, the European Union provides funding for Objective 1 and 5b regions.

So, principles of polycentricity such as diminishing regional imbalances are a major objective of national policy-making, but there is no strategic spatial plan to guide it. At the regional level, where planning competencies are stronger, in some of the autonomous regions the principles of polycentricity are more explicitly part of policy. The next example presents the Territorial Strategy of the autonomous region of Navarre.

22.3 Example of polycentric policy: Territorial Strategy of Navarre

The Territorial Strategy of Navarre (Estrategia Territorial de Navarra) was introduced in 2001 by the autonomous region Navarre. In this strategic territorial planning document is polycentricity a major aim. At the moment, the plan waits for final approval by the Government and the Parliament of Navarre.

Present situation

Navarre is among the richest regions of Spain, with a revenue per head slightly above the European average. The competitiveness of Navarre owes fundamentally to its geographical situation close to the French border, the Basque Country and the Valley of the Ebro, to the quality of the environment and to its industrial and agricultural culture. Additionally, the situation is considered positive for business development given the industrial consolidated area and a stable society. The society of Navarre is characterised by a high cohesion and a strong cultural identity relating to history, landscape and customs.

The region exists of three major distinct zones: the mountain region, which includes the whole area of the Pyrenees, and that constitutes the border with France; a wide central zone; and, a corridor on the south following the river Ebro. The western part of the mountain region can be distinguished because of its Atlantic influence and for its relation and functional interdependencies with the coast of the Basque Country and France. The oriental zone, which is badly connected to the rest because of its morphological characteristics, lacks influence and clear relations beyond the nuclei of major size that act as functional centers. The whole middle zone is under the influence of the metropolitan area of Pamplona. Finally, the south zone has a functional relation with the neighbouring regions of Rioja and Aragon.

Navarre has experienced in the last 35 years two parallel processes that shape its current situation: a continuous increase of the population, and the rural exodus towards its capital, Pamplona. The metropolitan zone of Pamplona hosts 52% of the population of Navarre, 45% of the industrial companies, 60% of the industrial employment, the majority of the activities in innovation and development and 90% of the exports. Pamplona also hosts the majority of the amenities and services, which reinforces its attraction as place of residence and location of economic activities.

Some intermediate nuclei have a high potential to structure the territory and to overcome the current imbalances. At present, there are seven settlements with more than 10.000 inhabitants. Together they may be able to form an economic backbone and to rebalance the urban system.

This would result in a more polycentric urban pattern and in turn consolidate the population figures within rural regions and thus prevent a continuing rural exodus. At the moment, however, these settlements themselves depend on the rural population for maintaining a critical level of services. The rest of the urban structure is composed of nuclei with limited population. Of the 272 municipalities 57% have less than 500 inhabitants.

A potential risk for polycentricity is the imbalance in population distribution: the rural marginal zones have about of 25% of 65-year-old among their population, of which 40% are potentially dependent, and, furthermore, a high rate of males relative to females.

Objectives

The strategy proposed in the document rests on the search of territorial balance by strengthening several urban subsystems. Its principal objectives are:

- To create a network of main cities where public services are concentrated, and improvement of the communication among them and with Pamplona.
- To promote the role of the above mentioned cities as areas of development as well as to diversify the rural economy.
- To form a polynuclear central city that takes advantage of existing nuclei of population to satisfy the new demands of residential space; to distribute activities; and to improve the intercommunications.
- To stimulate the axis of cooperation of the Valley of the Ebro, by making a special effort in Tudela, fomenting the competitiveness of the Valley of the Ebro, and establishing agreements and strategies of cooperation with Rioja.
- To take advantage of the impulse of the Atlantic Euro-city to benefit from its influence, and to offer to it space for expansion and leisure in this part of Navarre.

Policy in practice

As the policy still did not pass final approval procedures in the Navarre parliament, the means and budget are still unclear. It intends to establish programmes and platforms for co-operation among different sectors of the regional administration.

Though the plan is initiated by the Department of Land Management, several other sectoral departments take part in its development. These include for instance the department of Economy and European Matters, Environment, Public Works, Telecommunications, and Industry and Technology. Moreover, many efforts have been made to promote the participation of the society of Navarre, thus involving both the political, economic and social sectors in its preparation.

Two types of indicators are used in the initiative. The first type refers to the present situation, the second type to monitoring. The 'indicators of situation' offer a description of the situation of Navarre at a specific moment regarding the goals of the European Spatial Development Perspective. The indicators for monitoring are related to the policies and strategies proposed in the Territorial Strategy of Navarre. Among the 'indicators of situation' we can distinguished two groups: the strategic indicators, that measure the competitiveness, social cohesion and sustainability, and the territorial indicators, that try to give an image of the polycentric development, access to infrastructures and knowledge, and management of natural and cultural heritage.

The principal strength is the political institutional support by both the Government and the Parliament of Navarre. Moreover, the political, economic and social sectors of the region are

taking part in the development of the Plan. The great challenge from the moment of its approval will be to set up the mechanisms to keep the flame burning, implement mechanisms of cooperation, of assessment of policies with effects on the territory, of measurement of coherence with these strategies, and to value them accordingly to the quantitative goals fixed with indicators.

Polycentricity in the Territorial Strategy of Navarre

The current monocentric structure (with Pamplona being the major center) of Navarre is perceived as a weakness within the region, as it is expected to lead to a further rural exodus. The development of other urban centres within rural regions is enhanced, thus aiming for a more polycentric urban structure.

There is little tradition with such a polycentric strategy. However, in the last 10-15 years, a certain number of plans have been set up to improve the quality of life in rural areas, to develop and diversify economic activities, and, to increase the employment opportunities in rural areas. This was done with the objective in mind to try to maintain the rural population or, even to increase it. Though polycentricity as a development principle is not strongly embedded yet, there is a general concern about the present monocentric situation and the trend of concentrating the residential and economic activities in the metropolitan area of Pamplona.

22.4 Conclusion

At the national level polycentricity is understood as diminishing regional imbalances. However, at this moment, there is little strategic spatial planning at the national level which provides a territorial framework for this. In general, the independent sector planning documents and the more or less spatially relevant policy documents at the national level have a character of orientation or recommendation (communication). Planning competencies are stronger at the regional level, and likewise, the principles of polycentricity are more explicitly part of policy in some of the autonomous regions. The Territorial Strategy of the autonomous region of Navarre provides a clear example. Here, polycentricity was perceived as an objective and means the development of rural urban centres to prevent a rural exodus.

22.5 References

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23 Sweden²⁶

23.1 Introduction

The Kingdom of Sweden is the fifth largest country in Europe after Russia, Ukraine, France and Spain. It has, however, only 9 million inhabitants and thus a rather low average population density of 20 inh/km². Only one-third of the population lives north of the Uppsala-Stockholm area, while more than one-third lives in one of the four metropolitan areas Stockholm, Gothenburg, Malmö and Uppsala. Of these cities Stockholm is twice as big as Gothenburg, which in turn is twice as big as Malmö, which is twice as big as Uppsala. In general urbanisation took place rather late in comparison to other European states and reached its peak during 1950-70s. After a period of stagnation the urban growth rate is high again (Böhme, 2002).

The Swedish settlement pattern is often described as a number of islands in an archipelago. This archipelago consists of 24 larger urban centres that float in a sea of woods, rural areas and minor municipalities. The urban centres have access to differentiated labour markets, well-equipped service centres, good higher education facilities and external communications. “The National Vision “Sweden 2009” outlined by the National Board of Housing, Building and Planning (Boverket 1996) formulated the generally accepted idea of connecting these 24 islands with each other by high-speed railway connections, so that they would form a ‘String of Pearls Network’. The pearls are, however, quite spread out along the string” (Böhme, 2002: 185).

In terms of population and GDP the South and North differ to a high extent. The majority of the population is concentrated in the south and along the coast in the three urban regions around Stockholm, Gothenburg and Malmö, the only areas with more than 50 inhabitants per km². Migration trends do steadily enforce these disparities. The GDP per capita figures largely run parallel with the population division, although also the North shows a remarkable high figure. However, the high GDP per capita in the North can be ascribed to large mining and processing industries (especially pulp and paper) and does not reflect the level of personal disposable income. There is a concentration in the South where the Stockholm region accounts for more than 25% of the National GDP in 1997 and the top-five regions together account for 63% (Böhme, 2002; OECD, 2001).

In the 1990s Sweden faced a recession and job supplies fell sharply between 1990 and 1998, while unemployment rates rose spectacularly by an average of some 380 per cent. However, this did not affect each region in the same way. Today, the northern regions face the highest unemployment rates (over 10%) and the steepest decline of jobs. This leads to a further concentration of population in the southern regions, where unemployment rates are significantly lower. For instance, the unemployment rate in the Gothenburg region was expected to be 4% in Autumn 2001 (OECD, 2001).

“Swedish spatial policy making is, however, not only influenced by these geographical factors. To understand policy-making in Sweden, it is necessary to understand the main characteristics of the

²⁶ Authorized by Moa Tunström of Nordregio, Stockholm.

traditional Swedish welfare model, which form an important basis for policy-making and planning.” (Böhme, 2002: 185).

23.2 General position of polycentricity

Sweden is a decentralised state with considerable power for the national government. This counts for instance for spatially relevant policies like environmental and regional policies, but not for spatial or physical planning policy where the monopoly is situated at the local level. At the same time, although counties exist as long as since the 17th century, the regional level is not very important with regard to spatial development policies. Spatial planning, which in Sweden is mainly understood as land-use planning (Schulman and Böhme, 2000), is a non-issue at the regional level (Böhme, 2002).

It took EU membership to rediscover the regions in modern Swedish politics. Sweden has never had a regional level with politicians responsible for the regional development. “In general where the regional level is concerned the emphasis has traditionally not been on physical planning, but on economic development. (...) Traditionally the County Administrative Boards, which are creatures of central government, are responsible for regional development in co-operation with the Ministry of Industry and *NUTEK* (the Swedish Business Development Agency)” (Böhme, 2002: 195). So, it is important to note that physical planning and regional policy are two totally separated policies in Sweden, with regional policy being the primary field of interest from the perspective of EU (territorial) cohesion policy.

The history of the Swedish regional policy is characterized by pursuing equal access to resources such as employment and services. So, even though the concept ‘polycentric’ has not come into use until today, policies aiming at restructuring the urban-rural relationship have been implemented before. From the 1950s on, several policies have been developed, which share this basic characteristic. They used instruments such as advices for business settlement, economic subsidies and loans in order to encourage investments in the northern parts of the country.

At the end of the 1960s and the beginning of the 1970s the Swedish Parliament issued a ‘plan for the future settlement structure of the country’. This was mainly a reaction to rapid growth of the metropolitan areas (especially Stockholm) and the consideration that it was necessary to provide credible alternatives to these well-equipped areas. However, this top-down policy was difficult to defend. Instrumental in this was firstly the election of a new parliament in 1976 with a clear bottom-up mandate and secondly the fact that the municipalities have such strong powers (French Presidency, 2000).

The structural changes in the 1970’s had effects – internationally and in Sweden – in regions which primarily relied on basic industries. Several government measures were implemented during the 70’s and 80’s in order to hamper the negative development regarding mainly employment. The policies focused on the lagging areas. The aim was to encourage entrepreneurship. A relocation of several national agencies to peripheral parts of the country made part of this policy.

When Sweden joined the European Economic Area (EEA) and the European Union (EU) new tools were added to the regional policy in the form of financial aid from the Structural Funds. Through for instance Interreg and Regional Growth Agreements the regional policy now encompasses areas outside of the traditionally supported regions.

In general, presently as well as previously, there is no Swedish policy that explicitly takes the aim of polycentric development on board, or at least not with reference to this specific term. However, a main policy objective has always been to reduce the urban-rural split, ensure equal opportunities for the inhabitants in different parts of the country and hamper the out migration of active people from rural to urban regions. Perhaps, an ideological difference can be seen. The Swedish regional policy has been, and still is (to be discussed below), about equal opportunities across the country. The current heading or slogan is: "Let all of Sweden live!". To instead talk about polycentric regions and strong nodes could be interpreted as not paying attention to the space between the nodes. However, there has been for many years a common view among many policy makers and planners that cities and city regions have to be well-equipped. Presently, the relevance of this aim is strengthened by the need to meet the challenges of international/global competition (French Presidency, 2000). In this respect it is interesting to note that during the last 30 years the establishment of institutions for higher education in each of the 21 counties has been deliberately used as an instrument for this purpose.

At the regional level, however, there are examples of ongoing discussions and established policies for a polycentric structure of, for example, the Stockholm region or the Mälars region (Stockholm and eastward).

23.3 Example of polycentric policy: A policy for growth and viability throughout Sweden

The Government Bill 2001/02:4: *A policy for growth and viability throughout Sweden* was introduced in September 2001 by the Swedish Government and prepared by the Ministry of Industry and covers the whole country. It concerns a 'Regional development policy'; a concept introduced in the proposition itself that bears elements of traditional Swedish Regional Policy and the regional aspects of Industry Policy. Since there is no explicit polycentric policy in Sweden, this Government Bill is the one that comes closest to it.²⁷

In the bill, polycentricity can be regarded as a subsidiary aim. The concept is directly used in the sections where the ESDP is taken into consideration, but only indirectly in other sections. It concerns sections that deal with related issues such as co-ordination between national and EU policy on regional development, traffic planning and functional regions, strengthening of the regions, subsidies for increased commuting and a good basic service provision all over the country. It is never written directly that the policy aims towards a polycentric structure of Sweden in a sense of functional division of labor and increased interdependencies between towns. The aim is more the creation of stronger regions. In the sections of the bill that present the existing policies (before implementation of the policy of the bill) and describe the current (before September 2001) situation as regards Swedish regional development, there is some focus on urban areas and on the development in the urban areas as important for regional growth as a whole.

²⁷ In addition the already mentioned National Vision 'Sweden 2009' by the National Board of Housing, Building and Planning (Boverket, 1996) can be mentioned as a visioning exercise. However, this is no binding policy.

Figure 23.1 Cover illustration (Ministry of Industry, 2001a).

Government Bill 2001/02:4



In general, the policy presented is not a regional policy only for disadvantaged regions, but for the whole country and one important goal is to prevent the urban – rural split of the territory. This is similar to the urban-rural partnership approach in the ESDP.

Objectives and strategies

The policy objective of the regional development policy is formulated as the creation of:

“well functioning and sustainable local labor market regions with an acceptable level of service in all parts of the country”.

“By ‘well functioning local labour market regions’ is meant that it will be as attractive as possible to people and enterprises and allow the most to be made of the potential and vital forces existing in every region. By ‘sustainable’ is meant that the policy will contribute towards providing sound economic, social and ecological conditions for present and future generations. By ‘an acceptable level of service in all parts of the country’ is meant that the measures will contribute towards people and companies throughout the country having access to adequate commercial and public services” (Ministry of Industry, 2001a: 5).

This objective must be seen from the perspective of increasing urban-rural disparities. In the introduction to the policy document it is written that “...the division of Sweden must be stopped, and bridges be built between town and countryside. The whole country gains from co-operation, lacking – or uneven – growth creates problems. (...) In many municipalities the population is decreasing, this puts the welfare to the test. The policy must therefore focus on protection of the existing service and welfare in the municipalities for the people who live there.”

The strategies to reach this objective are:

- Horizontal regional policy objective;
- Clearer regional responsibilities for some policy fields – and a developed comprehensive view;
- Clear distribution of responsibility between government and local authorities;

- Learning processes and programmes as instruments for development;
- Regional comparisons as driving force for change (Ministry of Industry 2001a, 5-7).

An important aim of the policy is to increase cross-sectoral co-ordination for national policies from the perspective of regional development considerations. Also the EU structural funds will be used.

The strategies have been worked out in more specified policy measures under the following headers:

- Stronger regions and local authorities;
- Increased knowledge and skills;
- Greater enterprise and improved entrepreneurship;
- Local development and more attractive life environments;
- An acceptable level of service throughout the country.

Among the measures presented some can be connected to polycentric development. A selection is mentioned here, in bullets:

- The national traffic shall to a higher degree take the functional regions into consideration when making agreements with the deliverer;
- Subsidies to encourage commuting;
- A national program for the development of innovation systems and clustering should be established;
- Local development programs for commercial service provision should be established.

Relation with the ESDP

In the section of the bill called “ESDP in Sweden” it is written that several of the ambitions formulated in the ESDP are in line with the Swedish policy aims, for example the trans-sectoral policy approach. Here polycentric development, although without mentioning the specific concept, is interpreted mainly as a development at European scale. The policy document relates to the ESDP-perspective of development in the European periphery as a counterweight to the strong European core territory. In this context, Sweden is part of the periphery, and development of the major urban regions Stockholm, Gothenburg and Malmö as stronger nodes is desired. It is however mentioned that this development is not “...unproblematic as regards the inner Swedish balance”.

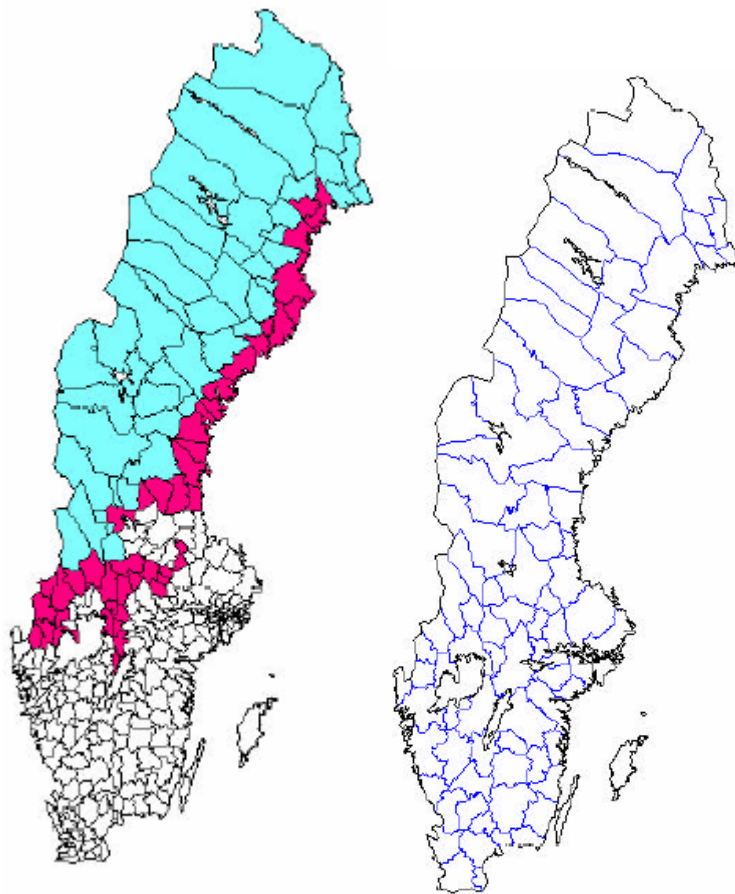
This latter sentence points at the sensitive issue that European polycentric development still is in merely all Nordic countries. It concerns the tension between strengthening the capital cities and their international ranking on the one hand, and stimulating more national polycentric development which would imply a more even distribution of resources in favour of the least developed regions on the other hand (CPMR, 2002: 82).

Application

The policy does not work with maps or visualisations that conceptualise the policy and have primarily a communicative objective. The only, possibly unintentional, example of this kind of illustrations has been found on the cover of the policy summary document (see Figure 23.1). The maps that are used in the policy document are ‘factual’ in a sense that they show the present situation instead of the wanted situation. In doing so, they use statistical data such as the local labour market areas and indicate eligible areas for funding of the national government and EU Structural Funding in the programming period 2000-2006 (see Figure 23.2).

No specific instruments have been developed for polycentric development. In Sweden a government bill is presented by the government to the national parliament, which then normally approves it, since it has been “processed” in parliamentary committees during the working process. During a certain period certain bodies also have opportunities to express opinions on the content of the bill. Authorities can be the county and municipality administrations, state agencies, research centers and universities, unions and NGO’s of different kinds.

Figure 23.2 Eligible areas for national funding (left) and local labour market areas (right) (Ministry of Industry 2001b. 199-200)



Since this concerns regional development policy, the state administration at the regional level and the municipal administrations are affected by the policy. Since the measures concern amongst others public transportation, accessibility to education, localization of state agencies and local development, actors from these fields such as traffic companies, education facilities and education administrators, state agencies and local development organizations are affected by the policy in different ways.

The monitoring and evaluating of the regional policy is done by the Swedish Institute for Growth Policy Studies (ITPS), a state agency. They have the specific assignment to evaluate the regional policy in order to learn lessons for the future. The implementation of the policy is done at regional level and by state agencies (The Rural Development Agency, The National Agency for Business Development, The National Board of Housing, Building and Planning etc.). These can of course perform their own evaluations in different forms.

The bill is quite strongly embedded in organizations and political belief systems. This can be explained from the fact that the Swedish governmental system is relatively successful in anchorage and processing the contents of proposals before presenting them. As a result, at the moment of presentation, the actors who have to implement it are already quite well prepared.

No specific policy related language has developed at the national level. It might be possible, though, at the regional level in the major conurbations – Stockholm, Gothenburg, Malmö – to trace certain language comprising concepts such as regional growth poles, regional expansion.

23.4 Conclusion

Since in Sweden physical planning policy is monopolised by the municipalities, regional development policy is the primary field of interest as regards polycentric development at national level. Due to poor resources and low political importance the regional level is less relevant for pursuing polycentric development. Although a spatial vision of ‘Sweden 2009’ has been developed by the National Board of Housing, Building and Planning in which polycentricity plays an important role, this is not considered a policy because of its non-binding character.

The policy that comes nearest to a polycentric policy has been developed by the Ministry of Industry, Employment and Communications and is laid down in the Government Bill 2001/02:4, ‘A policy for growth and viability throughout Sweden’. The main policy objective is to combat the urban-rural divide which is a policy aim since the 1950s. Inspired by amongst others the ESDP this is translated in a strategy focussing at increasing the strength of the regions throughout whole Sweden. Another strategy is to create better horizontal coherence between other sectoral policies that influence regional development. In this sense the Government bill can be perceived as a programme for all relevant sectors. It seems that the policy is quite strongly embedded at the horizontal level.

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24 Switzerland²⁸

24.1 Introduction

Like Norway, Switzerland does not make part of the EU, but seems to be integrated very well, if not in terms of policies then at least in terms of economy. Due to its central position in the EU there are strong spatial relationships, which makes Switzerland an important country to look at in the context of a possible EU wide polycentric development strategy. In this respect it is important to mention that Switzerland, as an external partner, takes part in INTERREG III and is involved in amongst others the North West Europe programme covering a highly urbanised area.

Basically one could say that Switzerland consists of two different parts. One is the *Mittelland* (Central Plateau), stretching with Geneva from the south-west to St. Gallen in the north-east. This part is a relatively flat and densely populated area with a tightly knitted urban network consisting of middle sized and smaller cities. The other part of Switzerland, located south-east of the *Mittelland*, is dominated by the Alps. This has led to a totally different kind of urban system consisting of relatively isolated cities with mostly only a regional function except from Lugano (Figure 24.1).

The division of the country in two parts is reflected by distribution of population, GDP and employment. From the total of 7.2 million inhabitants at the start of 2002, just about 1 to 1.5 million people live in the southern part. While the average population density in 1998 was about 180 per square kilometre, almost all regions in the north have densities above 210 with some regions reaching densities between 460 and 926 inhabitants per square kilometre. Interestingly, as regards demographic change between 1990 and 1998 the national population increased by 6,1% with the highest rates (10-15%) in the south and the lowest (3-6%) in the north. Together with the high population density, especially around Zurich and Basel, also the GDP per capita rates are high in these regions with the Zurich region showing a score of above 125% of national average in 1997, two adjacent regions of Basel and Luzern showing scores between 100 and 125% and the rest of the country scores below 100% (OECD, 2001).

²⁸ Authorized by Patrick Dümmler and Alain Thierstein of Institut für Raum- und Landschaftsentwicklung (IRL), ETH Zürich.

Figure 24.1 Swiss city network (Bundesrat, 1996).



24.2 General position of polycentricity

Polycentricity plays a dominant role in spatial planning policy at the federal level. It also plays a role in transport and infrastructure policy, but in large these policies follow the same discourse as spatial planning does. At cantonal level support can be found for polycentric development as well. However, because the 26 cantons vary in size, which makes them difficult to compare, and have to follow federal planning principles anyway (see below) we will not give examples of planning practices at this level, but limit ourselves to Figure 24.2 as an illustration. So the emphasis in this section and the rest of the chapter will be on federal spatial planning policy.

Figure 24.2 Examples of concentrated decentralising strategies in ‘relieve centres’ (Bundesrat, 1996).



Federal planning system

The Swiss administrative system consists of three layers, the confederation, 26 cantons and about 3000 municipalities, each having its own spatial planning responsibilities. The emphasis is at the cantons “...whose task is to integrate spatial claims by means of *structure plans* and to collaborate with their neighbours in Switzerland and abroad. The communes are generally responsible for *land use planning*. Lastly, under the constitution, the Confederation is responsible for the legislative framework, for formulating planning principles, for co-ordinating formal spatial policies both internally and with the cantons, for promoting and co-ordinating the efforts of the cantons, and for international relations. The Confederation works closely with the cantons and the cantons in turn with the communes” (Wegelin, 2001).

The relationship between the different administrative layers is controlled by the so-called ‘counter-current principle’. According to this principle the cantonal structure plans are binding for the Confederation, while at the same time cantons must take the federal sector plans into account. All spatial plans are subject to the aims and principles of the Federal Spatial Planning Law. Sectoral as well as cantonal plans have to be approved by the Federal Council, which guarantees co-ordination and a similar application of planning principles throughout the country. The same regulations apply between cantons and communities (Wegelin, 2001).

24.3 Example of polycentric policy: Report on the Swiss Planning Policy Guidelines (1996)

In 1996 the Swiss federal council submitted the planning policy guidelines to the Parliament, which approved them in 1997. After giving an overview of the existing spatial development trends (indicating amongst others an increased pressure on land use and growing agglomerations), the document unfolds a strategy. As Wegelin (2001) observes, the Swiss guidelines show remarkable similarities with the ESDP, as if the ESDP is an application of the Swiss guidelines at the EU-level. In general, however, the Swiss strategy is more elaborated than the ESDP. The overall objective of the Guidelines is sustainable development, which is broken down into three dimensions:

- Economic competitiveness (economic dimension)
- National cohesion (regional policy dimension)
- Ecological sustainability (environmental dimension)

The three dimensions are translated into four fields of action:

- Urban areas
- Rural areas
- Nature and landscape
- Integration of Switzerland into Europe

For us, looking after applications of polycentricity, the first and fourth field of action is interesting. In both cases there is a strong recognition that the Swiss cities in the northern part together form a network that has (strong) relationships with the 'European urban network'. As Figure 24.1 (above) shows the guidelines divide between different categories of cities. Zurich, Basel and Geneva are marked as large city agglomerations of international importance. A second category are the cities of national importance such as the capital Bern, Lausanne, Luzern, Winterthur, St. Gallen and finally Lugano in the South. Then a number of categories are distinguished of cities of different shape but with regional or tourist importance.

For the larger cities with (inter)national importance a strategy is proposed aiming at concentrated decentralisation in order to relieve them from urban pressure and to keep them sustainable (Figure 24.2). In this strategy there is an important role for public transport, especially railways. Through the development of new growth poles or *Entlastungszentren* (literally: relieve centres) processes of unlimited urban sprawl around the large cities should be avoided. The decentralisation policy aims at a further development of towns located in the vicinity of the larger cities with a railway connection, by offering new possibilities for urban development. In this way enough settlement business and residential settlement locations can be offered in a controllable way while keeping the larger cities healthy.

At the national level, or at least concerning the northern half of Switzerland, the concept of the Swiss urban network (*das vernetzte Städtensystem*) is fundamental for future strategies. Building or developing an urban network (which is considered to be there already) as such is not the prime ambition of the strategy. Rather, in the planning guidelines of 1996 the concept forms a basic assumption that should influence all kinds of spatial activities and thus act as a general common strategy. Within this framework all kinds of cooperation initiatives may be created, the policy as such does not limit or designate co-operation between certain cities. Because of the multitude of functional relationships in terms of scope, scale and interests between cities and regions and because it operates in an federalised environment the policy wants cities to be free to choose

whatever co-operation partners they like and merely provide a framework for their activities (Flückiger and Koll-Schretzenmayr, 2000).

Agglomerationspolitik des Bundes (2001)

In December 2001 the *Bundesrat* (Federal Council) published its *Agglomerationspolitik* or Agglomeration Policy, which forms an elaboration of the planning guidelines. In the Agglomeration Policy of 2001 the idea of a Swiss urban network has been further developed. Instead of talking about a “*vernetztes Städtesystem*” this policy now talks about the long-term objective of “*Polyzentrische Stadt- und Agglomerationsentwicklung*” (Bundesrat, 2001), or polycentric development of cities and agglomerations. This means that, be it inspired by the ESDP or not, in terms of terminology Swiss policy has been further developed since 1996. The long-term polycentric development goal is broken down into four more explicit objectives:

1. strengthen the international competitiveness of large cities
2. avoid the additional costs of agglomerative development
3. make better use of potentials small and medium sized cities
4. strengthen the small towns and cities on the border regions

This is further developed in five main strategies to follow amongst them pursuing a better integration of Swiss cities in the European urban network (for instance through Interreg) and determine specific needs of cities with respect to federal objectives. Other strategies have more to do with application and governance and deal with issues such as improving horizontal co-ordination and co-operation between federal sector departments, regularly dissemination of information, tripartite agreements between federacy, cantons and cities, development of cross-border city networks etc. Also ten to twenty projects will be launched focussing at creating innovative partnerships dealing with special or complementarity issues, the development of common strategies and at innovative projects for inner city renewal.

24.4 Conclusion

The northern half of Switzerland has a polycentric settlement structure consisting of medium-sized cities. This *vernetztes Städtesystem* or since the Agglomeration Policy of 2001 this *polyzentrische system* as it is called now, forms a fundamental principle along which the Swiss federal spatial planning guidelines are developed. In the federal planning system, which is based on vertical co-ordination and a cross-sectoral approach, this means that all spatial activities should take this urban network and its future development into consideration. Via horizontal and vertical co-ordination the broad defined planning guidelines are applied in all fields and administrative layers that have a spatial impact. It is therefore difficult to speak in terms of application as communication or programming, in fact, we are dealing here with a kind of *framework control*.

The main objective of Swiss federal spatial planning policy is sustainable development, which is broken down into three dimensions (see above), and a further strengthening and development of the polycentric urban pattern is assumed to contribute to that. Although Switzerland did not take part in the development of the ESDP, the ESDP shows remarkable similarities in terms of discourse with the earlier developed Swiss policy, the latter of course being the more elaborated and concrete of the two.

Basically the Swiss federal policy, which comes in an overall policy providing guidelines and an elaboration specifically focussing at agglomeration development, elaborates policy measures at two levels of scale. The first scale being that of the agglomeration at which a decentralised concentration policy is proposed in order to avoid urban sprawl and the costs that come with it.

The second scale concerns the whole country, but because of the morphological constraints and the present day settlement structure it basically comes down to the northern half of the country where most of the cities are located and form an urban network. At this level the focus is primarily at (further) integration in the European urban network and achieving a competitive position in this network.

24.5 References

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25 United Kingdom²⁹

25.1 Introduction

The United Kingdom is composed of England, Scotland, Wales and Northern Ireland. The United Kingdom is a unitary state with a hybrid regional structure and there are varying degrees of devolved competence. There has been a considerable transfer of responsibilities to the ‘devolved administrations’ over recent years. The spatial coordination of land-use and other sectoral development activities tends to occur at lower spatial levels, at or below the regional ones. However, regional and local plans, like for instance the Regional Planning Guidance, tend to be translations of generic policies at the UK-level in, for instance, the Planning Policy Guidance 11 (see figure 25.1). The national Planning Policy Guidance 11 is a non-statutory planning policy document. It advises on the preparation, scope and content of Regional Planning Guidance.

25.2 General position of polycentricity

Policies by the central government in the United Kingdom normally do not have a territorial nature, as the whole of the territory is treated in a standard way. Therefore, there is no explicit consideration of the objective of polycentric development at the national level. Sectoral policies may have an implicit impact on polycentricity though. The national government’s policy is to develop all parts of the United Kingdom. The intention is to assist in promoting growth in all areas (CPMR, 2002).

At the regional level polycentric development has become an increasingly important theme. For instance, Northern Ireland’s Regional Development Strategy features polycentric development as a key theme, as they strive for a balanced and polycentric urban system. Other examples include the regions West Midlands and the North West, which will be discussed in the remainder of this chapter. Polycentricity has a more or less prominent role in the Regional Planning Guidance (RPG) for both regions. It should be kept in mind, though, that there are other regions in which polycentricity is not, or is only a weakly developed theme.

Regional Planning Guidance’s are prepared either by a group planners who work in the constituent local authorities and/or with the help of private planning consultants. They are prepared for the politician representing the constituent local authorities in the region and subject to public consultation, which involves all the key stakeholders in the region. RPGs have to be approved by the central government prior to its final adoption. Its contents are guided by a national policy framework provided by Planning Policy Guidance 11 and central government’s national sustainable development strategy. Regional bodies as well as local planning authorities are the key audience of the RPG.

²⁹ Authorized by Michelle Wishardt and Simin Davoudi of the Centre for Urban Development and Environmental Management (CUDEM) Leeds Metropolitan University.

The purpose of a RPG is to provide a regional spatial strategy that guides and informs the preparation of local authority development plans. It is also used to inform the development of other strategies and programmes of other public sector agencies and service providers. Overall, it is a mechanism for producing the non-statutory context for the long-term planning and land-use framework for the region. RPGs have a key role to play in establishing a link between economic, social and environmental issues within a regional context. They also seek to provide the context for the development of an integrated approach to policy development in relation to these issues.

Figure 25.1 Overview of available national Planning Policy Guidance notes and Regional Planning Guidance notes

<i>Available National Planning Policy Guidance notes</i>		<i>Available Regional Planning Guidance notes</i>
PPG 1: General policy and principles	PPG 15: Planning and the historic environment	RPG 1: North East
PPG 2: Green belts	PPG 16: Archaeology and planning	RPG 6: East Anglia to 2016
PPG 3: Housing	PPG 17: Planning for open space, sport and recreation	RPG 8: East Midlands
PPG 4: Industrial, commercial development and small firms	PPG 18: Enforcing planning control	RPG 9: South East
PPG 5: Simplified planning zones	PPG 19: Outdoor advertisement control	RPG 10: South West
PPG 6: Town centres and retail development	PPG 20: Coastal planning	RPG 11: West Midlands
PPG 7: Countryside	PPG 21: Tourism	RPG 12: Yorkshire and the Humber
PPG 8: Telecommunications	PPG 22: Renewable energy	RPG 13: North West
PPG 9: Nature conservation	PPG 23: Planning and pollution control	
PPG 10: Planning and waste management	PPG 24: Planning and noise	
PPG 11: Regional planning	PPG 25: Development and flood risk	
PPG 12: Development plans		
PPG 13: Transport		
PPG 14: Development on unstable land		

Source: <http://www.odpm.gov.uk/>

25.3 Examples of polycentric policies

25.3.1 West Midlands Draft Regional Planning Guidance (WMRPG)

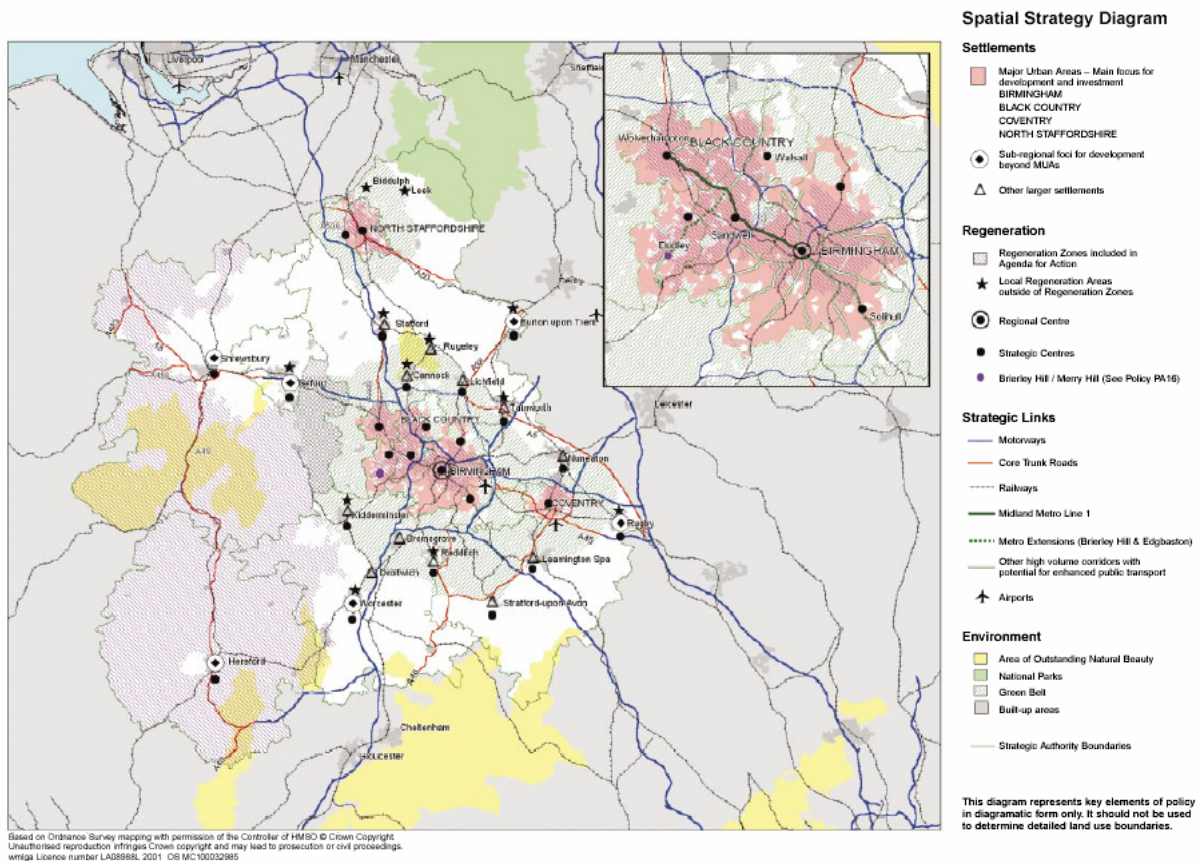
Located in the central part of England, the West Midlands region of the UK is a region of considerable diversity – incorporating major urban areas (Birmingham, Coventry, the Black Country) and sparsely populated rural locations. The region covers 13,000 square kilometres and has a population of approximately 5.3 million people. There are seven metropolitan districts, three unitary authorities, five shire counties and twenty-four district councils. At the core of the region is Birmingham (a dominating influence) – other major urban areas include Coventry, the Black Country, Solihull and the North Staffordshire conurbation (Stoke and Newcastle-under-Lyme) – each has distinctive roles and characteristics. In the shire countries (Shropshire, Herefordshire, Staffordshire, Worcestershire, Warwickshire) a network of settlements exists with

complex interconnections of work and commuting patterns – with each other and with the major urban areas. This is particularly the case where these settlements are close to the major urban areas. The majority of what could be classified as rural (and particularly the more remote parts of the region) are situated to the west of the regional boundary.

Rationales

The Draft RPG is prepared by the West Midlands Local Government Association and submitted to the Secretary of State for Transport, Local Government & the Regions (Now the Deputy Prime Minister). It was published in November 2001 (see Figure 25.2)

Figure 25.2 The Spatial strategy for the West Midlands.



Source: West Midlands Regional Planning Guidance, 2001.

The WMRPG recognises the region occupying a key position at the crossroads of two Trans European Transport Network routes – north/south and east/west. It also explicitly acknowledges and embraces the principles of the ESDP, among which the development of a balanced and polycentric pattern of development and new urban-rural relationships. The WMRPG recognises the key functional relationships/linkages between the West Midlands and the other English regions. The key issue for the WMRPG is the identification of the West Midlands as a significant nodal point in the national transport network. There is a clear recognition that the regions position as a strategic transport node needs to be maintained to ensure regional economic competitiveness.

A key theme of the WMRPG is urban and rural renaissance. The major urban areas play a significant role as they should try to meet their own needs in terms of housing and employment opportunities. The WMRPG is focused around:

- Urban renaissance – developing major urban areas such that they can meet their own economic and social needs.
- Rural renaissance – responding to the challenge of the continual restructuring of the traditional way of rural life.
- Diversifying and modernising the region’s economy
- Modernising the transport infrastructure of the region.

The WMRPG has 10 objectives to achieve the above focus:

- To make the major urban areas of the West Midlands increasingly attractive places where more people will choose to live, work and invest.
- To secure the regeneration of the rural areas.
- To support the diversification of the region’s economy whilst ensuring the link between opportunities for growth on the one hand and essential needs and reducing social exclusion on the other.
- To improve significantly the region’s transport system to a quality comparable to that of competitor regions.
- To ensure the conservation and improve the quality of the environment across all parts of the region.
- To retain the green belt, but to allow an adjustment of boundaries where this is necessary to support urban regeneration.
- To support cities and towns to meet their local and sub-regional development needs.
- To promote the development of a network of strategic centres across the region.
- To promote Birmingham as a world city.
- To create a joined-up multi-centred regional structure where all areas have a distinctive role to play.

Polycentricity in the WMRPG

The key aim of the WMRPG is to “*promote the West Midlands as a network of places, all important in their own right and with distinctive characteristics, but with reinforcing economic, cultural and social functions*” (WMRPG, 2001: 27).

The WMRPG defines polycentricity in the following way: “An approach to strategic spatial planning which recognises the diverse multi-centred nature of the West Midlands region. It gives consideration to the circumstances and value of each place and recognises that spatial planning policies should not be determined by a single hierarchy where, for example, all higher order functions have to be focussed in higher order places. Instead, polycentric policies address the specific combination of roles that different places play and the dynamic relationships between them” (WMRPG, 2001: 27).

The WMRPG argues that the development of a multi-centred and balanced approach to the development of urban areas, and the strengthening of their relationships with rural areas, will flow out of the ten RPG objectives that are mentioned above. The WMRPG sets out to promote a more balanced development (nationally) by encouraging higher order economic functions in the West Midlands region, as well as by seeking to create a context for inter-regional complementarity – principally defined through the complementarity of inter-regional regeneration. Complementarity may be reached, for example, by strengthening Birmingham’s role as a regional capital, and by realising the potential of North Staffordshire as an accessible location with good links to the East Midlands and the North West. The WMRPG also places emphasis on

the larger shire towns beyond the major urban areas to act as a focus for new investment. In adopting this approach the WMRPG states that:

“Development plans should seek to enable people, throughout their lives, to meet their reasonable day to day needs and aspirations wherever possible within their local communities. Where this cannot be achieved, development plans should consider the potential for emphasising the complementary roles of places in order to reduce the need for travel and to minimise wasteful competition” (WMRPG, 2001: 27).

Implementation/instruments

The WMRPG is organised around a series of guiding principles, spatial strategy objectives and overarching policies, policies for urban and rural renaissance and through specific topic policies.

25.3.2 Draft Regional Planning Guidance for the North West (RPG 13)

The North West has nearly 6 million inhabitants. The main cities in this region are Liverpool and Manchester. The region is thought of as having a multi-centred structure, both within the metropolitan areas of its main cities as in other parts of the Region. The Draft Regional Planning Guidance (RPG) for this Region is to provide a broad spatial development framework and a planning strategy for the region. It was initiated by the North West Regional Assembly (consisting of representatives of local authorities in the North West region of England). However, the Regional Planning Guidance has to be approved by central government, which also takes into account the result of a formal public consultation of the RPG. The Draft RPG was published in March 2002.

Rationales

The overriding aim of the RPG for the North West is to promote sustainable patterns of spatial development and physical change (see also figure 25.3). The key objectives are to:

- achieve greater economic competitiveness and growth with associated social progress;
- secure an urban renaissance in the region's cities and towns;
- ensure sensitive and integrated development and management of the coastal zone;
- sustain and revive the region's rural communities and economies;
- ensure active management of the region's environmental and cultural assets;
- secure a better image for the region, and to;
- create an accessible region.

The main problems that the RPG tries to overcome are those associated with the legacy of a declining traditional manufacturing industry, such as a concentration of multiple deprivation in inner cities of the two regional poles (Liverpool, Manchester) and environmental dilapidation.

Figure 25.3 Key diagram RPG for the North West.



Source: Regional Planning Guidance for the North West, 2002.

Concerning the current spatial and urban structure, the chapter on spatial development framework for the region describes the region as a ‘bi-polar’ metropolitan region in a coastal position and with extensive rural areas. The two ‘residential poles’ consist of the city centres of Liverpool and Manchester/ Salford. They lie within a large swathe of highly urbanised land consisting of numerous towns, many of which have coalesced over time to form the North West Metropolitan Area. Emphasis is placed on links with adjoining regions and links with Europe.

For example, the strategy refers to the fact that the North West is at an important crossroads made up of firstly, the east-west routes that extends from Ireland through Liverpool and other North West ports and onwards across the Pennine to Europe via North Sea and Baltic ports to Scandinavia, the Netherlands, Germany, Poland and beyond (i.e. the North European Transport Axis (NETA)); and secondly, the north-south M6 and the West Coast Main Line rail routes from Scotland to Europe via Channel Tunnel and ports. It also refers to Manchester and Liverpool as ‘international gateway cities’ whose economic success can facilitate the ESDP’s aim of “achieving greater balance and polycentricity in Europe as a whole”. The policy therefore also promotes co-operation in the INTERREG programme.

Polycentricity in the RPG for the North West

The previous version of the RPG (July 2002) regarded the region as ‘polycentric’. This was defined in terms of the multiplicity of cities and towns. However, it was acknowledged that “the multi-centred nature of the region is a strength that has yet to be fully exploited, because the region’s history and physical development have led to an unbalanced settlement structure”. It was also stated that “the 2 large conurbations of Manchester and Liverpool are themselves polycentric” and other towns and cities are important retail, employment and service centres in their own right.

The revised version of the RPG, which incorporates the result of consultation and the central government’s changes to the document, has omitted references to polycentricity and instead pursue a strategy based on ‘bi-polar’ development. The policy aims to target the two Regional Poles by focusing major developments in city centres of Manchester and Liverpool. No reference is made to a complementary development or economic profiling of these two cities.

Implementation/instruments

Regional Planning Guidance is a non-statutory document, but its policies should be taken into account in all statutory development plans in the region. These plans will then influence the decisions made on the location and extent of all new developments in the region. RPG policies are also taken into account in the Structural Funds Programme for the area as well as strategies developed by Regional Development Agencies. The latter has a budget allocated to it by central government to be spent largely on regional economic development.

Evaluation and Monitoring

The focus of monitoring is to assess the RPG’s impact overtime on the objectives and policies it covers through targets and indicators. The monitoring system involves the use of general intelligence-gathering methods plus analysis of relevant data for the Region, undertaken by the Regional Intelligent Unit. Each year an RPG Monitoring Report is published to show annual progress on a small number of indicators. A major review is usually undertaken after 5 years.

The lack of a statutory mandate as well as the fact that the RPG is not produced by a directly elected regional government limits its influence. Moreover, because the central government’s approval is needed, it often reiterates the policy guidelines produced by the government. Also, since politicians, whose interests focus mainly on their local constituencies and not the region, prepare it, its policies tend to be the lowest common denominator, to keep everybody happy.

25.4 Conclusion

Polycentricity in the United Kingdom is not an objective or concept in the national planning framework. However, it is given an interpretation in several Regional Planning Guidance

documents in a couple of regions. There is no history of polycentric policies and the terminology used in the regional planning documents is still developing (polycentricity, bi-polar development etc.). Much of its current appearance in several regional planning documents can be contributed to the influence of the ESDP.

25.5 References

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26 Selected transition countries: Bulgaria, Czech Republic, Hungary, Romania and the Slovak Republic

26.1 Introduction

This chapter deals with six countries at the same time, which makes it a bit special compared to the other chapters in this report. The main reason for this is that, within the boundaries of our time, we were not able to find sufficient information for each of these countries to guarantee an equal level of analysis. Most of the filled out questionnaires were too limited to rely on. Furthermore, in our experience it seems significantly more difficult to find up-to-date information in English (or German) in our usual (academic) sources for the six countries under consideration in comparison to other European countries. Also we have not found English summaries of national policies. This and the observation that the countries on the face of it seem to share a more or less common background, face common development problems and are, more generally speaking, in a phase of transition fuelled our decision to combine the six countries into one chapter.

26.2 General trends in transition countries

With ‘transition countries’ we refer to the former Central and East European (CEE) socialist countries that since 1989 are in the process of adapting their economy and political administrative models and positioning themselves in the new institutional setting. Although these transformation processes have an autonomous origin they have been accelerated by the prospect of joining the EU in terms of meeting administrative and institutional requirements. Moreover, three of them, Slovenia (discussed also in a separate chapter), the Czech Republic and Slovakia also face the challenge of nation building. Next to the six countries under consideration in this chapter, also Poland and the three Baltic States fall in the category of transition countries. Transition countries deal with challenges that might have relevance for polycentric development possibilities. We will briefly discuss four of them below and then turn to a brief discussion of present policies in the six countries.

Administrative decentralisation

Administrative decentralisation in transition countries refers to creating a regional administration. During the socialist period the regional tier, located between the national and local administration, virtually did not exist. At least not as an independent actor, but merely as a intermediary from the national government. Also because of EU requirements in the field of regional policy the regional government has to be built up again. Other, more endogenous and fundamental reasons are that the regional level is important in terms of democracy and efficiency (Marek and Baun, 2002; Illner, 2000). In the context of this research it is important to stress that decentralisation might lead to regional institutional capacity, which seems a prerequisite for endogenous growth and thus opportunities for polycentric development. Especially the EU regional policy requirements should be understood in this way. Whether it is reasonable to assume that administrative decentralisation strategies may contribute to polycentric development

has been pointed out, for instance, in the chapter about Austria with the example of the successful relocation of the provincial government from Vienna to St Pölten.

All this, however, does not indicate that all transformation countries face exactly the same challenge. There seem to be wide variations concerning the implementation of a regional democratic administrative government layer. According to Illner (2000) we must divide the CEE countries in three different groups:

- South-east European countries consisting of amongst others Bulgaria and Romania
- The Baltic States: Estonia, Latvia and Lithuania
- East Central Europe: Poland, Czech Republic, Slovakia, Slovenia and Hungary.

Two more groups consist of 'core countries' of the former USSR (Ukraine etc.) and 'other republics of the former USSR' (Armenia etc.). The distinction between the groups is based on criteria such as "...the experience of individual countries with democratic systems in their precommunist histories, length and intensity of their exposure to the Communist systems, the presently attained level of democratization and also the deep-rooted patterns of social organization and culture of the respective societies...". (Illner, 2000: 392) Then owing to situational contexts also within a category of countries large differences may emerge. For instance, regionalisation in Hungary was far more easier to implement than in the Czech Republic (or Czechoslovakia at that time), mainly due to several years of discussion already under the Communist regime. Although this refers to the end of the eighties it is important, however, to bear in mind that it may take a very long time for regional governments to acquire the popular legitimacy and support in order to become serious political actors that play a key role in the process of political mobilization at the regional level (Marek and Baun, 2002).

Regional polarisation

Various authors on regional development in CEE countries stress the likeliness of polarisation between regions within the same country in terms of increased disparities regarding income and employment. Processes which are at work in this respect have to do with the ability of a region to integrate in the global economy, to be competitive, to innovate, to make use of its endogenous potential and territorial capital etc. (see for instance: Gorzelak, 2001; Petrakos, 2001; Konvitz, 2001; Camagni, 2002). Now, more than a decade after the fall of the 'Iron curtain', it has become clear that only few regions in Central and East Europe have been able to catch up with these trends and processes and show positive figures regarding employment and income. They are becoming part of the 'sunny side' of the global economy. The effect is that while the total national income of most CEE countries increases the regional disparities sharpen. In the short term this development seems positive, in the long run, however, it may cause serious problems. For instance, in time at the national level such a development may lead to serious internal tensions, unstableness and migration streams, which probably will end up in weaker economic performance of the core regions and consequently the country as a whole.

While these observations seem to count for each CEE country the prospects for regions to integrate in the global economy and the EU internal market seem to differ. At the scale of individual countries but also at the scale of Central Europe as a whole a certain development pattern seems to be recognisable with serious impact on the regional structure. According to Petrakos (2001: 360) the process of internationalisation (in this case understood as globalisation) and structural change (Europeanisation: i.e. adapting to new models of government and governance) "...tend to favour metropolitan and western regions [in CEE countries], as well as the regions with a strong industrial base. In addition (...) at the macro-geographical level the process of transition will increase disparities at the European level, by favouring countries near

the East-West frontier.” Petrakos (2001: 379) continues that although transition in general must be related to increased polarisation a differentiation can be made regarding “...countries with a better record in terms of transforming their economy, a larger size and a short distance from the European development centre...” who will less often experience intensively increasing regional disparities than countries whose economy is less well adapted, are smaller and further located from the European core. In general, in terms of polarisation the picture for Poland (see also Gorzelak 2001) and Hungary looks more positive than for Romania and Bulgaria. (ibid.) Applying these criteria to Slovenia, Slovakia and the Czech Republic would lead to a more positive perspective for Slovenia and the Czech Republic and a problematic one for Slovakia. For Slovakia this is confirmed by Williams et al. (2001) who point out that western border regions and the capital Bratislava (also located at the western border) indeed show a far better record than the central and eastern regions.

Socialist industrial policy heritage

If a polycentric development is being pursued in transition countries, then this will not be the first time. Under socialist regime all CEE countries experienced some kind of polycentric development policy, in most cases in the form of industrialisation policy. Urban settlement patterns and the development of cities and towns largely became dependent on these macro-industry policies. In general these policies (just like their equivalents in West Europe in the 1950s) started from the assumption that the world could be planned. Disregarding natural, morphological, geological and geographical conditions these central planning policies tried to boost regional development (and national balance) by inward investments focussing mostly at just one economic sector. The result is still being felt today as many regions have to deal with an overdependence on just one or few economic sectors (see for Slovakia: Williams *et al.*, 2001) Also, according to a Romanian respondent of the questionnaires, the cities themselves face many problems, since any attention for the social-cultural development of urban areas was missing during the time that the industrial policies were promoted. So, apart from the number of inhabitants, urban areas may not really function as independent cities where various economic and socio-cultural aspects become integrated and intermingled and create specific identities and institutional capacity.

26.3 Examples of polycentric policies

Hereunder we will discuss very briefly polycentric policies in the six countries. Contrary to other chapters we here just rely on the information that was collected through the questionnaires. For the Czech Republic and Slovakia we did not receive any questionnaire, so here we used the Vision Planet Compendium of 1998 which now may give an out dated view. Because we did not do any further study to the planning systems in the four countries the examples that will follow may not be the main national discourse as regards spatial and regional economic development.

26.3.1 Hungary³⁰

The aim to stimulate polycentric development has been a traditional element of Hungarian state policy. This is more or less a natural reaction to over-concentration in the capital, Budapest, in terms of population and GDP (see for instance: Illés, 2003). Paradoxically, previous attempts

³⁰ The section on Hungary has benefited of contributions by Elizabeth Vajdovich Visy of Váti, Hungarian Public Non-profit Company for Regional Development and Town Planning.

under socialist planning regime, by means of industrial decentralisation and the development of services in the five regional centres had – for several decades – the net outcome of the further growth of Budapest.

At the beginning of the 1990's regional policy of Hungary had the explicit character of devolution. One of the first acts of the new Parliament was issued on the local governments (Act LXV of 1990) which declared the political and administrative independence of local self-governments and the normative distribution of resources. The strengthening of local level decision making has brought about substantial improvement of municipal technical infrastructure (water supply, sewage disposal and treatment, electric and natural gas supply as well as telecommunication) and decrease of regional disparities in this respect. Side by side with decentralisation at the local level, the government promoted the co-operation of local authorities and micro-regions by way of supporting the associations of municipalities in infrastructure development. This same period was characterised by serious economic crisis due to the loss of East-European markets, privatisation and restructuring aggravated by the accumulated national debt. Because of the scarcity of resources the government policy had a narrow focus on subsidizing the most underdeveloped areas and those hit by industrial restructuring. The aim was to avoid mass unemployment and social crisis.

The second period from the middle of the 1990's to the first years of the new millennium was the elaboration and formal (parliamentary) adoption and consolidation of the national spatial policy. The fundamental strategic objectives of spatial development were the following:

- to promote spatially balanced economic and social development: by
 - mitigating spatial disparities,
 - reducing the excessive concentration of Budapest,
 - promoting the spatial diffusion of innovation,
- to protect the state and quality of the natural environment, to preserve natural values,
- to promote international integration.

The Act XXI of 1996 on Spatial Development and Planning was an important contribution to Hungary's efforts towards balanced development. The Act is based on the spatial development principles of subsidiarity, partnership, resource co-ordination, programming and transparency, which are now basic criteria for resource allocation at each and every spatial level.

The *subsidiarity principle* is reflected by the power of county and local authorities. Following the amendment of the Act (Act XCII of 1999) - regional development councils were set up by the force of law with the aim to consolidate the regional level. The partnerships of municipalities continued to receive further support.

In the spirit of the *partnership principle*, the law provided frameworks for co-operation among different levels and sectors, and promoted the institutionalisation of regional (NUTS II) co-operation. Attempt was made to reduce the dominance sectors (e.g. transport) by prioritising spatial aspects and by intensifying governmental co-ordination.

The efforts to create conditions for *resource co-ordination*, however, failed by and large. The funds managed by the various ministries could neither be centralized nor co-ordinated at the central government level.

The application of the *additionality principle* has been hindered by the shortage of capital and by the relatively low volume of local development funds. Therefore, some of the regions which are in greatest need of development funds may find themselves left out of the mainstream of spatial development.

In line with the *programming principle*, by now every region (NUTS2) and county (NUTS3) has a strategic programme (the elaboration was facilitated by the central and decentralised support funds of spatial development). With the purpose to adopt the European Union's practice, the rules of programming have been gradually updated.

In accordance with the *transparency principle*, the activities of the regional development councils are open, all information related to planning and tendering are published in the local and national media. The spread of the use of the spatial information system and the improvement of the efficiency of control was a gradual process.

In the state policy statement – approved by the Parliament in 1998 – a somewhat differentiated approach is proposed to pursue polycentric development. In order to catch up with globalisation and to be competitive at the European Single Market the policy thinks that a special, knowledge economy based development of Budapest is needed for Hungary to obtain a role in the European spatial structure. It also means that the stimulation of the development of regional centres must go side by side with the modernisation (economic restructuring, infrastructure development and urban renewal) of the capital city. The implementation was first limited to the support of centres in the lagging regions (North-East Hungary) and in the former industrial regions (North Hungary). It was gradually extended to all regional centres. The tools of implementation have been direct subsidies, infrastructure projects (construction of motorways) and developments in higher education. In the eastern, less developed parts of the country the development of regional centres has been promoted by means of tax subsidies of job creation and training and retraining programs for unemployed. Meanwhile, in all regional centres support has been given to institution development, improvement of transport links, urban rehabilitation and upgrading.

Another, more definite – though indirect – example of a policy aiming at polycentric development is the National Spatial Plan enacted by the Parliament in 2003. It is a physical plan, which main thesis is to urge the development of north-south and east-west transport connections bypassing the Capital Region, which should result in a decrease of concentration processes. The background of this is that at the moment most motorways, expressways and important railways run from Budapest to regional centres. The regional centres between them are generally connected only by secondary roads. There has been indeed progress in transport development since 1990 (including the upgrading of road links, construction of motorways and three new bridges on the Danube), but the scarcity resources and environmental concerns have proved to be serious obstacles and the process is always slower and less satisfactory than planned and expected.

Two more examples of policies that follow a polycentric approach, but are not necessarily focussed – though coordinated with – at spatial and economic development policies, are firstly the education policy aiming at strengthening of regional universities and secondly the decentralisation policy aiming at the creation of regional governments in the seven regions. Both policies are likely to have a spatial and regional economic influence in favour of the regional centres. The policy for the strengthening of regional universities has been implemented by way of interlinking the formerly separate institutions of higher education into multidisciplinary complexes of undergraduate and post-graduate education and research. These institutions are likely to have multiplicative influence in view of the fact that the number of university students has increased from 100 thousand in 1990 to 350 thousand in 2001.

The third and current period of national spatial policy is characterized by the focus on making the Hungarian institutional system appropriate for the active participation in the activities of the European Union. Polycentric development and the strengthening of regional authorities are chief endeavors.

At the level of the regions (of which there are seven) there are several examples of attempts to organise a co-ordinated and joint development of the cities in one region. In most cases it concerns policies aiming at sustaining the evolved polycentric pattern expressed in Regional Development Strategies. This is for instance the case in the Western Transdanubian Region, which consists of three administrative counties, with strong centres (Győr, Sopron, Szombathely, Zalaegerszeg, Nagykanizsa). Similar processes can be observed in the Northern Plain Region (Debrecen and Nyíregyháza), the South Transdanubian Region (Pécs and Kaposvár) and Middle Transdanubian Region (Székesfehérvár, Veszprém).

It is partly the result of spatial policy implementation and partly the product of gradual economic modernization, that the development of regional centres and their specialization are distinctive phenomena. Győr in North-West Hungary for instance is a modern industrial city and centre of technological innovations, Sopron is a cultural centre as well as the centre of a cross-border region extending to Austria, Pécs in the South Transdanubian Region is the centre of a broad range of cultural services. The regional centres of the poorer eastern regions are now in the process of shaping their character.

The mono-centric character of Hungary is likely to prevail, but the pursuit of territorial cohesion and polycentricity may lead towards more balanced development. The most effective tools of the implementation of polycentric development appear to be the following:

- transport development (improvement of accessibility of and links among the regional and local centres);
- regionalisation (and thereby empowerment);
- as well as cross-border development enabling the regional centres to cooperate with the neighboring partners, extending their sphere of influence to cross-border areas, and thereby counter-balance their former one-sided dependence on the Capital City.

26.3.2 Romania

In general it has to be mentioned that Romania's urban system still suffers from the socialist industrialisation policies. These policies resulted in the creation of new urban settlements especially in deep rural areas lacking any service centres and unfortunately, lacking industrial resources too. Today these urban settlements perform with varying success. Some of them proved viable, others struggle with their urban status. The main problem with these 'new towns' is their one-dimensional set-up. Only basic facilities like health and education were provided while urban environmental aspects such as infrastructure (water supply, sewerage, a modernised street network) and quality urban dwellings were neglected. Also, no effort was made to create something like an 'urban culture'. Based on the negative outcomes of these policies our respondent advises that a polycentric development policy should strongly focus on stimulating endogenous forces in newly sustained centres. This message seems to be taken on board in the National Spatial Development Plan of 2001.

Since 2001, when the Romanian Parliament approved (as Law 35/2001) the National Spatial Development Plan, Section IV of which is about 'The Settlements Network', Romania has an

official strategy aiming at increasing the general socio-economic and cultural living standard, and diminishing the social and regional disparities.

The plan (law) provides:

- Main principles for development of settlement pattern.
- Six rank system hierarchy (from I to III for urban, and from IV to VI for rural settlements). This system reflects the actual and expected importance of every settlement in the national network from the administrative, social-economic, and cultural point of view measured by the dimension of the influence area and the fund allocation decision-making level. Rank I includes the Capital and municipalities surrounded by settlements located up to 30 km distance establishing co-operation relationships in many development policies and actions.
- Regulations for upgrading of settlements within the hierarchy and for stimulating the competition between them for a better position in the national network.
- Stimulation measures by Governmental, central and local authorities for depopulated areas between the years 1966 – 1997 (amongst others this involves: prioritising the development of endogenous potential in order to create balancing poles in deep rural areas, by modernising some rural settlements that have a service function in their area and by special programmes for co-financing institutional development).
- The legal framework for establishing the metropolitan areas by voluntary based partnerships between large urban centres and creating a better balanced spatial development of the national territory.
- Specific legislation for national and regional development, including sectoral plans and cross-border development programs for a better European integration.

Before the National Spatial Development Plan, Romania did not have a specific policy addressing the polycentric spatial development of its settlements network.

Another important policy, which influences polycentric development, is the transport and infrastructure policy. Although there is a Section 1 of the National Spatial Development Plan, which foresees the building of 7 motorways and several expressways, the Romanian Government gave priority in the past 6 years to the modernisation of national roads and communal (local access) roads, in order to eliminate extreme peripherality. Transportation policy is laid down in two very comprehensive and detailed governmental programs: The Strategy for Rehabilitation of National Roads until 2012, and the Strategy of Paving of Communal Roads for the period 2002-2010, both available from the Ministry of Public Works, Transportation and Dwellings.

26.3.3 Bulgaria

In Bulgaria polycentric development is an objective of both the Spatial Planning and the Regional Development Law from respectively 2001 and 1999. A revised draft of the regional development law is currently under consideration.

The Spatial Planning Law distinguishes between a national spatial development scheme and regional development schemes, both being strategic planning documents. Polycentric development is considered both with regard to the national level and with regard to the transnational and cross-border level. A National Spatial Development Scheme of the Republic of Bulgaria is currently in the process of being drafted by the Ministry of Regional Development and Public Works.

The regional development law defines the objectives and measures of the regional policy, as well as 'specific regions for purposeful impact'. In general the focus is directed at promoting a polycentric spatial development. Particular emphasis is laid on the regions of economic growth,

mountain areas, rural areas, regions of economic decline. The urban settlement system is considered forming the structural element of regional development. In this sense polycentric development is one of the objectives of the policy.

The Regional Development Law envisages the elaboration of development strategies for the regions and districts that form the base of the pyramid of the National Development Plan and at the same time constitute also independent spatial development and planning acts of lower tier authorities. Many districts and regions already have developed their own regional development strategies and plans. The majority of them comprise conceptual drafts about development of the system of different centres of social-economic functions inside the area and measures related to strengthening of certain functions.

With respect to the achieved results one may note the following:

- The links and interaction between regional planning and regional (economic) policy are not adequately developed as yet.
- The rate of implementation of the planned measures is still low and hence mobilisation of efforts and stronger focus on implementation is needed.
- The planned modes of impact may be assigned to the field of social-economic functions.

The city and regional plans for Sofia may serve as an example of a polycentric approach at the (city) regional level. In fact, it regards the elaborated strategic planning documents for spatial development of the City of Sofia and Sofia Region District: i.e. the Master Plan of Sofia City and Regional Spatial Scheme of Sofia Region. Their approval by the National Assembly was scheduled for May 2003. Both envisage a spatial development model and measures stimulating polycentric spatial development of the wider Sofia region. The basic concept underlying both plans sees the city of Sofia as the core of a polycentric urban network consisting of existing regional centres situated at a distance of some 20 - 80 km away from the capital. These centres, which are currently undergoing a more or less explicit economic decline, are expected to assume some of the current industrial functions of Sofia. Also they are expected to develop new functions related to respectively new transport corridors, the development of transborder co-operation between the Republic of Bulgaria and the Republic of Yugoslavia, the Republic of Bulgaria and the Republic of Macedonia, the development of recreation and tourism, agriculture, the setting up of economic zones, a technological park etc. This line of development is expected to enhance the economic competitiveness of the entire Sofia Region and to make the best use of all the advantages of this region in terms of geographic location and transport infrastructure, as well as to promote the relations of partnership and collaboration (in some cases of competition as well), depending on the specific circumstances and the available potentials.

Among the sector policies, transport and telecommunications may be said to have the highest impact on polycentric development. In connection to this, it is worth noting the impact of the new border-crossing checkpoints. The opening of border-crossing checkpoints changes the role and the function of the adjacent centres along the transport axis near the national border.

For the time being environmental and nature conservation sector policies do not have an explicit impact on the polycentric spatial development. The main reasons for this state of affairs is that the major environmental problems in Bulgaria are related to human settlements or industrial areas, in which energy generation, mining or other polluting industries predominate. However, the economic crisis of the past 10-13 years and the liquidation of many of these industries have resulted in considerable improvement of the local environmental situation. Additionally, the implemented measures of the environmental policy have improved the situation in a number of "hot spots", however they have not been able to produce clearly manifested changes in the

development path and functions of the cities and human settlements in these areas of the country.

The industrial policies, the policies aimed at attracting foreign investments, the implementation of industrial development programs by allocations from the state budget and from the EU pre-accession funds under the SAPARD, ISPA and PHARE, as well as from potential Bulgarian and foreign investors, are also significant in terms of polycentric spatial development.

26.3.4 Slovak Republic

According to the Vision Planet Compendium of the Slovak Republic the principles for regional policy have been approved in 1991. The principles present a step-by step approach to arrive at a full grown regional policy, which is able to provide solutions for regional problems and the development of regions, and are officially seen as an inseparable part of the transformation process. The policy itself is considered to be applied horizontally, i.e. co-ordinating territorial elements of sector policies, and vertically, i.e. to co-ordinate policy efforts of lower tier authorities.

The proposal contains seven principles addressing procedural and substantive issues. One of the principles is the strengthening of economic independence of economic units, which may be considered to reflect a polycentric development agenda. In terms of instruments in the early 1990s emphasis was put on the use of general economic instruments like "...regional differentiation in credit policy, tax policy, grant policy and depreciation policies to be approved individually for geographically and specifically determined regional units." (Vision Planet, 1999: 614). Whether these instruments have been used does not become clear. Next steps in the process to built up a sound regional policy were the creation of various funding programmes (none of which was approved) and the drafting of a number of policy documents. One of them, the 'Proposal of Strategy for Regional Development of the Slovak Republic' defines strategic intentions, amongst them the objective to raise the competitiveness of regions. This is however not explicated in the compendium.

Further reference is made to the development of the 'Slovak Spatial Development Perspective'. This perspective distinguishes between 'settlement core areas' of:

- Nation-wide and/or international importance
- Supra-regional and even national importance
- Regional importance
- Local importance.

Six core areas of national and international importance are recognised, of which the Bratislava regions outranges all others in terms of population and growth potential (Vision Planet, 1999: 579). The Compendium does, however, not further elaborate on the kind of policy that is proposed for these agglomerations. It remains, in other words, unclear whether a polycentric development policy (i.e. emphasising and stimulating the role of a selection of urban areas) is pursued or not and whether this is a major, subsidiary or minor aim. The differentiation between city-ranks suggest, however, the presence of something like a polycentric policy.

26.3.5 Czech Republic

Similar as the section on the Slovak Republic the main source for this section is also the Vision Planet Compendium of which the Czech chapter was last edited in 1998. The urban settlement system is described as "more or less in balance and (...) logical" and that there is "no (...) need

to change this structure” (Vision Planet, 1999: 250). The share of urban population is above the 70%. After 1993 there is no official classification of cities. Nevertheless there have been attempts in 1992 and 1993 to agree on a city hierarchy complete with corresponding service levels (Pallagst, 2000). The compendium, however, speaks about 11 regionally important urban agglomerations and the city of Prague as of international importance. Also the city of Brno has some dominance. Some of the cities are recognised as ‘gateway cities’, with important connections with the international economy.

In the spring of 1998 the so-called ‘Principles of the regional policy of the government of the Czech Republic’ were approved. In this regional planning, which used to be very economy based, spatial planning aspects play an important role as a harmonizing element. The main goal of regional policy is to support the economic and social development of individual regions and to contribute to harmonic and balanced development for the country as a whole. Basic principles of the policy are amongst others the ‘principle of partnership’ and what is called the ‘principle of programming’, which refers to narrow co-operation on the conceptual approach. Next to the national strategy each region develops its own development programme. In terms of instruments reference is made to sectoral measures of the national ministries, development and supporting programmes and the system of financial instruments such as state guarantees, grants, loans, incentives etc. (Vision Planet, 1999: 272).

Having read some articles (Blazek, 2001), policy documents as the National Development Plan 2004-2006 (Czech Republic, 2003), which is an obligatory document for EU-funding, and searching the web, it occurs that there is neither a spatial strategy nor a polycentric policy in the Czech Republic. In fact, it transpires through different texts that the Czechs, especially at the level of the regions and municipalities, stand reluctant towards strategic spatial development plans anyway (Pallagst, 2000; Blazek, 2001; Czech Government, 2003; Sodomka, 2003). Objectives as balanced competitiveness, cohesion and increasing competitiveness are of course at the core regional development policy. No attempt has however been made to look at these aims from a territorial point of view. Polycentric development policy as such seems not to exist therefore, at least not explicitly.

26.4 Conclusion

While this chapter differs from the other chapters in this report, also the conclusion differs. Instead of providing conclusions for each country apart we draw some more general conclusions that apply to all six countries. It has to be noted though that although the conclusions below are phrased in general terms applying to all six countries, a closer and more detailed look will reveal significant variations between them.

One of the main conclusions is that all countries, except the Czech Republic, seem to have polycentric development on their minds. In most cases the application and elaboration of the concept takes (or will take) place by means of spatial planning or regional development schemes that apply to the national level. This government level may generally speaking be considered dominating since the regional government level often still is in the process of getting matured. This may, however, not be interpreted as if there are no polycentric strategies at the regional level. On the contrary, in each country regions can be found with plans, visions, programmes or schemes aiming at polycentric development. Often such strategies have been formulated for the metropolitan regional development around the capitals, which seem to attract most economic activities. These policies aim at creating what we would call ‘urban networks’.

In terms of objectives it seems that issues as 'increasing competitiveness', 'balanced development' and 'combating over-concentration' are the main goals to reach via polycentric development. Especially in Hungary, Bulgaria and Romania the capital city plays a main role in the strategy, which often tries to find a delicate balance between increasing the international competitiveness on the one hand and the a national balanced development on the other. (Also Poland offers a good example of this kind of strategy) In Hungary, the Czech Republic, Slovakia and Bulgaria there are clearly centripetal trends visible which lead to over-concentration in the capital region. In terms of potential for balanced development it seems that the three western located countries, Hungary, Slovenia and the Czech Republic, are better off than Slovakia, Romania and Bulgaria, which have to deal with the socialist heritage, i.e. urban settlements located in extremely peripheral areas having no clear endogenous potential.

A remarkable difference with EU member states is the relative importance that respondents gave to infrastructure and transport policies. Whereas these policies hardly figure in the answers of EU member state respondents, who generally speaking focused at spatial planning and regional development policies, infrastructure policies are deemed essential in stimulating polycentric development in the accession countries. Obviously, this may be considered as an indication of underdeveloped infrastructure systems in accession countries compared to present EU members. Also remarkable perhaps is the relative absence in the questionnaires of the possible impact of decentralisation of administrations.

As regards the type of application it is difficult yet to draw firm conclusions. Most of the policies and the legal frameworks that constitute them are just a few years in operation and, as indicated, we do not have up to date information nor do we have the time to study it if there was some. The Vision Planet and ESTIA planning compendia may fill in this gap, although, just as the EU Member States Spatial Planning Compendium, they already may be outdated at some points (Vision Planet, 1999; ESTIA, 2000).

Finally, as regards the history of polycentric development strategies in the six countries it has been indicated that under socialist regime emphasis was put on industrialisation policies. Although stimulating in their own way a polycentric development, the present policies may be judged as a radical departure of these traditional approaches.

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Appendix I – Respondents

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Slovenia: Chapter written by Nataša Pichler-Milanović of the Urban Planning Institute of the Republic of Slovenia. The questionnaire was coordinated by Friedrich Schindegger and Gabriele Tatzberger (Austrian Institute for Regional Studies and Spatial Planning) (ÖIR)

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Sweden: Moa Tunström (Nordregio)

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United Kingdom: Simin Davoudi, Michelle Wishardt and Ian Strange (Cudem, Leeds Metropolitan University)

Appendix 2 – Questionnaire

ESPON 1.1.1: Polycentric development in Europe
WP2: Application of the concept of polycentricity
17 January '03

Questionnaire: Polycentricity in Policies

Please pick out at least two policies or projects/initiatives that in your view pursue polycentricity and answer (if appropriate) the questions below. Please select in first instance policies that explicitly address polycentricity. Start selecting at the national level and in case there are no such policies at this level, then move one level down to the sub national or regional level. (For further explanation see Annex)

General

1. Name of policy document:
2. To which level does it apply (national, sub-national, regional)
3. Date of introduction
4. Initiating body / bodies
5. Policy field / sector
6. Is polycentric development a major / subsidiary / incidental / indirect aim?

Rationales

Please give a brief description of the general objectives of the policy, using (in random order) the points below, and its relevance for polycentric development. Please make specific reference to the documentation that you include (see our request for 'Further information' below)

7. Could you give a little overview of the present situation in the territory the policy addresses?
8. Does the policy (or you) regard the territory as mono- or polycentric? (Please, describe in terms of for instance the dispersion of functions, settlement structure, scale, proximity etc.)
9. How does the policy (or would you) describe the geographical and economic position of this territory in a national, transnational and European context?
10. Are there any relationships or interdependencies between the different parts, regions or cities of this territory in terms of for instance complementary, co-operation and competition? How do they get visible, for instance: commuting patterns, shared use of certain social-economic functions?
11. Main concern and strategy of the policy
12. What is the desired situation?
13. How is this translated into objectives?
14. Which problems does the policy try to solve?

15. How does the policy influence polycentric development?
16. Policy in practice

Please give information regarding the way the policy is being executed.

17. Specific means, instruments, budget, regulations and policy concepts (in use or proposed) that are used to pursue polycentric development?
18. Are maps and / or other forms of visualisation used to illustrate the policy?
19. Which actors, parties and bodies are involved and / or addressed by the policy?
20. Method of monitoring and evaluating?
21. Strengths and weaknesses, missing instruments or solutions, possible role for the EU?

History of policy

Please give information, using the questions below, about the extent to which the policy is rooted in the present political and policy environment.

22. Could you describe the historical context? In other words, was there already some sort of 'tradition' of polycentric development strategies, or would you describe the present approach as relatively new?
23. Is the policy strongly or weakly embedded in organisations and political belief systems?
24. Has a certain language (terminology, terms and concepts, visuals) developed around the issue of polycentric development?

Further information

Please add written information in English, German, French or Dutch. We are thinking of policy summaries, (scientific) policy review articles, general information sheets, websites etc.

Thank You!

ESPON 111
Potentials for polycentric development
in Europe

Annex report C
Governing polycentricity



This report represents the final results of a research project conducted within the framework of the ESPON 2000-2006 programme, partly financed through the INTERREG programme.

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This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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ESPON 1.1.1

Potentials for polycentric development in Europe

Annex report C **Governing polycentricity**

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Critical dictionary of polycentricity
European urban networking
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Foreword

This annex report of the ESPON 1.1.1. project "The role, specific situation and potentials of urban areas as nodes in a polycentric development" presents the findings of work package 5 on "Governing polycentricity" conducted by Simin Davoudi (co-ordinator), Ian Strange and Michelle Wishardt, CUDEM, Leeds. The findings of the work package are summarised in the project report and presented in full in this annex report.

The project report and the four annex reports are available at www.espon.lu

Stockholm, August 2004

**The content of this report does not necessarily reflect
the opinion of the ESPON Monitoring Committee**



ESPON Project 1.1.1

THE ROLE, SPECIFIC SITUATION AND POTENTIALS FOR URBAN AREAS AS NODES OF POLYCENTRIC DEVELOPMENT

WP5: GOVERNING POLYCENTRICITY

August 2004

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Chapters 1, 2 and 3 are based on Interim Report 2, March 2003, 4, 5 and 6 Interim Report 3, July 2003 and 7 and 8 on Cudem's contribution to the 111 Final Interim Report of July 2004. Chapters 9 and 10 are a combination of all inputs. All are based on the work of Simin Davoudi, Ian Strange, Michelle Wishardt.

CHAPTER 1: INTRODUCTION TO WORK PACKAGE FIVE

1.1 The Rationale

Urban governance frameworks are changing as a result of globalisation and socio-economic restructuring across Europe. National boundaries are being over-run by economic activity, environmental change and technology. The linear top-down decision-making model is not working effectively any more and the borders between levels of government are no longer relevant. There is a widespread recognition that a new form of governance, which involves working across boundaries within the public sector as well as between the public, private and community sectors, is underway. Many European cities and regions are either experiencing the shift, or the need for a shift, from traditional model of hierarchical power to a system where power is shared and split between a variety of stakeholders. Governments are no longer the exclusive holder of authority. The discourses of the current governing bodies are peppered with terminologies such: civil society, partnerships, network, cohesion and integration. These transformations have led to a number of processes; the most visible amongst them are the multiplicity of actors and interests involved in decision making and the fragmentation of responsibilities.

Creating horizontal and vertical co-operation between various levels of government as well between government and non-public bodies and achieving integration between disparate responsibilities have now become the central focus of effective governance. This is particularly the case with regard to the polycentric development of Europe. Promoting economic competitiveness in European polycentric urban regions needs both 'hard' infrastructure, such as an efficient transport and telecommunication network between and within the regions, and 'soft' infrastructure, including in particular an effective institutional network. Existence of effective governance relationships is an important prerequisite for developing and sustaining the economically, socially and environmentally balanced regions across Europe. The institutional structure and the nature of mechanisms for decision-making, co-operation and power partitioning can significantly influence the direction of a balanced European territory and the successful implementation of policy options. Moreover, whilst industry, businesses and households operate on the basis of functionally defined areas particularly in polycentric urban areas, governance institutions are often organised and operate on the basis of administratively defined areas such as communes, municipalities,

boroughs or Kreise. In order to overcome the potential problems of such a mismatch, the ESDP emphasises the need for building up co-operations and partnerships between towns and cities and their surrounding rural areas. Joint working arrangements which are capable of cutting across the administrative and sector boundaries are seen as effective ways of creating integration and co-ordination in the midst of diversity and multiplicity of: actors, interests, powers, responsibilities and institutions. There is a need for effective harmonisation and co-ordination of the operation of these institutions in order to develop their capacity for capturing the opportunities that are embedded in and arise from polycentric development of the European regions.

1.2 Aims and objectives

This Work Package examines the extent to which the existing and changing governance relationships reflect and capture the functional complexity of polycentricity in Europe at various scales, as defined by work packages 2.

Key objectives of this work package are to:

- Provide a state of the art review of existing literature on key concepts and definitions regarding governance, partnership, institutional capacity, multi-level governance and 'good' governance, as well as typologies of administrative and legal systems in European countries. The focus of the
- Identify barriers and opportunities for building effective partnerships
- Identify and analyse innovative institutional and partnership arrangements which are successful in responding to the dynamics of the complex relationships in polycentric urban areas
- Develop models of partnerships for different scales of polycentricity
- Build upon and complement WP2 and provide inputs in policy recommendations (WP6) concerning the influence of governance relationships in different types of polycentricity.

1.3 Methodology

A combination of the following methods are adopted:

- A literature review including academic literature, key European policy documents and other relevant project reports

- A series of questionnaire surveys of a sample of the existing partnerships whose focus is on spatial strategy making. The survey will be undertaken at two main spatial scales as defined by the project team. These include:
 - Inter-municipal co-operation at the level of Functional Urban Areas (FUA) with one or two examples in each European country (27)
 - Inter-FUA co-operation at the level of polycentric regions (selected samples from the areas identified by the project team as typologies of national polycentricity) and Trans-national co-operation at the level of Europe (selected sample of the areas identified by the project team as typologies of European polycentricity using INTERREG projects as examples)
- A round table meeting / workshop with selected experts from the Commission and member states to discuss and test the outcome of questionnaire results

CHAPTER 2: PATTERNS OF GOVERNMENT STRUCTURES IN EUROPE

2.1 Introduction

There is a large body of literature on the commonalities and differences of the legal and administrative systems in various European countries (for example, Batley and Stoker, 1991; Bennett, 1993, Marcou and Verebelyi, 1993). However, despite the considerable variation in legal and administrative systems across Europe, there is a general consensus in the literature that European countries fall into five main categories (Zweigert and Kotz, 1987). Derived from cumulative histories, each type is based on distinctive, interrelated logics of political representation on the one hand and policy making on the other. Emphasis is placed on two key factors: the differences in constitutions of each country and the relationship between central and local government. The following account, which draws mainly on a review by Newman and Thornley (1996), aims to provide a brief summary of the five 'families' of European legal and administrative system. These are labelled differently in various literatures but, following Newman and Thornley (1996), we group these as British, Napoleonic, Germanic, Scandinavian and East European.

2.2 The British family

British legal style evolved from English Common Law and the principle of precedent. This system is based on the accumulation of case law over time. With the exception of being practiced in Ireland, it is unique in Europe and hence stands in isolation from the rest of European countries. Another key distinction between the British system and the rest of Europe relates to the powers given to local government.

The British 'unwritten constitution' gives no special protection in law to local government. The scope of local authorities are defined by central government and if they act beyond their given powers, they will be confronted by the principle of *ultra vires*. This contrasts with the rest of Europe where the 'doctrine of general competence' applies. Here, local authorities are assumed a general power over the affairs of their communities and only when they are unable to do so higher levels of government will become involved. This principle of subsidiarity is particularly strong in Federal countries such as Germany.

Bennett (1993) describes the administrative system in Britain and Ireland as dual system in which central government set legal and functional constraints for local authorities and then plays a supervisory role. Stoker (1991) describe the relationships between local and central governments in Britain as an agency model where local authorities act as agents of central government carrying out its policies within a system of regulation, laws and centrally controlled taxation and financial allocations. The separation between the spheres of local and central government has led to what is called dual polity (Batley, 1991) with little movement of politicians and professionals between the two tiers of government. In Britain, most local governments are currently administered through political committees with Mayors playing a symbolic role. However, where there is an elected mayor, he/she has a wider range of powers and responsibilities. For example, the Mayor of London has responsibility for strategic spatial planning for London. Given that the ethic of efficient delivery of services has always been at the centre of 'good' local government in Britain, the units of government are fairly large as compared with some other European countries.

2.3 The Napoleonic Family

This family, which is the largest in Europe, originated in France before spreading to other, mainly Southern European countries.

The legal style uses abstract legal norms and involves greater theoretical debate than the British style. Following the French Revolution in the early 19th Century, the French Code provided a comprehensive statement of new legal principles, "founded on the creed of Enlightenment and the law of reason" (Zwegert and Kotz, 1987:88) spread to Europe through military expansion under Napoleon. However, given there has been considerable variation between different countries. For example, in Italy church remained as an influential player. In Spain, laws developed in Middle Ages and were particular to different localities retained much of their influence.

Bennett (1993) traces the influences of historical development on the structure of local government and the level of power attributed to it. One of the key points highlighted by Bennett is the continuing significance of the nature of commune as the basic building block of local administration in France, Belgium and Switzerland. This has led to the creation of numerous authorities at the lowest level where the identity of local administration is more closely related to the communities' sense of local identity. This is in contrast with the British style where the emphasis is on the efficiency of service delivery and hence the creation of larger local authorities. Communes derived originally from the administrative structure of Catholic Church. After Reformation, the Protestant north and west adopted a new system of administration based on the nation-state with a corporate and professional orientation. In the Catholic south, nation building occurred later and in some countries the establishment of democracy was delayed by dictatorship.

According to Bennett (1993), Britain and France are polar opposite in their paths to democracy. In France, the key issue for democratisation process and government was the imposing of central authority on local government. This led to the establishment of the prefectural system and a strong inter-governmental network. In Britain, the issue was keep the local level subordinate to parliamentary sovereignty given that the local landed aristocracy had maintained their local patronage in the counties.

In the Southern European countries, where Napoleonic reforms introduced the prefectural system, municipal officials have traditionally administered rules, yet lacked much of the legal authority or independent administrative capacity of the Germanic and Scandinavian families (Sellers, 2002). At the same time mayors have wielded greater influence over policy making at higher levels as well as implementation of those policies.

Authorities that have strong links between central and local levels have been categorised as 'fused' systems by Leemans (1970). Here a uniform system, established by central government, ensures central control over lower tiers. The department prefect is a civil servant from central government who, in the past, appointed the mayor. "Within this system, local government is not simply the local agency of central government but contains local representation, albeit with strong central control" (Newman and Thornley, 1996: 33). France is an example of fused system par excellence. Other countries including Italy, Belgium, the Netherlands, Portugal, Spain and Greece also have a fused system. However, recent changes particularly in Spain and Belgium have moved them away from the fused system towards more regional autonomy.

2.4 The Germanic Family

This legal family, which includes Germany, Austria and Switzerland, can be seen as a distinctive branch of the Napoleonic one. Whilst they both share the legal approach of codification, the Germanic family has no central power to impose a unified legal system, similar to England and France. Germany adopted the Roman legal ideas and institutions in a more comprehensive way than other countries. This was then superimposed by the adoption of an abstract and highly intellectual codification after the Enlightenment. German Code has had considerable influence in Eastern Europe and Greece. Whilst Greek legal system is based on Germanic model, its administrative style is Napoleonic.

A key feature of the Germanic model is the significance given to the written constitution (Basic Law). This sets out the powers of different levels of government based on a system of federalism. Any changes in the balance of responsibilities require constitutional change. Within the federal system, central government shares much of its powers with the regions (Länder) which have their own constitutions and representatives, and are engaged in national decision-making. Each region has a different system for dealing with its counties (Kreise)

and communes (Gemeinden). Free-standing cities, such as Hamburg, combine the powers of the various levels.

In Austria, Landers have less power because of the country's legacy of Austria-Hungarian Empire, where a regional level worked as the agency of the Empire and there was no general autonomy at the local level. Similar system existed in the former Czechoslovakia and Yugoslavia.

2.5 The Scandinavian family

The Scandinavian family, which includes Denmark, Sweden, Norway and Finland, represent a hybrid system which lay somewhere between Napoleonic and Germanic models but clearly distinct from the British one. Historical conquests between Denmark and Sweden explain the common features of the Scandinavian countries. Despite common roots with German and French, Scandinavian legal style has developed its own path and has not been affected by 'scientification' of the codes as happened in Germany. In general, a more pragmatic approach has been adopted by Scandinavian lawyers. One of the key features of this style is its clarity and accessibility.

The administrative approach of this family is also a hybrid. On the one hand, there is a strong relationship between central and local governments similar to the Napoleonic model, with agencies of the central government operate at the regional level to implement national policy. On the other hand, self-government at the local level has remained a strong characteristic of the Scandinavian countries and cornerstone of their constitution. This to some extent stems from the far-flung nature of the country and the strength of peasant politics (Newman and Thornley, 1996).

2.6 The East European Family

Following the political re-structuring of the former eastern European countries after the collapse of communism in 1989, there has been a process of reforms and the new laws and administrative systems have been put in place. The common historical roots with Austria and Germany have influenced some of these developments. Sources of information on various administrative systems and governmental structures in these countries are more difficult to obtain at this

stage. However, we aim to complete this section of the report and provide a fuller picture in later work.

2.7 Formal government structures and responsibility for spatial planning

Although it is difficult to generalise about countries' constitutional arrangements, it is broadly true to say that most European systems are organised into unitary, regionalised or federal states. The following table shows which of these systems is dominant in different EU member states.

Table 1: Government Systems

Unitary (with varying levels of decentralisation)	Power resides with the national government, although certain responsibilities may be delegated to government departments for specific territorial units or to local government.	Denmark Finland France Greece Ireland Luxembourg Netherlands Portugal Sweden UK
Regionalised	Power lies with national government and with tiers below national level, and is apportioned through the constitution or statute.	Italy Spain
Federal	Power is shared between national and 'regional' governments, with each having autonomy in some spheres, and able to make law.	Austria Belgium Germany

Source: The EU Compendium of Spatial Planning Systems and Policies

Constitutional arrangements determine, to a large extent, the respective power that different tiers of government have with regard to spatial planning. In unitary states, for example, it is a general principle that the national government makes the law concerning spatial planning and this is then applied throughout the country. However there is variation in the extent of delegation to lower levels. More complex still is the situation in 'regionalised' states where the relative autonomy of regions varies, some being more dependent on national government than others. Again differences arise between and within the federal states, the latter as a result of the autonomy of the 'regional tier'. Nonetheless it is possible to summarise briefly how responsibilities for spatial planning are divided between

the national, regional and local levels across the EU, as illustrated in Table 2 below.

Table 2: Responsibility for Spatial Planning

National level	<p>All member states have some responsibility except for Belgium. The Austrian national government has only limited responsibilities.</p> <p>In Greece, national government has had sole responsibility and is holds most responsibility for the planning system in the UK, Ireland and Luxembourg.</p>
Regional level	<p>The Austrian Lander and the Belgium regions hold primary responsibility. The German Lander and Italian and Spanish regions have significant autonomy. The regional or provincial structure is important in The Netherlands, France, Denmark and Finland.</p> <p>It is much less important in the UK and Ireland and in the particular circumstances of Luxembourg.</p>
Local level	<p>Local authorities have the primary responsibility for regulating land use control and detailed plan making across most of the EU, but within a framework set and supervised in national or regional government.</p> <p>The role of local authorities is most strong in states that are unitary with a policy of decentralisation, such as Denmark, Finland and Sweden.</p>

More recently, there have been changes in the structure of government in relation to spatial planning, mainly as a response to transnational and strategic developments. This is apparent in the expanding role of regional tiers as they take on responsibilities from national government, but also arising out of the need to provide a context, primarily at the regional level for bidding for European funding. Factors in addition to 'regionalism', which are affecting spatial planning, include the following:

- Changes at central government level to improve co-ordination of different sectoral policies, for instance in the creation of inter-ministerial committees in France, Ireland and Portugal.
- The establishment of city regions as regional public bodies, but often not as a separate tier of government, as with Greece in the operation of metropolitan planning organisations in the two largest cities.
- The reduction in the number of authorities with spatial planning responsibility within a member state, at the regional or local level. In the UK for example, area councils have grouped several small local authorities together.

- The increasing trend towards regionalisation where powers have been devolved down from central government, as with Belgium. Alternatively, as with Finland and Luxembourg where groupings of local authorities are co-operating to prepare regional plans.

It should, however, be noted that in a number of member states government structures and the division of power and responsibilities have remained fairly stable, most notably in Austria, Denmark, Ireland and Sweden.

(Source: The EU Compendium of Spatial Planning Systems and Policies)

CHAPTER 3: TERRITORIAL GOVERNANCE

3.1 Introduction

This chapter provides a review of literature about current academic debate on 'governance' and 'institutional capacity'. The emphasis is to unpack the meanings attached to these concepts and the ways in which they are interpreted by different theoretical perspectives. It will also give a conceptual framework and rationale for the empirical work undertaken to explore the political dimension of polycentricity.

3.2 Territory as a new dimension in the EU policy

There has been a rediscovery of the significance of place and territory in the discussion around local economic development, environmental sustainability and quality of life. This renewed interest in place is taking place in the context of globalisation of the economy, technological advances in transport and telecommunication, the growing influence of multi-national corporations and a concern for global environmental problems. It is argued that as capital is becoming ever more stretched out and mobile, it is the place-specific qualities that are becoming the defining factors in its search for profitable production sites (Hudson). These developments clearly raise a number of challenges for the relationships between the state and society and for spatial planning systems in particular, not only because it is a major component of that relationships, but also because of its central concern with place-making and territorial development. In

most western societies, the spatial planning systems have traditionally provided a key arena within which economic, social and environmental concerns are played out over the decisions on the use and development of land (Campbell, 2000; Davoudi et al, 1996).

This widespread recognition of the significance of place as a focus for integrating these key policy domains and the role of spatial planning as tool to achieve such integration have been recognised by the European Community. The European Spatial development Perspective (ESDP) promotes 'territory' as a new dimension of European policy and argues that by focusing on territory, a better integration of EU sectoral policies can be achieved. A major concern of the ESDP is "to reconcile the social and economic claims for spatial development with the area's ecological and cultural functions and hence contribute to a sustainable, and balanced territorial development" (ESDP, 1999:10). One of the cornerstones of its 'policy options' for achieving this three-fold objective is the promotion of polycentric development through spatial planning strategies. It suggests that, "the economic potential of all regions of the EU can only be utilised through the further development of a more polycentric European settlement structure". "A network of internationally accessible metropolitan regions and their linked hinterland", rather than a single dominant urban centre, is seen as "an essential prerequisite for the balanced and sustainable development of the local entities and regions" (ESDP, 1999, para 67, 70 & 71).

3.3 Governance matters

The importance of place to the substance of policy has reinforced the rationale for localisation and local governance. Cities and regions, whether mono-centric or polycentric, are faced with the challenge of becoming economically more competitive, socially more cohesive and environmentally more sustainable. As theories of social ecology have shown, these developmental, environmental and distributive domains constitute the critical objectives of policy making (Liepietz, 1995). However, key to the realisation of this critical objective is the capacity of institutions and the relationships within and between them.

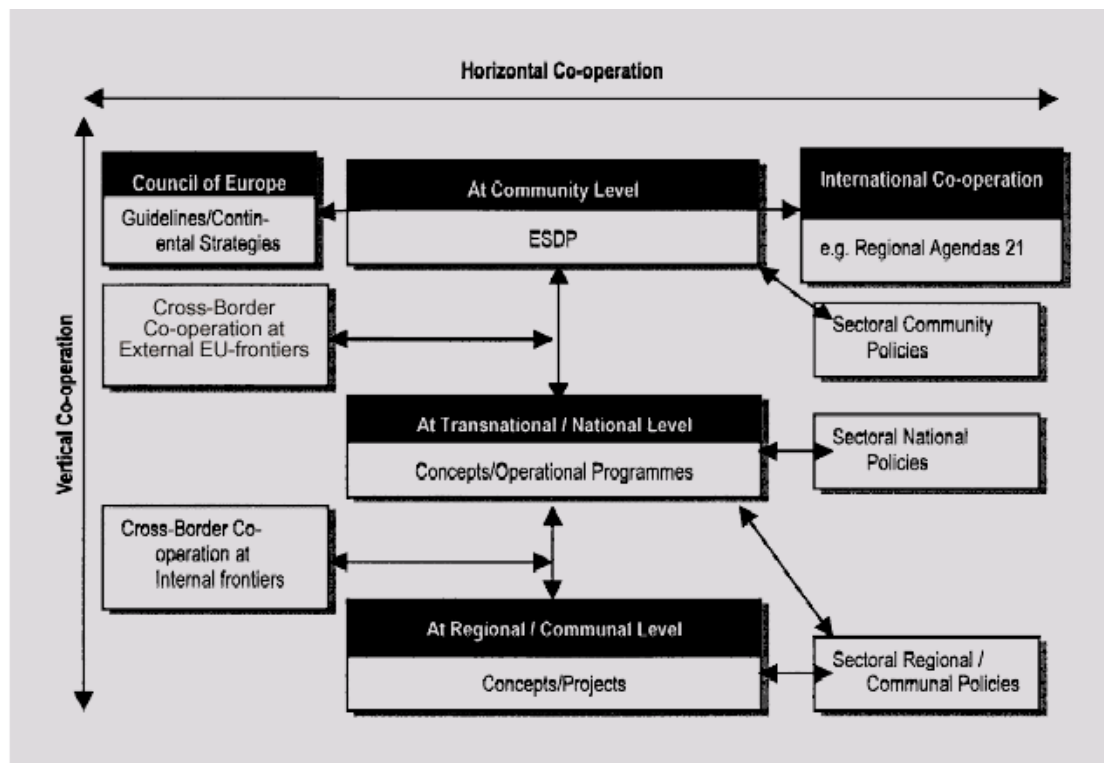
The importance of local institutional capacity and forms of governance has been emphasised in a wide range of literature. The local economic development literature in Europe emphasises the importance of institutional capacity in economic competitiveness of localities (Amin and Thrift, 1994; Ashiem, 1996;

Belussi, 1996). The literature of social cohesion highlights the significance of the active role of residents in community development (Duggan and Ronayne, 1991). The environmental literature puts emphasis on the involvement of stakeholders and citizen participation in environmental actions (CEC, 1990, 1992d). A common theme in all this literature is that institutional capacity is taken to be more than just the institutions of formal government. Instead, it refers to the overall nexus of social relations through which collective action for managing and promoting the qualities of places is undertaken (Healey, 1997)

3.4 Co-operation: a central thrust of the ESDP

The ESDP along with several other European, national and regional policy documents argue that, in the same way as clustering and networking play an important role in business competition and economic competitiveness of firms, cities and regions can also become successful if they develop associational structures in their social relationships. The ESDP states that, "in smaller towns in less densely settled and economically weaker regions, co-operation between urban centres to develop functional complementarity may be the only possibility for achieving viable markets and maintaining economic institutions and services" (ESDP, 1999: para: 76). It also emphasises that, "a pre-requisite [therefore] is the voluntary nature of the co-operation and the equal rights of the partners (op cit, para. 74). It is argued that by encouraging interaction between neighbouring cities and towns and by pooling together and sharing labour market and infrastructure facilities amongst them, economic innovation will be enhanced and functional synergies will be created (Priemus, 1994; Albrechts, 1998, Batten, 1995).

Figure 1: Co-operation in the ESPD



Source: ESDP, 1999:36

In short, the quality of governance relations matters if effective polycentricity is to be developed and sustained. If such synergies are to take place in European polycentric urban regions, there is a clear need for not only the 'hard infrastructure' such as an efficient transport and telecommunication network between and within the regions, but also the 'soft infrastructure' including in particular the appropriate forms of institutional arrangement. Existence of effective governance relations is an important prerequisite for developing and sustaining the economically, socially and environmentally balanced regions across Europe. The institutional structure and the nature of mechanisms for decision-making, co-operation and power partitioning can significantly influence the direction of a balanced European territory and the successful implementation of policy options. Whilst industry, businesses and households operate on the basis of functionally defined areas particularly in polycentric urban areas, governance institutions are often organised and operate on the basis of administratively defined areas such as communes, municipalities, boroughs or Kreise.

It is in this context that the ESDP emphasises the need for building up co-operations and partnerships between towns and cities and their surrounding rural areas to enable the development of sustainable polycentric territories. As Sellers (2002:93) argue, "within an urban region that faces common problems, the

multiple local jurisdictions that typically divide up the urban space often must coordinate with one another or come together in collective action. Throughout the advanced industrial world, urban and regional planning has emerged as one of the most important local means to this end”.

Although there is a growing body of the literature on governance and ‘institutional capital’, which provides a useful starting point for developing a conceptual framework to underpin such evaluation, they rarely tackle the methodological challenges of designing appropriate indicators for measuring these qualities. However, developing a conceptual framework for studying and evaluating the performance of governance requires the knowledge of what ‘governance’ means and how does it differ from ‘government’. It also requires an understanding of the key challenges of governance.

The remaining parts of this chapter are therefore devoted to:

1. Providing an overview of the distinction between the concepts of ‘governance’ and ‘government’
2. Examining the key challenge of governance
3. Developing a conceptual framework for examining the quality of governance relations
4. Reviewing current thoughts on what constitute as ‘good’ governance

3.5 The transition from ‘government’ to ‘governance’

The concept of governance has found a central place in social science debate. As an analytical concept, it has emerged in a range of research fields including urban politics (Stoker, 1997), political economy (Campbell, et al, 1991; Hall 1996), and international and comparative politics (Hyden, 1992). The main focus of the debate has been on the transformation of the prevalent modes of governing advanced economies from *government* into what has come to be called *governance* (Jessop, 1995).

Across Europe, the modern urban systems are characterised by complex patterns of interdependencies between actors, institutions, functional activities and spatial organisations. Controlling, managing or even steering the complex, fragmented and often competing societal interests is beyond the capacity of state as an agent of authority. City governments are no longer the key locus for integration of

urban relationships but merely one of many actors competing for access to resources and control of policy agenda (Davoudi, 1995). Stone (1986, 87) argues that, "as complexity asserts itself government becomes ... more visible as a mobilizer and co-ordinator of resources". In this context, urban governance is defined as "the actions and institutions within an urban region that regulate or impose conditions for its political economy" (Sellers, 2002:9).

Various theoretical perspectives have tried to conceptualise this transformation and its outcome (Pierre, 1999, 2000; Peters 2000). For example, regulation theorists argue that the shift from government to governance is part of and a response to the wider process of socio-economic changes manifested in a move away from a Fordist mass production system and an established Keynesian welfare state towards a 'post-Fordist' flexible specialisation (Jessop, 1995a&b; Piore and Sabel, 1984) and a relentless search for a new 'institutional fix' (Peck and Tickell, 1994a). They argue that the changes in the 'mode of accumulation' in the world economy demands transformation in the 'mode of regulation' (see Amin ed 1994, Harvey, 1989).

Jessop (1997) argues that, central to these developments is the profound restructuring of state and its changing role in governing the relationships between society and economy. This partly relates to the twin trends within the changing economic structure, that of 'globalisation' and 'localisation'. As the organisation of economic activity becomes transnational and global, national governments are less able to control and influence the economic forces which act within their own borders. It is, therefore, suggested that the 'denationalisation of the state', or the 'hollowing out' process, has led to a continuing loss of state functions and shift of power upwards to supranational bodies such as the EU, downwards to special purpose bodies at the sub-national levels and sideways to a range of semi-public and semi-autonomous agencies (Jessop, 1995a&b; Rhodes 1997&2000).

On the other hand, it is suggested that the structure of post-Fordist economic activity - characterised as 'flexible specialisation', lead to a process of localisation whereby localities are more able to develop their own trajectories of economic development within this global system. As the study of small and medium-sized cities in Europe (Cameron, Davoudi et al, 1997) has shown, some localities and regions gain from this process while others lose. One important factor in the way these localities respond to the processes of transformation is the capacity of their

institutions and the quality of their governance relation in maximising opportunities and minimising threats.

These restructuring processes have marked a number of changes in governing structures of cities and regions, including:

- A relative decline in the role of state in management of social and economic relationships
- The involvement of non-governmental actors in a range of state functions at a variety of spatial scales
- A change from hierarchical forms of government structures to more flexible forms of partnership and networking (Jessop, 1995, Marks 1996, Stoker 1997)
- A shift from provisions by formal government structures to the contemporary sharing of responsibilities and service provision between the state and civil society (Stoker 1991)
- The emergence of local / regional forms of governance as a result of mobilisation and construction of scale-specific state policies and institutions (Brenner, 2000)

In summary, the outcome of these restructuring processes is a shift from 'government' to 'governance'.

Here, *government* refers to the dominance of state power organised through the formal public sector agencies and bureaucratic procedures and characterised by:

- Hierarchical organisation of responsibilities between different territorial (national and local) scales in Europe
- Sectoral separation of competencies between various functions of the public sector
- Perceived distinction between politics (managed through representative democracy), professionals and experts (based on technical and instrumental rationality) and lay people
- Functional division between the roles and interests of public (state), private (market) and community (civil society)
- Universalist welfare state structure of service delivery

Governance, on the other hand, refers to overlapping and complex relationships that are increasingly replacing these neat and simple dividing lines (Judge et al, 1995, LeGales, 1998).

Healey et al, (2002), argue that governance, in its *descriptive* sense, directs attention to the proliferation of agencies, interests, service delivery and regulatory systems which are involved in making policies and taking actions. In its *normative* sense, governance is defined as an alternative model for managing collective affairs. It is seen as "horizontal self-organisation among mutually interdependent actors" (Jessop, 2000:15). Here, government is not the only actors and indeed has only 'imperfect control' (Rhodes 1997:8).

In addition, there are multiple interpretations of the exact meaning of governance. Pierre (2000, p.3), for example, argues that governance has two meanings: one "refers to empirical manifestations of state adaptation to its external environment" and the other "denotes a conceptual or theoretical representation of coordination of social systems and, for most part, the role of the state in that process". This latter interpretation is further sub-divided into two categories by Peters (2000) who distinguishes between a "state-centric" approach to governance where the focus is on the extent to which the state has the political and institutional capacity to steer society and economy through defining goals and priorities; and a "society-centred" approach where the emphasis is on co-ordination and self-governance manifested in public-private partnerships and networks.

Key to these approaches is that as the focus of debate shifts from government to governance, emphasis is placed more on process and less on institutions. Hence, Pierre (1997 PUG) defines governance "as a process through which local political institutions implement their programmes in concert with civil society actors and interests, and within which these actors and interests gain (potential) influence over urban politics" (Pierre, 1997:5). It is therefore imperative that governance as a process cannot be understood without also clarifying the normative framework within which governance occurs.

3.6 The challenge of governance

The move to governance has not only led to fragmentation of local governance, it has also led to disruption of established channels, networks and alliances through

which local government linked to the citizens and businesses. It has resulted in decay of established forms of political representation. Old networks are disintegrating, new ones forming, focusing on new arenas and different forms of representation (Stoker and Young, 1993). Hence, the challenge of governance is how to create new forms of integration out of fragmentation, new forms of coherence out of inconsistency. As Stoker points out, governance is “a concern with governing, achieving collective action in the realm of public affairs, in conditions where it is not possible to rest on recourse to the authority of the state” (Stoker, 2000:93) at different time and spatial scales, how collective actors emerge from a diverse group of interest (Le Gales, 1998). A key concern is the availability of strategies of co-ordination to actors involved in the governing of specific policy area.

In the context of polycentric urban areas, which are made of a number of cities and towns that are historically and politically independent, actors are not only drawn from beyond the boundaries of formal institutions of government and spread among public, private and voluntary sectors. They also spread across the boundaries of different political and administrative jurisdictions with little sense of a shared, place-based identity. Moreover, the policy objective with which they are preoccupied, i.e. the development of a spatial planning strategy which enables and enhances the development of polycentricity is highly complex, demanding, and dependent on the actions of a wide range of actors outside the public sector. All this leads to a higher degree of fragmentation and poses an even greater challenge for effective governance. In other words, in the context of polycentric urban areas, creating a favourable condition to meet the challenge of collective action is even more problematic.

Previously, following the work of Logan and Molotch, the literature, largely from the US, provided a powerful argument about the role of growth coalition in creating the condition for collective action (Logan and Molotch, 1987). However, the narrow focus of this literature on economic growth is of little use to the complex and highly conflicting task of developing spatial planning strategies which aim to strike a balance between economic, social and environmental goals. As Sellers (2002) argues, to assess how much of a difference urban governance can make requires an analysis of its role in all three areas of promoting growth, protecting environmental quality and remedying inequities.

For that, regime theory has provided a wider perspective. Following Stones' studies of urban regime formation in Atlanta (Stone, 1993), regime theorists have moved beyond growth coalition and focused on the formation of regimes whose remit is wider than economic growth and can include other shared purposes and common goals. From the regime theory perspective, the problem of governance, understood as the challenge of collective action, can be resolved by forming governing coalitions or regimes that are informal, stable, have access to institutional resources, have sustained role in decision-making, and draw on actions from public and non-public sectors (Stoker, 2000). Substantive policy outcome can be achieved if organisations from various sectors come to co-operate as a result of recognising mutual dependency in objectives, resources, power or knowledge (Bryson and Crosby, 1992).

3.7 Characteristics of effective governance relations?

The above discussion has established that the key challenge of governance is to create a condition which allows collective action to take place, or in other words, to make things happen, to get things done and to implement policies. For policy makers, therefore, the critical questions are:

- What are the key factors for creation of such a condition?
- What are the key ingredients of a favourable climate in which collective action can flourish?

Many commentators have tried to identify specific set of relationships for assessing the performance of governance and its capacity to act collectively. For example, Amin and Thrift (1995) coined the concept of 'institutional thickness' and argued that the nature of institutional relations is a significant factor in the economic and social health of localities. The concept refers to five main factors including:

- A plethora of civic associations
- A high level of inter-institutional interaction
- A culture of collective representation and coalitions which cross individual interests
- A strong sense of common purpose
- Shared cultural norms and values

Coffey and Bailly (1996) used the concept of 'innovative milieu' which was first developed in the French speaking world in the 1980s. This defines broadly based local milieu which encompasses economic, social, cultural and institutional factors which affect the competitive advantage of cities. An innovative milieu is characterised by the following factors:

- A group of actors (firms and institutions) that are relatively autonomous in terms of decision making and strategy formulation
- A specific set of material (infrastructure), immaterial (knowledge, know-how) and institutional elements (authorities, legal framework)
- Interaction between local actors based on co-operation
- Self-regulating dynamics that lead to learning and ability to adapt to changing environment

This approach emphasises the significance of the complex web of relations that tie different actors and agencies together. Here, the territory is not seen as a 'container' but rather as a 'created space' that is both a result of and a precondition for learning (Malmberg and Maskell, 1997). It is an active resources rather than a passive surface (Coffey and Bailly, 1996).

More recently, Innes et al (1994) have argued that the capacity of governance initiatives to achieve a common goal, to make a difference, depends on the character and quality of three forms of capital and the ways in which they interact. These include:

- Intellectual capital (knowledge resources)
- Social Capital (trust and social understanding)
- Political capital (the capacity to act collectively)

Regime theory confirms the significance of these factors and makes a number of other factors which are seen as essential for a regime to achieve a sustained capacity to act and influence developments in key policy areas more explicit (Stoker, 1995). These include (Stone, 93):

- Composition of the governing coalition
- Nature of relations among members of the governing coalition
- The resources that members bring to the coalition

These perspectives lead to the conclusion the following set of capitals are key to the success of a self-organising voluntary coalition in terms of its ability to act collectively and to develop the capacity to achieve its goals and objectives:

Intellectual capital: knowledge resources that are socially constructed and flow among the actors

- Social capital: relational resources and the nature of relations between the actors
- Political capital: power relations and the capacity to mobilise resources and to take action
- Material capital: financial and other tangible resources that are made available to the actors and the coalition

Developing, sustaining and making use of these capitals, however, depend on a number of factors as listed below. These factors can also be used to examine the quality of governance relations in a locality.

Intellectual capital. As argued by de Magalhaes and Healey (2002), building up intellectual capital depends on:

- The *range* of knowledge available to the actors. In the case of coalition which aims to develop spatial strategy the range includes, for example, knowledge of spatial structure of cities and regions and the ways in which they evolve, knowledge of socio-economic processes and their impact of spatial development, knowledge of the ways in which institutions operate, etc
- *Frames of reference* to make sense of the available knowledge. Knowledge can be used and interpreted in different ways by different people. To develop a shared understanding of the available knowledge, a common frame of reference between the actors needs to be developed in the process of co-operation
- *Transparency* in the flow of knowledge and the sharing of information
- *Learning capacity* of actors, which includes both willingness to learn and openness to new ideas

Social Capital. The concept of social capital links to other concepts, most importantly to the concept of 'civic society' or 'civic virtues'.

These were coined by Putnam. His work, based on a longitudinal study of Italian regional institutions, showed that the presence of 'civil society' is a causal factor in explaining institutional performance and ultimately economic development (Putnam et al, 1993). Putnam argued that, civic context matters for the institutions work and defined civic virtues as encompassing "an active, public-spirited citizenry, by egalitarian political relations, by a social fabric of trust and co-operation" (op cit:15).

Using these ideas in the context of coalitions and partnerships, it is argued that creating and maintaining co-operation depends on setting up relations based on:

- *Solidarity* among the actors
- *Relationships* which are based on Loyalty and trust rather than hierarchy and bargaining
- *Mutual support* for the actions that have been agreed
- *Shared sense of purpose:* The most common form of achieving co-operation is by mutual self-interest. Selective incentives create the conditions for collective action. However, another form of achieving co-operation is through a deeply held commitment to a shared social purpose (Stoker and Mossberges, 1994)

Political capital. This is about the capacity to mobilise which depends on:

- Intangible *Resources* that members bring to the coalition such as political popularity.

For actors to be effective, two characteristics are necessary (Stone 1986):

1. The possession of strategic knowledge of social transactions and a capacity to act on the basis of that knowledge
2. Access to resources that make one an attractive coalition partner

- *Power relation* in terms of power *to* act rather than power *over* the action of others and the degree of *pre-emptive power*

Dyeberg (1997) argues that power can be seen as both the power to control the actions of others and as the power to act, to get things done. Power is seen as a matter of social production rather than social control. "The power struggle concerns, not control and resistance, but gaining and fusing a capacity to act – power to, not power over" (Stone, 89b: 229). However, it is clear that in the social relations of governance processes, both forms of power exist and remain in tension. As Stoker (1995) suggests, beyond the surface of fragmented and disjointed interest group conflicts certain partnership between government and non-governmental actors may be formed that gives its members a pre-emptive occupancy of a strategic role.

The move away from a traditional model of hierarchical and mainly political power to a system where the power is shared and split between a variety of political and non-political stakeholders has led to further diffusion of power with multiple characteristics. Stoker (2000) identifies four types of power:

- 1 Systemic power which "is a matter of context, of the nature of or 'logic' of the situation" (Stone 1980:979 quoted in Stoker, 1995). It relates to the position of actors in society and socio-economic structure
- 2 Power of command and social control relating to active mobilisation of resources: information, finance, reputation, knowledge
- 3 Coalition power which increases the capacity to bargain, not to control
- 4 Pre-emptive power which relates to power of social production. This needs leadership (not of individual but a group of interests) for solving collective action problems and building capacity to govern

Although those with systemic and command power have advantage in governance relations, but they can only do so if they turn that power into pre-emptive power, i.e. power to act as "a collective actor to guide the community's policy response to social change and alter the terms on which social co-operation takes place" (Stone 88:102).

Material capital. This relates to the tangible resources (financial and asset based) available to actors.

Assembling and blending resources is a daunting task. Even if a form of co-operation is developed, for a governing coalition to be viable in the long term, it "must be able to mobilise resources commensurate with its main policy agenda" (Stone 1993:21).

Institutional capacity

In their study of an urban regeneration project, de Magalhaes and Healey (2002) draw on the work of Innes and Booher (1999) on consensus-building processes and used the notion of 'institutional capital' as a conceptual device for linking together the first three forms of capital.

Creating and enhancing new forms of governance and creating strategic capacity to capture new opportunities requires progress towards all four forms of capital. This is particularly important in relation to spatial planning aimed at promoting a polycentric Europe. Given the new condition of governance, the capacity of institutions to create new relationships for engaging in purposeful, collective action is key in success or failure of cities and regions in taking advantage of the globalised economy. However, the conditions affecting capacity varies between different localities. As Healey (1998b: 1531) argue, " a key element of such capacity lies in the quality of local political culture some are well-integrated, well—connected, well informed and can mobilise readily to capture opportunities and enhance local conditions. Others are fragmented, lack the connections to sources of power and knowledge and the mobilisation capacity to organise to make a difference". In short, in some governance relations and institutional arrangements the four forms of capitals are well developed, whilst in others they are either non-existence or pre-mature. The question which arises is whether and how policy intervention by the EU and or national states can help develop such capacities.

3.8 The role of policy intervention in building up effective governance relations

Whilst it might be argued that in the United State (where discussions on governance and urban regime were pioneered), coalitions are 'natural', in EU countries government has attempted to actively steer processes of coordination and collective action across public private and voluntary sector boundaries. 'Steer' in the context of governance recognises that "government cannot impose its

policy but must rather negotiate both policy and implementation with partners in public, private and voluntary sectors" (Stoker 2000:98). New 'operating code' is based less on government's authority to make decision and more on creating the condition for positive-sum partnership.

It is therefore argued that governments can establish a framework for effective collective action. In the UK for example, the election of a Labour government has accelerated the search for a 'modernised' form of government. As Harding (1998) argues, the UK's interest in regime comes out of a growing awareness of the limits to direct action by the state and the need for partnership with other actors including the private sector and the civil society. Similar attempts have been made in France and Spain to promote local coalition building.

At the local level, local government has an important role to play in promoting new forms of governance and enhancing local institutional capacities given that is situated at the crossing point between the traditional vertical axis of power and public administration and the new horizontal axis of partnership between government, private and civil sector.

At the EU level, research undertaken on the impact of governance structure and institutional performance on delivery of the Structural Fund's SME policies in southern Europe concluded that an important factor influencing the degree of to which EU policies can be implemented is based on institutional capacity of the localities (Batterbury, 2002). Such capacity can be enhanced by the action of the European Union aimed at enabling local institutions to operate effectively.

Most of the EU policies are embedded in a system of multi-level governance where European, national and regional government play a role. These mediate policy implementation through local governance structures. In many EU countries, Structural Funds have effectively become a mechanism for regional capacity building, a role as important as the delivery of regional assistance itself (Grote, 1996). However, some regions have been more successful in adapting themselves to the requirement of policy, others have faced a difficult challenge, due to a number of factors as mentioned above. The problems are exacerbated when institutions are faced with achieving new policy goals. The concept of polycentric development, simple as it may look, is a complex one with potential for being interpreted in different ways (Davoudi, 2002). Key to successful

application of this policy framework is effective governance relations and a capacity to capture opportunities offered by polycentricity.

Hence, it is important that part of the EU resources is explicitly allocated to enhancing governance relations at a variety of scales and building up of institutional capacity by, for example, focusing on the four capitals mentioned above and using the tools identified below.

Another key issue is the need for flexibility and differentiation in policy delivery in a way which enables a better 'fit' between policy goals, local condition and institutional performance. This means that the Structural Funds, or indeed any other EU funding regime, needs to be better adapted to suit different institutional culture and capacities across the EU.

Recent attempts by the Commission to open up policy-making process at the level to get more stakeholders involved in shaping and delivering policy (CEC, 2001) is step towards right direction.

How external factors can stimulate co-operation?

Stoker (2000:99-104) identifies five tools for stimulating partnership and effective collective action, which have been used in the UK urban politics since the late 1980s. He also identifies how each is associated with certain tensions and contradictions:

Cultural persuasions

Government can steer by using its 'moral' authority to promote and persuade others to work in partnership to solve problems and take action. Here the key tension is lack of legitimacy and clash with established 'norms' of public conduct.

Communication

Another way of bringing people together is to provide for a in which learning can be facilitated and encouraged through communication. However, a key dilemma is the limits to openness of the fora, who should be included and who excluded.

Finance

Government can steer governance by subsidising partnerships. Financial incentives are strong motivators for partnership. Given the limited amount of

public finance, the process of financial allocation is highly competitive. This in turn encourages short-term self-interested behaviour which undermines the quality co-operation. Another long term effect on building up strategic capacity is through the imposition of performance criteria which are part of the quantitative monitoring of the fund.

Monitoring

Government can also steer governance by setting up monitoring procedure to check the development of partnership. It can also organise cross-institutional learning by identifying and disseminating best practice. However, as Rhodes (1997 in Stoker 2000) argues, such plans and performance reviews can create over-rigid procedures which can stifle innovation and undermine the development of social capital.

Structural reforms

Finally, governance can be steered through the appointment of new agencies which consist of multiple stakeholders. However, there are a number of tensions associated with this strategy. Firstly, it is the issues of who is appointed to them. Secondly, how they can be held to account. Thirdly, how the resulting fragmentation can be put together.

3.9 What is 'good' governance?

As shown above, the concept of governance is a complex one. Urban governance is more than just the exercise of authority by government. It involves working across boundaries within the public sector as well as between the public, private and community sectors. Partnership and networking are the keys to success. Governance is not the same as government, and it is a process rather than a product. It operates at different levels and it is important to develop governance systems at the appropriate layer.

Although there has been a tendency to see urban governance simply in terms of urban management, i.e. the operation and maintenance of a city's infrastructure and services, it is increasingly recognised that governance processes are heavily politicised rather than simply managerial processes. Hence, good governance is about a desired standard of practice for which common values or norms can be identified.

Whilst there are dangers in trying to find one definition which can be used in all circumstances, key international organisations such as the United Nation Centre for Human Settlement (UNCHS) have tried to provide a definition which can work as a guideline to contextualise the implementation of good governance in various circumstances. This defines good governance as "an efficient and effective response to urban problems by accountable local governments working in partnership with civil society" (quoted in BSHF, 2002). The main characteristics of good urban governance are defined as follows:

- Sustainability: balancing the social, economic and environmental needs of present and future generation
- Subsidiarity: Taking decisions at the appropriate level with clear frameworks for the delegation of authority
- Co-operation: developing collaboration between spheres of government and shared competencies
- Equality of access in decision-making
- Efficient delivery of services
- Transparency and accountability
- Civic engagement and citizenship

These principles are similar to those proposed in the White Paper on European Governance (CEC, 2001), which identified the reform of European governance as one of its four strategic objectives in early 2000. The White Paper identifies five principles which underpin good governance. These are: openness, participation, accountability, effectiveness and coherence. Each principle is important for establishing more democratic governance. They underpin democracy and the rule of law in the Member States, but they apply to all levels of government – global, European, national, regional and local as well as to polycentric governance.

- *Openness*

The Institutions should work in a more open manner. Together with the Member States, they should actively communicate about what the EU does and the decisions it takes. They should use language that is accessible and understandable for the general public. This is of particular importance in order to improve the confidence in complex institutions.

- *Participation*

The quality, relevance and effectiveness of EU policies depend on ensuring wide participation throughout the policy chain – from conception to implementation. Improved participation is likely to create more confidence in the end result and in the institutions which deliver policies. Participation crucially depends on central governments following an inclusive approach when developing and implementing EU policies.

- *Accountability*

Roles in the legislative and executive processes need to be clearer. Each of the EU Institutions must explain and take responsibility for what it does in Europe. But there is also a need for greater clarity and responsibility from Member States and all those involved in developing and implementing EU policy at whatever level.

- *Effectiveness*

Policies must be effective and timely, delivering what is needed on the basis of clear objectives, an evaluation of future impact and, where available, of past experience. Effectiveness also depends on implementing EU policies in a proportionate manner and on taking decisions at the most appropriate level.

- *Coherence*

Policies and action must be coherent and easily understood. The need for coherence in the Union is increasing: the range of tasks has grown; enlargement will increase diversity; challenges such as climate and demographic change cross the boundaries of the sectoral policies on which the Union has been built; regional and local authorities are increasingly involved in EU policies. Coherence requires political leadership and a strong responsibility on the part of the institutions to ensure a consistent approach within a complex system. Each principle is important by itself. But they cannot be achieved through separate actions. Policies can no longer be effective unless they are prepared, implemented and enforced in a more inclusive way.

The application of these five principles reinforces those of

- *proportionality and subsidiarity*

From the conception of policy to its implementation, the choice of the level at which action is taken (from EU to local) and the selection of the instruments used must be in proportion to the objectives pursued. This means that before

launching an initiative, it is essential to check systematically (a) if public action is really necessary, (b) if the European level is the most appropriate one, and (c) if the measures chosen are proportionate to those objectives.

Whilst there is a high degree of consensus about the principles of good governance, as shown above, it is notoriously difficult to measure good governance. Attempts to develop proxy indicators to help identifying current practice and opportunities for improvement have had a mixed success. Given that governance is an evolving process, it is also difficult to set up permanent indicators. Hence, indicators should be used cautiously and circumspectly and evaluation should be undertaken during a long period of time.

The White Paper on European Governance concerns the way in which the Union uses the powers given by its citizens and proposes opening up the policy-making process to get more people and organisations involved in shaping and delivering EU policy. It promotes greater openness, accountability and responsibility for all those involved. This itself will be a mechanism for building institutional capacity at various scales.

CHAPTER 4: MODELS OF CO-OPERATION AND PARTNERSHIP

4.1 Introduction

The concept of partnership has come to occupy a central place in the political economy of the redevelopment of urban areas and regions. Partnerships between the public and private sectors are now commonplace as vehicles for the development and implementation of strategies for local economic regeneration. Since the mid-1980s, there has been a steady growth in the number of formal and informal organisations, committees, bodies and forums that have a collaborative approach embedded in their structures. Such bodies have emerged in the field of spatial planning and territorial development. If the physical evidence of partnership is widespread, so too is its language. Policy-makers now talk in terms of a 'partnership economy', and the need for collaboration, co-operation and programmes of joint action between the public and private sectors.

4.2 Rationales for co-operation and partnership

Partnerships in the field of urban and regional development and spatial planning have come to occupy a prominent position on the agenda of urban and regional policy because of a specific political and ideological response to the regeneration of previously industrialised areas. In the UK, and across Europe, a broadly neo-liberal economic and political agenda has given rise to a form of urban and regional policy that although often ad hoc, uncoordinated, and pragmatic, has sought to combine state and market actors in the management of urban economic and social change.

Over the 1980s and 1990s a raft of partnership initiatives were developed that coincided with a political perspective that emphasised policies for supply-side incentives and market-based solutions to urban and regional problems. Throughout the 1980s, this neo-liberal agenda found expression in the rhetoric of the 'inner city debate', the parameters of which were structured by notions of deregulation, the 'incentification' of the private sector, and a consequent change in institutional framework for tackling urban problems. It was the introduction of the concept of partnership as a policy style within this debate that gave impetus to the development of a more specific role for the private sector in the formulation and implementation of policy. During the 1990s, and more latterly however, a role has now been found for new community-based elements in partnership working, reflecting a subtle movement in political rhetoric and policy towards more communitarian or 'third way' thinking.

The ubiquity of partnership working implies that collaborative co-operation between state and market will generate benefits that a non-pooling of resources would otherwise not produce. The benefits of partnership working have been variously described by a range of commentators as, building local consensus and capacity, unlocking land and development potential, place promotion and marketing and creating synergy (Bailey, 1995; Pierre, 1998). Box 1 summarises some of these points.

Box 1: The Benefits of Partnership

Synergy creation

The 'pooling of resources' and the belief that more can be achieved working in partnership than working independently - the creation of internal synergy. The ability of the partnership to attract resources

	from the external political-economic environment – the creation of external synergy.
<i>Transformation and consensus construction</i>	The development of trust and mutual understanding and interdependence. Working methods and objectives are modified and agreed through co-operation – the 'mutual struggle for transformation'.
<i>Budget enlargement</i>	Partnership as a way to enlarge limited public resources available to a local authority and as a way to allow the private sector to reduce the economic risk of civic activity, or to receive elements of public subsidy.
<i>Land and development potential</i>	Public-private sector partnerships as a means to unlock complex land ownership patterns, particularly in large-scale development projects.
<i>Place promotion</i>	Partnerships as symbols of economic and social regeneration. Inter-sectoral consensus construction as a mechanism for image-building and local identity construction. The promotion of place and cultural capital to niche markets.
<i>Co-ordination</i>	The co-ordination of services, functions and infrastructures of previously extant authorities. Or, the co-ordination of new areas of activity either at the level of implementation or strategy development.
<i>Confidence-building and risk minimisation, and the legitimisation of pro-growth politics</i>	The development of pro-growth strategies as a mechanism to provide local political and economic stability to secure both private and public investment.

Given the shifts outlined above in the political and policy context of partnership development, it is appropriate to consider the rise of partnerships as an *approach* to tackling urban problems within a policy environment created by more specific policy measures of central government. The idea of partnership as an approach to, or method of, dealing with particular urban economic and social problems is important for two reasons. Firstly, the development of partnership is characterised by its piece-meal evolution rather than by formal design and implementation. Secondly, conceptualising partnerships as an approach or *process* allows us to begin to unpack the diversity and range of policy styles, organisational formats, and relationships that underlie the term, as well as revealing the interplay of ideology, politics and economics which structure those forms and relations. Any definition or understanding of partnership that seeks to take into account the contingency of factors that shape the partnership must go beyond identification of the actors involved and the issues around which the partnership is based. This means that we need to consider both the extent to which partnerships act as a focal point or a mediator of change, (whether political, economic, social or cultural), and the degree to which the fusion of state

and market, in and through partnership institutions, has the capacity to materially and discursively effect the well-being of particular localities.

4.3 Partnership as an institutional resource for collective action

Across Europe, partnerships range in style and format from those that are partnerships of municipalities (Sweden) to public-private sector partnerships that are managed by local public officials and local authorities (UK/France). Different types of partnerships vary across territory, reflecting political systems, economic conditions, social composition and cultural heritage (see fig.4.1 below). As Savage (1998, 178) argues, “strong states with weak voluntary traditions produce partnerships dominated by the public sector...limited states with a tradition of vigorous voluntary action, produce partnerships dominated by the private sector. Between these two points, hybrid types of partnership are likely to arise.”

At a very general level, European partnerships are likely to be either managed or dominated by the state, where public officials ‘orchestrate action’ and ‘apply resources’ (Savage, 1998, 182). In contrast, in the USA an approach to public-private sector co-operation has emerged where business is dominant, reflecting a local government system that is more permeable to private sector influence (Savage, 1998). In Canada, a more interventionist stance towards partnership working is evident, where, through its provinces, local government and the private sector work through ‘mixed’ and ‘pluralist’ partnerships (Savage, 1998, 183).

Clearly, despite this range of activity and partnership style and format, we need to be aware that forms of collective actions that aim to work within a partnership framework have input from more than one agency. This is not merely the semantic point that partnerships involve more than one partner, but that partnerships come in different forms. This acknowledged, it is still possible to devise a crude classification of the organisational forms of partnership and of state-market interaction. Table 3 provides a typology of partnerships focusing on type, the process of mobilisation, the territorial coverage, partners, and purpose.

Table 3: Typology of Partnerships

Type	Site of Mobilisation	Territorial Coverage	Partners	Purpose
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Development	Local	Single site or small area	Private developer Local authority Public agency	Joint development
Development Trust	Local	Neighbourhood	Community organisations Local authority	Community regeneration
Joint Agreement Company	Local, but may be response to national policy	Defined area of regeneration	Public, Private and Voluntary sectors	Strategy preparation – implementation through third party
Promotional	Local	Urban, Region	All sectors, but often private sector-led	Place marketing and promotion
Agency	National, Regional	Urban, Regional, sub-regional	Public sector-led with private sector, voluntary sector representation	Various – depends on lead agency terms of reference and objectives
Strategic	Regional, Local	Sub-regional, metropolitan	All sectors	Broad strategy development, accessing funding, agenda setting, consensus construction

Source: Adapted from Bailey et al, (1995, 30)

Table 4 outlines the broad dimensions or purposes of partnership. Partnerships are seen to be either deliberative/strategic or operational/instrumental in purpose. The former relates to partnership working that is operating a strategic or agenda setting level of policy development, while the latter is focused on partnership activity that is designed around the implementation or delivery of specific programmes of action.

Table 4 Dimensions of Partnership

PARTNERSHIP ACTORS		DIMENSIONS OF PARTNERSHIP	
		<i>Deliberative/Strategic</i>	<i>Operational/Instrumental</i>
State/Market		✓	
Market/Community			✓
State/Community			✓
State/Market/Community		✓	✓

Source: adapted from Jacobs (1992, 201).

The dimensions of partnership should be seen as lying at ends of a partnership continuum, with the potential for movement and transition through dimensions as the partnership develops. So, for example, a partnership may begin as co-operation between state and market actors but move to incorporate community elements within its structure (Balloch and Taylor, 2001). As its composition changes so its purpose may also change from strategic-agenda setting to

localised implementation, or some combination of each. Equally, partnerships may be seen as residing on a spectrum of working arrangements that stretch from competition to co-ordination, and co-ordination to co-evolution (Pratt et al, 1998).

Figure 2: The continuum of Partnership



The form of its origination or inception further complicates the issue of partnership purpose or rationale. There are essentially two variations on the theme of partnership. The first can be termed *imposed* partnership. The characteristic form here is the 'parachuting' of a development agency, quango, or institution of central government into a particular locality. In the UK, Urban Development Corporations in the field of economic regeneration and property and land development, and Training and Enterprise Councils and Compacts in the field of education, training and economic development have been prime examples. In contrast, the second approach has revolved around the construction of *organic* partnerships that draw on a range of institutions and individual actors. Such partnerships have variously been established to carry out specific physical development projects, undertake promotional or marketing campaigns, promote business and enterprise growth, or develop long-term strategies for local economic regeneration.

In practice, the distinction between the 'imposed' and 'locally inspired' forms of partnership is more blurred than has been suggested. Centrally imposed modes of partnership can intermingle with locally based initiatives, whilst local partnerships are rarely composed of local individuals, organisations and resources. This picture is further complicated by two additional factors. First, within the second classification a distinction should be made between initiatives and projects inspired from the political and business elite, and those that are generated by, and based on, the needs of the community. There is a significant question mark over the degree to which the local community is represented or can find articulation within these new partnership structures.

4.4 Effective co-operation and partnership working

Irrespective of the mode of partnership there appears to be a consensus of principles within partnership philosophy in the development and regeneration of local economies. These can be characterised as recognition of the value of local initiatives; an awareness of the spatial causation and partial solution to identified problems; and the need to develop and 'enterprise culture' through business growth (Richardson, Moore and Moon, 1989,79). In terms of policy implementation, these principals have produced a number of responses from partnerships. For example (depending on the type of partnership), it has involved the rise of small business development policy, including the provision of general physical infrastructure such as business development sites, and the creation of business support and information services. It has also produced policies to improve the image of particular places and boost both local and non-local confidence in a locality's economy. Many partnerships have embarked on a process of sectoral diversification of their local economies through a movement away from a reliance on single sector industry, towards service industries, new technology enterprise and tourism. Another policy feature has been the creation of specific urban renewal projects, which illustrates both a spatial approach to the problems of urban decline and the need for focus or 'flagship' projects as catalysts for local regeneration activity. Finally, there has been a growth in policies designed to enhance local employment and training opportunities in order to make the labour force more competitive and a stronger local productive asset (Richardson, Moore and Moon, 1989,79).

Clearly, it would be wrong to assume that all partnerships in the field of urban and regional development are identical. Partnerships developed for specific development initiatives may have significantly different aims, methods of operation, structures, and resources from those that have been established to work on the image and promotion of a particular place. Equally, although partnerships have a broad remit to do something about the local economy, there will be differences in emphasis in how they do that something. Indeed, the format of a partnership will depend on a combination of factors within the local economic, social and political milieu. Moreover, the degree of interaction between partners will vary depending on the projects undertaken and the level of cohesion and consensus around aims and objectives. The capacity of any partnership to effect change will be dependent both on local as well as national

and international economic and political circumstances. Conditions such as industrial structure, the effects of national policy, and local culture, will interact with such factors as infrastructure development, physical environment, and the ability of local institutions to produce strategies designed to accommodate structural economic and social transformation. In any particular location emergent forms of co-operation will be influenced by the inter-relation between these conditions, and the level of involvement of local and non-local inputs. What is apparent, however, is that for partnerships of state and market actors to approach a level of effectiveness certain sets of requirements are necessary. Box 2: below outlines the requirements of effective partnership working (this information is drawn from Shucksmith, 2000,44).

Box 2: Key Requirements of Effective Partnership Working

<i>Adequate lead-in time</i>	Time required to establish structures and relationships to be developed. Time for the identification of roles, responsibilities and understanding of the partnership environment.
<i>Time, resources and training for community participation</i>	Time, training and money required for the development of community capacity to participate in, and/or understand the partnership environment.
<i>Recognition of different partners' cultures</i>	The need for all partners to learn and appreciate the working practices and cultures of each partner.
<i>Time and resources to build trust</i>	Time to establish clear administrative procedures and development of good working relationships.
<i>Stable programmes of adequate duration</i>	Short time-limited partnerships often spend too much effort on establishing relationships and seeking future funding. There is a need to establish partnerships that are more enduring to allow for a more concerted focus on objectives and programme delivery.

4.5 Structure and process in partnership working

Politically, partnerships are about the management of change in the face of widespread structural economic transformation. On an ideological level, they represent an attempt to change the nature of local collective action in the formation and implementation of policy. What is important, is not just that partnerships have an ideological as well as political dimension, but that these dimensions converge within partnerships so that they become indistinguishable from each other.

Partnerships can be seen as operating on two levels - structure and process (Moore and Pierre, 1988). The structure is the organisational entity of the partnership such as a committee, local enterprise agency, or development company. In contrast, the process refers to the development of formal and informal linkages and networks between the individuals and organisations involved. Both the structure and process may vary between partnerships, but some combination of each is required for a partnership to be able to formulate and implement its policy objectives. The necessity for both an organisational structure and a developed network of contacts leads towards the notion of the 'realisation' that no one partner has the ability to achieve more on their own than they can in collaboration. *Mutual dependence* in its turn implies the recognition of the need for, and existence of, consensus, and ultimately, partnerships need a level of consensus to be effective - consensus around the identification of a problem, and consensus around the ability to do something to remedy that problem. It is the movement towards a state of mutual dependence, and the development of a consensus approach to policy generation, that obscures the political and ideological dimensions of partnerships. In this way, partnerships can appear as the natural outcome of unmediated events, rather than the product of political and ideological conflict and choice. Thus, there is a tendency to lose sight of the fact that partnerships represent different things for different partners. Once a partnership has been formed there is a tendency for differences to be minimised, while all efforts are directed towards areas where there is a degree of common ground. Hence, what is seen to be of primary importance is what partnerships do, rather than how they achieve particular outcomes, or act as mediators of economic change.

The construction of consensus within a partnership is not, however, straightforward. Although the desires for common ground and mutual dependence are strong forces within partnerships, the values and views that partners hold are not necessarily equable. In other words, inputs from partners do not necessarily match. Underneath the agenda to do something about the local economy may be a range of agendas that stand in marked contrast to each other. These could revolve around how partners define regeneration. For example, whether regeneration is to be set within a market or more socially redistributive context, and whether there is to be a targeting of investment and policy, or a blanket approach; additionally, what are the criteria the partnership adopts for evaluating its impact, and what role is each partner to play? Within any public-

private partnership the potential exists for a divergence between partners. In this way, partnerships are the site of potential conflict as well as a site of consensus construction.

At their core, partnerships represent a political and ideological response to economic change. Whether partnerships are developed locally or are developed as a result of central government imposition, they are the product of a climate conducive to combining both state and market resources in the wake of economic and social transformation and political fragmentation. The political, economic and social outcomes of partnership ventures will be influenced by this factor; however, this does not mean that they will necessarily be determined by it. Partnerships may well represent a neo-liberalised form of urban and regional policy instrument, but a neo-liberalised deregulated market driven policy outcome is not an inevitable. What are of equal importance in shaping outcomes is who has the power to determine consensus, and where and how that consensus is achieved. The politics of partnership is about how the partners manage this process, seek to resolve their differences, and present their strategies to their wider communities as consensus policies for spatial and territorial development.

CHAPTER 5: POLYCENTRIC GOVERNANCE IN EUROPE

5.1 Introduction

As mentioned earlier in this report, the key to the development and promotion of polycentricity in Europe is the existence or development of effective institutional co-ordination and co-operation. In other words, effective political polycentricity is a significant part of effective functional polycentricity. The review of literature has shown that many European cities and regions have developed a variety of horizontal and vertical co-operations either on single issues of mutual interests or on wider strategic issues. We can therefore argue that whilst current research may not be conclusive about the degree of functional polycentricity different areas, there is already evidence of a degree of political polycentricity at various spatial scales. This is illustrated by the proliferation of institutional networks, partnership arrangements and governance relations.

One of the key objectives of this study has been to examine the level and nature of this political polycentricity in different European countries. The aim has been to

provide a review of the scale and scope of partnership arrangements that cut across administrative boundaries and sectors and include governmental and non-governmental bodies. Our focus is on those partnerships and networks which have a wider place-based strategic remit.

5.2 Mapping institutional co-operation at different scales of polycentricity

In order to achieve this objective a series of questionnaire surveys of a sample of existing partnerships has been undertaken during the course of the study. These have focused on recent and current institutional networking and partnership arrangements whose focus is on developing or implementing a joint spatial strategy for their area. The survey was undertaken at two main spatial scales which were defined by the project team. These included:

1. Inter-municipal co-operation at the level of Functional Urban Areas (FUA)
2. Inter-FUA co-operation at the level of polycentric regions (PR) and Trans-national co-operation at the level of Europe as whole (PE)

For the first spatial scale, a questionnaire survey of a sample of current inter-municipal partnerships has been undertaken. The methodology used and the early analyses are outlined in the next Chapter.

For spatial scale two a questionnaire survey of a sample of partnership arrangements in polycentric areas consisting of three or more neighbouring FUAs, located either within one member state or across the border of two or more member states, was undertaken. The samples were selected from the FUAs which were identified and classified by the relevant work packages of the project. The aim has been to select at least one example from each typology of FUAs. A questionnaire was designed and sent to key partners in each sample through the relevant project team member. Progress on this survey depended on progress made by the relevant work packages on identification of FUAs.

With regard to trans-national co-operation a similar approach was employed, but based on fewer samples selected from relevant INTERREG projects. These cases can be interpreted as forms of European polycentricity.

At all scales, the analysis will draw on the survey results in order to:

- Examine the extent and nature of institutional networking (i.e. political polycentricity) at various spatial scales
- Identify barriers and opportunities to multi-governmental, inter-sectoral and cross-boundary co-operations
- Highlight examples of good practice in developing and sustaining effective governance relations

CHAPTER 6: POLYCENTRIC GOVERNANCE AT THE LEVEL OF FUNCTIONAL URBAN AREAS

***Note:** The following section, marked with [] is an extract from an article published by Davoudi (2003) in European Planning Studies Journal. It has been reproduced here as a way of providing a historical context for the notion and definition of functional urban areas.*

6.1 Defining functional urban areas: a brief literature review

[Studies of functional urban regions can be traced back to the early 1970s when attentions began to move away from a concern with urban form per se towards a focus on social processes and urban functions. At the same time, the scale of observations and analyses began to focus away from individual cities towards the city region (or as Americans call it, metropolitan region). In Britain, the focus on the city-region was promoted first by Patrick Geddes who coined the word *conurbation* in his book: *Cities in Evolution*. He used the term to describe the transformation of geographical tradition of town and country (Geddes, 1915). Geddes' conception of the conurbation was primarily that of a planning unit; suggesting that for sensible planning it would be crucial to take into account the resources of the region in which the historic but rapidly spreading cities are situated. Later in the 1930s, the term conurbation was given a different meaning by Fawcett who ... provided one of the earliest definitions of polycentric urban regions.

The next definition of conurbation came from the statisticians in the General Register Office (GRO) who, on the basis of the 1951 census, identified seven conurbations in Britain, which more or less corresponded with the ones delineated by Fawcett. They suggested that, "the conurbation generally should be a

continuous built up area" with some consideration being given to population density (GRO, 1956: xv). On the other side of the Atlantic, the term *metropolitan district* was used as early as 1910 to describe urban agglomerations with a population of more than 200,000. But, the concept found wider connotation through the writing of N.S.B. Gras, an economic historian, who used the notion of *metropolitan economy* to describe fourteen centres in North America, using economic rather than spatial criteria (Gras, 1922). The concept of metropolitan area was formally adopted by the United States' Bureau of the Census in 1950 as *the Standard Metropolitan Statistical Area*. SMSA defined aerial units of a much smaller population size (over 50000) than that of GRO's conurbation. This constituted the first key difference between them. The second major difference was the basis of their delineation. For SMSA functional integration played a key role in defining metropolitan areas, whilst for GRO such relationships played only a secondary role.

However, criteria similar to the ones used to define SMSA were later applied in Britain following a study of *Standard Metropolitan Labour Areas* (SMLA) in England and Wales (Hall et al, 1973). In practice, SMSA and SMLA consist of the historic city plus its commuting hinterland instead of being limited to the continuously built up area centred upon a particular city (Thomas, 1973). The SMSA and the conurbation (as used by British GRO in 1956) were both designed partly to distinguish the predominantly urban areas from the predominantly rural ones. Yet, the concept of city region (which is consistent with Geddes' original definition of conurbation and Gras' concept of 'metropolitan economy') moves beyond such distinction and covers not only the commuting hinterland of the city but also the whole area which is economically, socially, and culturally dominated by the city].

More recently, a study undertaken by the OECD (2002) defined a functional urban region (FUR) as a "territorial unit resulting from the organisation of social and economic relations in that its boundaries do not reflect geographical particularities or historical events. It is thus a functional sub-division of territories. The most typical concept used in defining a functional region is that of labour markets" (OECD, 2002:11).

Although there are some differences in the definitions used, the OECD study concluded that the rationale underlying the delineation of functional regions remains the same, i.e. in most countries the definition is based "on the same

principle as commuting conditions (OECD, 2002:11). Within that, however, it is possible to distinguish between two groups of countries: the first one include those countries which define FUAs as an area surrounding an urban centre (the OECD examples include Canada, France, Germany, Portugal, and the USA); and second group are the countries which define FUA by using an algorithm or cluster analysis based on a combination of proximity, commuting thresholds, travel time, etc (examples include the UK. Here, FUAs are constructed by using successive aggregation of adjacent territorial units (op cit). Although, the non-official and the shifting boundaries of FUAs often make the collection of data and the monitoring process very difficult, they provide a more meaningful delineation of territorial boundaries, one which represent functional interrelationships rather than administrative convenience.

6.2 Governance of functional urban areas

The OECD study also examined the relevance of functional delineation of regions on the basis of travel-to-work. It concluded that in many countries FURs are used as the basis of examining and monitoring socio-economic trends and territorial disparities as well as providing identifying regions in need of regional aid. However, official recognition of FURs as a unit for policy implementation varies considerably from one country to another. In some countries, such as Austria, Denmark and Switzerland, FURs are used as a framework for the implementation of policies relating mainly to labour market and transport. In other countries, such as Finland, France, Germany, Italy and the UK, FURs are used for setting up criteria for receiving financial aid from national and European agencies but, it should be noted that support is not paid to FURs since they do not constitute as administrative units. In Norway, the concept of FUR has played a significant role in the discussion about regionalism and regional policy. Examples of countries which do not use FURs as their official units for policy implementation include Portugal, Sweden and Czech Republic (OECD, 2002).

With the exception of countries such as Austria, Denmark and Germany (who use FURs for labour policies) in most other European countries functional regions have no power over or responsibilities for making strategies or implementing policies. Similarly, no funding is provided for FURs, apart from in countries such as Austria, Denmark, Finland, the Czech Republic and Hungary (op cit).

6.3 Rationale for a questionnaire survey of inter-municipal partnerships

Although the survey undertaken by the OECD does not include all European countries, it provides a clear indication that there in most countries in Europe (as well as Canada and USA) there is no formal structure of governance operating at the level of FUAs. However, as mentioned above, there has been a proliferation of inter-municipal co-operations particularly amongst the constituent members of functional urban areas across Europe.

In order to examine the extent and nature of such co-operations, a questionnaire survey (A) of a sample of current inter-municipal partnerships was undertaken. The questionnaire (see A1) was sent to all members of Trans-national Project Group working on ESPON Project 1.1.1 in early February 2003. Respondents were asked to provide at least two examples of inter-municipal co-operation. Given that most of the team members have responsibility to provide information for more than one European country, it was hoped that a full coverage of EU (of 29) will be provided. In cases where it was not possible to cover a specific country by the TPG partners, the questionnaire was sent to the relevant members of ESPON monitoring committee via the project's Lead Partner.

6.4 Questionnaire response rate

By July 2003, 30 completed questionnaires from 21 EU countries (covering 72.4% of countries covered in the project) had been returned (see Table 5), of which 4 are related to partnership working at trans-national scale. The remaining parts of this report provide key analyses and findings of the survey in relation to inter-municipal co-operation at the level of functional urban areas.

6.5 Partnership formation

The first part of the analyses cover the formation of the partnership in order to ascertain when and how they were established, and identify the nature of the different partnerships in terms of their size, composition, working practices and organisational structure (See Table 6).

Table 5: Questionnaire responses on Partnerships and Networks (at July 2003)

Project partners	Countries to be covered	Countries covered	Name of partnership/s
DFLRI	Denmark	Denmark (2)	<ul style="list-style-type: none"> The Triangle Region (TTR) National Centre Midt-Vest (NCMV)
OIR – IRSSP	Austria Bulgaria Czech Republic Hungary Romania Slovakia Slovenia Switzerland *	Austria/ Hungary/ Slovakia (1)	<ul style="list-style-type: none"> Joint Regional Development Strategy for the Vienna, Bratislava and Gyor Regions (JORDES)
CNRS-UMR	France	France (1)	<ul style="list-style-type: none"> Inter-regional mission for spatial planning (MIAT)
Dept. URP Athens	Greece Cyprus Malta	Greece (2)	<ul style="list-style-type: none"> Development Society of the Pireaus Region Municipalities (ANDIP) Development Company of the Western Macedonia (ANKO)
DIT Torino	Italy	Italy (2)	<ul style="list-style-type: none"> Strategic Plan North Milan Development (SPNM) Patto Territoriale del Sangone (PTS)
OTB	Netherlands Belgium Luxembourg Germany	Netherlands (2) N/B (1) L/G/B/F (1) Germany (2)	<ul style="list-style-type: none"> Samenwerkingsverband Randstad (SR) Vereniging Deltametropool (VDM) Rhine-Scheldt Delta (RSD) Saar-Lor-Lux (SLL) Bergisches Statedreieck Remscheid – Solingen – Wuppertal (BSW) Kommunalverband Ruhrgebiet (KVR)
CUDEM	UK Ireland	UK (2)	<ul style="list-style-type: none"> South Yorkshire Forum (SYF) Greater Manchester Strategic Planning Officers Group (GMPG)

Nordregio	Finland Sweden Estonia Latvia Lithuania Poland Norway	Finland (1) Sweden (1) Estonia (1) Latvia (2) Lithuania (2) Poland (2) Norway (3)	<ul style="list-style-type: none"> • Saimaa city co-operation (SCC) • Council of Stockholm-Malar region (CSM) • SINA project (SINA) • Baltic Palette (BP) • Latgale Region Development Council (LRD) • Western Lithuania 2020 (WL) • Metropolis Vilnius-Kaunas (MVK) • The Union of Copper Basin Municipalities (UCB) • Snieznik Municipalities Association (SMA) • Action programme for regional development in Oslo city and Akershus country (OSLO) • Valdres Industrial Development Ltd. (VID) • The Regional Council for the Hamar Region (HAMAR)
Quart. Porto	Portugal Spain	Portugal (1) P/S (1)	<ul style="list-style-type: none"> • Association of Municipalities of the Lima River Valley • Braganca/Zamora Co-operation Work Community
Total	29	21	30

* The translation for Switzerland, which arrived later, will be incorporated into later reports.

Table 6: The nature of the Partnership

Country	Partnership	Q2; Start date	Q3/4; How was it initiated? EU EU prog N/R national/ regional prog PO partners own prog	Q5; Number and Type of Partners involved? M Municipality P Private V Voluntary oth Other, T Total	Q6; Fixed or Open Membership	Q7; Position of partners in their organisations	Q8; Frequency of meetings	Q9; Timescale of the partnership	Q10; Sub- divisions
Denmark	TTR	1992	PO, within the framework of a N/R	8M, 1P, 1oth 10T	Fixed	Senior management (mayors)	Quarterly	Permanent	Yes
	NCMV	2000	N/R and PO	4M, 4T	No comment	Senior management (mayors) and opposition politicians	Quarterly	Permanent – with 3 year working periods	Yes – focus groups
Austria/ Hungary/ Slovakia	JORDES	2002	EU	7M, 4oth, 11T	Fixed	Senior and Middle management	Quarterly	Time limited – three years	Yes
France	MIIAT	1997	N/R	9oth, 9T	Open	Senior management	Monthly/ Quarterly	Long-term	Yes – policy groups
Greece	ANDIP	1989	PO	6M, 6T	Fixed	Senior, middle management and junior staff	Quarterly	Long-term	No
	ANKO	1991 (from 1985 in another form)	PO	4M, 1oth, 5T	Fixed	Senior and Middle management	Monthly	Long-term	No
Italy	SPNM	1999/ 2000	PO	4M, 1P, several V, 5+T	Fixed legally, but informally open	Senior management	Monthly	Long-term	Yes

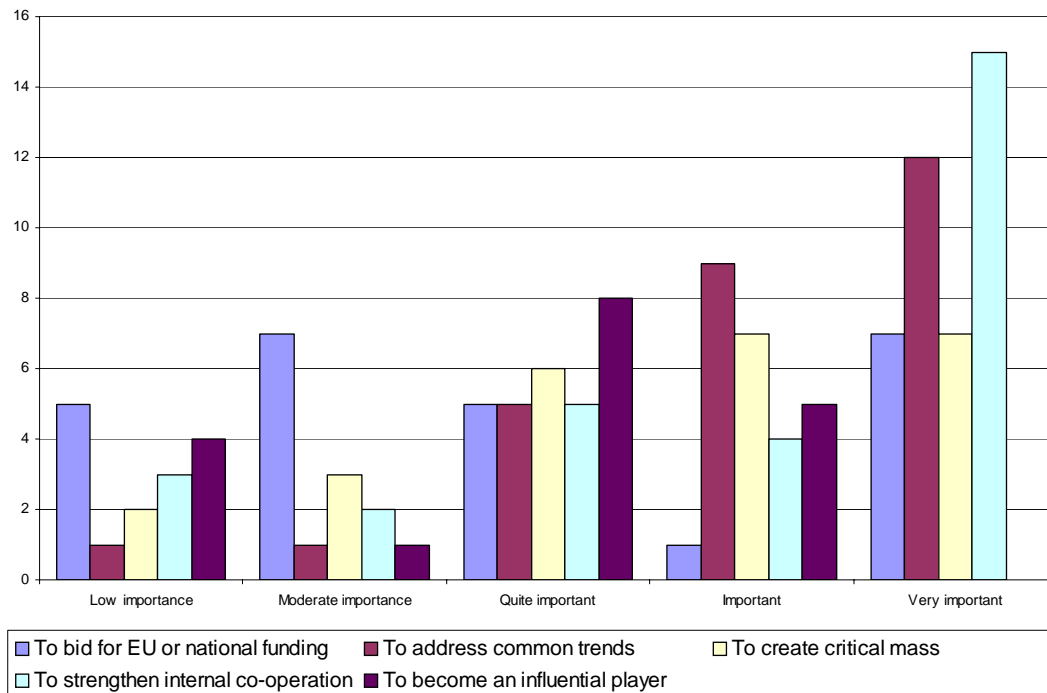
Italy	PTS	1999	PO on the basis of a national programme	9M, 74P, 250th, 108T	Fixed	Various	Bi-monthly	To end in 2005, may continue in some form	Yes - 2 working groups
Netherlands	SR	2002	PO	4M, 80th, 12T	Fixed, with limited option for new members	Senior management and some elected	Quarterly	Long-term	Yes
	VDM	2000	PO	28M, 6P, 3V, 10th, 38T	Open	Senior management and Politicians	Annually, Sub-networks more often	Long-term (8 yearly reviews)	Yes
Netherlands/ Belgium	RSD	1999	PO	14M, 14P, 2V, 80th, 38T	Open	Senior and Middle management	Monthly	Until 2006, but hope to extend	Yes
Luxembourg /Germany/ Belgium/ France	SLL	1980	N/R and PO	9M and several P and oth, 9+T	Open	Various	Quarterly, sometimes more often	Long-term	Yes
Germany	BSW	1991/92	PO	3M, several P and V, 30th, 6+T	Open, though stable	Middle management	Quarterly	Project – time-limited Approach – long-term	Yes
	KVR	?1992	PO	53M, 53T	Fixed	Senior management	Quarterly	Long-term/ Permanent	Yes
UK	SYF	1998	PO	4M, some P , and V, 800th, 84+T	Open	Senior management	Bi-monthly, full forum quarterly	Indefinite	Yes
	GMSG	1986	PO	10M, 10th, 11T	Fixed	Middle management	Monthly	Long-term	No
Finland	SCC	2001	N/R and PO	3M and 20th, 5T	Open	Various	Bi-monthly	Until 2009	Yes
Sweden	CSM	1992	PO	40M, 50th, 45T	Open	Senior management in working groups and politicians	Bi-monthly to quarterly	Long-term	Yes

Estonia	SINA	2001	PO	4M, 1P, 5T	Open	Middle management	Quarterly	Long-term	Not given
Latvia	BP	1998	EU	6M, several oth, 6+T	Open	Senior and middle management	Quarterly	Probably long- term	Yes
	LRD	1998	PO	8M, 8T	Fixed	Senior management	Monthly	Long-term	Yes
Lithuania	WL	2002	N/R	11M, 2oth, 13T	Open	Senior management	Not set	Long-term	Yes
	MVK	2002	PO	2M, 2oth, 4T	Open	Senior management	Monthly	Long-term	Yes
Poland	UCB	1994	PO	8M, 8T	Fixed	Senior management	Monthly	Long-term	Yes
	SMA	1998	PO	4M, 4T	Fixed	Senior management	Quarterly	Long-term	No
Norway	OSLO	2000	N/R and PO	2M, 2P, 4oth, 8T	Fixed	Middle management	Quarterly	Long-term	No, except for imple- menting agencies
	VID	1990	N/R	7M, 7T	Fixed	Senior management, county mayors	Quarterly	Long-term	Yes
	HAMAR	1998	PO	4M, 4T	Fixed	Senior management	6 monthly and monthly working groups	Long-term	No
Portugal	LIMA	1994	PO	4M, 4T	Fixed	Not applicable	Monthly	Long-term	Yes
Portugal/ Spain	B/Z	2000	EU	11M, 2oth, 13T	Open	Inapplicable, public member institutions	Bi-monthly	Long-term	Yes

6.5.1 Motivation and initiation

We were also interested in the original motivations for the establishment of the partnerships. This is summed up in Chart 2 below. What is clear from this chart is that for the majority of respondents addressing common issues and challenges as well as building co-operation and capacity between local partners were seen as key reasons for the establishment of partnerships. Of less importance was the objective of securing external funding sources for specific projects. This finding is perhaps not surprising given that the majority of responding partnerships are focused on achieving strategic spatial development objectives rather than on localised place-specific projects or programmes of action. It also represents the widely acknowledged view that building partnerships (at least in the initial stages of development) requires common (often uncontested) policy goals and objectives. What is equally clear, is that motivations for continuing to participate in partnership working are open to change. As partnerships develop and new challenges arrive, as policy goals are achieved, and as the economic and political climates changes, so motivations are reassessed and evaluated in the light of new circumstances.

Chart 1: Motivation for the Establishment of the Partnership



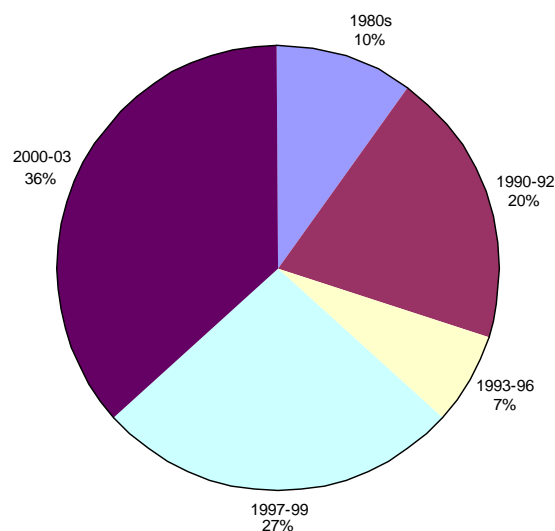
6.5.2 Initiation

The great majority (73%) of the partnerships were initiated by partners themselves. However, some networks have been formed in response to a national or regional programmes (such as the Inter-regional Mission for Spatial Planning: MIIAT in France), whilst in the case of Baltic Palette Partnership in Latvia, the incentive for the partnership came from a number of EU initiatives including Interreg, Phare and Tacis. The high level of bottom-up partnerships provides a clear indication of the growing demand for inter-municipal co-operation between neighbouring authorities for developing integrated and territorially based strategies. It also indicates that although the concept and boundaries of FURs may not have been firmly established, the need for cross-boundary and multi-level governance relationships has already been acknowledged by local governments in Europe.

6.5.3 Starting date

It is clear from the survey results that the late 1980s and early 1990s marked the beginning of a growing number of inter-municipal partnerships across Europe. Whilst some partnerships have been in place for more than a decade (such as the Greater Manchester Strategic Planning Officers Group which was set up to fill the gap left by the abolition of a formal government structure, namely the Metropolitan County Councils). Others have been established more recently (such as Western Lithuania 2020, which was established in 2002 to consolidate municipal and other resources and raise the profile of the area as a whole).

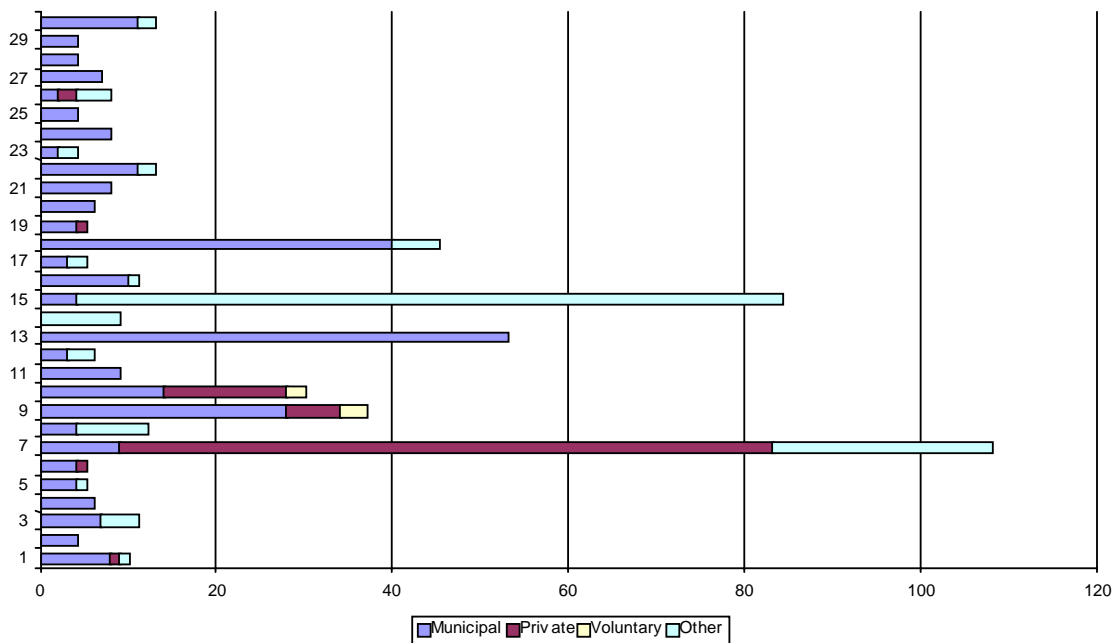
Figure 3: Establishment of the Partnership



6.6 Size and composition of the Partnership

The size and composition of the partnerships range from small, single-sector networks (such as the National Centre Midt-Vest in Denmark and Association of Municipalities of Lima River Valley in Portugal, each with only four partners from municipalities) to large, multi-sector networks (such as Patto Territoriale del Sangone in Italy with 108 partners from municipalities, private sector and other agencies). The multi-sector partnerships, with partners from local government (municipalities), private and voluntary sectors and other public and private agencies, made up the majority of networks. However, given that the focus of the survey was on partnerships which involve municipalities, the returns include cases where municipalities are the sole partners, some of which with as many as 53 municipalities (Kommunalverband Ruhrgebiet in Germany). Overall, as seen in Figure 4 below, municipalities provided the largest number of partners followed by 'other' category.

Figure 4: Partners involved



Another key difference in the nature of partnerships that have been analysed is the extent of which they are open to new members/partners. As shown in Table 6, many partnerships (43%) have a porous boundary and are open to new

partners. This means that the size and composition of the networks can change over time, whilst others (53%) have hard edges in terms of both membership numbers and composition. It is interesting to note that all single-sector partnerships, which consist of municipalities, have fixed memberships, an indication of a more formal structure of networking. However, the opposite is not true, i.e. not all multi-sector partnerships have adopted an open membership approach.

6.7 Working practices and organisational structures

As Table 6 illustrates, all partnerships have regular meetings, ranging from as frequently as twice a month (Saimaa City Co-operation in Finland) to annually (Vereniging Deltametropool in the Netherlands) with the majority meeting every three months (quarterly). This is an indication of the dynamics of the partnership and the level of interests and commitments from the partners to the partnership agenda.

The great majority (72%) of the individual partners hold senior management positions in their own organisations. This in some cases includes the city mayors (for example in The Triangle Region in Denmark), and in others, elected politicians (for example in the Council of Stockholm-Malra Region in Sweden). As mentioned above, one of the key factors in the networks' success is the credibility and 'weight' carried by individual partners in their own organisations which will strengthen the ability of the network to mobilise resources to achieve goals and objectives.

Almost all partnerships, with the exception of Patto Territoriale del Sangone in Italy (which will end in 2005 but may continue in some form) and Saimaa City Co-operation in Finland (which will end in 2009), have a long-term life span. Many are permanent arrangements (such as the two Danish partnerships) with varying cycles of review. This is a promising sign because a long term horizon with a reasonable lead time enables the partnership to mature and develop common language and understanding between the partners.

Another important observation, which relates to the effectiveness of the networks, is that the majority of the partnerships have put in place clear organisational structures based on a number of sub-divisions such as: 'focus groups' in National Centre Midt-Vest in Denmark, 'policy groups' in Inter-regional

Mission for Spatial Planning in France, and 'working groups' in Patto Terr del Sangone in Italy.

Overall, given the combination of clear working structures, regular meetings and long term horizons, the outcome of the survey points to a high degree of stability within and credibility of these partnerships. Although many have emerged through the partners' own initiatives and on a voluntary basis, they seem to have developed established effective working relationships. Furthermore, given the seniority of the individual partners involved, they also have developed a potentially influential 'voice' for their areas.

Box 3: Key characteristics of the Partnerships' nature and working practices

Commonalities	Differences
Voluntary/ partners' own initiative	Newly established v. old network
Long term life span	Single-sector v. multi-sector
Organisational sub-divisions	Small v. large membership
Regular meetings	Fixed v. open memberships
Senior partners	

6.8 Powers and resources of the Partnership

The second part of the analysis deals with the power and resources of the partnerships (see Table 7). As mentioned in the literature review, power is understood not in terms of power over actions of others but in terms of power to act, to be able to mobilise available resources to implement the objectives of the partnership. Similarly, resources not only include financial resources but also human resources and access to other forms of support including management and administrative support.

6.8.1 Decision-making powers

As shown in Table 7, the great majority of partnerships (73.3%) do not have executive powers for implementing their objectives. However, it was mentioned that they can influence the policy-making processes and seek implementation by

Table 7: Powers and resources of the Partnership

Country	Partnership	Q11; Accountability to higher tier body	Q12; How does the partnership seek implementation?	Q13; Regular source of funding? If so, short-term or long-term?	Q14; Who provides the funding?	Q15; How is the secretariat for the partnership arranged?
Denmark	TTR	No comment	By making recommendations	Yes, annual	Municipalities	Employed staff jointly paid by the partners
	NCMV	No comment	By making recommendations	Not regular, changes annually	Municipalities	Employed staff jointly paid by the partners
Austria/ Hungary/ Slovakia	JORDES	Yes, regional governments	By making recommendations and some own executive powers	Regular for life of the partnership	National, Regional and Municipalities	Employed staff jointly paid by the Austrian partners
France	MIAT	Yes	By making recommendations	For at least another 4 years	Government	State representative in each region
Greece	ANDIP	No	By making recommendations, implementation sought through the realisation of studies, programmes.	Yes, annual	Six shareholders, the municipalities. Also national, regional, private and others.	Employed staff jointly paid by partners
	ANKO	No	By making recommendations, implementing programmes and studies	No	Municipalities	Employed staff jointly paid by partners
Italy	SPNM	Yes, to municipalities	By making recommendations, joint official decisions and guidelines.	Linked to the duration of the planning work.	Municipalities	The technical secretariat with flexible involvement of the external advisors.
	PTS	Yes, Turin province and indirectly, National Government	By making recommendations	No comment	Partners, National Government and EU Structural Funds	Employed staff paid by partners

Netherlands	SR	No	Executive powers over some co-operative issues and programmes. On other issues makes recommendations.	Long-term	Joint funding by the partners (municipalities and provinces 40%, regional authorities 20%).	Employed staff jointly paid by the partners.
	VDM	No	By making recommendations and 'sharing a vision and responsibility'	Yes, membership fees, can be topped up	Regional govt., municipalities, private bodies	Employed staff jointly paid by the partners.
Netherlands/ Belgium	RSD	No	By making recommendations, then commitment to implement	Regular until 2006	Joint funding by partners	Employed staff jointly paid by the partners
Luxembourg /Germany/ Belgium/ France	SLL	No, but individuals may be	Recommendations and executive powers	Not regular	Ad hoc funding	Partly in rotation, partly on an ad hoc basis
Germany	BSW	No	By decision of the city councils	Yes, on-going	Mainly by the participating cities. Also partly by regional, national or EU and/or co-financed by the private sector.	Employed staff paid by the municipalities
	KVR	Yes, national government - Ministry of Interior of Westphalia	Through its own executive powers	Yes, based on yearly contributions by partners	Joint funding based on a levy set in law	Employed staff jointly paid by the partners
UK	SYF	No	By making recommendations	No, on-going contributions	Joint funding, proportional to size of partner	Rotates between partners who host it on a part-time secondment basis.
	GMSG	Yes, Association of Greater Manchester Authorities	By making recommendations	No	No comment	By one of the partners

Finland	SCC	Yes, Local city boards and councils	By making recommendations	No comment	Mainly municipalities, also national government	Employed staff jointly paid by partners
Sweden	CSM	No	It lobbies, but has no executive powers	Members provide most of the funding, implied regularity	Regional, municipalities and other partners	Employed staff jointly paid by partners
Estonia	SINA	No comment	By making recommendations	Not given	Municipalities and others	Employed staff jointly paid by partners
Latvia	BP	Yes, national - Ministry of Finance and Regional Development	Implementation through partners' executive bodies	No regular source of funding, now to last 'til 2004	Mainly EU (Interreg, Phare and Tacis) and municipalities and joint funding of partners	Rotates among the partners who host it in turn
	LRD	Yes, Ministry of Finance and other funders	By making recommendations and through its own executive powers	Regular, government based and membership fees	National government and municipalities	One directly employed person, otherwise rotating
Lithuania	WL	Yes, Regional Government	By making recommendations	Regular source of funding	National, regional, municipalities, private, other and international funds	By one of the partners
	MVK	Yes, National Government	By making recommendations to respective municipalities and other organisations	No regular source of funding	National, regional, municipalities, private, other and international funds	By employed staff jointly paid by the partners
Poland	UCB	Yes, National Government and Regional Audit Office	By making recommendations	Regular, long-term - Member fees	Joint funding by all partners	Employed staff jointly paid by partners
	SMA	Yes, National Government and Regional	By making recommendations	Regular, long-term - Member fees	Joint funding by all partners	Employed staff jointly paid by partners

Norway	OSLO	No	By making recommendations	Regular, long-term, but still dependent on yearly national and local budgets	All parties	Rotates between partners
	VID	Yes, Regional Government	Through responsibility for industrial development and its own initiatives	Annual grants from the regional council and income from own projects	Municipalities	Employed staff paid by the partners
	HAMAR	Yes, Regional Government	The partners are the decision makers	Municipalities pay per inhabitant	Regional Government and Municipalities	By one of the partners
Portugal	LIMA	Yes, Regional member city councils	Execution of certain responsibilities eg application phase and management in issues such as taxes recommendations	Not clear if regular or the length of time guaranteed	Transfers from city councils and EU co-funding	Employed staff jointly paid by the partners
Portugal/ Spain	B/Z	Yes, Regional government	Each project is supervised by the respective municipalities	Presumably regular, length of time not given	Based on contribution from the municipalities and also EU co-funding	Employed staff jointly paid by the partners

making recommendations to the decision-making bodies. Furthermore, some seek to implement their strategies by lobbying (CSM), or through undertaking studies and specific programmes (ANDIP), or through conducting a specific responsibility (as does VID through its responsibilities for industrial development). Some have a mixture of these approaches in their attempts to create shared agendas and strategies for their areas.

6.8.2 Resources

In terms of regularity of funding, 26.6% are funded annually, while 30% are funded over a longer financial cycle. The majority of this funding is guaranteed for the life of the partnership and/or tied to specific projects or initiatives (see for example, JORDES, OSLO B/Z), but there is a smaller number of cases where funding is ad hoc and more precariously balanced (for example, MVK, BP, GMSG). The sources of partnership funding include member subscriptions, higher tier governmental support (regional, national and EU structural funds) and local/municipal investment. What is evident is that the overwhelming majority of partnerships (80%) are financially supported by the public sector at various spatial scales of the state.

With regard to human resources, 66.6% employ full-time staff who are paid jointly by all partners. A smaller number (26.6%) adopt a rotation system whereby staff are seconded from partner organisations and work for the partnership on a part-time basis.

6.8.3 Accountability

As shown in Table 7 above, the majority (63%) of partnerships are accountable to a statutory authority, which is either a national government department (as in Latgale Region Development Council which is accountable to Ministry of Finance in Latvia), or a regional government. This even includes those partnerships that have been established through the partners' own initiatives (such as Metropolis Vilnius Kaunas which is accountable to Latvia's national government). However, there are a number of partnerships (37%) which represent a degree of self-governance and are not accountable to any higher tier authorities (such as South Yorkshire Forum in the UK).

6.9 Objectives and achievements of the Partnership

Table 8 is a summary of the findings of our research into the objectives and achievements of partnerships. Our commentary here is based on this table and is structured around a brief discussion of two themes: objectives and achievements of the partnerships.

6.9.1 Objectives

Table 8 highlights the fact that there is a range of objectives that partnerships have been set, or have set for themselves. We have consolidated these objectives into the following (not mutually exclusive) categories:

- Strategic development
- Project orientation
- Networking
- Advocacy

Most of the partnerships appear to be working towards the establishment of clearly identified *strategic objectives*. These range from attempts to better integrate regional and municipal development strategies (for example TTR, MIIAT, KVR, GMSG), to fostering balanced development within regions (see for example SYF, SR, RSD, SLL), to the development of more co-ordinated inter and intra-municipal development strategies (see VDM, SMA, LIMA).

Partnerships that are only focussed on *specific (often time-limited) projects* are less heavily represented. The Saar-Lor-Lux provides an example of a more-project-based partnership with its focus on creating a single regional labour market within its spatial remit, and its attempts to develop transport and educational links within the partnership area. Similarly, the SINA project in Estonia represents collaboration between private and public sector partners in the construction of a waste separating plant in Narva.

As far as *networking* and *advocacy* is concerned, most partnerships have an implied objective to region-build and promote the partnership and its area of activity, or to establish more integrated relationships between institutions and organisations internal and external to the partnership. In relation to networking for example, Valdres Industrial Development Limited (VID) in Norway, has an

Table 8: The purpose and achievements of the Partnership

Country	Partnership	Q18; Aims and objectives of the partnership	Q19; What concrete results has the partnership achieved?	Q20; Has a joint spatial strategy been produced? If so, what are the key elements?	Q26; Is this model of partnership a common practice, or unusual?
Denmark	TTR	Broaden the function and focus of 'National Centre'. Co-ordinate regional and municipal strategies.	Recognition by national government.	Yes, it will be a ten year plan co-ordinating strategies put forward by each of the municipalities into a spatial strategy for the whole region.	With one other network (National Center Midt-Vest) unique configurations and possible pioneers.
	NCMV	Find solutions to regional challenges using shared expertise.	Joint projects and planning (including joint board for economic development) and mutual support.	Yes, it was a prerequisite from the Government when the group were given status as a National Centre. Strategy for physical planning currently being produced.	Since the 1990s it became more common to set up networks of cities and municipalities.
Austria/ Hungary/ Slovakia	JORDES	To initiate a common growth process on the cross border regional level leading to the formation of a prime region in the polycentric system of regions.	A tri-lateral working team has been established as a foundation for making well informed decisions about settlement policy and infrastructure investments.	This is under development.	Cross-border co-operation is common practice under Interreg, but not joint decision making.
France	MIAT	Renew co-operation between State and regions and give an added-value to each regional action.	Not yet	Yes, tourism has been identified as a core activity.	It is already in practice at the State level, through inter-ministerial work.
Greece	ANDIP	Supplement the gap between existing bodies to support the productive potential of the region, increase choices and co-ordinate programs of intervention.	Technical support, training programmes, research, new computer networks and planning and implementation of programmes.	Yes, which include; transport, urban renewal, environmental protection infrastructures and training.	This model of partnership/ Network is a common practice in Greece.
	ANKO	Exploit the resources of the region to its competitive advantage. Encourage balanced development and decentralisation.	Realisation of development programs with the integration of a variety of actors.	Yes, which include; employment training, transport system improvement, urban development and environmental protection.	It is common practice.

Italy	SPNM	Urban regeneration, economic recovery, territorial marketing, social cohesion and retaining of environmental quality.	Common sense of belonging for residents, realisation of some projects, attraction of external investments and new activities.	Yes. Most important for this; defining new area identity, developing infrastructure for sustainable mobility, managing urban transformations and re-converting productive land in residential areas, defining environmental compensation to improve urban life and promoting institutional co-operation.	This is uncommon.
	PTS	To address the decline of the region and develop the potential, eg the SME networks in the car industry.	Documents about common strategies, public information point opened and support of Government.	A strategy has been developed, but the focus is economic. Spatial factors within it relate to human formation and environmental sustainability. Improving the urban network and complementarities of urban functions is being considered.	Several territorial pacts and area contracts exist, also 3 thematic pacts (concern agriculture and fisheries).
Netherlands	SR	Foster a balanced, dynamic development of the Randstat, with high-quality rural and urban environments and strengthen its international competitiveness.	Little concrete as yet, but the establishment of SR shows a clear awareness of the need for co-operation in regional strategy.	Not as yet, but a vision has been produced of what one may look like. It argues for renewal and strengthening of co-operation and expansion to all policy areas important for the future of the Delta Metropolis. Also for modesty in terms of power structures and selectivity in project development.	It is unique and innovative.
	VDM	Strengthen key features of the Metropolis, eg diversity of economic activities, develop 'a configuration of well-connected vital cities encircling a Green Heart'.	The building of a coalition of different actors. The production of futuristic publications and maintaining the Randstad on the public and political agenda.	Yes, several 'spatial visions' on the development of parts of the Randstad have been produced; these focus on 'synergy', integrating social, economic, cultural and sustainability issues. In the statutes of the VD, spatial planning is the prime instrument for achieving its' objectives.	It is a new and relatively unique network.
Netherlands/ Belgium	RSD	To enhance the economic and spatial development of the region and to give opportunities to public and private actors to stimulate a more optimal balance in living and working environments.	The databank on business locations and network discussions on four themes: the logistical-industrial system, the eco-system, the tourist and leisure system and the urban system.	Yes, but it is a non binding document relating to ideas liable to bring about innovative regional policy developments.	This model is quite unique.
Luxembourg /Germany/ Belgium/ France	SLL	To create one regional labour market, strengthen regional identity and harmonise transport and higher education in the four areas.	The visibility and acceptance of the region and co-operation in the development of joint social, economic and environmental projects.	No, regional planning is not an explicit objective of the partnership.	Cross-border partnerships are quite common, but this degree of political involvement fairly unique.

Germany	BSW	Co-operate to strengthen the particular qualities of the region to restructure it and provide lasting employment, solve social problems and help the environment.	New forms of regional and city networking have been created, also new ways of co-operation between public and private actors and many more.	Yes, for polycentricity one key aspect is the 'RSW Circle Line' connecting the three cities to be used as a guide to future development, as an 'associating element' and as an 'action field' of its own.	It is unique.
	KVR	Develop and promote regional initiatives, engage in planning for leisure, landscape, transport etc.	Many, but most successful have been in the preservation of natural areas and the improved management of waste.	No, no longer a core activity, regional planning competencies been transferred to another institution.	Most of the metropolitan regions have installed a body to co-ordinate and develop the region, but competencies and organisation vary.
UK	SYF	To find the most effective spatial arrangements for achieving economic transformation of the South of Yorkshire.	Some consensus between competing bodies, representing different interests has been achieved. So far only in the form of a study.	No, but planning to produce a sub-regional component to Regional Planning Guidance by the end of 2004.	At least 4 comparable partnerships are in operation in England and Wales.
	GMSG	To co-ordinate planning policy across the region and respond to the wider regional agenda.	It has produced and reviewed a 'Greater Manchester Planning Framework' – a major influence on the development of planning policy for the NW.	Yes, Urban regeneration, sustainable communities, countryside enhancement, green belt protection.	Not aware.
Finland	SCC	Fuse three municipalities into one, produce a leading 'foster cluster area', improve high tech employment and provide a contact point between Finland and Russia.	Joint planning and service provision has begun.	Yes, building the network of 'aerial' centres of competence and high levels of facilities for living, working and transportation.	It is new.
Sweden	CSM	To improve better focus in its activities, especially transport, housing, higher education and international marketing.	Better knowledge about the conditions in the region and good networks established.	No	It is uncommon.
Estonia	SINA	Implementation of a joint project.	First stage of the project was completed; construction of waste separating plant in Narva town.	No comment	Not known

Latvia	BP	To develop a dynamic, sustainable, innovative region, not hampered by its borders. To create integration by a wide co-operation.	Five widely spread reports on eg infra-structure. European Commission now holds the project up as a model for interregional co-operation.	Not an aim of this project. Importance of common strategies has been recognised, but they differ from region to region due to diversities.	The only one of its kind – covering so many co-operation areas.
	LRD	Organisation and management of long term development plans and strategies. Representation of the region at the national level.	Adopted regional development strategy and some projects underway including Latgale Spatial Plan.	Yes, now altered to be called Latgale Urban Development Strategy. Also the spatial plan has been developed in the framework of an international programme.	Planning Regional Development Councils are obligatory by law since last year.
Lithuania	WL	To bring sustainable economic growth to the region, increase the choices and standard of living of the population. Consolidate resources and raise the profile of the area.	Currently the projects of territories planned 5-10 years ago are being implemented.	Preliminary joint strategy; infrastructure development as a stimulus to economic development, cross-border partnerships, support to rural development and transport as part of the economic development axis.	One of only a few examples.
	MVK	To join the potential of the cities, encourage co-operation between business, education and administration and increase external competitive abilities of the state.	A public organisation 'Dipolis' was set up for the support of metropolis Vilnius-Kaunas development.	Preliminary joint strategy has been produced. Key fields of co-operation are listed as transport, the economy, administration and tourism.	Unusual
Poland	UCB	Co-operation and joint actions for multi-sectoral development objectives.	The concept of common marked tourist routes and waste management.	Yes, so far just related to waste management.	It is common practice.
	SMA	To elaborate an integrated development strategy for the municipalities.	Establishment of Tourist Information Centres, the 2000 Spatial Development Concept and a positive image.	Yes, the basic goal of which is the transformation of the tourist infrastructure and developing economic programmes.	It is common practice.
Norway	OSLO	To improve conditions for developing business activity in the region.	Many projects have been started, but none carried through or evaluated.	The Strategy as such relates to business development.	Joint programmes like this are unique.
	VID	To be a contact point between the county, the regional development fund and other organisations and to engage in regional development.	Establishment of a network of firms, a local 'industrial park/garden' and regional 'value-added-programmes' for food, wood, etc.	Yes, for restructuring local regional industries, enhancing entrepreneurship and developing a common residential, service and labour market in the region.	It is unusual and often used as an example to other regions.

Norway	HAMAR	To develop co-operation between the partners and better use untapped regional resources.	Formalised co-operation, fixed meeting points, initiation and follow-up of projects.	Yes, but for one of the four regions on the basis that this is likely to be the most attractive residential area. Plans to be updated every four years.	Three quarters of Norwegian municipalities participate in regional co-operation, but this one is unusually active.
Portugal	LIMA	To contribute to the development of its territorial space through the instrument of inter-municipal co-operation. Implementation to be achieved through sectoral objectives in the economy, culture, tourism, transport and the environment.	A consortium of business associations and a regional energy and environment agency are now operational. Also waste solutions have been found collectively, the building of road accessibilities and a network of business parks and nodes.	Yes and it has been essential to the action achieved. See actual plan for details.	Institutionally partnerships are common, but the practice varies considerably.
Portugal/ Spain	B/Z	To develop joint projects and mitigate the border effect.	The development of a set of coherent trans-border joint actions.	No comment	It is a very recent practice that has come to be generalised.

objective to be a link and contact point between different levels of government, the private sector, and regional development funding regimes. In contrast the advocacy role performed by MIIAT in France is more about creating the conditions for more effective regional development, with its objective to development better co-operation between national government and regional government.

Box 4: Objectives of the Partnership

Objectives	Comment	Partnership
<i>Strategic Development</i>	To find the most effective spatial arrangements for achieving the economic transformation of South Yorkshire To address the decline of the region and develop the potential of SME networks	SYF (UK) PTS (Italy)
<i>Project Orientation</i>	Collaboration between private and public sectors in the creation of a waste separating plant To develop joint projects and mitigate the border effect	SINA (Estonia) B/Z (Portugal/Spain)
<i>Networking</i>	To co-ordinate planning policy across the region To join the potential of cities and encourage Co-operation between business, education and Administration	GMSG (UK)
<i>Advocacy</i>	Renew co-operation between the national government and the regions Development and promotion of regional initiatives	MIAT (France) KVR (Germany)

6.9.2 Achievements

While only 36% of respondents claim that the partnership working in which they are engaged is common practice, nearly all respondents reported varying levels and types of partnership achievements. Table 9 highlights the range and type of 'concrete results' that each partnership considers itself to have achieved over its life to date. We have organised these achievements into the following categorisations:

- Formation of a strategic framework
- Project implementation
- Capacity building
- Knowledge transfer
- Place marketing and promotion

A number of partnerships claim to have been successful in developing wider *strategic frameworks* for development. For example, in the UK, the GMSG has created a strategic planning framework for the ten local authorities in Greater

Manchester. This has had a major influence on the development of regional planning policy for the North West of England. Similarly, the Latgale Region Development Council (LRD) in Latvia has produced an adopted regional development strategy and is working on the development of the Latgale Spatial Plan. Currently, 60% of respondents have developed a Spatial Strategy while a smaller number have indicated that they intend to produce such a strategy in the future.

Project implementation is less well represented in the list of achievements, and is not surprising given the limited partnerships who claim to be project oriented in terms of objectives. However, some partnerships claim project based successes and these include the Rhine-Scheldt Delta (RSD) in the Netherlands (establishment of a databank on business locations and networks), the Kommunalverband Ruhrgebiet (KVR) in Germany (preservation of natural areas and improvements in waste management), and SINA in Estonia (the construction of a waste separating plant in Narva).

Capacity building achievements are better represented, with many partnerships claiming to have improved 'mutual support and understanding', established foundations for 'well informed decision-making', developed a 'common sense of belonging', created 'new forms of city and regional networking' and 'formalised co-operation'.

Perhaps more interesting is the extent to which some partnerships claim to have engaged in *knowledge transfer*, revealing the extent to which partnership working provides an opportunity for individual as well as collective knowledge enhancement. Even those partnerships that reported little 'concrete' outcomes (see SR in the Netherlands and CSM in Sweden) commented on the significance of the existence of the partnership as a mechanism for sharing information and knowledge.

What is equally clear from the responses of the partnerships is that the majority claim some form of *promotional* success for their partnership. This is apparent either in terms of awareness of the partnership within the region (see for example GMSG, SLL, LRD), or of the region externally by the activities of the partnership (see BP, SMA, TTR as illustrative examples).

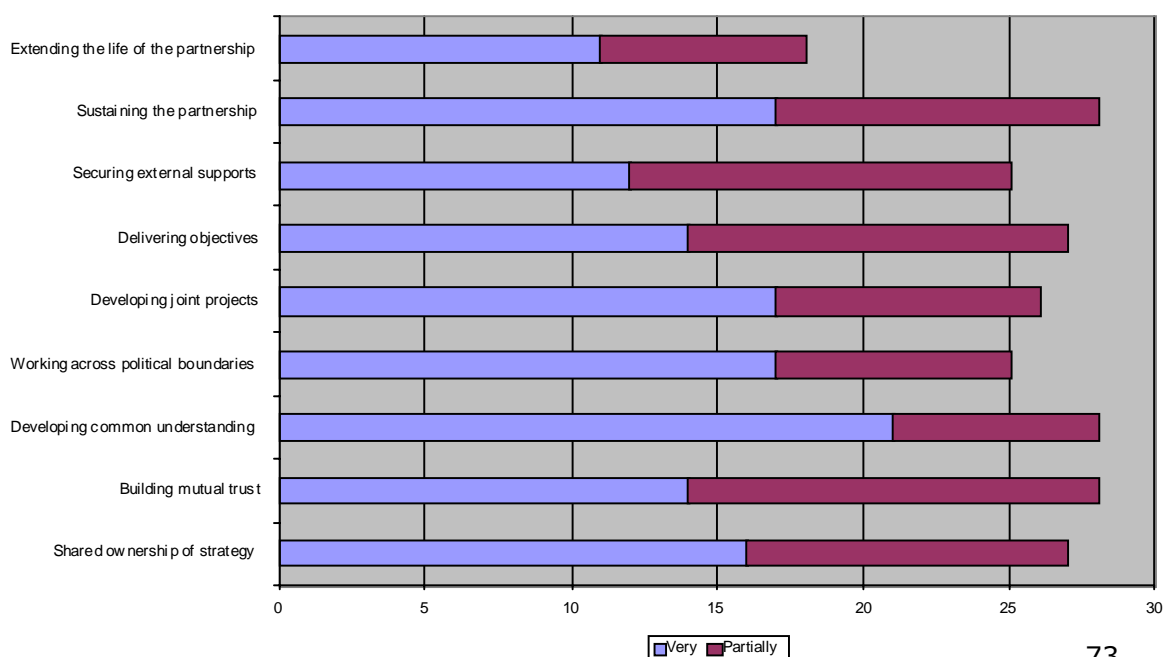
Box 5: Achievements of the Partnership

Achievements	Comment	Partnership
<i>Formation of strategic framework</i>	The development of a an adopted regional strategy	LRD (Latvia)
	Establishment of tri-lateral working teams	JORDES (Austria/Hungary/Slovakia)
<i>Project implementation</i>	Establishment of a data-bank on business networks	(RDS) Netherlands
	Delivery of technical support and training programmes	ANDIP (Greece)
<i>Capacity building</i>	Developing a 'common sense of belonging'	SPNM (Italy)
	The building of a coalition of different actors	VDM (Netherlands)
<i>Knowledge transfer</i>	Better knowledge about regional conditions between partners	CSM (Sweden)
	Production of common strategy documents, public information office opened	PTS (Italy)
<i>Place marketing and promotion</i>	Greater visibility and public acceptance of the region	SLL (Luxembourg/Germany/Belgium/France)
	Greater external awareness outside the region of the activities of the partners and the region	SMA (Poland)

6.10 Areas of success

Tables 9, 10 and 11 summarise responses from the partnerships on issues of success. In particular they focus on the areas of success of the partnership, the factors contributing to success of the partnership, and the factors inhibiting partnership success. Figure 5 below illustrates the areas that the partnerships consider the most has been achieved.

Figure 5: Relative areas of success



What is clear from Table 9 is that most partnerships believe that they have been very successful or partially successful in developing a common understanding amongst partners, a critical factor in securing good working relationships (see Table 10). Respondents also claim to have been very or partially successful in sustaining the partnership, developing a shared strategy for the partnership and working across political boundaries. This list reveals the extent to which successes are being conceptualised and articulated in terms of relationships and improved inter-organisational understanding.

Figure 6 follows a similar conceptual trajectory. Here, more than 60% of respondents highlight the development of a shared agenda and motivated committed individuals within the partners as a key to success. Partner pro-activity and expertise is also rated highly in contributing to successful partnerships, with 60% of respondents highlighting these criteria. Only 13% cite a history of joint working as a critical factor in contributing to successful working. This reveals the extent to which a commitment to partnership working around clearly defined objectives that are shared by all is capable of overcoming previous antagonisms or lack of co-operation. It may also be a reflection of the seriousness of problems and issues to which a partnership has to respond, or around which it is necessary to co-operate.

Figure 6: Key Factors contributing to the success of the Partnership

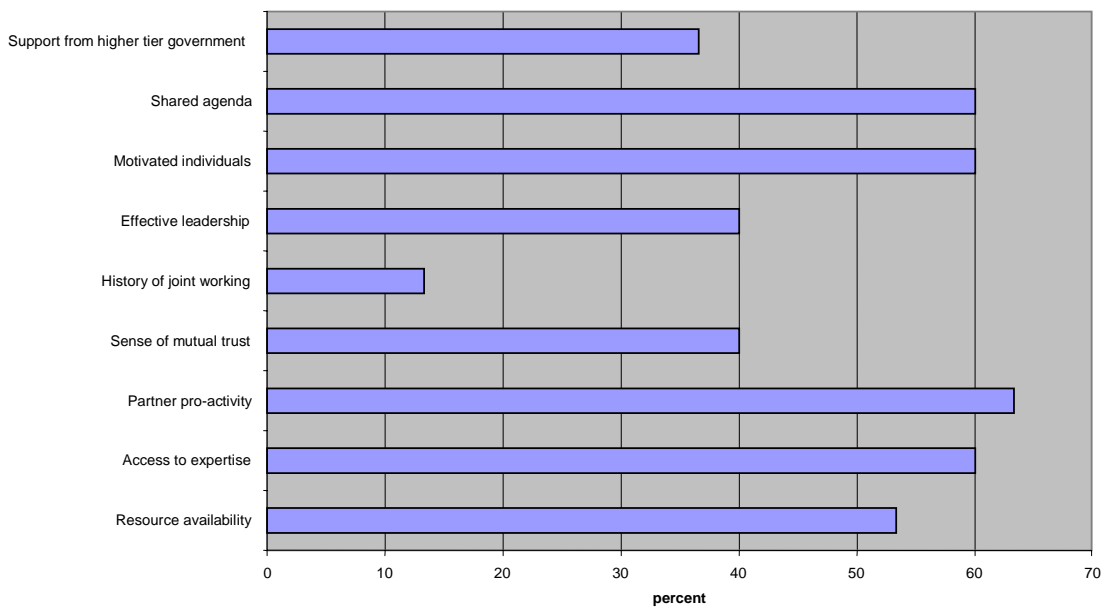


Table 9: Areas of success (Q21)

Successful in the following areas?	Denmark		Fr	Greece		Italy		Neth'lds		N/B	L/G/B/F	Germany		UK		F	S	E	Latvia		Lith'a		Poland		Norway			P	P/S
	T	N	M	A	A	S	P	S	V	R	S	B	K	S	G	S	C	S	B	L	W	M	U	S	O	V	H	L	B
	T	C	I	N	A	P	N	R	D	S	S	S	V	M	S	C	M	P	R	L	V	C	M	S	S	I	I	M	Z
Shared ownership of strategy	V		P	P	P	V	P	V	V	V	P	P	P	V	V	V	P	P	N	V	V	V	P	P	V	V	V	V	V
Building mutual trust	P		P	V	V	P	P	P	V	P	V	V	V	P	P	V	P	V	V	V	P	V	P	P	P	P	V	V	V
Developing common understanding	V	V	P	V	V	V	N	V	V	V	V	P	P	V	V	V	P	V	V	V	V	V	V	P	P	P	V	V	V
Working across political boundaries	V	V	V	P	V	P	N	P	V	V	V	V	V	P	V	V	P	P	V	N	P	P	V	N	N	V	V	V	V
Developing joint projects	V	V	V	V	V	P	P	P	V	P	V	V	V	N	N	V	P	V		P	V	V	P	V	V	V	P	P	V
Delivering objectives	V	V	V	V	V	V	P	P	V	P	P	P	V	N	P	V	P	P	V	V	V	V	P	P		V	P	P	P
Securing external supports	V	V	N	V	V	V	P	P	P	V	P	P	P	V	N	P	N	V	P	P	P	P	P	N	V	V	P	V	V
Sustaining the partnership	V	V	P	V	V	V	P	V	V	I	V	V	P	P	V	P	P	V	V	V	P	P	V	P	V	P	V	P	V
Extending the life of the partnership			N	V	V	P	V	V	I	I		V	V	I	V	N		V	V	V	P	P	P	N	N	P	P	P	V

Legend; V Very, P Partially, N Not at all, I Inapplicable

JORDES Not completed for this partnership as 'this is an on-going process and cannot be evaluated yet'

Table 10: Key factors contributing to the success of the Partnership? (Q22)

Key factors	Denmark		A/ H/ S	Fr	Greece		Italy		Neth'lids		N/ B	L/ G/ B/ F	Germany		UK		F i n	S w	E s t	Latvia		Lith'a		Poland		Norway			P o r t	P/ S	Total %	
	T T R	N C M V	J O R D E S	M I A T	A N D I P	A N K O	S P N M	P T S	S R	V D M	R S D	S L L	B S W	K V R	S Y F	G M S G	S C C	C S M	S I N A	B P	L R D	W L	M V K	U C B	S M A	O S L O	V I D	H A M A R	L I M A	B / Z		
Resource availability	X	X	X	X			X		X				X	X	X				X	X				X		X	X	X	X		53.3	
Access to expertise			X	X	X	X	X	X				X		X		X		X	X	X	X					X	X	X	X	X		60
Partner pro-activity	X	X	X	X		X		X		X	X		X	X		X	X	X		X	X	X	X					X	X		63.3	
Sense of mutual trust					X	X	X	X			X		X	X					X	X	X		X			X					40	
History of joint work							X	X						X		X															13.3	
Effective leadership				X			X			X				X	X	X						X	X			X		X	X	X	40	
Motivated individuals			X		X	X		X	X	X	X		X	X	X	X		X			X	X		X	X			X	X		60	
Shared agenda	X	X			X	X	X		X	X	X	X	X		X	X		X		X							X	X	X	X		60
Support from higher tier government	X	X		X	X	X		X				X		X			X		X								X				36.6	

Nb PTS Answers re pro-activity and motivated individuals relate only to certain partners and support from higher tier government was not evident in the early stage.

Table 11: Inhibiting factors (Q23)

Key factors	Denmark		A/ H/ S	Fr	Greece		Italy		Neth'lds		N/ B	L/ G/ B/ F	Germany		UK		F I n	S w	E s t	Latvia		Lith'a		Poland		Norway		P o r t	P/ S	Total %	
	T T R	N C M V 1	J O R D E S	M I A T 2	A N D I P	A N K O	S P N M	P T S	S R 3	V D M	R S D	S L L	B S W	K V R	S Y F	G M S G	S C C	C S M	S I N A	B P	L R D	W L	M V K	U C B	S M A	O S L O	V I D	H A M A R	L I M A		B / Z
National/Regional policy context			X				X			X	X	X	X	X			X	X	X	X							X	X	X		46.6
National Legal/Tax System											X	X									X			X							13.3
Limited resources			X		X	X		X			X	X			X		X	X	X	X	X	X	X	X	X	X	X	X		X	60
Limited knowledge																						X	X						X	10	
Lack of motivation									X		X						X										X			13.3	
Parochial attitude					X	X	X							X	X	X	X	X				X						X		13.3	
Lack of trust															X	X														6.6	
Little experience of joint working														X				X				X	X						X	16.6	
Weak leadership					X		X							X		X		X	X									X		23.3	
Disagreement on key issues	X									X					X	X	X	X									X			23.3	

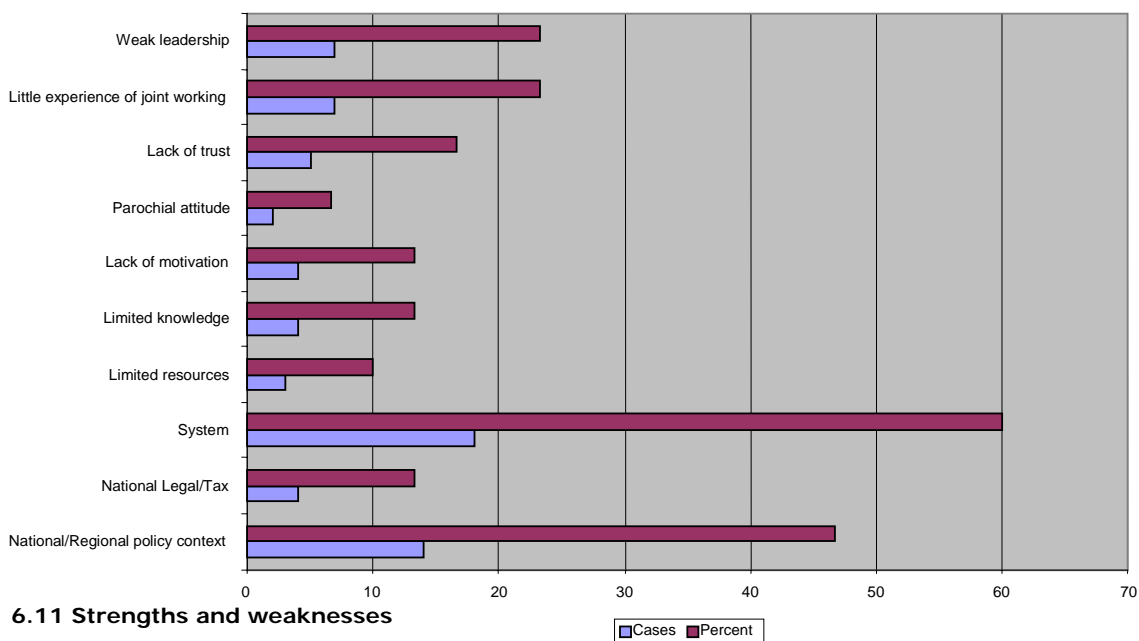
1 The quite long distances and lack of functional complementarity.

2 At the moment the focus is on decentralisation, not inter-regional co-operation.

3 None of the factors seem to be inhibiting factors, the Randstat is a well established partnership.

Figure 7 is illustrative in that it highlights the extent to which resources (financial and human) are critical in the successful development of partnership working. 60% of respondents (18 cases) claim that limited resources is a key factor in inhibiting partnership development. Nearly, 47% of respondents (14 cases) also highlighted the importance of the national and regional policy context for successful partnership working. This demonstrates the importance of political commitment from higher tiers of government and a policy terrain that is conducive to inter-organisation and institutional co-operation.

Figure 7: Areas of difficulty



The partnerships were asked to comment on what they felt were their strengths and weaknesses. As with other responses, comments received revealed a wide range of strong and weak areas. (See Table 12)

In terms of *strengths*, we have organised the responses into three broad categories of importance (see Box 6 which provides a brief illustration of this), including:

- Networking and co-ordination
- Knowledge transfer
- Interdependence

For *weaknesses*, our categorisations (See Box 7 for illustration of this) are:

- Lack of resources
- Lack of political will/commitment
- Limited partner experience

Box 6: Strengths of Partnerships

Strengths	Comment	Partnership
<i>Networking and Co-ordination</i>	The creation of a stable co-ordination agency Co-ordination of resources, goals and objectives	PTS (Italy) VID (Norway)
<i>Knowledge Transfer</i>	Building up access to knowledge and expertise Developing knowledge of the environment and values associated with the environment	ANDIP (Greece) SMA (Poland)
<i>Interdependence</i>	Mutual dependence and shared understandings of common challenges Professional values, desire to work together and the development of strong district interdependency	OSLO (Norway) GMSG (UK)

Table 12: Key weaknesses and strengths (Q24)

Country	Partnership	Weaknesses	Strengths
Denmark	TTR	Internal special interest among the larger municipalities with their own agenda could weaken the partnership. Economic development focus on regions larger cities may mean smaller municipalities not getting enough out of the network.	The shared commitment seems to be stronger than the disagreements. The participating municipalities have made a joint plan for the general development of the region.
	NCMV	No comment.	Support from national government.
Austria/ Hungary/ Slovakia	JORDES	Differing funding periods and application procedures for the partners.	Political interest in the outputs of the project. Co-operation will help to withstand repressive framework conditions.
France	MIAT	Co-operation was only looked at as something that might be of an added value for all regions.	The added-value factor for pulling the regions together and making the project possible.
Greece	ANDIP	Limited resources and weak leadership (weakened since early years). Parochial attitude has increased and mutual trust lessened over the past 3-4 years.	Building up access to knowledge and expertise, pro-active stance of partners, previous collaboration, motivated individuals and support from higher tier government.
	ANKO	Poor resources.	Previous collaboration and the other factors listed in question above.
Italy	SPNM	Not explicit, but hard political competition between some mayors of the municipalities, especially at the 'supra-local national arena'. The marketing strategy has provoked a demand that has been difficult to satisfy for land for new activity locations.	Organisation and social capabilities, negotiating process, accountability, mutual trust between citizens and policy makers. Good external advisors and infrastructure endowment.
	PTS	Political instability in the area.	The creation of a stable co-ordination agency (Assot).
Netherlands	SR	The capacity for implementation, democratic legitimisation, the problem of making decisions in the interests of the region as a whole and an imbalance favouring the position of the four large cities and excluding some large municipalities.	The participation of all major public policy making bodies, motivated members, the endorsement of the need for such a regional urban network and shared understanding of threats and opportunities and the strength of the Randstat as a planning concept.
	VDM	The noncommittal character of the body and its dependence on the initiatives of the members.	Informal meetings can have a positive impact on participation.

Netherlands/ Belgium	RSD	The Dutch national government is not represented and there is disagreement on key issues.	Public/private partnership and the ability to work across political boundaries. The clear identity of the region and united vision on the future of the Delta.
Luxembourg /Germany/ Belgium/ France	SLL	Decision making capacity is limited, unanimity is required reducing progress to the most reserved partner. Funding is ad hoc.	The many different sub-networks provide for co-ordination towards the thematic or territorial issue addressed. Access to expertise, shared agenda and government support.
Germany	BSW	Financing of projects and difficulties of regional politicians building up strategic concepts.	Trust and ten years of experience of joint working and co-operation with little or no funding.
	KVR	The weak political position of the KVC government – delegates from local parliament with no mission for the regional level.	Planning and operational departments in one organisation. Secured funding from a regional levy (guaranteed in law) and ability to obtain funds from other levels (federal, EU). Good professional skills.
UK	SYF	Shared agenda much more in evidence in some members than others. Limited support from government.	Some highly committed members willing to put in a lot of extra time.
	GMSG	No specific resources available. Work relies on individuals carrying out tasks in addition to their 'day jobs'.	Professional values, desire to work together, strong inter-dependency of districts.
Finland	SCC	Problem of gaining the trust of the inhabitants.	A strong vision and motivation to create something totally new.
Sweden	CSM	Only consensus issues can be dealt with. Poor unfocused leadership.	Good networks and new knowledge exists.
Estonia	SINA	Little experience of joint working and lack of resources.	Common views on regional development strategy, mutual trust and similar cultural background.
Latvia	BP	It is implied that socio-economic and political disparities are not taken sufficiently into account. Technical and financial management can work as an obstructive factor when trying to find common interests.	Project partners have declared their good will for co-operation and have defined common vision. Project is professionally oriented and involves politicians.
	LRD	The lack of participation of private players and lack of resources for development.	Understanding interdependence, 'regional thinking' and close relationships to the executive body – LRDA.
Lithuania	WL	Some areas will probably get more out of the partnership than others, the strong urban centres are most likely to benefit. The partnership unlikely to be able to halt the desertification of the rural areas.	The Siauliai-Klaipeda part of the metropolitan axis will be encouraged to develop.
	MVK	Vilnius is at an advantage in the partnership and its strength in strategic planning will allow it to make beneficial decisions for itself.	Kaunas and Vilnius have the chance to exchange their experiences.

Poland	UCB	Lack of financial resources for large projects can't be realised. Weak connections with other sub-regional institutions. Small tradition of working together and little attention given to voluntary local government co-operation.	Functional space (copper mining area) connecting the municipalities and enhancing willingness to co-operate. High local tax incomes and sense of mutual reliance.
	SMA	Limited financial resources don't allow critical mass for activity. Too small staff and membership limited to municipalities. Peripheral location.	Environmental and natural values of the sub-region. The location and Phare support.
Norway	OSLO	Limited scope and resources.	Mutual dependence and shared understanding of common challenges.
	VID	Financial uncertainty and the lack of legal underpinning for industrial development.	Co-ordination of resources, goals and objectives.
	HAMAR	Struggle of power between county and municipalities, conflict between government levels. Have to set the tempo according to the weakest link, which is slowing the process.	Enough power has been assembled to attain implementation, where there is enough willpower. The working committee of the Regional Council has become an everyday part of the policy development process in the region.
Portugal	LIMA	Resistance from Central Administration to strengthening inter-municipal co-operation structures and reinforcing their role especially in the management of EU funds. Lack of career prospects for participants.	Solidarity and support from political leadership, technical capacity and positive image within and beyond the territorial space.
Portugal/ Spain	B/Z	Peripheral situation in relation to the Central Administrations of both countries.	Low dynamism in economic activities.

Box 7: Weaknesses of Partnerships

Weaknesses	Comment	Partnership
<i>Lack of Resources</i>	Difficulty in financing projects No specific resources available – work requires ‘good will’ of partners	BSW (Germany) GMSG (UK)
<i>Lack of Political Will/Commitment</i>	Political instability in the area The struggle for political power between different levels of the state	PTS (Italy) HAMAR (Norway)
<i>Limited Partner Experience</i>	Lack of participation of private sector Little experience of joint working	LRD (Latvia) SINA (Estonia)

6.12 Recommendations for the way forward

Table 13 provides a summary of the responses of the partnerships in relation to ways to improve their activity. Predominantly, the responses represent recommended improvements to the specific partnership in question rather than more generic recommendations for improving the performance of partnership arrangements.

However, there are four general observations that can be drawn from this variety of response. Firstly, it is clear that partnerships require more *robust political and policy frameworks* if they are to operate successfully. A significant number of partnerships argued for greater political commitment from higher tiers of government and which is further supported by a programme of directed resources. As one partnership commented: “We need....a new legal framework by the national government, orientated to facilitate the inter-municipal co-operation with direct or indirect incentives” (SPNM). Relatedly, the issue of *resources* (funding) was also seen as critical to continued and improved partnership working. Indeed, many partnerships commented on the lack of financial investment in their work, particularly from higher tiers of government: “New legislation and more money would help” (BSW). Another key issue is the ability of a partnership to integrate its programme of action with existing *EU funding* regimes. As one partnership commented: “ the harmonisation of INTERREG, PHARE and TACIS programme procedures is an essential part that will help run the project in a more effective way” (BP). A final point to note is that improvements in the *co-ordination* of partnerships, by the partners themselves and from interests outside of the partnerships who may have an impact on its activities, is considered essential to successful partnership working.

Table 13: Recommendations for improvement of the Partnerships (Q25)

Country	Partnership	Selective Quotations
Germany	BSW	"New legislation and more money would help."
	KVR	More effective regional work requires regional planning competency. Access to a special regional development fund and a high professional, business led leadership would make a difference.
Greece	ANDIP	"It is rather a question of political will"
	ANKO	As above, political commitment seems to be the key.
Italy	SPNM	"..a new legal framework by the national government, orientated to facilitate the inter-municipal co-operation with direct (funding) or indirect incentives (e.g. tax reduction for activity relocating)."
	PTS	To improve the connectivity and efficiency of the discussion table. To improve the coherence between aims, strategies and political actions.
Netherlands	SR	"The implementation procedures of decisions needs to be worked out. A transfer of competencies from the members to the partnership could increase the organising capacity of the partnership."
	VDM	Not applicable, it has a successful function as it stands.
Netherlands/ Belgium Luxembourg /Germany/ Belgium/ France	RSD	A legal cross-border entity to the organisation.
	SLL	An overall strategic vision document to guide the actions of the network and better methods for decision making. A budget for implementation and more permanent funding.
UK	SYF	"More time to work on it. More money to implement it. Going from the study to the strategy needs staff time and cost, full-time workers would help, rather than relying on people's good will. Not sure how long they can continue as they are."
	GMSG	More resources and better organisation.
Finland	SCC	"We'll try to increase the mutual trust by working together (especially the politicians), looking to the future by working together, inviting the inhabitants for discussions, by using the web-sites and e-dialogue etc."
Sweden	CSM	Better leadership and better organisation.

Estonia	SINA	Strengthen motivation of municipalities' leaders to mutual co-operation.
Latvia	BP	Harmonisation of Interreg, Phare and Tacis programme procedures is an essential part that will help to run the project in a more effective way. Activities that are defined and implemented in order to achieve projects aims and vision should be more result oriented, that will motivate project partners on an individual as well as an institutional level.
	LRD	More commitment from the national government to regional development issues, adding the private sector and other relevant regional players to the partnership and including national representatives into the regional partnership.
Lithuania	WL	Adoption of negotiated rather than hierarchical governance. Improved motivation, by providing more opportunities for co-operation. Strengthen administrative abilities.
	MVK	To involve society. To promote partnership in other municipalities, situated in the zone of the metropolis. To participate in international events. To co-ordinate interests and functions of the city partners.
Poland	UCB	Employing more innovative staff oriented at the implementation of new development projects and at gaining external funds. Learning from partnerships elsewhere.
	SMA	Changing the special purpose association form to a normal association to enable participation of other institutions. Transferring know-how from other successful associations around the world.
Norway	OSLO	Extend the scope and increase the resources.
	VID	Secure long-term funding.
Portugal	HAMAR	More distinct targeted decisions, less control activities in the implementation of decisions and more delegation to daily management and administration.
	LIMA	Recognition from Central Administration of the role of inter-municipal co-operation structures, through delegation of attributions and competencies and adequate financial resources. Although the dominant discourse has defended this position, the practice has been very different.
Portugal/ Spain	B/Z	Contribute to the reinforcement of knowledge and mutual trust and give greater responsibility in defining local investments.

Nb TTR and NCMV (Denmark), JORDES (Austria/Hungary/Slovakia) and MIIAT (France) gave no comment at this point.

CHAPTER 7: Inter-regional and trans-national co-operation at the level of Europe)

7.1 Cross-border and inter-FUA co-operation

Our initial findings on the degree and nature of co-operation between neighbouring functional urban areas are based on responses to a questionnaire survey (B) received in April from the following seven potentially polycentric trans-national areas; Vienna/Bratislava/Győr Area (VBA), Copenhagen Malmø Area & the Øresund region (CMA/O), Krakow/ Katowice/ Ostrava Area (KKOA), Lyon/Grenoble/Geneva/ Lausanne Area (LGGLA), Bologna/Parma Area (BPA), Dresden/ Chemnitz/ Leipzig/ Halle Area (DCLHA) and the Edinburgh/ Glasgow Area (EGA). We have also integrated recent findings from an eighth area straddling Slovenia and Italy; Gorizia/Nova Gorica (G/NGA) and added the findings from four existing transnational partnerships which we had surveyed during our study of inter-municipal co-operation. We did not receive responses from the Portuguese and Spanish regions which we were investigating.

This area of research is new and vital according to academics; 'cross-border comparative research is essential...so far, this kind of international research on polycentric urban regions has been relatively thin on the ground' (Harris, 1997). Furthermore, while polycentricity has been examined from a spatial, planning, economic and demographic point of view, there has been very little relating to governance, 'research (is needed) to investigate types of governance and functional relationships between the elements of the PUR and its identity and representation' (Kloosterman and Musterd, 2001) This work sets out with these objectives in mind.

Results indicate that cross-border regions find it easier to co-operate on economic issues than spatial development or, surprisingly transport. Indeed we found only one example of an operational joint strategy which concerned transportation, although there are developments which indicate the beginnings of some forms of co-operation, see below. The picture may change over the next few years however, almost all joint plans had been developed in the last couple of years.

7.2 Obstacles to Inter-regional co-operation and polycentric development

The following account of the difficulties faced in developing formalised forms of inter-FUA co-operation are now given, based on the responses to our second questionnaire.

7.2.1 Political and administrative factors

The development of political organisation over time often means that divisions are difficult to overcome. Political history, in the case of KKOA has meant that by law provinces have their own development strategies and each provincial capital proudly represents that province. Furthermore recent decentralisation has reinforced regional consciousness and independence, something which provinces are reluctant to lose after years of central domination. In the case of KKOA this has had the effect that trans-national co-operation is actually easier than co-operation within Poland.

The provision and maintenance of infrastructure and services may typically be the responsibility of different government departments or agencies, at central, regional and local government levels. In particular it is common for urban and peri-urban areas to fall under separate administrative jurisdictions, with different resources, capacities and political leanings. In many metropolises, expansion of the municipality or metropolitan council boundaries to take account of rapid urban growth has often divided the peri-urban zone, with the inner segment falling within the urban centre, and the outer segment falling within one or more peri-urban or rural jurisdictions.

Institutional arrangements for economic development, planning and other policy areas may be specific to each city, as in the case of Edinburgh and Glasgow, this makes collaboration difficult without constitutional change. As well as separate responsibilities, authorities may have different competencies, as with the Danish and Swedish regions in CMA. In some instances, such as DCLHA, there have been attempts to develop polycentricity which have met with resistance from local politicians, who are actively conscious of their competition with other cities. The competition can be accentuated where one area/city is stronger than the other or is seen to have a comparative advantage.

Particular institutional complexities have acted against the emergence of a joint spatial strategy for LGGL, where one country is outside the European Union, so energies are focused on the organization of the cross-border agglomeration of Geneva. Furthermore the Lyon agglomeration extends to four departments and focuses on the organization of the "région urbaine de Lyon".

The 'institutional fragmentation combined with the internal orientation of key persons' which Meijers and Romein found to be a 'main constraint' towards functioning polycentricity in earlier work, was thus also found to be factor in our responses.

7.2.2 Economic factors

Where metropolitan regions, for geographic and natural reasons, both contain the same type of industries, for instance the coal basins of KKO, there is inevitably a lack of complementarity and there is rather a tendency to competition. Where there has been economic decline, as in the case of Edinburgh and, more markedly Glasgow, this competition may be enhanced. Also where one city is dominant, as with Bologna, there is a tendency towards dependence rather than partnership. Other factors that increase competition may be competitive bidding processes, including tendering for EU monies.

In some instances there is economic co-operation between cities, though this is not elevated to the status of a joint strategy. In the case of Lyon, Geneva, Grenoble and Lausanne it operates at two levels; the international level ("Alpine Diamond"), with Lyon, Geneva and Torino and the regional level ("Sillon Alpin"), with Geneva, Grenoble and medium cities between them (where there is a good degree of complementarity). But in each instance the success of the co-operation has been restrained by the competition between them (notably on congress organization), by the international ambition of Geneva and the high degree of autonomy of the French cities.

Finally flexibility is seen in some instances, such as the French-Swiss example, as the major characteristic of the regional co-operation and key to economic success, thus 'light thematic structures are preferred to a strong and global ones'.

7.2.3 Cultural factors

Meijers and Romein found that the lack of identification with the region at large was a key factor impeding progress towards polycentricity. While this was not explicit in the responses, strong identification with the 'home' area was. Some city regions have over a long period of time built up very different identities and have established rivalries which are difficult to break down; Edinburgh and

Glasgow are typical examples of this tendency. Competition is also a factor in the case of LGGL, where the will of Lyon to position itself as a regional capital and an international metropolis increases the rivalry with Geneva. This also results in placing the medium and small towns in a defensive position (notably Grenoble). The constitution of the "Sillon Alpin" cities network (excluding Lyon) illustrates this situation.

Alternatively there may be no tradition of holistic planning, so that most officials adhere to narrow conceptual and procedural guidelines. Traditional bureaucratic procedures invariably discouraged integration across sectors, agencies and areas; this is starting to change only slowly and unevenly in the face of demonstrable failures of existing practices and the examples being demonstrated by externally funded initiatives.

7.2.4 Geographical factors

Co-operation may be physically difficult, simply because of the distances between cities. Conversely physical changes may contribute to the development of polycentricity, as in the building of the bridge linking Copenhagen and Malmo.

In the case of the Lyon, Geneva, Grenoble, Lausanne area, it was pointed out that the geographic configuration doesn't facilitate the development of common transport strategies; the mountains but also the Lemman Lake isolates Lausanne from the French cities. Consequently transportation partnerships are mainly concentrated on facilitating the commuting around Geneva and developing the infrastructures between Lyon and Torino. Indeed there are 35000 cross-border commuters around Geneva, notably from the French departments of Ain and Haute-Savoie.

7.2.5 Other factors

Practically there may be problems as census or other urban statistical databases seldom cover the entire area. Compiling inclusive data sets is therefore time-consuming and difficult, especially if they have different base years or geographical extents and accuracy of coverage.

It may be that joint strategies have simply not been thought out yet, or there has been no forum to stimulate the development of polycentric ideas. In cross-border cases specifically language problems have also been reported as a problem.

Finally there may be practical or financial disincentives for polycentricity, for instance in terms of 'ecological footprints', it is often in the interests of urban officials and planners not to have to engage with, and bear responsibility for, waste disposal and environmental quality 'downstream' beyond the jurisdiction of the local authority. They may therefore seek to avoid such integrated city-region initiatives.

7.3 Emerging forms of inter-FUA co-operation

Evidence of emergent forms of inter-FUA co-operation and potential functional forms of polycentricity relating to specific policy spheres are now outlined.

7.3.1 Economic Strategy

Economic and commercial development were the most common fields in which emerging polycentricity was evident. Rationale for preparing joint strategies focused on the need to develop complementarities and to exploit the broader marketing potential of two or more centres. The latter was certainly the case in the development in 2003 of the establishment of CENTROPE, a unified investment region covering the Vienna Bratislava Győr Area. Fostering the 'international attractiveness' of the region is an explicit objective, as is the promotion of sustainable development. Improving functional complementarity and enhancing economic co-operation was the stated aim of the Strategic Development Plan for the Gorizia/Nova Gorica Area and growth enhancement for the strategy for the Øresund Region. These three are all recently established formal political plans, The CMA one a recognised "governance without government" arrangement, recognised by the OECD. However the possibility of fragmentation has emerged related to the number of informal bilateral consultations on various issues. CENTROPE has also encountered some resistance, explained in this case as the perceived priority given to self-conception and identification of a new nation. There are indications that it may be easier to get support for co-operation on specific projects which seem less threatening and less of a challenge to local control. The specific *Øresund Science Region* (OSR) for instance has been a

relatively uncontroversial and productive platform in terms of the future competitiveness of the region.

In addition there is evidence of less formal forms of economic co-operation emerging. In the KKOA this has developed with a view to compensating for the relative peripheral and marginal character of the area and in the Italian case to rationalise economic activity where 'development has overstressed the local environment'. It appears that the district model of organisation which characterises Italian political life is ideally suited to the development of polycentricity.

7.3.2 Spatial Strategy

Spatial development, together with transport, found least evidence of activity in terms of joint strategic planning. Where there were plans emerging this tended to have been in response to a specific problem, such as the environment, or in conjunction with another programme, such as the Interreg initiative.

In the case of the DCLHA the motivation was largely economic though its expression has been in the form of a joint spatial development strategy; the Landesentwicklungsplan Sachsen (LEP), the 'Saxony triangle'. It was initiated in 1995 by the MKRO (MinisterKonferenz für Raumordnung (Council of Ministers for Spatial Planning) and has achieved official status (Halle is excluded). The idea was based on a desire to create German Metropolitan regions of European importance. The aims of the strategy include marketing and promoting complementarity between the cities. The LEP has been perceived as successful and reflects the view that rather than seeing the three cities apart, one metropolitan area had been formed.

The formation of a future 'joint city' is also an ultimate aspiration of the spatial strategy for G/NGA, inspired initially by the growth in the (former) national border area between the cities and differential rates of growth. Prior to the instigation of the strategy, the spatial development process of two cities has been informally coordinated, providing a good grounding for future collaboration.

In 2003, a Joint Regional Development Strategy (JORDES+) was developed for the VBGA within the framework of an Interreg IIIA project. This has involved the establishment of regional administrative bodies for the advancement of the region

covering substantial substantive issues which include planning, economic development, transport, education/science/research, settlement, nature, the environment, tourism and cultural inheritance.

In the case of the CMA, there is no formal joint spatial development strategy between Copenhagen and Malmo, or in the Øresund region, but there are a broad range of co-operations on spatial planning. When the Bridge was planned in the early 1990s it became relevant to enhance the co-operation on environment and planning. Most significantly, in 1994 the Danish and Swedish government decided on a joint "environment programme" for the ØR where a environmental focused physical planning was a central element. The long-term goal according to this agreement is that the region should develop as one of the cleanest metropolitan regions in Europe, it has focused on land-use, transportation and recreation/biological diversity. In addition planners responsible for the overall planning in the municipality of Copenhagen and Malmø city meet to discuss their main interests every six months. However there are barriers for co-operation on spatial planning, most notably, many authorities are involved in the field, the national and regional level has different competencies on the two sides of the Strait and different environmental regulation has created problems concerning the implementation of the "environment programme".

Although there is no special arrangement for the BPA, there is a joint spatial development strategy of a type for the Region as a whole and for the individual Provinces (NUTS 3). However, the economic competition among the main local systems of Emilia, the political autonomy of the individual Provinces and the rising sprawl of the urban outskirts, which weaken the leadership of urban cores, are the main reasons of a general lack of co-operation in spatial planning policies. The Region has tried to balance this local individualism by its comprehensive strategy for the entire territory, the Regional Territorial Plan (PTR).

7.3.3 Transport Strategy

The relative underdevelopment of joint planning in the field of transport was quite surprising, given that this would seem to be a natural arena for inter-regional or cross-border co-operation. Some collaboration in relation to the Øresund Bridge is reported below as are generalised systems for joint ventures in Italy and the single example of a fully operational plan in the G/NGA.

Box 8: Transport Case Studies

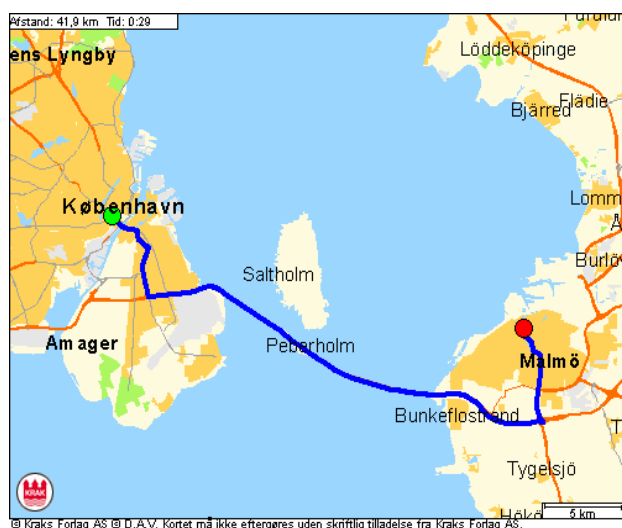
Gorizia/Nova Gorica – Building on TEN

The joint strategy here covers the municipalities of Gorizia on Italian side and Nova Gorica and Šempeter/Vrtojba on Slovenian side. There is also a regional development plan which should result in forming a new cross-border European region. Broadly the aims of the strategy are the enhancement of already strong transport activities in the region, especially in connection to the 5th TEN transport corridor and the planning of joint transport terminal on the premises of the current border crossing in connection with the nearby train station.

Bologna/ Parma Area - Provincial plans

In the metropolitan area of Bologna and the Region as a whole (the same occurring in every province) there are established forms of collaboration. The Metropolitan Rail System has been designed jointly by the Province and the Municipality of Bologna and the Region has published a Regional Transport Plan (PRIT 98-2010), with reference to the entire regional territory (Palma is however excluded). This organisation began in 1998 and is to be reviewed every 10 years. The objectives behind the co-operation are broad; economically to reinforce the competitiveness of the local economic systems, by sustaining the internationalisation of regional firms; in terms of settlement to concentrate new residential and productive activities in the main corridors (multimodal and intermodal corridors) and nodes of the regional structure (Bologna, intermodal platforms, rail stations) and with regard to infrastructure to build up a multi-level infrastructural platform, served by a secondary network of routes directly entering industrial districts, urban areas and peripheral areas of the mountain.

CMA - evidence of emergent joint plans



The beginnings of collaboration here was a concrete political project, the two Governments in 1991 signing an agreement on building what was to be a combined railway and motorway bridge across Øresund which opened on July 1st, 2000. As a consequence of the opening of the bridge the city of Copenhagen integrated the new railway line with the existing transport network and the new metro-system, Malmö too is revising its transportation network. The establishment of a permanent link across Øresund is a core element of the successful integration and development of the Øresund region and symbolises the idea of it as one region. Indeed the number of people commuting between Sweden and Denmark has grown significantly since the opening of the Øresund Bridge.

7.3.4 Overall strategic plans – evidence of emergent forms of polycentricity

Over-riding formalised governance structures developing to encompass and encourage polycentricity across the board in the regions selected are still at the early stages of development. Where generalised collaboration was reported, the motivation was either economic or specific to development issues in the area. However in KKOA and G/NGA the potential for the polycentric development of the area was a key factor in the formation of the partnership.

Although a strategic level organisation which oversees the development of joint strategies for all of the aforementioned sectors is not in evidence for the whole KKO, there is such a partnership between Katowice and Ostrava. It constitutes an agreement on collaboration between the Province of Silesia (Republic of Poland) and the Moravian-Silesian Land (Czech Republic), signed in 2001 in parallel by the representatives of the central authorities (province governors) and of the self-governmental bodies. The potential for the polycentric development of the area was a key factor in the establishment of the partnership.

The main aims and objectives of the strategy are very broad and include the following domains: economy, environmental protection, transport and communication, restructuring of heavy industry, self-governmental administration, culture, science and education, tourism, sports and recreation, as well as joint activities undertaken in these sectors. The perceived strengths of having this arrangement have focused on the envisaged possibility of common actions (promotion, acquisition of means) within the framework of the extended European Union and the opportunity of broadening the initiatives appearing in the border areas over a more extensive spatial reach. However the agreements are of a general character and it is difficult to determine their concrete role in terms of polycentricity.

In 1996 a joint office was established which oversees and coordinates collaborative actions and projects for the G/NGA. In the future it should develop into a common administrative authority of the prospective cross-border European region. Polycentric development of the area was a factor in the establishment of the partnership as well as the obvious need for complementary development of both cities and their hinterlands due to their physical proximity.

The PHARE (cross-border) programmes that Slovenia, Italy, Austria and Hungary have been participating in have been an important factor in the continuation of collaboration. In 1998 the Regional Office was open in Štanjel, a small town located just few km from the border (at Slovenian side) to enhance cross-border contacts, links, co-operation, networks and projects between partners in Italy and Slovenia. In the 2000-2006 period, cross-border regions/municipalities in Slovenia and Italy are participating in INTERREG III A-PHARE CBC, also and INTERREG III B (Alpine Space, CADSES) and INTERREG IIIC programmes. The shift from environment/transport/cultural projects to 'sustainable spatial

development, economic development and human resources and harmonisation of legal systems' is visible in programming documents and project proposals. The co-operation between two cross-border towns Gorizia(Italy)/Nova Gorica (Slovenia) is taken as an example of new 'European cross-border regions in-making'. The other priority is to establish joint cross-border territorial planning mechanisms and to promote specificities of this cross-border area after accession of Slovenia to EU (May 2004).

In the case of the BPA, there a strategic level organisation which oversees the development of joint strategies for several sectors, but particularly the business system, with a joint management of fair and exhibition areas in Bologna, Modena and Ferrara e Reggio that has developed during the last decade. In addition an agreement has been signed by Parma and Piacenza for a common provision of fair services. The actors are the local governments – the most important municipalities and the Provinces - the Chambers of Commerce and the employers' associations. In transport planning, the choice of Bologna as the main high speed train node was originated by the main institutional and business actors. Functional polycentricity could be said to be the base for the establishment of the partnership, even if the historical rivalry among the different cities (which mirrors the rivalry among the the autonomous states of the *Ancien Régime*) still remains in many fields. This case indicates that the political organisation of Italy well suited for politically grounded polycentric development.

7.3.5 Joint strategy in other policy areas

Responses to the questionnaire revealed that there were several cases of polycentric relations operating in diverse fields of activity which are summarized below. While some of these may seem peripheral in policy terms, they may be standard setting for political collaboration in other areas.

Box 9: Cases of formal co-operation in other policy areas

Copenhagen Malmø Area – Education

The long-term informal co-operation among the regions universities were formalised in 1997 with the creation of the *Øresund University*, a voluntary co-operation between universities on both sides of the Øresund. It is based on the idea of utilising network technologies to create research and learning centres across geographical and institutional barriers. Working in collaboration with researchers, business leaders and policy makers throughout the region, the University has helped in identifying critical driving growth clusters and facilitating the development of networking associations in each of those clusters.

The Øresund Labour Market Council has been created to promote active integration of the labour market in the region and *Øresund Networks* works for co-ordinating the marketing of the Øresund region regionally, nationally and internationally. It is responsible for the region's brand and co-ordinated the overall activities when it comes to marketing and communicating the values and the general development of the region.

There are other examples of educational co-operation in other European areas, for instance Modena and Reggio have realised a 'joint university pole', with premises in each city but with common services and administration.

Edinburgh/ Glasgow Area – Canal and culture

Joint strategies in this region have been confined to specific projects and initiatives. The Millenium Link project to re-open the G-E canal route, involves a wide range of agencies in both cities and £180 million of joint capital investment. Although there is at present no other formal working relationship between Glasgow and Edinburgh, work is underway to develop a joint protocol between the two cities. In May 2004 the two Lord Provosts met to discuss areas where there could be closer working/joint initiatives. It was agreed that the following areas would benefit from this; sporting events, cultural events, the Edinburgh International Festival and the Glasgow Celtic Festival. Finally there is work on two joint initiatives currently underway; Tartan Week in New York - the 2 Lord Provosts are going together and holding joint exhibitions in New York to promote both cities and it was agreed to work jointly on the celebrations of the 10th Anniversary of democracy in South Africa, with a joint service.

Gorizia/Nova Gorica – Higher Education and Hospitals

There has been a strong initiative for complementing medical services on both sides of the border. Another strong common project is the initiative to establish a common University for both cities; at present there are several departments in Gorizia from Universities in Udine in Trieste and a new but growing Polytechnic faculty in Nova Gorica.

Lyon, Geneva, Grenoble, Lausanne Area – Health and Science

The alpine diamond is the major reference for scientific and hospital co-operation between cities of Rhône-Alpes, northern Italy and Switzerland. There are also existent cultural connections.

Krakov Katowice Ostrava Area – Tourism

In 1999 a Joint Strategy of Development of Tourism in the Silesian and Silesian-Moravian Beskidy Mts. INTERTOURISM was elaborated. This strategy was elaborated by the Association for the Regional Development and Co-operation "Olza" and the Euroregion "Cieszyn Silesia". The work on strategy was financed from the PHARE fund.

7.4 Trans-national partnerships

Below a selected sample of trans-national partnerships are discussed, the sample of areas was identified by the project team as typologies of European polycentricity and INTERREG projects are used as examples.

7.4.1 Interreg case studies

Earlier research into active inter-regional transnational partnerships covered the following organisations; Joint Regional Development Strategy for the Vienna, Bratislava and Győr Regions (JORDES) (Austria, Hungary and Slovakia), Rhine-

Scheldt Delta (RSD) (Netherlands and Belgium), Saar-Lor-Lux (SLL) (Netherlands, Belgium, Germany and France) and the Braganca/Zamora Co-operation Work Community (B/Z) (Portugal and Spain).

There were certain similarities in the characteristics of these partnerships with the emergent ones we describe above. The rationale for instigating the partnership was explicitly economic in half of them and encouraging a common growth process at the cross border regional level a factor in the others. 'Mitigating the border effect' was mentioned and calls made for a 'legal cross-border entity' to one of the organisations. An appeal for more national government commitment to regional development issues was made and in the B/Z case the peripheral situation of the body relative to the Central Administrations of both countries was identified as a significant problem.

One organisation listed achievements that had been made in settlement policy, two others shared environmental concerns. Co-operation rather than joint decision making was the norm and powers were generally limited to making recommendations, but the pro-activity of partners and a sense of shared ownership of the strategy was common to all in recording the successes to date. Our findings here bode well for the notion of a 'Europe of regions'.

Key factors which help in the instigation of joint strategies include previous informal co-operation and the operation of European projects, such as the TENS programme and various Interreg initiatives. Although polycentric forms of co-operation appear still to be limited, judging by our case studies they are beginning and as our OTB colleagues concluded 'the best start (is) a small start' (Meijers and Romein).

CHAPTER 8: Conclusions and recommendations

The research undertaken for this project has examined the extent to which the existing and changing governance relationships reflect and capture the functional complexity of polycentricity in Europe at various scales. The report concludes now with a summary of recommendations derived from the responses to the our surveys on the prospects for the future.

8.1 Inter-municipal co-operation: recommendations for the way forward

Box 11 provides a summary of the responses of the partnerships in relation to ways to improve their activity. Predominantly, the responses represent recommended improvements to the specific partnership in question rather than more generic recommendations for improving the performance of partnership arrangements.

Box 10: Key recommendations for the way forward

Recommendations
<ol style="list-style-type: none">1. the need for more robust political and policy frameworks2. greater political commitment from higher tiers of government3. continued and improved resource allocation4. improvements in the coordination of partnership working – internally and externally

There are four general observations that can be drawn from this variety of response. Firstly, it is clear that partnerships require more *robust political and policy frameworks* if they are to operate successfully. A significant number of partnerships argued for greater political commitment from higher tiers of government and which is further supported by a programme of directed resources. As one partnership commented: *“We need....a new legal framework by the national government, orientated to facilitate the inter-municipal co-operation with direct or indirect incentives”*. The issue of *resources* (funding) was also seen as critical to continued and improved partnership working. Indeed, many partnerships commented on the lack of financial investment in their work, particularly from higher tiers of government: *“New legislation and more money would help”*. Another key issue is the ability of a partnership to integrate its programme of action with existing *EU funding* regimes. As one partnership commented: *“the harmonisation of INTERREG, PHARE and TACIS programme procedures is an essential part that will help run the project in a more effective way”*. A final point to note is that improvements in the *co-ordination* of partnerships, by the partners themselves and from interests outside of the partnerships who may have an impact on its activities, is considered essential to successful partnership working.

8.2 Inter-regional co-operation: lessons from the cases investigated

In several cases suspicions about commitment to formalized forms of inter-regional partnership were in evidence. Perhaps beginning with specific projects which can gain general acceptance or with informal forms of co-operation may be the best approach at the outset, such co-operation may lead to more established polycentric practices later. Where established practices are prohibitive, less formal forms of collaboration may be appropriate and where long-standing rivalries are an issue, building up relationships between newer, or younger, individuals may help overcome barriers.

In some instances it seemed that transnational partnerships were easier to establish than partnerships within the national context, maybe where the latter have caused difficulties the former can be tried. Finally it was suggested that polycentricity may simply failed to emerge in some situations because 'it

had not been thought of'. If this is the case visits from areas that have successfully developed partnerships to areas where polycentricity is not operative may be a constructive idea.

Abbreviations

Inter-municipal partnerships

ANDIP	Development Society of the Piraeus Region Municipalities
BSW	Bergisches Statedreieck Remscheid – Solingen – Wuppertal
CSM	Council of the Stockholm-Malar region
GMPG	Greater Manchester Strategic Planning Officers Group
HAMAR	The Regional Council for the Hamar Region
KVR	Kommunalverband Ruhrgebiet
LIMA	Association of Municipalities of the Lima River Valley
LRD	Latgale Region Development Council
OSLO	Action programme for regional development in Oslo city and Akershus County
PTS	Patto Territoriale del Sangone
SINA	SINA project
SMA	Snieznik Municipalities Association
SPNM	Strategic Plan North Milan Development
SYF	South Yorkshire Forum
VDM	Vereniging Deltametropool
VID	Valdres Industrial Development Ltd.
WL	Western Lithuania 2020

Inter-regional cases

VBGA	Vienna/Bratislava/Győr area
CMA	Copenhagen/Malmö area
BTA	Barcelona/Tarragona area
LGGLA	Lyon/ Grenoble/Geneva/ Lausanne area
DCLHA	Dresden/Chemnitz/Leipzig/Halle area
BPA	Bologna/Parma area
KKOA	Krakow/Katowice/Ostrava area
PBCA	Porto/Braga/Coimbra area
EGA	Edinburgh/Glasgow area

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A2 Questionnaire A



5.1 Questionnaire: Partnerships and Networks

Introduction

This questionnaire is designed within the context of the ESPON Project 1.1.1, which examines the role, specific situation and potentials of urban areas as nodes of polycentric development¹. Development of polycentric urban regions is strongly

¹ Further information about the ESPON Programme can be found at: <http://www.espon.lu>

promoted by the ESDP² as a way of enhancing economic competitiveness of the EU regions, and achieving balanced territorial development across the EU. In order to fulfil this objective, the ESDP emphasises the need for building up co-operations and partnerships between towns and cities and their surrounding rural areas. Existence of effective governance relationships is therefore seen as an important prerequisite for developing and sustaining economically, socially and environmentally balanced regions across Europe. The purpose of this questionnaire is to *collect examples of recent and current network/partnership arrangements between municipalities (with or without other partners) from two or more cities whose focus is on developing or implementing a joint strategy for spatial development of their area*³. If you know of any such networks or partnerships please use the following questionnaire to provide us with *at least 2* examples.

General

1. Name of the partnership/ network:
2. When was it established?
3. Which municipalities/ organisation(s) initiated it?
4. How was it initiated? Was it by the partners within the framework of (tick):
an EU programme of co-operation a national/regional prog.
the partners' own prog. of co-operation

Nature of the partnership

5. Name and number of the partners involved:
Municipalities

Private sector

Voluntary sector

Other public agencies /organisations

6. Is the number of partners fixed or is the membership open to other interested parties?

7. What kind of position do the partners hold in their own organisations?

² European Spatial Development Perspective can be downloaded from: <http://www.nordregio.se>

³ Please do not include partnerships that are engaged in any other specific projects. The focus of this survey is on an established partnership between municipalities who work together on a joint spatial strategy

Senior management

middle management

junior staff

8. How often do the partners meet (tick?)

Every 2 weeks

monthly

quarterly

every 6 months

9. Is this a time-limited co-operation (if so, for how long) or is it a long-term partnership?

10. Is the partnership sub-divided into a number of working groups? If so, please draw a simple chart to show the organisational structure and outline the key tasks of the key sub-divisions/working groups

Powers and resources of the partnership

11. Is the partnership accountable to a higher tier body? If so, which one?

National government

Regional government

Others

12. How does the partnership seek implementation of its decisions?

By making recommendations to respective municipalities and other organisations

Through its own executive powers, if so, over what type of issues does it have such powers?

13. Does the partnership have a regular source of funding? If so, is it short-term or long-term funding? How long?

14. Who provides the funding?

National government

Regional government

Municipalities

Private sector partners

joint funding by all partners

Others

15. How the secretariat for the partnership is arranged?

By employed staff jointly paid by the partners

Rotates among the partners who host it in turn

By one of the partners

The purpose and achievements of the partnership

16. What were the initial purposes of developing a joint spatial strategy? (score between 1 to 5 according to the significance: 1 is the lowest, 5 is the highest)

To bid for the EU or national funding

To address common trends (threats & opportunities)

To create critical mass by joining resources and efforts

To strengthen internal co-operation between the partners

To become an influential player / lobbyist vis-à-vis external players (regional, national, EU and international)

17. Has the complementarity of urban functions between the partner cities been an explicit driver for co-operation? If so, please provide further comments

18. What are the current aims and objectives of the partnership?

19. What concrete results has the partnership achieved in pursuing / implementing its aims and objectives?

20. Have they yet produced a joint spatial strategy for their area? If so, what are the key elements of the strategy?

21. How successful has the partnership been in relation to the following areas?

	very	partially	Not at all
*Shared ownership of strategy			
*Building mutual trust /confidence			
*Developing common understanding of key regional/sub-regional issues			
*Working across political boundaries			
*Developing joint economic/ social/ environmental projects			
*Delivering objectives / targets of the partnerships			
*Securing external financial/ institutional / political supports to achieve their key aims			
*Sustaining the partnership over time			
*Extending the life of partnership beyond			

what was initially expected

Comments

22. What are the key factors that have contributed to the success of the partnership? (tick all those which apply)

Availability of resources (staff time, funding) expertise	Pro-activity of the partners	Access to knowledge and Sense of mutual trust
Past history of joint working		Effective leadership
Motivated individuals	Shared agenda	Support from higher tier government

Comment

23. What are the key factors that have (or will in the future) weakened the partnership and its ability to deliver or inhibit their co-operation? (tick all those which apply)

National/ regional policy context	National legal/taxation system	
Limited resources (staff time, funding)	Limited knowledge and expertise	
Lack of motivation	Parochial attitude	Lack of trust
Little previous experience of joint working	Weak leadership	
Disagreement on key issues		

Comment

24. In your view, what are the key weaknesses and strengths of the partnership?

Weaknesses

Strengths

25. What can be done to make the partnerships work more effectively?

26. Is this model of partnership/network a common practice in your country or is this one of only few examples?

Further information

If the network has a **web site**, please provide its address

Please also attach any written (preferably in English) materials (organisational chart, review articles, commentaries, other related websites) which may provide further useful information about this or similar partnerships arrangements

Thank You

Contact details of the respondent

Name:
Organisation:
Email:
Phone:
Country:

Please email or send the completed questionnaire and additional information by 15 February 2003 to:

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A3 Questionnaire B



Questionnaire: Partnerships and Networks

Introduction

This questionnaire is designed within the context of the ESPON Project 1.1.1, which examines the role, specific situation and potentials of urban areas as nodes of polycentric development⁴. Development of polycentric urban regions is strongly promoted by the ESDP⁵ as a way of enhancing economic competitiveness of the EU regions, and achieving balanced territorial development across the EU. To

⁴ Further information about the ESPON Programme can be found at: <http://www.espon.lu>

⁵ European Spatial Development Perspective can be downloaded from: <http://www.nordregio.se>

investigate the extent and nature of the existing or emergent partnership arrangements between the constituent cities of a selection of potential Polycentric Urban Regions (PURs)*, we are assessing indications of co-operation between cities and towns around spatial development issues and other key functional policy areas, which would allow polycentricity to develop. We are also looking at the degree to which any such co-operation has been institutionalised and the extent to which any awareness exists of the polycentric potential of the region.

* Please see attached list of the regions being investigated.

Please return the completed questionnaire by **2nd April '04**

Case Study:

Economic Development

Context

- 1 What are the key economic functions of this area?
- 2 Are there any other key economic functions performed by other cities/towns?
If yes; What are these?
- 3 Is there a strong functional complementarity between;
a) the cities in this area
B) these and other major cities?

Joint Strategy

- 4 Has a joint economic development strategy been developed for the area?
If yes;
 - a) When did it start?
 - b) Who initiated it?
 - c) How frequently is it reviewed/updated?
 - d) Does this strategy have formal status?
 - e) What geographical area does it cover?
(Please name all cities and towns that are included and, if available, include a map/diagram)

f) What are the aims and objectives of the strategy?

g) Please provide an example of the key achievements/outcomes of the joint strategy.

If no;

h) Could you please give some indication of why (for example, political conflicts, local rivalries and competition, lack of complementarity, lack of awareness of the significance of joint working or lack of national/regional mandate).

i) Are there any other mechanisms for co-ordinating local economic development strategies?

Transportation

Context

- 5 What modes of transport exist between the main cities? (Highest speed rail link/ Train/ Air links/ Motorway)
- 6 How long does it take to travel between the two/more cities by each mode of travel?
- 8 Could you please supply data on the extent/patterns of commuting within the area (eg Travel to work data).
- 9 How many international airports exist in the area?
- 10 Please could you provide a map/diagram of key transport routes.

Joint Strategy

- 11 Has a joint strategy for transport been developed for the area?

If yes;

- a) When did it start?
- b) Who initiated it?
- c) How frequently is it reviewed/updated?
- d) Does this strategy have formal status?
- e) What geographical area does it cover?
- f) What are the aims and objectives of the strategy?

g) Please provide an example of the key achievements/outcomes of the joint strategy.

If no;

h) Could you please give some indication of why (for example, competition, lack of awareness of the significance of joint working or lack of national/regional mandate).

Spatial Development

Context

- 12 What are the main future growth areas within the area?
(general geographical location only, specific site details not required)
- 13 Please provide data on demographic growth and decline of the main cities/towns (comparing for example, 1991 and 2001) within the area.

Joint Strategy

- 14 Has a joint spatial development strategy been developed for the area?

If yes;

- a) When did it start?
- b) Who initiated it?
- c) How frequently is it reviewed/updated?
- d) Does this strategy have formal status?
- e) What geographical area does it cover?
(Please name all cities and towns that are included)
- f) What are the aims and objectives of the strategy?
- g) Please provide an example of the key achievements/outcomes of the joint strategy.

If no;

h) Could you please give some indication of why (for example, political conflicts, local rivalries and competition, lack of awareness of the significance of joint working or lack of national/regional mandate).

Other Joint Strategy Arrangements

- 15 Are there any other joint strategies covering any other sectors (eg environment, education, etc.) other than those mentioned above. If so what

are they?

Strategic Partnership Arrangements

- 16 Is there a strategic level organisation /partnership which oversees the development of joint strategies for all of the sectors mentioned above (economic, transport, spatial planning)?

If yes;

- a) When did it start?
- b) Who initiated it?
- c) Was the potential for the polycentric development of the area a factor in the establishment of the partnership?

If not;

Is it now being discussed in the partnership?

of What is the current level of awareness of the polycentric potential of the area now?

Were there other reasons why the partnership was established?

- d) What is the composition of the partnership
- e) Does this strategy have executive powers?

If yes;

Over what activities?

- f) What are the key aims and objectives of the strategy?
- g) What have been the strengths of having this partnership arrangement?
- h) What have been the main weaknesses?
- i) What future is envisaged/planned for this partnership?

If no; ?

g) Could you please give some indication of why (for example, political conflicts, local rivalries and competition, lack of complementarity, lack of awareness of the significance of joint working or lack of national/regional mandate).

List of potential Polycentric Urban Regions covered by this questionnaire

<u>Partners to be approached</u>	<u>Potential PURs</u>	<u>Countries covered</u>
OIR/IRSSP	Vienna/Bratislava/Győr	Austria/Slovakia/Hungary
OFLRI	Copenhagen/Malmö	Denmark/Sweden
Quart. Porto	Barcelona/Tarragona	Spain
CNRS-UMR	Lyon/ Grenoble/ Geneva/ Lausanne	France/Switzerland
OTB	Dresden/Chemnitz Leipzig/Halle	Germany
D Torino	Bologna/Parma/	Italy
Nordregio	Krakow/Katowice Ostrava	Poland/Czech Rep
Quart. Porto	Porto/Braga/Coimbra	Portugal
CUDEM	Edinburgh/Glasgow	UK

These constitute 9 cases each with an average of 3 cities, selected with a focus on spatial development and partnership arrangements in mind.

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ESPON 111
Potentials for polycentric development
in Europe

Annex report D
**Morphological analysis of urban areas
based on 45-minute isochrones**



This report represents the final results of a research project conducted within the framework of the ESPON 2000-2006 programme, partly financed through the INTERREG programme.

The partnership behind the ESPON programme consists of the EU Commission and the Member States of the EU25, plus Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

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ESPON 1.1.1

Potentials for polycentric development in Europe

Annex report D **Morphological analysis of urban areas based on 45-minute isochrones**

Separate volumes

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Potentials for polycentric development in Europe
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Annex report A
Critical dictionary of polycentricity
European urban networking
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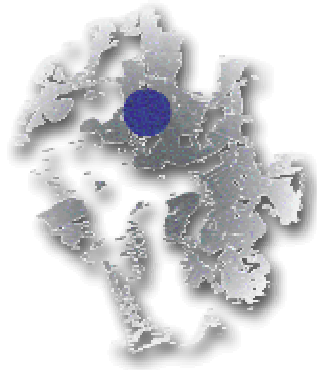
Foreword

This annex report of the ESPON 1.1.1. project "The role, specific situation and potentials of urban areas as nodes in a polycentric development" presents findings on the delimitation of Potential Urban Strategic Horizons (PUSH) by using an approach based on 45-minute isochrones, and on the morphological analysis of settlement areas within these areas. The report is prepared by Carsten Schümann RRG Spatial Planning and Geoinformation, Oldenburg, as part of work packages 3 and 4.

The project report and the four annex reports are available at www.espon.lu

Stockholm, August 2004

<p>The content of this report does not necessarily reflect The opinion of the ESPON Monitoring Committee</p>



RRG Spatial Planning and Geoinformation

Carsten Schürmann

**MORPHOLOGICAL ANALYSIS OF URBAN AREAS
BASED ON 45-MINUTE ISOCHRONES**

Report prepared for

ESPON Project 1.1.1

“The Role, Specific Situation and Potentials of Urban Areas
as Nodes in a Polycentric Development”

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Part A. Context and Objectives

1. Study Background and Study Objectives

This study was conducted in summer 2004 under the framework of the ESPON Project 1.1.1 on “*The role, specific situation and potentials of urban areas as nodes in a polycentric development*” within the European Spatial Planning Observatory Network. As stated in the third interim report of this project, “the promotion of a ‘balanced polycentric urban system’ is one of the most frequently cited policy objectives of the European Spatial Development Perspective (ESDP) and is one of the core concepts of ESPON” (Nordregio 2003, 2). The third interim report furthermore explains that

“The urban/rural distinction is no longer a functional dichotomy for the European space, as described in the ESDP. Cities must be seen as service points for population and industries in a wider perspective. The urban network is the structural backbone for the territory as a whole – polycentricity corresponds to the capacity of this network to service all parts of it efficiently and harmoniously. The political concept of polycentricity is the territorial dimension of the European coherence policy. The urban structure should be organised to stimulate competitiveness and economic growth. Businesses should have access to the necessary services. Labour markets should have a sufficient diversity, such that people can find jobs corresponding to their professional aspirations. In all parts of Europe, citizens should benefit from a service provision that allows them to uphold a satisfactory quality of life, cultural offers and recreational areas. Structural evolutions towards increased geographical concentration tend to deprive some areas of their urban network. Other areas may suffer from an excessive or badly managed concentration of urban functions, which affects the environment of businesses and populations negatively. Reaching equilibrium between economic competitiveness and social cost-efficiency will often imply organising high-quality dense areas. This in turn implies reflecting on an efficient division of tasks between different layers of the urban hierarchy, encouraging the development of activities that can thrive at the lower levels of the hierarchy in secondary cities.” (Nordregio 2003, 2)

But even though the concept of polycentricity is nowadays widely used and discussed, there is no common understanding of all its meanings. Therefore, the starting point for the ESPON Project 1.1.1 was to give an overview on the different aspects of polycentricity, its meaning, potentials and weaknesses, and policy implications in order to derive a common understanding which is a prerequisite for giving policy recommendations and formulating specific targeted policies.

The term *Functional Urban Area* (FUA) was chosen in this project to compensate for a lack of a universal definition of what is a city or what is urban, as the political and even more administrative perception of both differs widely across the study area (which comprise the old and new EU Member States, plus Bulgaria, Romania, Norway and Switzerland, i.e. EU27+2). This term also expresses the strong believe that a discussion of polycentricity restricted to the analysis of nodes (in a network) is too narrow in the sense that this only reflects an European or even national approach, but is neglecting the fact that polycentricity also has a strong regional (or even local) dimension when analysing functional linkages between core cities and their surroundings.

So the term *Functional Urban Areas* (FUA) allows to analyse both, the national or European level (linkages or competitions between global and/or national cities) as well as the regional/local level.

In parallel to this theoretical work, the actual identification or definition of these *Functional Urban Areas* using an harmonised set of criteria was an important achievement. Of course, many European countries do have definitions of *Functional Urban Areas* or similar concepts (travel-to-work-areas, commuting catchment areas, commuting zones etc.), however, as the diversity of concepts is suggesting all of them are using different sets of criteria for the actual delimitation of these areas. Therefore, a common harmonised set of criteria had to be developed and applied to the countries which consist of (Nordregio 2003, 8):

- FUA population over 50 000 inhabitants and urban core (agglomeration) with more than 15 000 inhabitants (i.e. excludes those artificially large ‘urban’ areas with minor urban core);
- or FUA population more than 0.5 % of national population and urban core (agglomeration) with more than 15,000 inhabitants (i.e. in less populated countries smaller FUAs were taken into account);
- and smaller FUAs were included if they had at least local importance in transport, knowledge or decision-making functions or regional importance in administrative, tourism or industrial functions.

A total of 1,595 FUAs are identified in EU27+2 and gathered into a GIS database. However, for the time being only as point locations of their centres.

One of the overall objectives of the ESPON Project 1.1.1 then is to describe the urban structure and functional diversification of these FUAs and the linkages and relationships between them for the study area as comparative as possible. As the third interim report shows, quite a lot of data on the situation of the FUA has already been collected and quite a number of indicators are already calculated and analysed. However, a spatial delimitation of the FUAs has not been achieved so far. Again, for some countries such as France such a spatial delimitation of FUAs exists in official documents, but for many others this delimitation is missing; and again even if the delimitation exists for some countries most of them were based on different sets of criteria.

For certain types of analysis it is, however, important to have a spatial delimitation of FUAs. This refers to the analysis of regional/local polycentricity within *Functional Urban Areas*, but it also refers to specific types of analysis of national or even European polycentricity. Thus, the overall objective of this study is the spatial delimitation of *Functional Urban Areas* in Europe for EU27+2 using a harmonised common approach based on the construction of 45-minute car travel isochrones. Unfortunately, data on functional linkages (such as commuter flows) are only, if at all, poorly available for many countries in sufficient spatial detail (preferable at the municipality level), and so it was decided to use a pure travel time approach here.

As the travel time calculation should be based on an unloaded network, i.e. no traffic flows should be taken into account, it was assumed that a driving time threshold of 45 minutes translates into a real world driving time of 60 to 90 minutes, which in many countries is equivalent to the average commuting time for one way and so seems reasonable to use here.

The overall objective of this study can then be subdivided into the following sub-goals:

1. Calculation of 45-minute isochrones for all FUAs;
2. Approximation of these isochrones to municipalities in order to identify which municipality is located within the catchment area of which FUA in order to add the spatial dimension (spatial extent) to the FUAs. In order to avoid confusion with national definitions of FUAs and national delimitations of FUAs the areas revealed after approximation of the isochrones to the municipalities are called here *Potential Urban Strategic Horizons* (PUSH). This terminology should also express that all further analysis within this study will assess potentials of these areas based on morphological considerations, rather than analysing real (traffic, information) flows.
3. Basic morphological analysis of the so-derived *Potential Urban Strategic Horizons* in order to contribute to the European/national approaches to the FUA analysis;
4. Description of the settlement structure of each *Potential Urban Strategic Horizon* in order to assess the regional and local dimension of polycentricity;
5. Calculation of different types of indicators measuring the degree of polycentricity of PUSHs in Europe;
6. Generation of a GIS database storing the analysis results.

However, the focus of this study is on sub-goals 1 to 4 and on sub-goal 6, whereas measuring the degree of polycentricity of PUSHs in Europe is being one of the main objectives of ESPON Project 1.1.1 as a whole; to which this study is contributing. As shown later, this study is focussing on measuring certain aspects of polycentricity, on so is able to contribute to this discussion but is not claiming to cover the full range of all aspects associated with polycentricity.

Morphological analysis in this context means that the shape, extent, area, perimeter, centre location, the spatial configuration and relative position of the *Potential Urban Strategic Horizons* will be assessed, rather than analysing real transport flows, communication and information flows, commuting patterns or administrative linkages. Thus, the focus is on the potentials that the PUSHs offer, rather than on the actual use or the actual ability of cities and regions to adopt and facilitate these potentials.

In order to avoid confusion, the meaning of the three main terms used in this report can be summarised as follows:

If the report is referring to the centres of the Functional Urban Areas, or to Functional Urban Areas as point locations, than the term *Functional Urban Area* (FUA, FUA centroid) is used. The term *Isochrones* is used for the area reachable within 45 minutes car travel time from the FUA centroid before their approximation to municipalities; finally, the term *Potential Urban Strategic Horizon* (PUSH) is representing the area derived after approximation of the isochrones to the municipalities.

2. Structure of this Report

Based on the aforementioned objectives of the study, this report is structured as follows:

Part B of this report describes the methodologies applied and data used to analyse the *Potential Urban Strategic Horizons*. *Chapter 4* describes methodological issues of the delimitation of the isochrones, their approximation to municipalities and the types of analysis performed. *Chapter 5* introduces the different layers of the GIS database necessary for this study.

Part C of this report then provides the results. *Chapter 6* briefly introduces previous work done in the framework of ESPON Project 1.1.1 on which this study was based upon. *Chapter 7* starts with the description of the isochrones generated, explains the results of different scenarios for their approximation to municipality boundaries, justifies the selection of the appropriate assignment criteria and finally describes the resulting *Potential Urban Strategic Horizons* from a morphological perspective. *Chapter 8* analyses the settlement structure within each PUSH, and finally *Chapter 9* concludes with the presentation of different approaches to measure polycentricity.

Eventually the *Annex* introduces the GIS database constructed, provides a gallery of selected sample isochrones maps, and provides indicator numbers for each FUA and PUSH, respectively in tabular format.

Part B. Methodology and Database

3. Approach to Delimitate and Analyse Potential Urban Strategic Horizons

3.1 Basic Principles

The delimitation and analysis of *Potential Urban Strategic Horizons* in Europe is based on a three step approach.

In the *first step*, car travel times from the centres of the *Functional Urban Areas* (FUA centroids) to each node of the road network are calculated, and, based on these travel times, isochrones are constructed. For the purpose of this study, 45 min isochrones are constructed. As the travel time calculation should be based on an unloaded network, i.e. no traffic flows should be taken into account it is assumed that a driving time threshold of 45 minutes translates into a real world driving time of 60 to 90 minutes, which in many countries is equivalent to the average commuting time. The outcomes of this step then are isochrones for each FUA.

For the purpose of statistical analysis, and in order to assign municipalities to FUAs, these isochrones are afterwards approximated to municipality boundaries in the *second step*. The isochrones are overlaid with the municipality boundaries, and if they overlay to a certain degree, then the municipality is considered part of the *Potential Urban Strategic Horizon* (*PUSH*). At this stage, four different thresholds (scenarios) are applied in order to see how sensitive this assignment procedure is. According to these scenarios, municipalities are assigned to a PUSH, if the respective isochrones

- (1) covered 100 % of the municipality territory (the full municipality area was overlapped) (scenario 1),
- (2) covered at least 50 % of the municipality territory (i.e. more than half the NUTS 5 area was overlapped) (scenario 2),
- (3) covered at least 10 % of the municipality territory (scenario 3), and finally
- (4) covered at least 5 % of the municipality territory (scenario 4).

As explained further below, eventually the 10 % threshold is chosen for further analysis. All municipalities assigned to a particular PUSH together form the *Potential Urban Strategic Horizons* for a specific FUA.

In order to analyse the internal structure of the PUSHs, the derived *Potential Urban Strategic Horizons* are overlaid with the settlement areas in the *third step*. This allows the analysis of continuous or non-continuous settlement patterns.

All the steps explained above are entirely implemented in the GIS ArcInfo workstation version, using ArcInfo's Arc Macro Language (AML). They require the following basic information provided in form of GIS layers: Location of FUA centroids (point layer), detailed road network, municipality boundaries (NUTS 5 layer), settlement areas (land use layer). These input data are described further below in Chapter 4.

3.2 Calculation of Travel Times and Construction of Isochrones

The first major step of calculating car travel times and of constructing isochrones can further be subdivided into the following 6-step approach (Figure 1) (see also Schürmann, 1999):

1. Densification of nodes on road segments
2. Introduction of FUAs as new centroids to the modelling network
3. Calculating link travel times
4. Calculating travel times for destination nodes from origin FUAs
5. Construction of buffer rings around network nodes
6. Merging individual buffer rings to one single isochrones polygon

Departing point for the construction of the isochrones is the specific arc-node-topology of the current RRG GIS road network database. There, nodes exist only at locations where two or more roads intersect, or where road characteristics change (e.g. where a four-lane road becomes a two-lane road). Since the ArcInfo **NODEDISTANCE** command applied to calculate node travel times in subsequent *Step 4* is calculating travel times between nodes, the arc-node-topology must be densified in the beginning in order to derive sound and accurate isochrones.

Thus, *Step 1* involves the densification of nodes along road segments using the **DENSIFYARC** command of ArcInfo. This command is issued on all road segments except for motorways and dual-carriageways (there, you can only enter/leave such roads on distinct exit locations), and except for ferry connections and road tunnel segments. After this densification, the road network layer contains some 514,000 arcs and some 497,000 nodes, which found the basis for all subsequent steps.

The following *Step 2* adds the centroids of the FUAs to the road network environment using automated AML scripting routines in ArcInfo. Based on the x-/y-co-ordinates of the centroids, the script first of all is searching for the nearest network node. Then, a virtual access link is constructed in the road network layer linking the centroid to the nearest node. Finally, the access link and the centroid are appropriately attributed in the road layer in order to be able to select them at later stages of the process.

Step 3 sees the calculation of link travel times subject to the link length and the speed limits on this link. After this, *Step 4* is devoted to calculate the travel times from each origin centroid (i.e. FUA) to all other nodes in the network applying the already mentioned **NODEDISTANCE** command. The travel time to each node in the network is then calculated as the sum of all link travel times of the shortest path from the origin. The results will be written to a matrix file that includes all those nodes whose calculated travel time is less or equal to the specified threshold (here: 45 minutes). This step is again performed via AML scripting routines, where iterative loops are used to calculate the node distances from each FUA centroid.

The results of *Step 4* are travel times for each node in the network from the origin centroid. The time difference between the threshold defined (here: 45 minutes) and the actual travel time (for instance, 15 min) will in *Step 5* then be buffered based on a speed of 30 km/h, in order to calculate those areas that can further be reached from the node. After buffering, one obtains individual rings around each network node that is reachable from the origin FUA within the given threshold time. Since each buffer ring in the layer represents an individual polygon object, they need to be merged in a *Final Step* into one final polygon object (or region object, resp.), which eventually represents the travel time isochrones for a given FUA. Again, these two last steps are repeated iteratively for all 1,595 FUAs, using AML scripting routines.

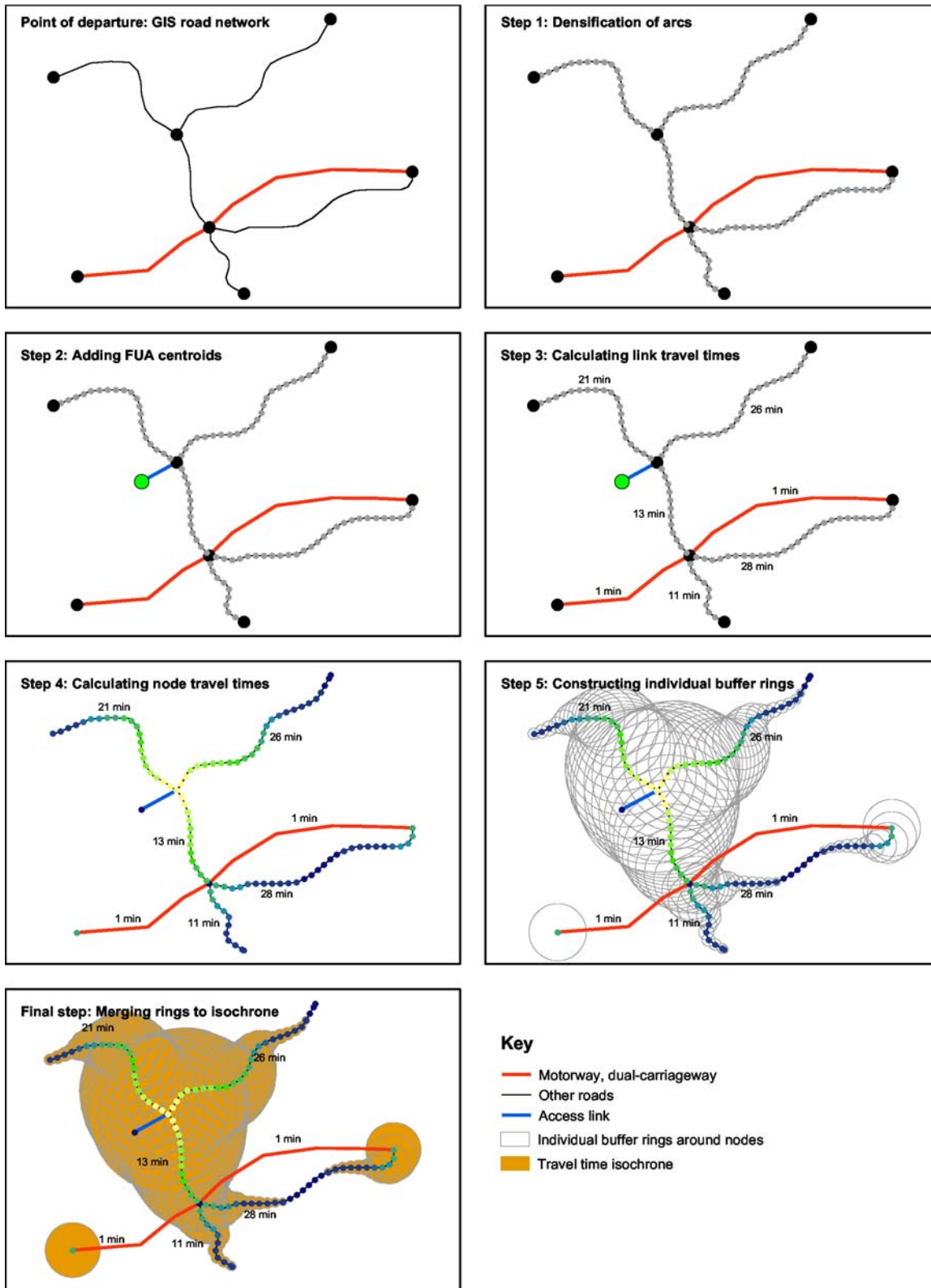


Figure 1. Steps to construct isochrones.

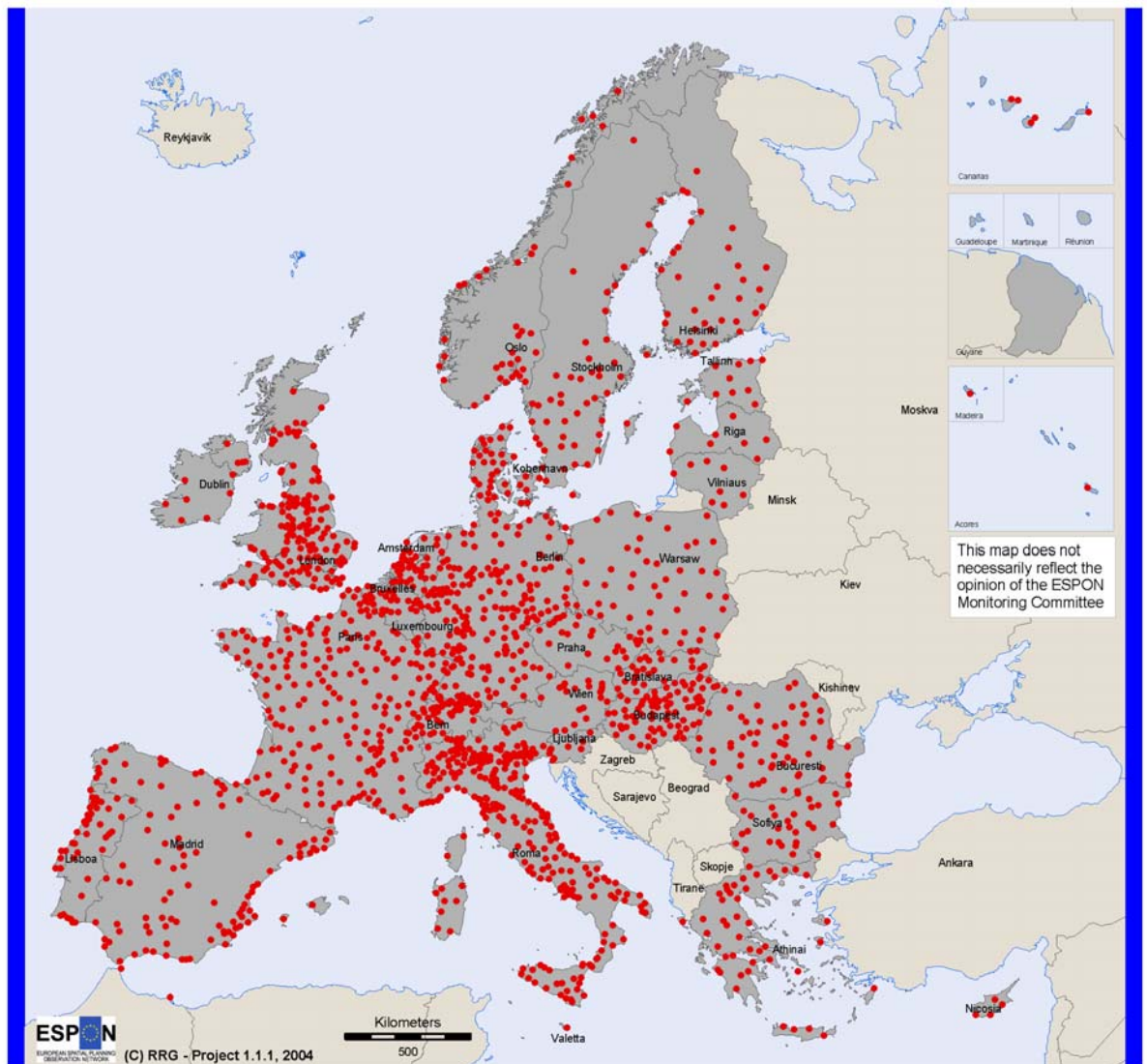
4. The GIS Database

As already mentioned, this study requires four basic GIS input layers: A point layer representing the location of the FUA centroids, a detailed road network layer for calculating travel times, a municipality boundary layer and finally a layer providing settlement areas in Europe. It is, of course, vital that all these layers cover the whole of Europe and not just parts of it. The data sources used are described in the following sections.

4.1 Centroids of Functional Urban Areas

The main input is a layer representing the FUA centroids (co-ordinates). This layer was provided by Nordregio as output of the first phase of the ESPON Project 1.1.1, and includes 1,595 FUA locations across Europe (Figure 2). Beside their geographical position, this layer provides basic information on FUAs such as their names and population density.

FUA centroids



Geographical Base: Eurostat GISCO

Figure 2. Centroids of Functional Urban Areas in Europe.

4.2 Road Network Layer

As a second important input to this study, a detailed road network layer covering the whole of Europe is required to estimate car travel times over the network. This layer was taken from the *RRG GIS Database* (Figure 3). It contains all motorways, dual-carriageway roads, national roads and other trunk roads, as well as all E-roads and other important transport arteries for the whole of Europe. In some areas further secondary roads, regional or even local roads are included. Finally, car ferries ensure maritime connections across the sea. All roads can be differentiated by the type of road (motorway, dual-carriageway, regional or local road, ferry etc.); as one of the basic attribute features, speed limits are also available subject to the type of the road and country concerned (Table 2). In case of ferry connections timetable travel times are used as well.

4.3 Municipality Boundaries

After constructing the isochrones they need to be overlaid with municipality boundaries in order to identify which (part of a) municipality falls within or outside the isochrones.

As the basic existing input layer, the NUTS-5 level municipality layer compiled in the framework of the so-called 'mountain study' was used (Nordregio, 2004). The contents and structures and attributes of this layer have already been described in a comprehensive user manual (Gløersen et al., 2003). This layer already represented a compilation of different data sources; it was mainly based on Eurostat/GISCO's SABC 97 database, but updated with additional and more accurate boundaries for Bulgaria (NCRD, 2002), Romania (ESRI Romania, 2002), Slovenia (Oikos, 2002) and Switzerland (Swiss Federal Statistical Office, 2002), the Netherlands, Denmark, Estonia, Latvia and Lithuania (source: Eurostat/GISCO).

Altogether, this layer represents some 115,000 municipality for the old and new EU member states, the remaining candidate countries, plus Norway and Switzerland (Figure 4).

4.4 CORINE and PELCOM Land Cover Layer

The base land cover input layer used to analyse settlement structures is the CORINE layer in its 100x100 m resolution (EEA, 2004). As in this version data for Sweden, Norway and Switzerland are missing, the PELCOM (PELCOM, 2004) land cover layer with its 1 km resolution is used in addition to CORINE in the three countries concerned.

The CORINE land cover layer differentiates altogether 44 classes, of which the following classes have been extracted representing settlement areas (Table 1): Besides residence and industrial areas, also areas dedicated to transport and areas dedicated to sports or other leisure facilities as well as inner-urban green areas have been selected.

As PELCOM is focussing on the differentiation of vegetation areas, it contains one settlement land use class only which consequently was extracted for the three countries Norway, Switzerland and Sweden. As there is a significant loss of resolution of the PELCOM dataset compared to CORINE the results of the settlement structure analysis for the three countries Norway, Sweden and Switzerland must be taken with care.

Road network used for modelling

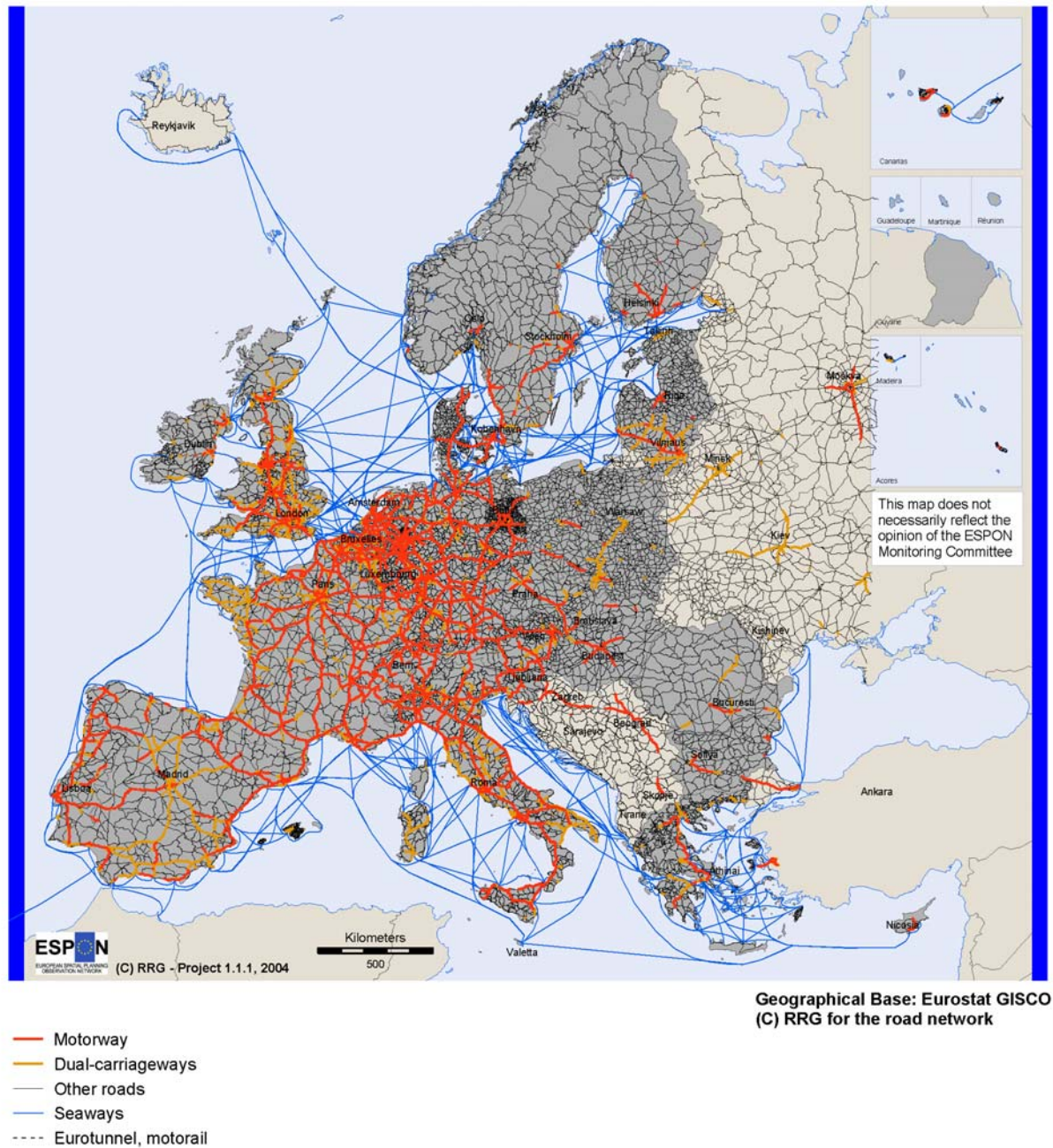
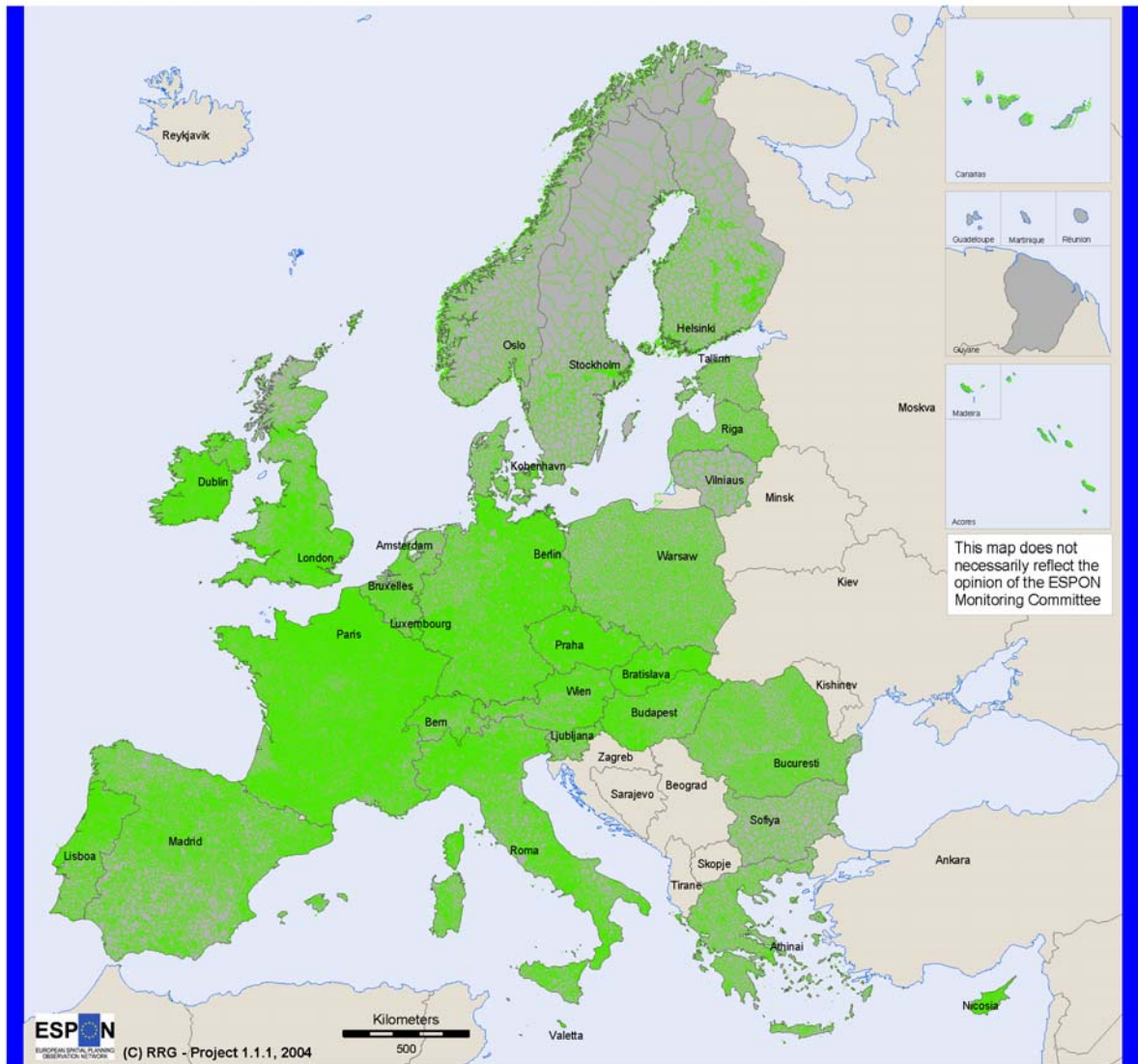


Figure 3. Road network used for calculating travel times and constructing isochrones.

Municipality boundaries in Europe (NUTS 5 level)



Geographical Base: Eurostat GISCO

Figure 4. Municipalities in Europe.

Table 1. CORINE land use classes representing settlement areas.

Class	Description
1	Continuous urban fabric
2	Discontinuous urban fabric
3	Industrial or commercial units
4	Road and rail network and associated land
5	Port areas
6	Airports
9	Construction sites
10	Green urban areas
11	Sport and leisure facilities

Settlement areas in Europe

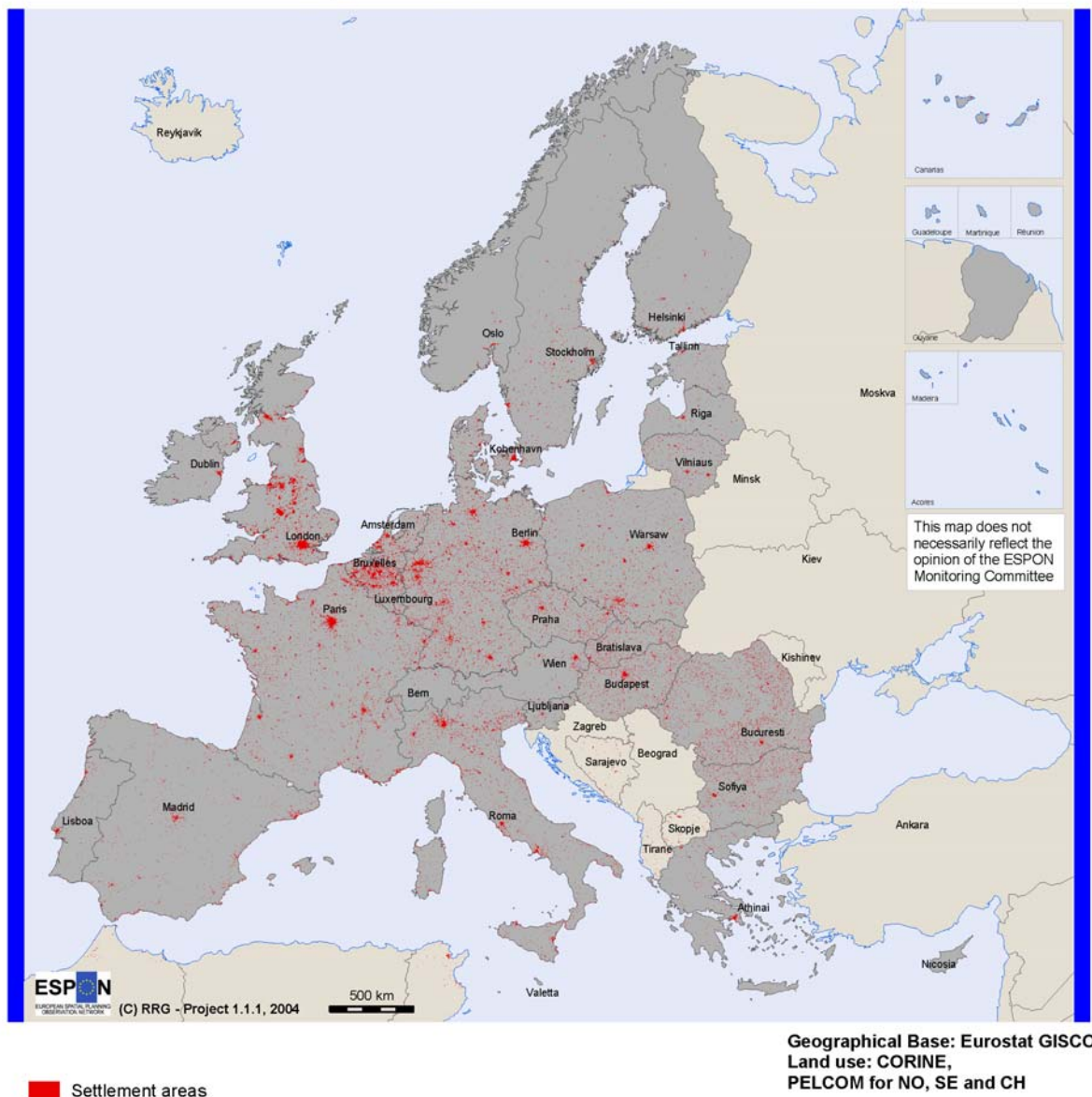


Figure 5. Settlement areas in Europe.

Originally, both layers were provided as grid layers, i.e. in raster format. In a first step the respective land use classes have been extracted and have been transformed into polygon vector format to enable further analyses. As in the following steps a differentiation of urban land use classes was not intended, the nine CORINE land use classes and the single PELCOM land use class were merged together into one single *settlement area* class. Figure 5 demonstrates the result of this exercise.

Although the PELCOM layer was used to improve the land cover database, settlement data for Cyprus and Malta is still missing at all, and data for some FUAs in Norway and Greek and for the Portuguese islands is also missing due to the poorer spatial resolution of the PELCOM layer.

4.5 Other data and parameters used

Apart from the GIS layers, the construction of isochrones also involves other data and parameters for the travel time calculation, as there are:

- Speed limits for cars differentiated by type of road and by country;
- Ferry timetable travel times;
- Assumptions about access speeds from the centroids to the network;
- Assumptions about basic speeds used for buffering residuals.

Speed limits defined as general maximum permitted speed allowed to drive are differentiated by road type and country, and were compiled from ADAC (2000), IRU (2000) and UBA (1998). Table 2 gives an overview on the speed limits.

Table 2. Speed limits in Europe (km/h).

Country	Inner-urban	Major roads outside towns	Expressways (dual-carriageway)	Motorways
Albania	50	70	70	100
Austria	50	100	100	130
Bosnia-Herzegovina	50	80	80	110
Belgium	50	90	90	120
Bulgaria	60	90	90	120
Belarus	60	90	90	90
Switzerland	50	80	80	120
Cyprus	50	80	80	100
Czech Republic	60	90	90	110
Germany	50	100	130	130
Denmark	50	80	80	110
Estonia	60	90	90	90
Spain	50	90	90	120
Finland	50	80	100	120
France	50	90	90	130
Greece	50	90	90	120
Croatia	60	90	90	130
Hungary	50	80	100	120
Ireland	48	96	96	112
Iceland	50	80	90	90
Italy	60	90	90	130
Lithuania	60	90	90	90
Luxembourg	50	90	90	120
Latvia	60	90	90	90
Malta	50	80	80	100
Moldova	60	90	90	90
Macedonia	60	80	80	110
Netherlands, The	50	80	80	120
Norway	50	80	80	90
Poland	50	80	80	110
Portugal	50	90	100	120
Romania	60	70	90	90
Russia	60	90	90	90
Sweden	50	70	90	110
Slovenia	60	80	100	120
Slovakia	60	90	90	110
Turkey	50	90	90	130
Ukraine	60	90	90	90
United Kingdom	48	96	96	112
Serbia and Montenegro	60	80	80	110

For ferry links and other seaways, real timetable travel times are compiled from various (on-line based) sources, such as European Shortsea Network (2004), Faehren.Info (2004), FerryConsult (2004), Ferrylines.com (2004), Ocean24 (2004), Sellpage.De (2004); or are compiled from web pages of shipping companies such as Scandlines (2004), DFDS (2004) Moby (2004), StenaLine (2004), or Superfast Ferries (2004) and others, but also other related publications on tourist information such as Visit Sweden (2004).

It is assumed that the general access speeds from the centroids of the FUAs to the nearest network node is 30 km/h, so as are the speeds used for buffering travel time residuals.

Part C. Potential Urban Strategic Horizons in Europe

5. Previous Work in ESPON Project 1.1.1

This study on the *Morphological analysis of Potential Urban Strategic Horizons* relied on previous work prepared within the ESPON Project 1.1.1 as published in its third interim report (Nordregio, 2003). As the main input, this report identified 1,595 FUAs in EU25 plus Bulgaria, Romania, Norway and Switzerland. Most European countries have definitions of *Functional Urban Areas* or similar concepts; such as travel-to-work-areas, commuting catchment areas, commuting zones or functional urban regions, but using different criteria. Others such as Germany, Luxembourg, Belgium, the Czech Republic, Bulgaria and partly Spain and Portugal are lacking official definitions. Necessarily a common harmonised set of criteria had to be developed applied to all countries concerned. Eventually, the selected set of criteria was (Nordregio 2003, 8):

- FUA population over 50 000 inhabitants and urban core (agglomeration) with more than 15 000 inhabitants (i.e. excludes those artificially large ‘urban’ areas with minor urban core);
- or FUA population more than 0.5 % of national population and urban core (agglomeration) with more than 15,000 inhabitants (i.e. in less populated countries smaller FUAs were taken into account);
- and smaller FUAs were included if they had at least local importance in transport, knowledge or decision-making functions or regional importance in administrative, tourism or industrial functions.

Altogether 1,595 FUAs in 27 countries have been identified (see Figure 2). As Figure 6 (left) shows, the greatest number of FUAs can be found in Italy, France, Germany and the UK and Spain. But also countries with a comparative small number of municipalities (Figure 6, right) do have many FUAs, such as Hungary, Greece or Switzerland.

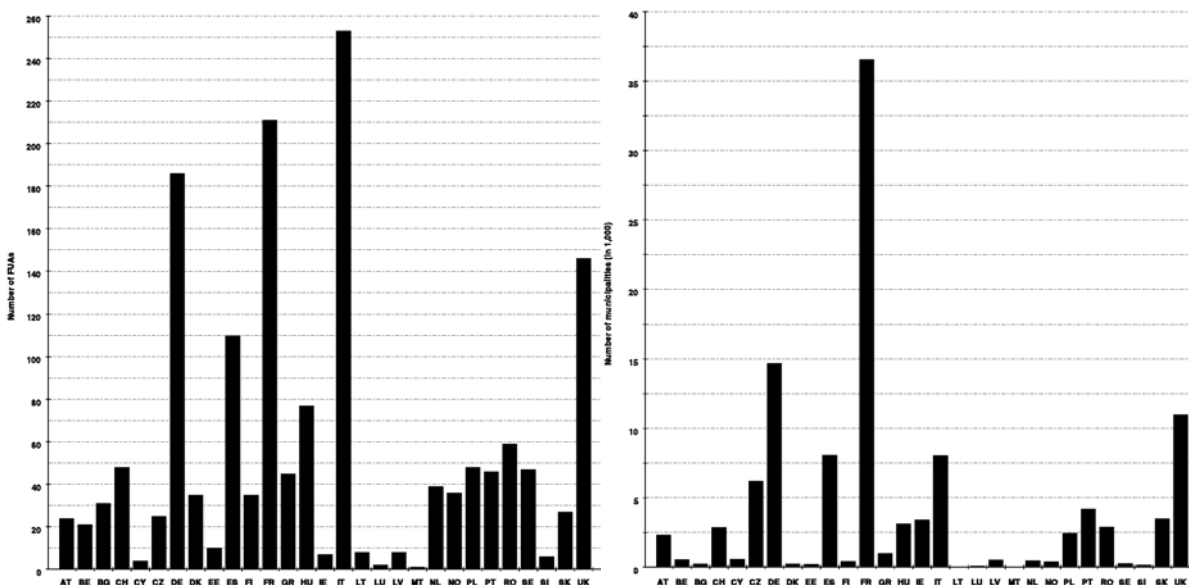


Figure 6. Number of FUAs (left), number of municipalities (right) by country.

Basically, the distribution of FUAs reflects the general national urban systems. Less populated countries with less urban density consequently have less FUAs, whereas in contrast higher populated countries with higher urban densities do have a higher number of FUAs.

For these FUAs a number of data and indicators have already been collected and calculated. Exemplarily, Figure 7 shows the FUA population as collected from national statistics. There are three FUAs with more than 5 million inhabitants (London, Paris, Madrid), and 45 FUAs with more than 1 but less than 5 million inhabitants. Most of the FUAs have less than 1 million inhabitants, of which many have even less than 50,000 inhabitants.

Based on the data already collected and indicators already calculated, a typology of *Functional Urban Areas* has also been developed differentiating between *Metropolitan European Growth Areas* (MEGAs), *(trans-)national FUAs*, and *regional/local FUAs* (Figure 8). Most of the MEGAs can be found in the ‘blue banana’, ranging from London via the Benelux countries, along the Rhine River and across the Alps (Switzerland) towards northern Italy. But there are also many MEGAs located in Poland and the Czech Republic, in the Baltic countries, Spain and Portugal, and even located on some islands, such as Palma de Mallorca or Valetta.

However, what is still missing in the previous work undertaken is the spatial delimitation of *Functional Urban Areas*. Although for some countries official delimitations exist (e.g. France), these are lacking for most countries, and even if they exist they were delimited using different sets of criteria and so were hardly comparable. Therefore, the main objective of this study was the spatial delimitation of *Functional Urban Areas*, i.e. the assignment of municipalities to FUAs and the construction of *Potential Strategic Urban Horizons*.

6. Isochrones and Potential Urban Strategic Horizons

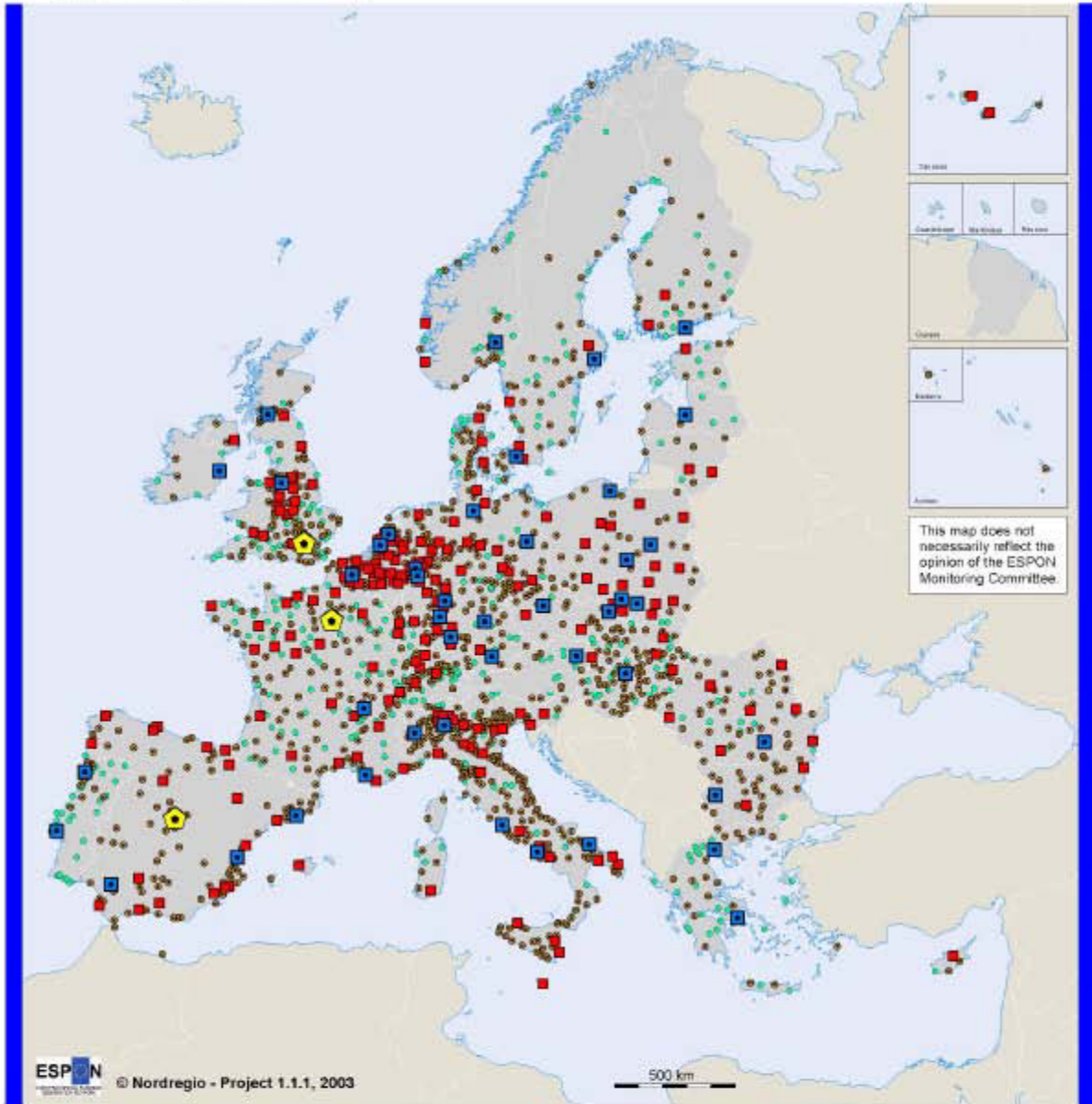
6.1 45-min Isochrones

Based on the methodology described in Chapter 3, isochrones have been generated for all 1,595 FUA across Europe.

As expected, the area, perimeter and shape of the isochrones vary to a high degree. There are multiple reasons for this, as the actual characteristics of the isochrones depend on

- the general location of the centroid of the FUAs;
- the number, quality, connectivity and shape of the road network (i.e. is there are a dense mesh of different roads with different type of roads such as motorways, dual carriageways or other roads available or not);
- the different maximum permitted speed limits subject to the type of road and the country concerned (e.g. in Germany one is allowed to drive at speeds of 100 km/h on trunk roads outside towns, whereas in other countries such as Norway one is allowed to drive 80 km/h only);
- general physical and topographical criteria (for example, does the centroid represent a harbour directly located at the seaside, or is the centroid located on an island or within a mountain valley etc.).

FUA population (mass function)



Total FUA population in FUAs with more than 20 000 inhabitants 2000-2001

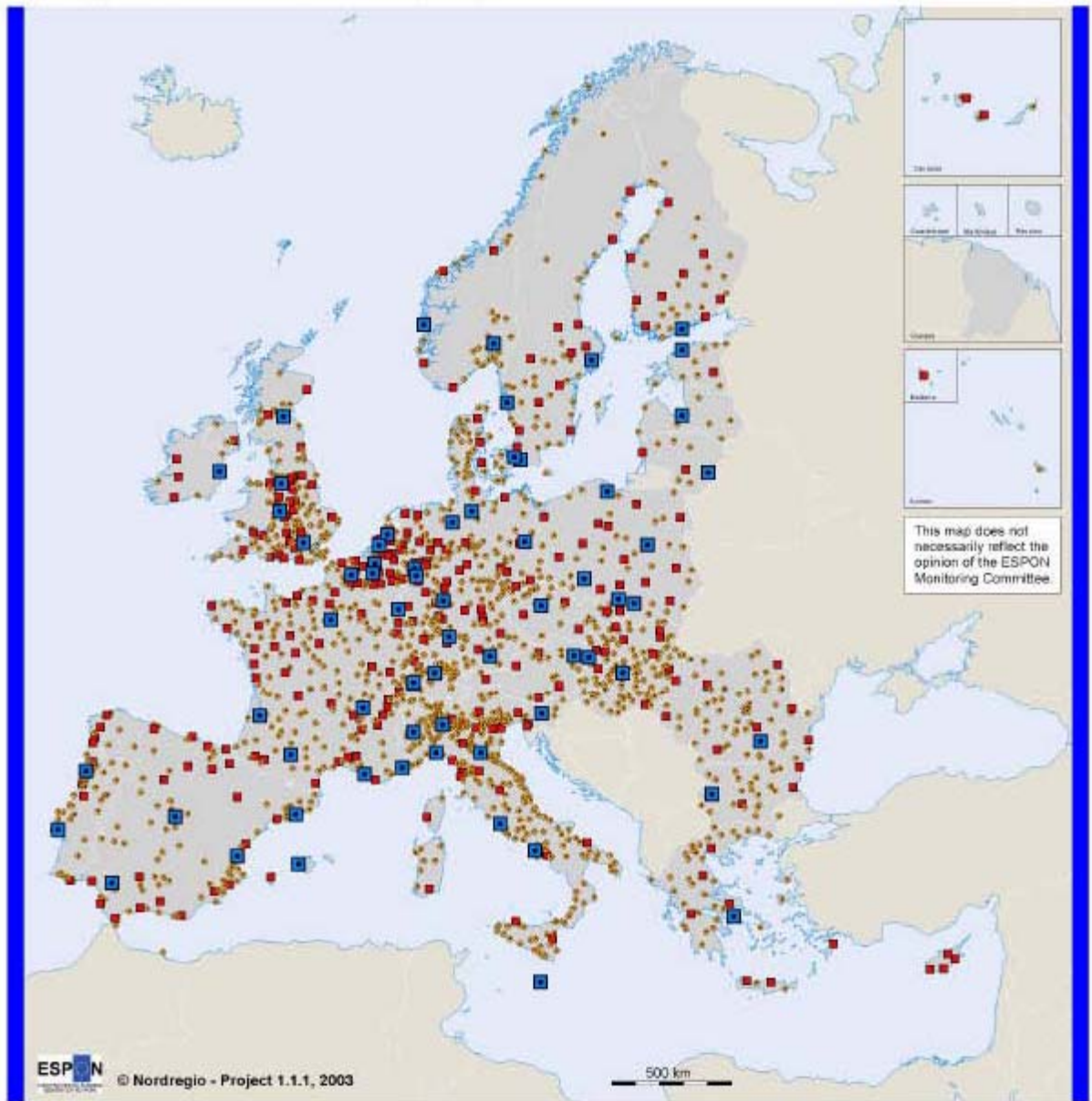
Geographical Base: Eurostat GISCO

- ⬠ > 5 million inhabitants
- 1-5 million inhabitants
- 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

Origin of data: National Statistical Offices, National experts
Source: Nordregio

Figure 7. FUA population (national sources) (Nordregio 2003, 9).

Typology of Functional Urban Areas (FUAs)



ESPON
© Nordregio - Project 1.1.1, 2003

Geographical Base: Eurostat GISCO

- Metropolitan European Growth Areas (MEGAs)
- Transnational / national FUAs
- Regional / local FUAs

Origin of data: EUROSTAT, National Statistical Offices, National experts

Source: Nordregio

Figure 8. Typology of Functional Urban Areas (Nordregio 2003, 14).

Figure 10 gives a full overview on all isochrones for all FUAs for entire Europe. It is obvious that in those countries with a dense system of agglomerations (e.g. Germany, UK, Benelux countries) almost the whole country is covered by 45 min isochrones, with many isochrones overlapping each other and so forming seamless areas (e.g. Benelux, Germany, Switzerland, Denmark, northern Italy and southern UK); whereas in other countries such as Sweden, Romania or the Baltic States the isochrones rather give a ‘pattern of pearls’ or are rather scattered throughout the country, forming individual areas (e.g. Ireland, Finland, Spain). Figure 9 zooms into (southern) Sweden and the Netherlands as two prominent examples to visualise these contrary effects more clearly. In turn this also means that in countries such like Germany, the Netherlands, Belgium or the UK there is no clear assignment of municipalities to one single FUA (almost each municipality is located within the catchment area of at least two FUAs), whereas in countries like Sweden or Romania a clear assignment can be made in many cases. However, this issue will be discussed in more detail later in the report.

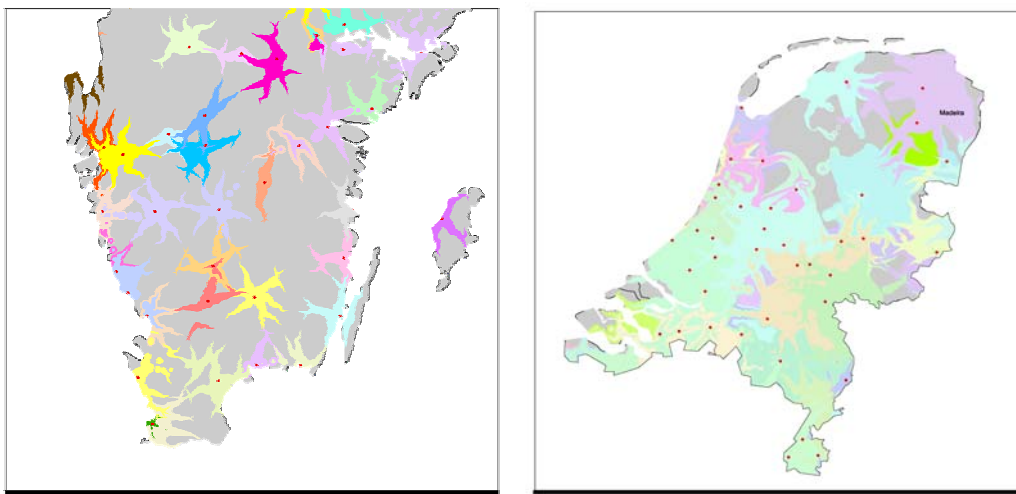
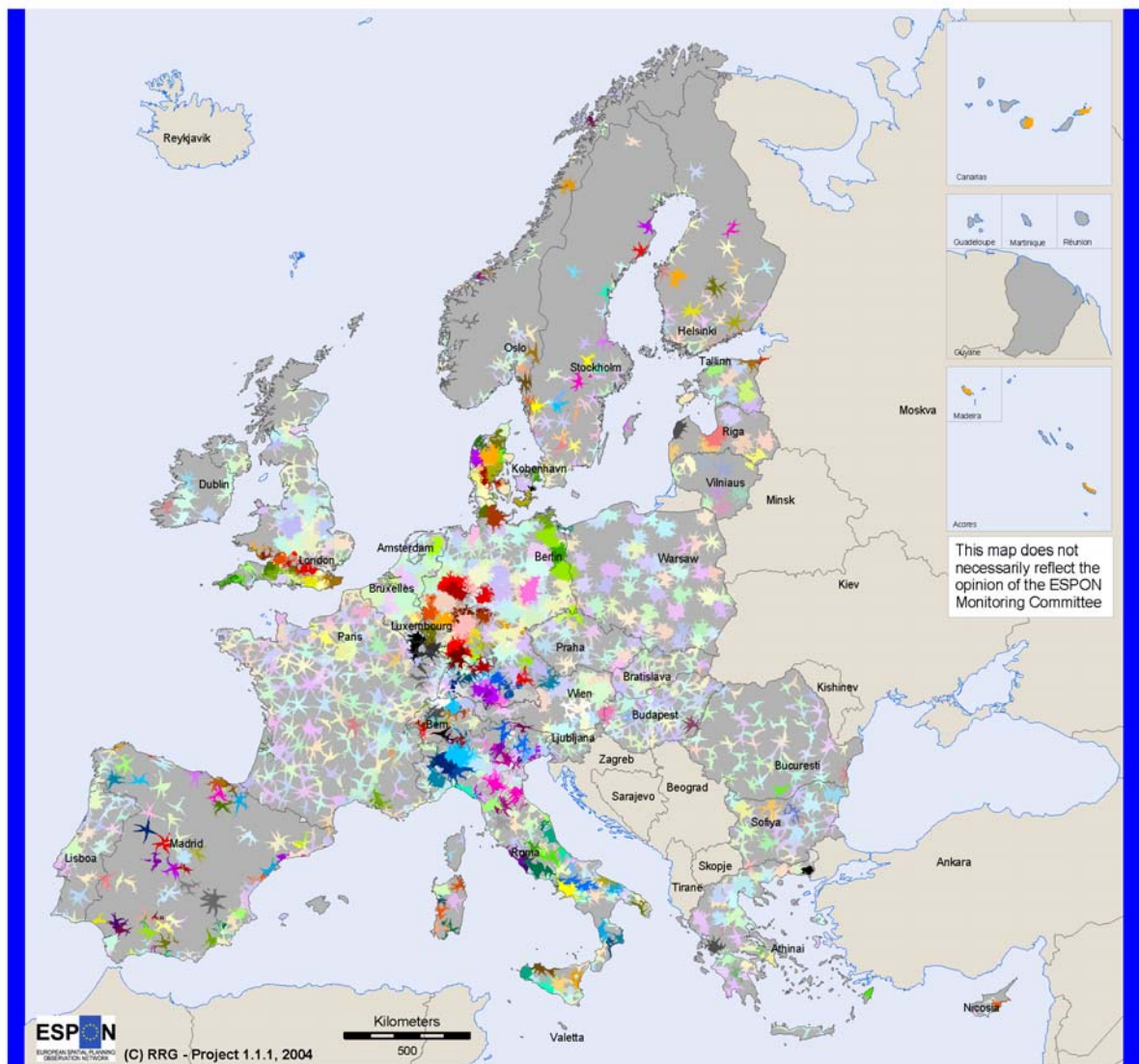


Figure 9. 45 min isochrones in southern Sweden (left) and in the Netherlands (right).

Figure 11 plots the isochrones for the *Metropolitan European Growth Areas* (MEGAs) only. Although there is only a limited number of MEGAs defined (64 MEGAs throughout the study area), there are still parts of Europe where even their isochrones overlap each other, such as in the areas around Amsterdam / Rotterdam / Antwerp / Brussels / Lille, or Bremen / Hamburg and Cologne / Düsseldorf.

The greatest extend of isochrones show Berlin, Duisburg and Düsseldorf, with more than 10,000 km² for each of them (Table 3). Among the 20 greatest isochrones, there are 13 German FUAs, either those located in the wider Rhine-Ruhr-Area (such as Duisburg, Düsseldorf, Bochum, Essen, Köln, Krefeld, Wuppertal), or located in the Berlin area (Berlin, Potsdam, Neuruppin). This strong performance of German FUAs reflects the high quality and great density of the road networks, as well as the comparable high speed limits in Germany. At the other end of the spectrum, the 20 smallest isochrones represent FUAs located on islands (such as Mariehamn, Rønne, Valetta or Ermoupolis) or FUAs in any other specific situation (such as the Spanish Melilla and Ceuta located in Africa and lacking hinterland). Nevertheless, if the FUAs are ranked according to their isochrones areas and compared against the cumulative isochrones areas, the picture yields a rather balanced rank-size distribution (Figure 12).

45 min isochrones around FUA centroids



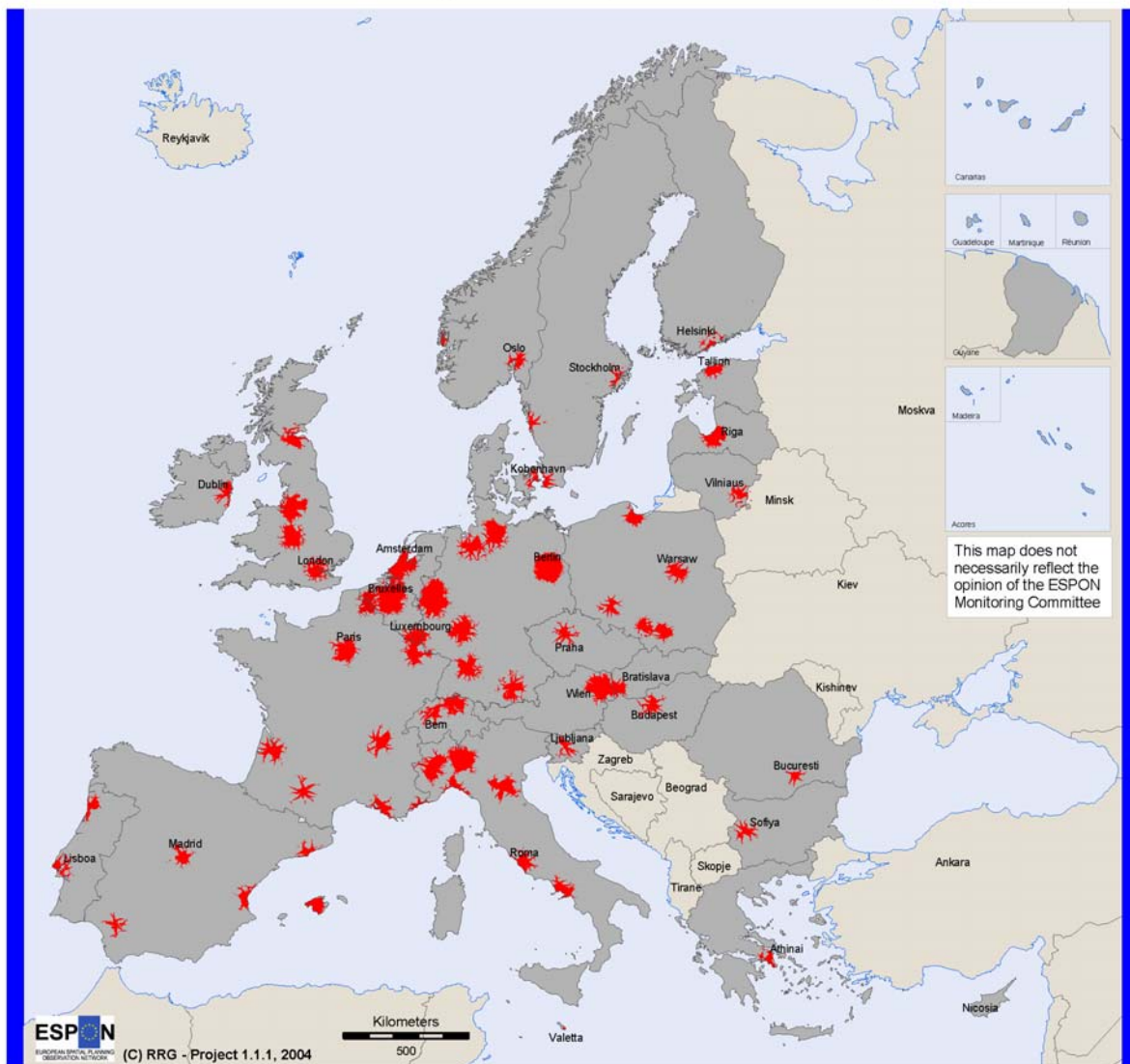
Geographical Base: Eurostat GISCO

Figure 10. 45 min isochrones in Europe.

There is also no clear relationship between the type of the FUA (MEGA, (trans-)national or regional FUA) and their isochrones areas. On the one side of the spectrum, there are of course MEGAs with great isochrones (e.g. Berlin, Düsseldorf, Cologne, Milano, Brussels or Vienna), but there are also MEGAs with only small isochrones such as Valletta on the other end of the spectrum. To make things even more complex, there are also regional/local FUAs belonging to the top 10 ranked FUAs with greatest isochrones areas (e.g. Krefeld, Wuppertal, Neuruppin). These FUAs are located in the vicinity of greater continuous agglomerated areas.

As Figure 13 shows, there is no clear relationship between the isochrones areas and the FUA population (based on national statistics). Of course there is a tendency that the MEGAs do have greatest population numbers, followed by (trans-)national FUAs, whereas the regional and local FUAs only have small population numbers. However, a clear relationship with the isochrones cannot be proofed.

45 min isochrones around Metropolitan European Growth Areas (MEGAs)



Geographical Base: Eurostat GISCO

Figure 11. 45 min isochrones around Metropolitan European Growth Areas (MEGAs).

As already stated, the shape and extend of the isochrones depend on various factors, of which the availability and density of high quality road infrastructure and the permitted speed limits are being the two most important ones. Well-known countries such as Austria, Germany, the Benelux countries, or Italy with dense motorway systems and rather high speed limits show on average the greatest isochrones (Figure 14) with more than 4,500 km² each as the average size. The average size of the isochrones in the new EU Member States are in general somewhat lower, however, the range of the size (minimum/maximum) and the standard deviation in these countries are smaller than in the countries with the greatest isochrones. For example in Germany there are isochrones of more than 10,000 km² as well as isochrones with only 1,100 km² (which is a ratio of 10). Similar observations can be found, for instance, in Italy or in the Netherlands. As it will be shown later, this is due to the fact that although these countries do have high quality road networks, there are specific locations of FUA's which do not allow to spread great isochrones (for example, FUA's located on islands or FUA's located at the sea).

Table 3. Rank size distribution of isochrones (greatest 20, smallest 20).

Rank	FUA Name	Isochrones area (km ²)	Country	Type of FUA	No of municipalities		
					Full	50%	10%
1	BERLIN	10,933	DE	4	465	559	657
2	DUISBURG	10,432	DE	3	97	172	246
3	DUESSELDORF	10,130	DE	4	93	134	179
4	BOCHUM	9,949	DE	3	91	121	153
5	ESSEN	9,718	DE	3	87	120	154
6	POTSDAM	9,687	DE	3	422	501	584
7	KOELN	9,656	DE	4	110	166	255
8	KREFELD	9,623	DE	2	85	122	158
9	WUPPERTAL	9,462	DE	2	84	119	155
10	NEURUPPIN	9,257	DE	2	379	440	516
11	HAGEN	8,835	DE	3	82	103	139
12	VENLO	8,778	NL	2	84	127	166
13	MILANO	8,769	IT	4	686	836	994
14	RUESSELSHEIM	8,735	DE	2	330	457	610
15	BRUXELLES/BRUSSEL	8,735	BE	4	177	229	292
16	LEUVEN	8,569	BE	3	186	229	280
17	ANTWERPEN	8,547	BE	4	159	200	256
18	EBERSWALDE-FINOW	8,518	DE	2	324	406	480
19	NOVARA	8,500	IT	2	512	631	784
20	WIEN	8,399	AT	4	231	311	385
...
...
1576	NOVO MESTO	513	SI	2	0	2	8
1577	PONTYPRIDD	503	UK	2	42	69	96
1578	PAPHOS	500	GR	3	33	49	69
1579	KRISTIANSUND	448	NO	2	0	1	4
1580	IERAPETRA	428	GR	2	0	1	4
1581	JESI	420	IT	2	4	9	24
1582	MARIEHAMN	375	FI	2	0	1	4
1583	ALESUND	373	NO	3	0	2	4
1584	MONDRAGON O ARRASATE	362	ES	2	2	10	26
1585	PENICHE	324	PT	2	8	19	34
1586	LEIRVIK	291	NO	2	0	1	3
1587	ULSTEIN	275	NO	2	0	1	4
1588	ROENNE	271	DK	2	1	3	4
1589	ABERGELE/RHYL/PRESTA	230	UK	2	10	22	38
1590	FECAMP	115	FR	2	10	18	23
1591	MELILLA	113	ES	2	1	1	1
1592	CORFU	91	GR	2	0	3	3
1593	VALLETTA	90	MT	4	32	38	41
1594	CEUTA	86	ES	2	1	1	1
1595	ERMOUPOLIS	84	GR	2	2	3	4

Not surprisingly, the spatial extend and so the size of the isochrones in those countries with relative poor transport systems is significantly smaller than in other countries with a high degree of high quality roads (Figure 14).

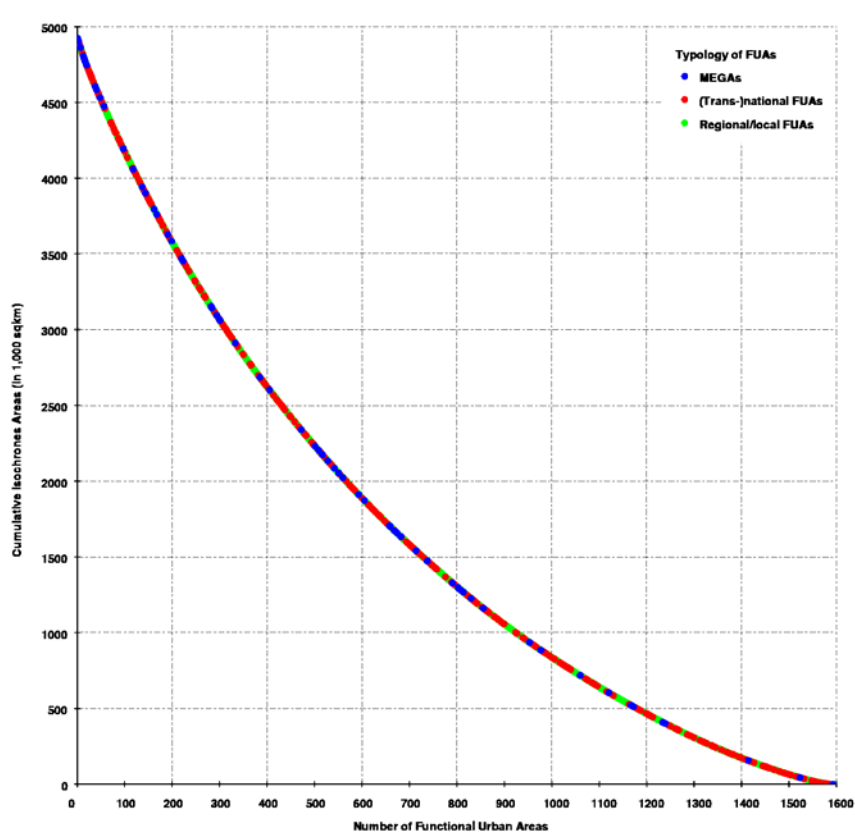


Figure 12. Distribution of isochrones.

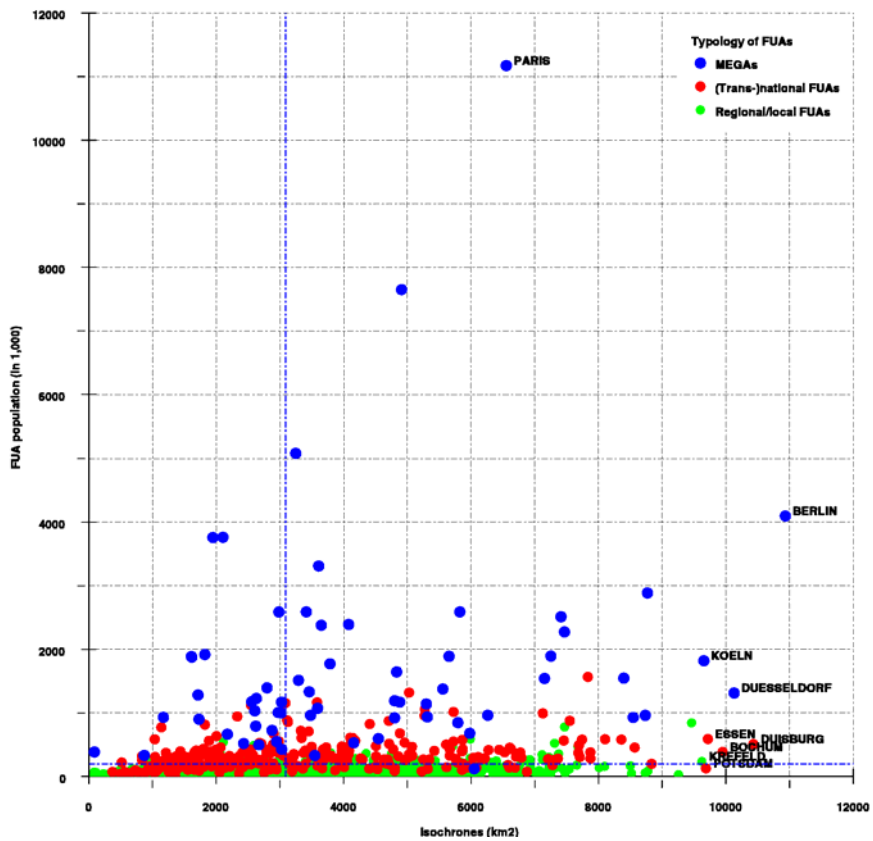


Figure 13. Isochrones and FUA population.

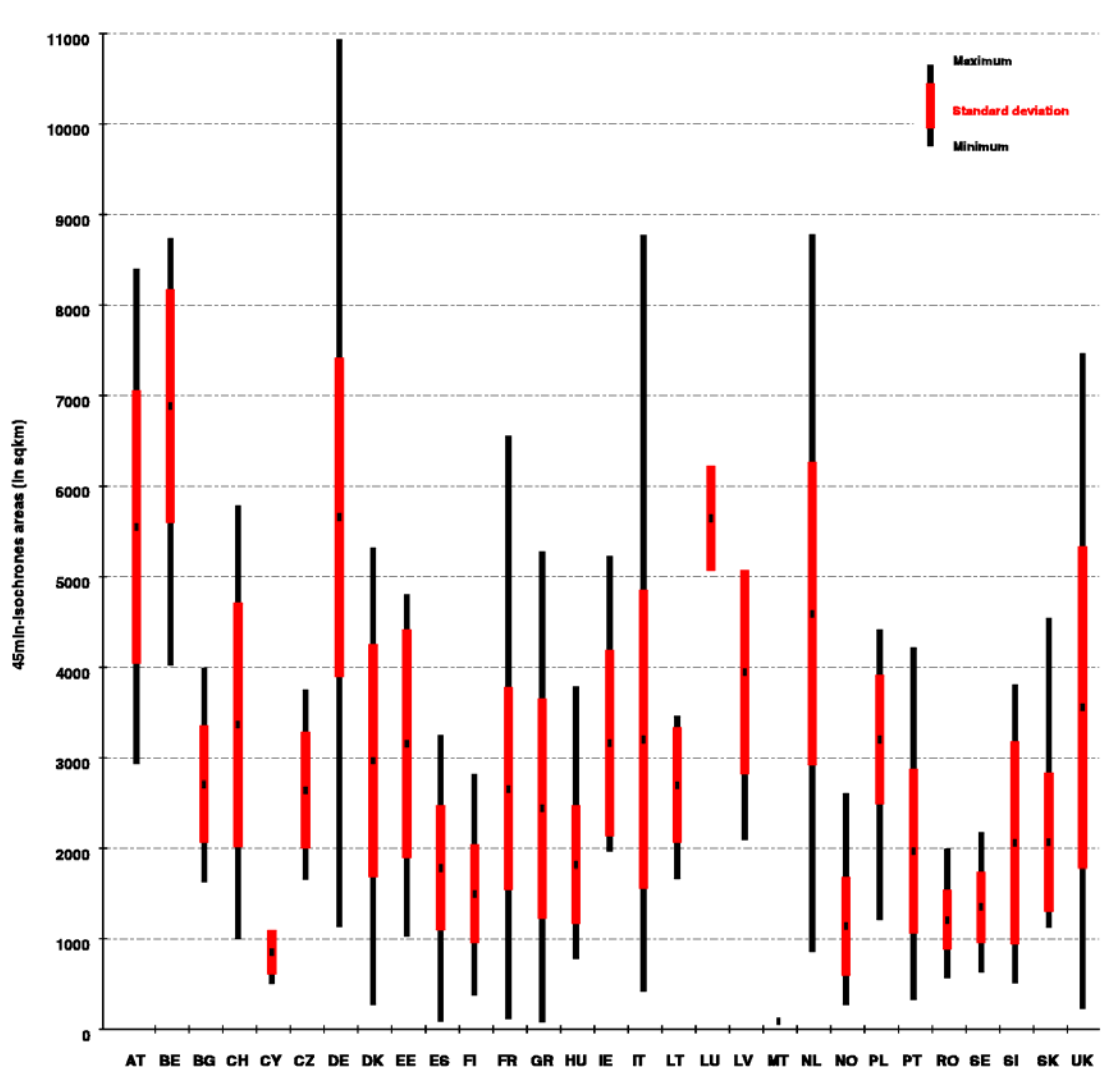


Figure 14. Minimum, maximum and average isochrones by country.

Another remarkable observation for all isochrones is that they extend deep into suburbia following main road arteries such as motorways or dual-carriageways, whereas they do not flood that far into those directions where such high quality roads are missing. Figure 15 represents the isochrones for FUA Heidenheim (Germany) exemplifying these effects.

In hilly and mountainous areas the isochrones follow the curve of the valleys, also often crawling from the lowland (where the centre of the FUA is often located) finger-like uphill into the mountain ranges. Figure 16 gives an example for this in Italy.

Annex 2 provides a selection of further sample isochrones maps (“Gallery of Isochrones”).

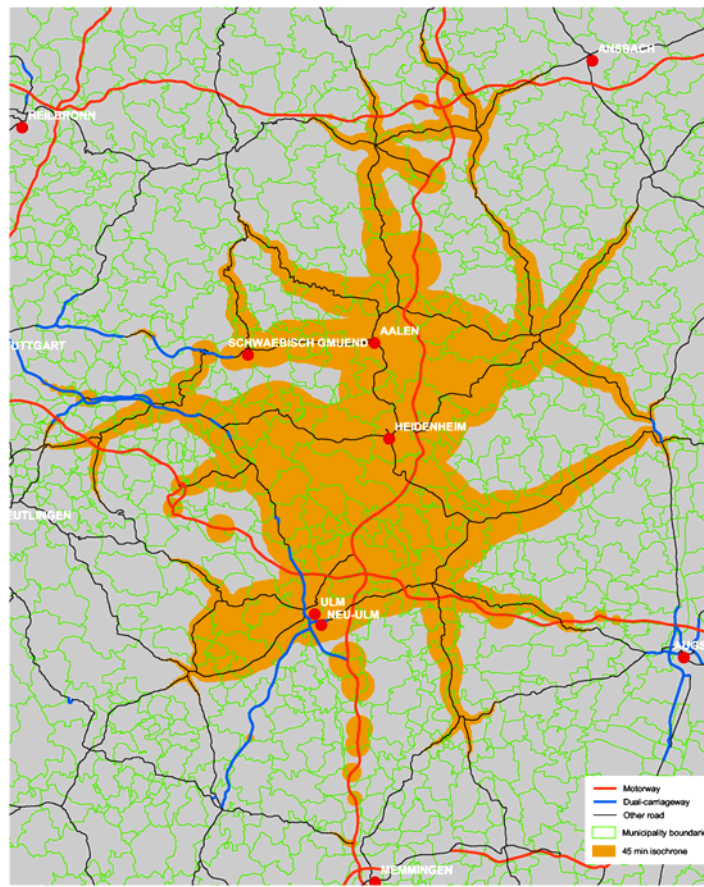


Figure 15. Isochrones flooding into suburbia – the case of Heidenheim, Germany.

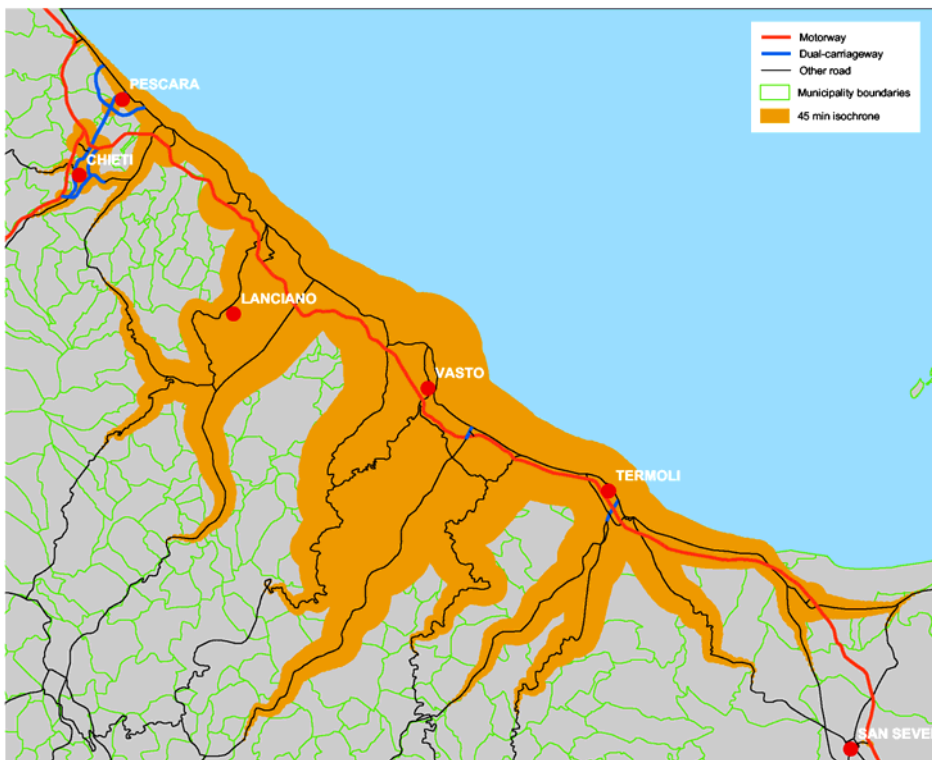


Figure 16. Isochrones extending into valleys – the case of Vasto, Italy.

6.2 Approximation to Municipality Boundaries

All the previous findings are based on analysing the shape and areas of the isochrones as such, not taking into account the number and size of the municipalities they overlap. However, for statistical purposes and political reasons it is important to assign municipalities to FUAs based on these isochrones in order to delimitate the *Potential Strategic Urban Horizons*. As the boundaries of the isochrones of course ignore municipality boundaries (NUTS 5 boundaries), the problem emerges to find suitable criteria and thresholds for this assignment. To test different options, the following four thresholds have been applied.

Municipalities were assigned to a *Potential Urban Strategic Horizon*, if the respective isochrones

1. cover 100 % of the municipality territory (the full municipality area is overlapped) (scenario 1),
2. cover at least 50 % of the municipality territory (i.e. more than half the NUTS 5 area is overlapped) (scenario 2),
3. cover at least 10 % of the municipality territory (scenario 3), and finally
4. cover at least 5 % of the municipality territory (scenario 4).

Selected outcomes of the different assignment criteria will be presented in the following sections.

Table 4 represents the minimum, average and maximum number of municipalities assigned to PUSHs differentiated by these four scenarios. If the total municipality area must be covered by the isochrones, on average 103 municipalities are assigned to a PUSH, and 1,070 municipalities at maximum (for London). Of course, the more the thresholds are relaxed, the more these numbers increase: For the threshold of 50 %, on average 145 municipalities and at maximum 1,264 municipalities will be assigned to a PUSH. For the other two thresholds the average numbers increase to 195 and 206, respectively, and the maximum number for both increases to 1,450. Annex 3 gives a full list of FUAs indicating the size of the isochrones and the number of municipalities assigned differentiated by the four scenarios tested.

Remarkably, for all four scenarios the minimum number of municipalities is zero, which at a first glance might look perplex. However, reasons for this observation are the great extent of municipalities in Nordic countries, in relation with relative poor road networks. In the case of Kiruna, which is the FUA located furthest north in Sweden, the overlap of the isochrones with the municipality boundary reveals a percentage overlay of less than 5 %, i.e. even the lowest threshold is not reached and so, by default, no municipality is assigned to this FUA.

Table 4. Number of municipalities assigned to PUSHs.

Threshold	Minimum number	Average number	Maximum number
Total area	0	103	1,070
50 %	0	145	1,264
10 %	0	195	1,450
5 %	0	206	1,450

However, such specific cases were treated individually (in this case, the municipality of Kiruna was manually assigned as well), as described later.

Again, there is no clear relationship between the areas of the isochrones and the number of municipalities that are overlapped, as the last three columns of Table 3 already showed. Of course, there is a tendency that the greater the isochrones are the more municipalities are covered, and vice versa, however, even if one looks at FUAs from the same country and with similar isochrones areas the number of municipalities differs significantly (for example, compare Berlin against Duisburg).

This is due to the fact that the size of the NUTS 5 entities (municipalities) rather reflect a certain political system than socio-economic or socio-demographic patterns and or even functional linkages. Of course, as the threshold increase, the number of municipalities assigned decreases, so that for the full area threshold in several cases no municipality could be assigned to the PUSH (e.g. Novo Mesto, Kristiansund, Ierapetra, Alesund etc.).

As already shown in the map, many isochrones overlap. This also means that very often it is not possible to assign a municipality to only one PUSH, but that many municipalities are located within of several *Potential Urban Strategic Horizons*. So, Table 5 changes the perspective and counts how many municipalities have been assigned to how many PUSHs, differentiated by the four assignment scenarios.

Table 5. Number of municipalities assigned to PUSHs by different assignment criteria.

No of PUSHs assigned	Number of municipalities by scenario ¹			
	Total area	50 %	10 %	5 %
0	59,135 (51.2)	44,529 (38.6)	32,608 (28.0)	30,529 (26.4)
1	23,639 (71.7)	25,686 (60.8)	25,070 (49.9)	24,568 (47.7)
2	11,685 (81.8)	14,689 (73.5)	16,291 (64.0)	16,526 (62.0)
3	6,622 (87.5)	9,321 (81.6)	11,616 (74.1)	11,900 (72.3)
4	3,868 (90.9)	5,883 (86.7)	7,930 (81.0)	8,428 (79.6)
5	2,598 (93.1)	3,746 (89.9)	5,342 (85.6)	5,604 (84.5)
6	1,975 (94.8)	2,524 (92.1)	3,457 (88.6)	3,794 (87.7)
7	1,470 (96.1)	2,031 (93.9)	2,668 (90.9)	2,796 (90.2)
8	1,016 (97.0)	1,368 (95.1)	1,930 (92.6)	2,027 (91.9)
9	976 (97.8)	1,319 (96.2)	1,581 (93.9)	1,684 (93.4)
10	692 (98.4)	1,071 (96.3)	1,355 (95.1)	1,412 (94.6)
11	538 (98.9)	928 (97.1)	1,343 (96.3)	1,422 (95.8)
12	450 (99.3)	685 (97.7)	1,054 (97.2)	1,104 (96.8)
13	343 (99.6)	547 (98.1)	838 (97.9)	921 (97.6)
14	181 (99.7)	415 (98.5)	722 (98.5)	822 (98.3)
15	136 (99.9)	243 (98.7)	467 (98.9)	533 (98.7)
16	78 (99.9)	180 (98.9)	334 (99.2)	370 (99.1)
17	40 (99.9)	124 (99.0)	276 (99.5)	310 (99.4)
18	26 (99.9)	88 (99.0)	227 (99.7)	277 (99.6)
19	12 (99.9)	58 (99.5)	159 (99.8)	175 (99.7)
20	1 (100.)	31 (99.9)	98 (99.9)	128 (99.8)
21	2 (100.)	11 (99.9)	45 (99.9)	56 (99.9)
22	0 (100.)	4 (99.9)	38 (99.9)	51 (99.9)
23	0 (100.)	2 (100.)	22 (99.9)	25 (99.9)
24	0 (100.)	0 (100.)	11 (99.9)	17 (99.9)
25	0 (100.)	0 (100.)	1 (100.)	4 (100.)
Sum	115,483 (100)	115,483 (100)	115,483 (100)	115,483 (100)

¹ Cumulative percentages indicated in bracket.

If the criterion is a full overlap (total area), than some 59,000 municipalities in the study area are not located in any one PUSH, and 23,639 municipalities are located in only one PUSH.

These both together account to some 72 % of all municipalities. The shares of these two classes for the other three criteria are, of course, lower (61 %, 50 %, and 48 %) as the threshold relaxes.

The maximum number of PUSHs assigned to a municipality is 25 for the 10 % and 5 % threshold (these are the municipalities of Cormano, Pero and Vittuone in Italy, and Weiningen in Switzerland), 23 for the 50 % threshold and 21 for the 100 % threshold; however, more than 20 PUSHs in all the four scenarios can be considered exceptional since they account for less than 1 % of the total number of municipalities.

In general, there are of course great differences in the assignment distribution between the 100 % (total area) and 50 % thresholds, and also between the 50 % threshold and the 10 % threshold, but in contrast the difference between the 10 % and the 5 % threshold are not that great.

The information provided in Table 5 are then transformed into visual representations in Figure 17 and Figure 18, differentiating those municipalities assigned to a PUSH from those not assigned according to the four different criteria applied.

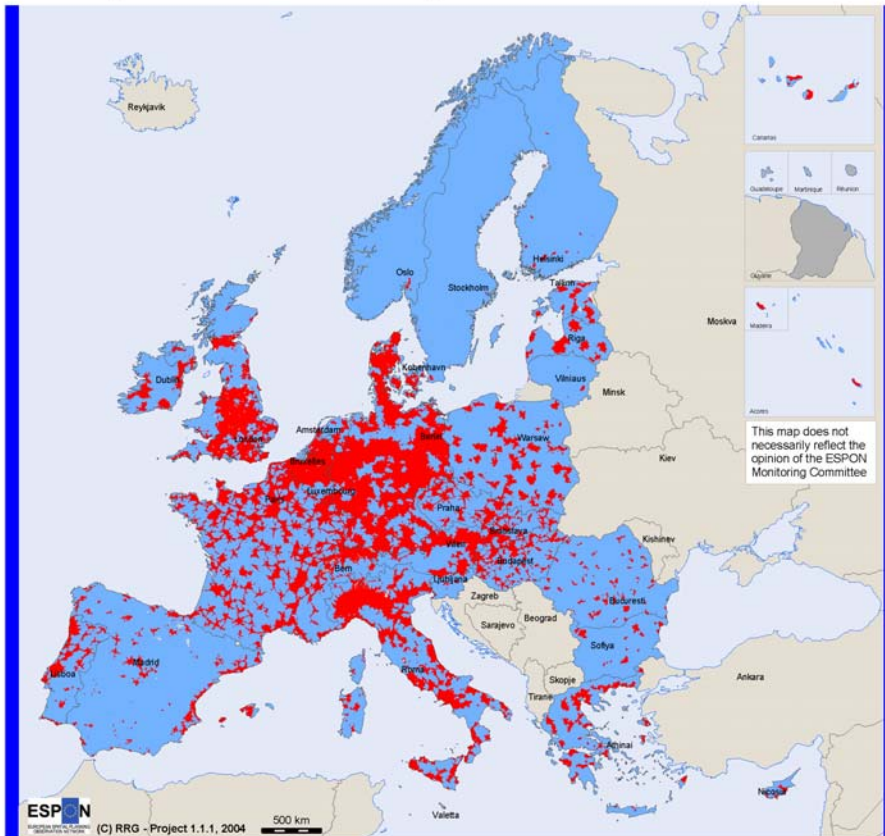
When looking at the *total area* scenario (Figure 17 top), there are seamless assigned areas in the Benelux countries, in parts of Germany, Denmark, Austria, Italy and the UK. All other countries show rather dispersed pictures, where only few municipalities located close nearby FUA centroids are assigned. However, these pictures are so scattered that one can hardly speak of *Potential Urban Strategic Horizons*. Again outstanding are the three Scandinavian countries Norway, Sweden and Finland where only very few smaller municipalities are assigned, and most of the territory not due to the great extend of NUTS 5 entities there.

When looking at the 50 % scenario (Figure 17 bottom) the general picture does not change that much. The seamless areas in the Benelux countries, Germany, Denmark, Austria, Italy and the UK has become even greater, and the previous dispersed and scatters pictures in the new EU Member States has turned into a system of real *Potential Urban Strategic Horizons* around the FUA centres. Also in the case of France, Spain and Portugal clear spatial patterns of PUSHs can now be recognised. However, the situation in Norway, Sweden and Finland still remains outstanding due to the problems mentioned, not withdrawing that now some municipalities are also assigned to PUSHs there.

Again, when looking at the 10 % scenario (Figure 18 top) there is a jump in the number of municipalities assigned to PUSHs. This observation can particularly be found on the Iberian Peninsula, in the new EU Member States (for example, Bulgaria) and in Sweden, Norway and Finland. Finally, a comparison between Figure 18 top and Figure 18 bottom shows that the differences between the 10 % and 5 % criterion are only marginal, again with the exception of Norway, Sweden and Finland.

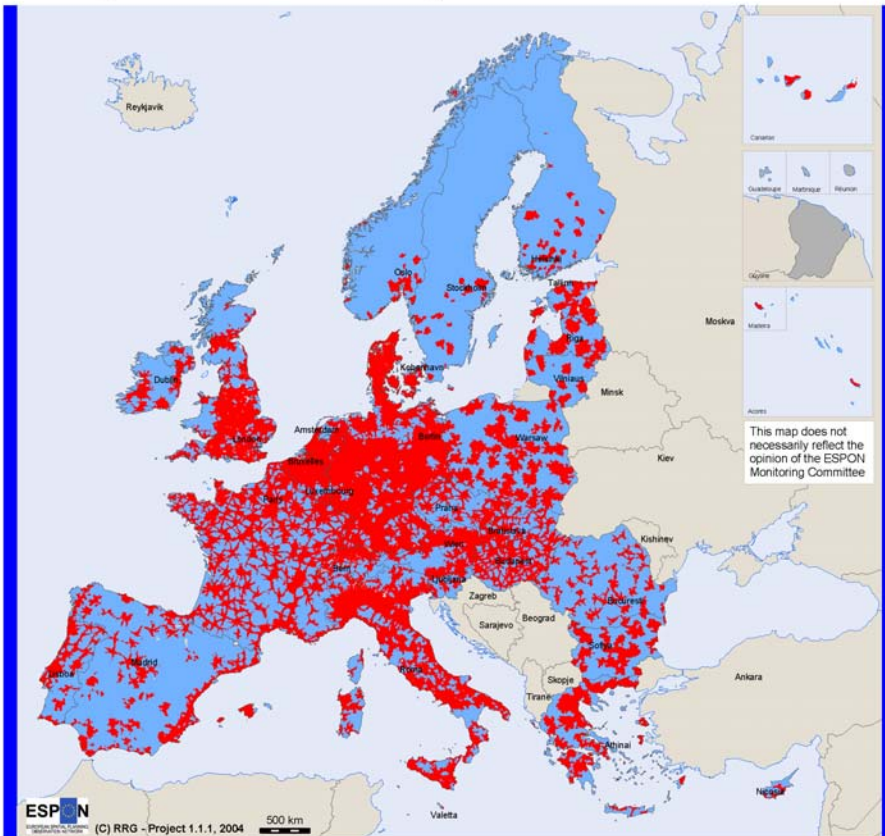
As Figures 17 and 18 represent whether or not a municipality is assigned to any PUSH according to the different assignment criteria, the following Figures 19 and 20 visualise the number of PUSHs to which they were assigned. As discussed later in Chapter 8.1, from the point of view of the municipalities these numbers can be interpreted as a type of polycentricity indicator. As mentioned, the highest numbers of more than 20 assignments can be found in northern Switzerland, the Benelux countries, western Germany and parts of the UK. Most municipalities in the new EU member states, in the Nordic countries and on the Iberian Peninsula are assigned to one, or two or to three PUSHs at maximum.

Area assigned to Potential Urban Strategic Horizons: 100 % criterion



Geographical Base: Eurostat GISCO

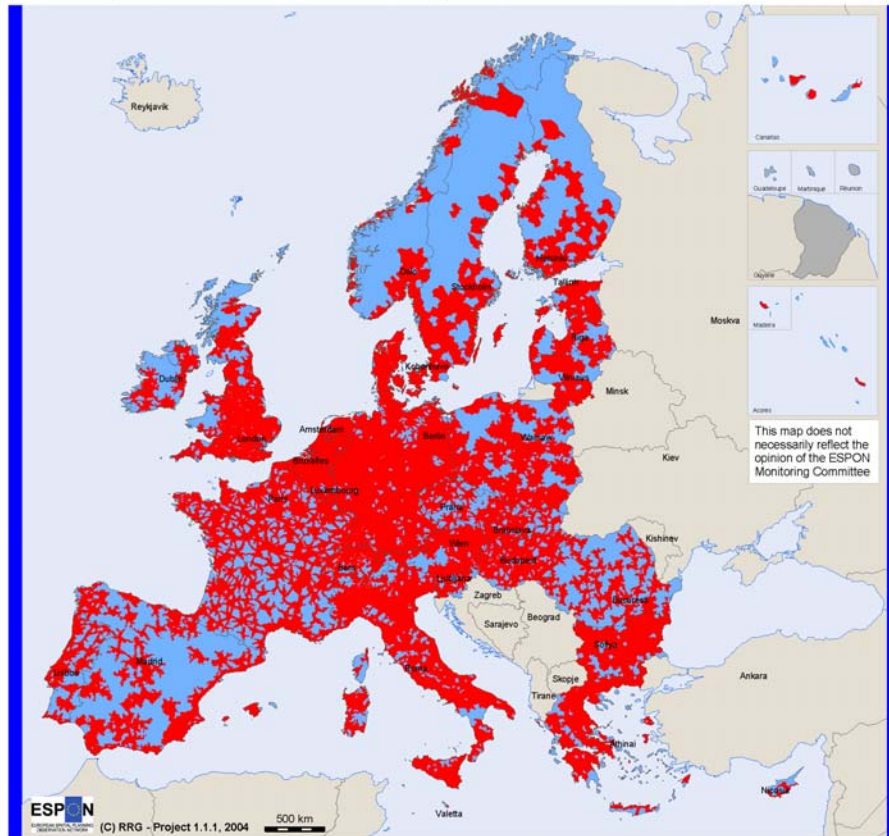
Area assigned to Potential Urban Strategic Horizons: 50 % criterion



Geographical Base: Eurostat GISCO

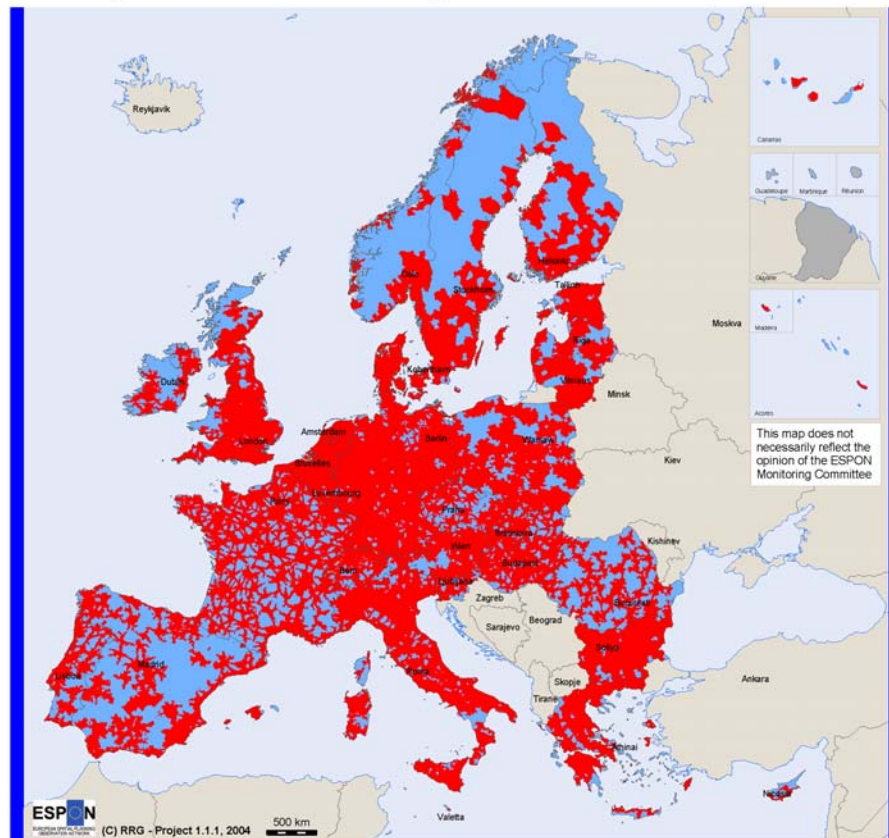
Figure 17. Areas assigned to PUSHs (red colour): full overlay (top), 50 % overlay (bottom).

Area assigned to Potantial Urban Strategic Horizons: 10 % criterion



Geographical Base: Eurostat GISCO

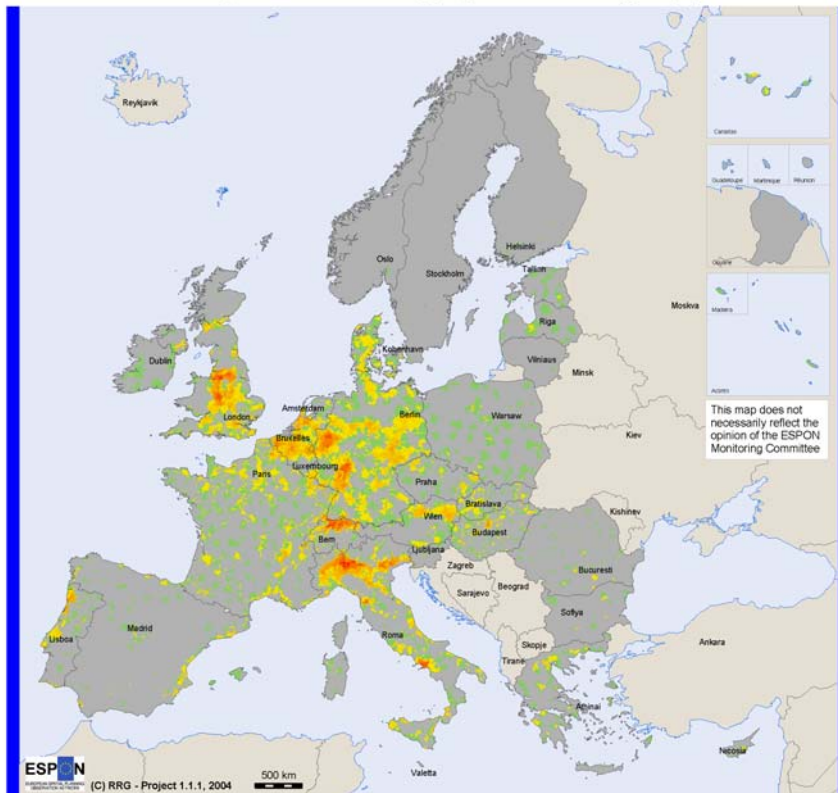
Area assigned to Potantial Urban Strategic Horizons: 5 % criterion



Geographical Base: Eurostat GISCO

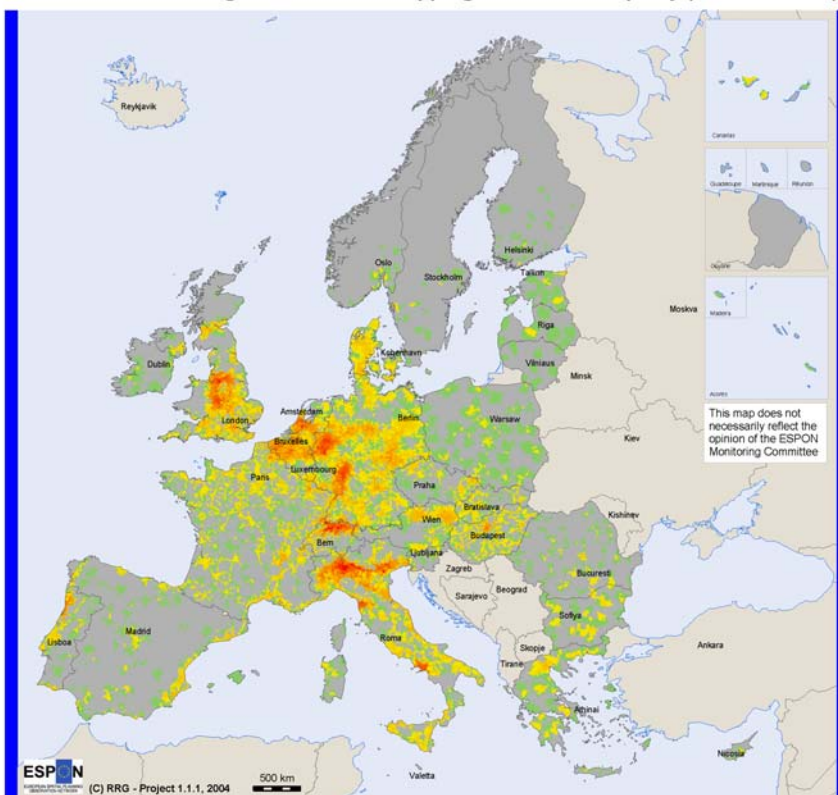
Figure 18. Areas assigned to PUSHs (red colour): 10 % (top), 5 % overlay (bottom).

Potential Urban Strategic Horizons overlapping in each municipality (100 % criterion)



Geographical Base: Eurostat GISCO

Potential Urban Strategic Horizons overlapping in each municipality (50 % criterion)

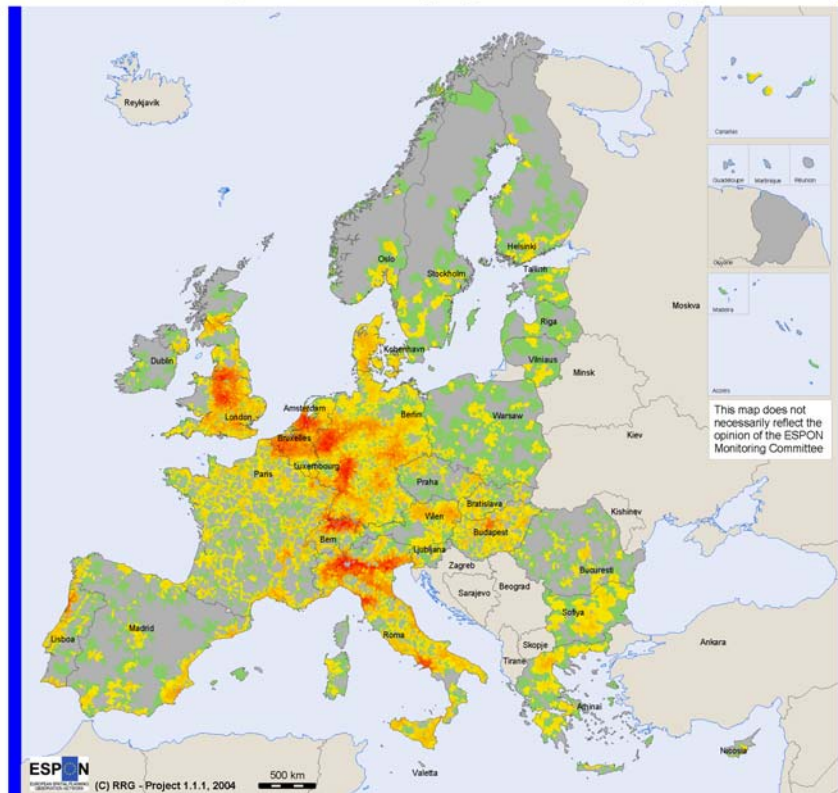


Geographical Base: Eurostat GISCO



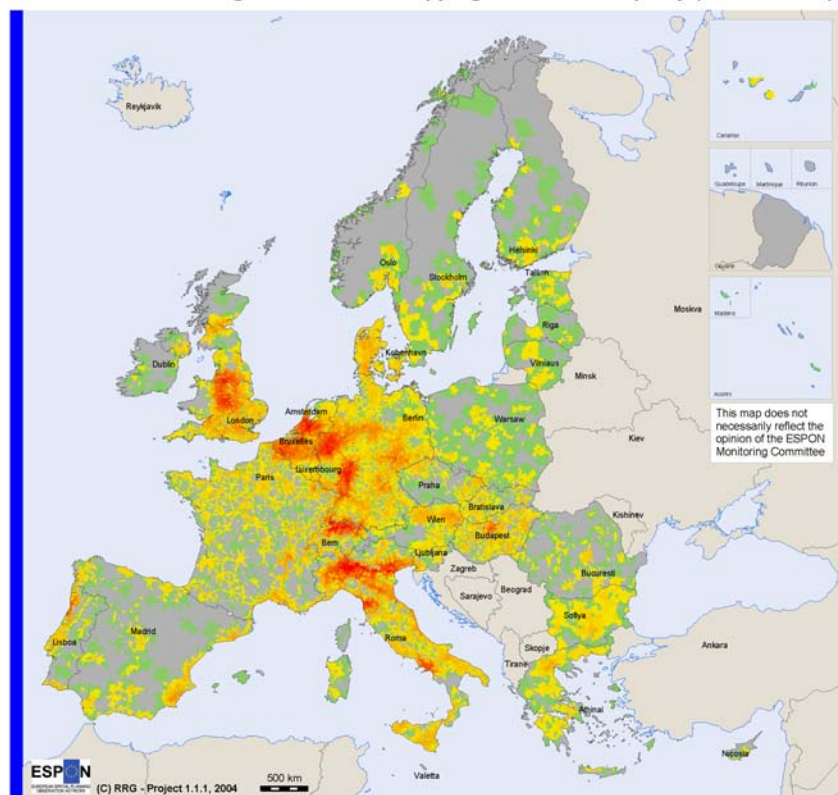
Figure 19. Municipalities assigned to PUSHs: 100% criterion (top), 50% criterion (bottom).

Potential Urban Strategic Horizons overlapping in each municipality (10 % criterion)



Geographical Base: Eurostat GISCO

Potential Urban Strategic Horizons overlapping in each municipality (5 % criterion)



Geographical Base: Eurostat GISCO



Figure 20. Municipalities assigned to PUSHs: 10% criterion (top), 5% criterion (bottom).

6.3 Selection of the Appropriate Assignment Criteria

After reviewing the results of the different assignment criteria, the threshold of 10 % was chosen.

The full area threshold is not suitable at all, as for many PUSHs no municipality was assigned at all. Using a threshold of 50 % is a real improvement in this respect (for some 17 countries this would be a suitable threshold: Austria, Belgium, Bulgaria, Switzerland, Germany, Denmark, Estonia, Greece, Hungary, Ireland, Italy, Luxembourg, Latvia, Malta, The Netherlands, Poland, UK); however, in many peripheral areas the situation remains unsatisfactory as only small spots of municipalities were assigned. The difference between the 50 % and 10 % thresholds are significant in all respects, in particular the 10 % threshold yields reasonable *Potential Urban Strategic Horizons* in the new EU Member States, and even in peripheral regions such as Scandinavia, the Iberian Peninsula or Greek islands. Using the 5 % threshold would not add many improvements except for some countries with small municipalities (such as Germany).

In summary, the 10 % threshold was chosen and so all further analysis presented in this report is based on the 10 % scenario, i.e. all municipalities overlaid by at least 10 % of their territory by particular isochrones was considered part of the respective PUSH (i.e. was “assigned to the PUSH”). Apart from this general rule, some particular cases had to be treated exceptional, as the following chapter describes.

6.4 Specific Assignment Cases

Apart from the clear assignment criteria, some specific cases had to be considered, which are described in the following paragraphs:

Water bodies

In some countries the municipality territory extends into the sea or into bigger lakes (e.g. in Sweden, Finland, Norway or the Netherlands). These water bodies have been excluded beforehand before calculating the overlay percentages. These areas also were excluded from any assignment and from any analysis.

Areas not belonging to any municipality

In some countries there are certain areas not belonging to any municipality in administrative terms. For example, if the area represents military complexes or other areas of specific interests (such as greater forests in Germany). Although sometimes these areas do have a significant extent, and although sometimes they might be (partly) overlaid by isochrones, they were excluded from further processing.

Enclaves and islands

As the isochrones tend to form seamless shapes, one expects that their approximation to municipalities will also result in seamless areas. However, there are two exceptions: Depending on the spatial configuration of municipality boundaries and the size of the municipality territories, the approximation process might end up with *enclaves* or *islands* although the isochrones do not show enclaves or islands. Such phenomena might occur when

- the isochrones overlap less than 10 % of the municipality concerned, whereas they overlap more than 10 % of the territories of the neighbouring municipalities, so the municipality must be considered as enclave not assigned to the PUSH (see Figure 21), or
- the isochrones overlap more than 10 % of the municipality concerned, whereas they overlap less than 10 % of the territories of the neighbouring municipalities, so the municipality must be considered as an island assigned to a specific PUSH (see Figure 21).

Whereas the above mentioned phenomena occur just through the use of the 10 % criteria, particular islands might also be constructed through the spatial configuration of the road system. More precisely, if there are high quality roads such as motorways or dual-carriageways which can only be entered at dedicated exits, distinct spatial isochrones patterns may occur, where municipalities in greater distance to the FUA centre but with direct motorway exit were assigned to the PUSH, whereas other municipalities closer by to the FUA centre (in terms of airline distances) but lacking direct motorway entrances were not assigned to them.

After approximation of isochrones to municipalities, the enclaves were removed (except if they represent water bodies or areas not belonging to any municipality), but because of the latter reason the islands were retained.

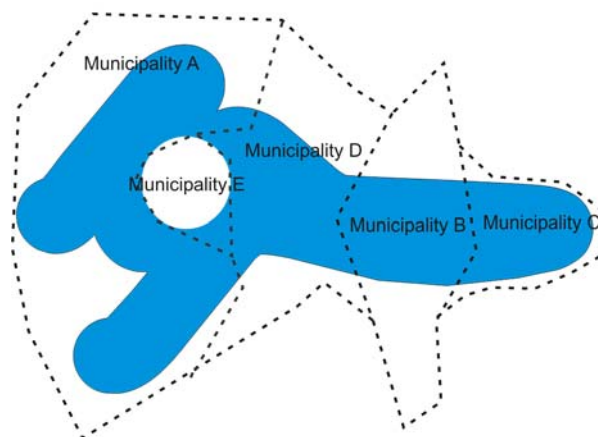


Figure 21. Enclaves and islands after approximation of isochrones to municipalities.

As Figure 21 shows, Municipality E will not be assigned to the PUSH through the approximation of the isochrones, forming an enclave, whereas Municipality B might not be assigned because its territory is overlaid by less than 10 % by the isochrones, so that Municipality C becomes an island after the approximation. However, in the second adjustment step the enclave Municipality E is assigned to the PUSH, whereas Municipality B was retained as non-assigned.

Null assignments

As already exemplified by the case of Kiruna (Sweden), there might be cases where no municipality was assigned to a particular PUSH due to the specific spatial configuration of the FUA centre, the municipality boundaries and the size of the municipality territory, and the quality and density of the road network. In such cases the municipality where the FUA centroid is located was manually assigned to the PUSH even though the isochrones overlap the municipality by less than 10 %, in order to ensure that at least one municipality is assigned to all PUSHs.

6.5 Morphology of Potential Urban Strategic Horizons

The following sections are devoted to describe the distribution, size, and perimeter and extent of the *Potential Urban Strategic Horizons* after approximation of the isochrones to the municipalities. Just to recall, the term *Potential Urban Strategic Horizon* refers to the area constructed after this approximation.

Comparison with Isochrones

Figure 23 (top) shades all municipalities in red colour that were assigned to a PUSH (similar to Figure 18 top). In many areas of Europe there is almost a seamless coverage of municipalities, such as in the Benelux countries, Germany, southern England, Denmark, or Italy. In other areas in Spain, Poland, Ireland, Romania or southern France there are still many continuous areas that fall outside any PUSH (see also Figure 23 bottom which highlights those areas). In the Nordic countries, which are characterised by rather great municipalities, only few of them are located within *Potential Urban Strategic Horizons* (mostly located in the southern parts of the countries), whereas the majority of them fall outside, even though the 10 % criterion is rather modest.

This, furthermore, points out that the density of the road networks in Finland, Norway and Sweden is rather thin compared to other regions in Europe. But nevertheless, if the extent of the isochrones is compared against the extent of the *Potential Urban Strategic Horizons* after approximation to the municipalities as in Figure 22, it is quite interesting to see how the extent of PUSHs in Finland, Norway and Sweden countries increases.

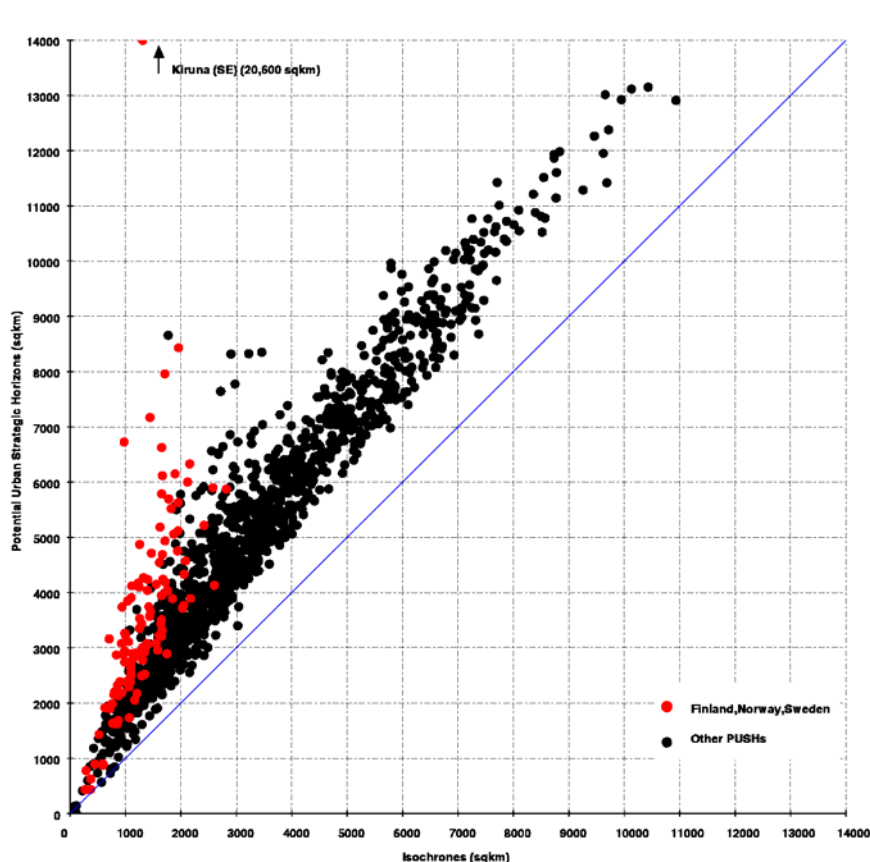
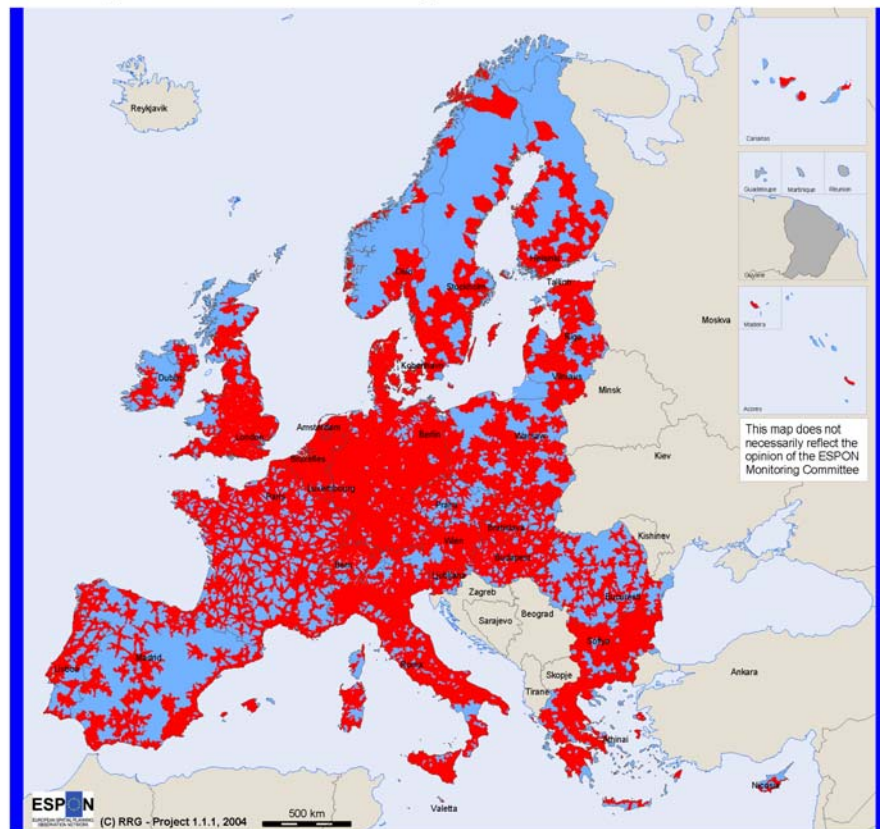


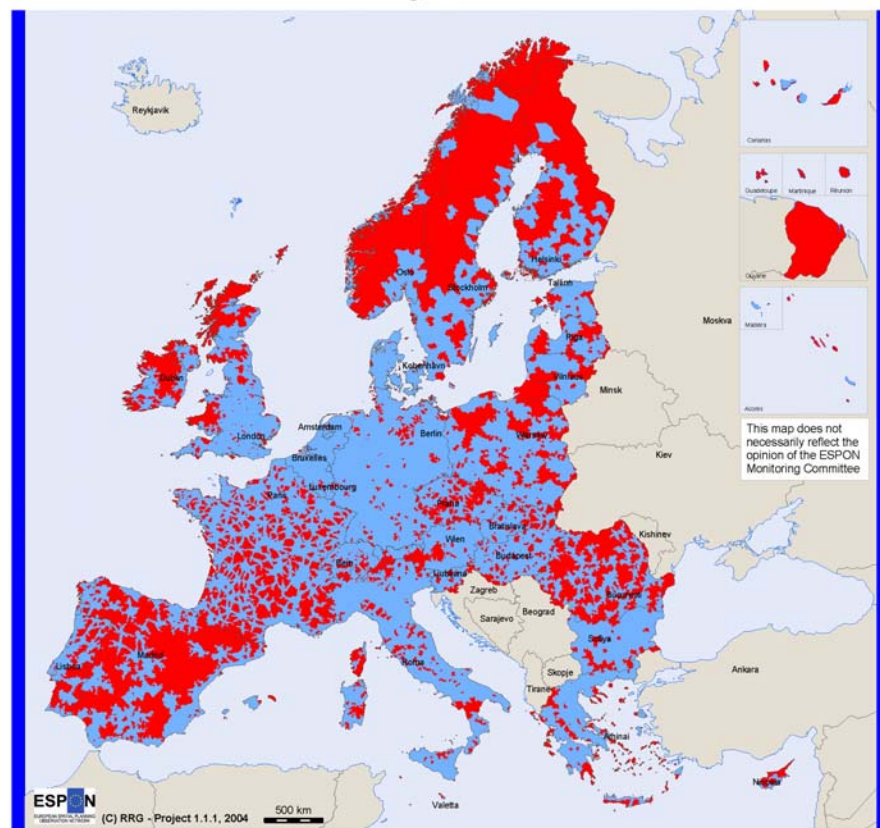
Figure 22. Extent of isochrones vs. extent of Potential Urban Strategic Horizons.

Area assigned to Potantial Urban Strategic Horizons



Geographical Base: Eurostat GISCO

Area outside of Potantial Urban Strategic Horizons



Geographical Base: Eurostat GISCO

Figure 23. Municipalities inside (top) and outside (bottom) PUSHs.

Not surprisingly, there is a high correlation between both. As it can be seen, there is almost a linear relationship with the tendency that already great isochrones areas gain even more after approximation than comparatively small isochrones areas. The Scandinavian PUSHs are somewhat exceptional from this rule, as their gains seem to be above-average, with Kiruna (located in northern Sweden) being the most extreme outlier. As a consequence of the approximation procedure, no PUSH is decreasing in terms of its extent.

Figure 25 maps the differences in area between the isochrones and *Potential Urban Strategic Horizons* in order to derive spatial patterns. The radii of the circles represent the area of the PUSHs (in km²), whereas its colour indicate the difference between both in percent of the isochrones area. The biggest PUSHs can be found in Germany, the Benelux countries, in England, Austria and northern Italy. However, the difference between the isochrones and PUSHs are smallest here. In contrast, the size of the PUSHs in the Nordic countries and southern Spain are relative small, but they experience greatest differences between the isochrones and PUSHs. Interesting effects can also be observed for the Baltic countries. All three of them show relative large PUSHs, but due to its large municipalities only Lithuania experiences great differences between the isochrones and the PUSH, whereas Estonia and Latvia only experience small increases in the PUSH areas. Similarly, Bulgaria also experiences considerable differences between the isochrones and the PUSHs due to its large municipalities.

Another interesting issue is to look into the proportion of the country area covered by *Potential Urban Strategic Horizons*, as visualised in Figure 24 through a bar plot.

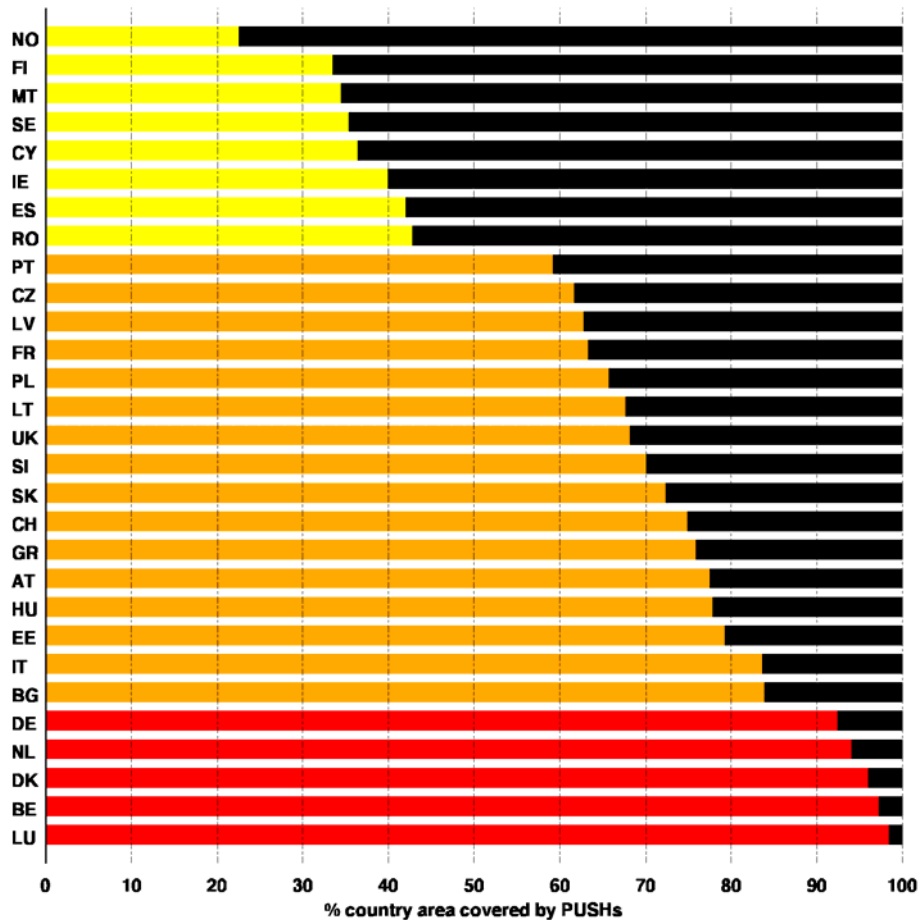
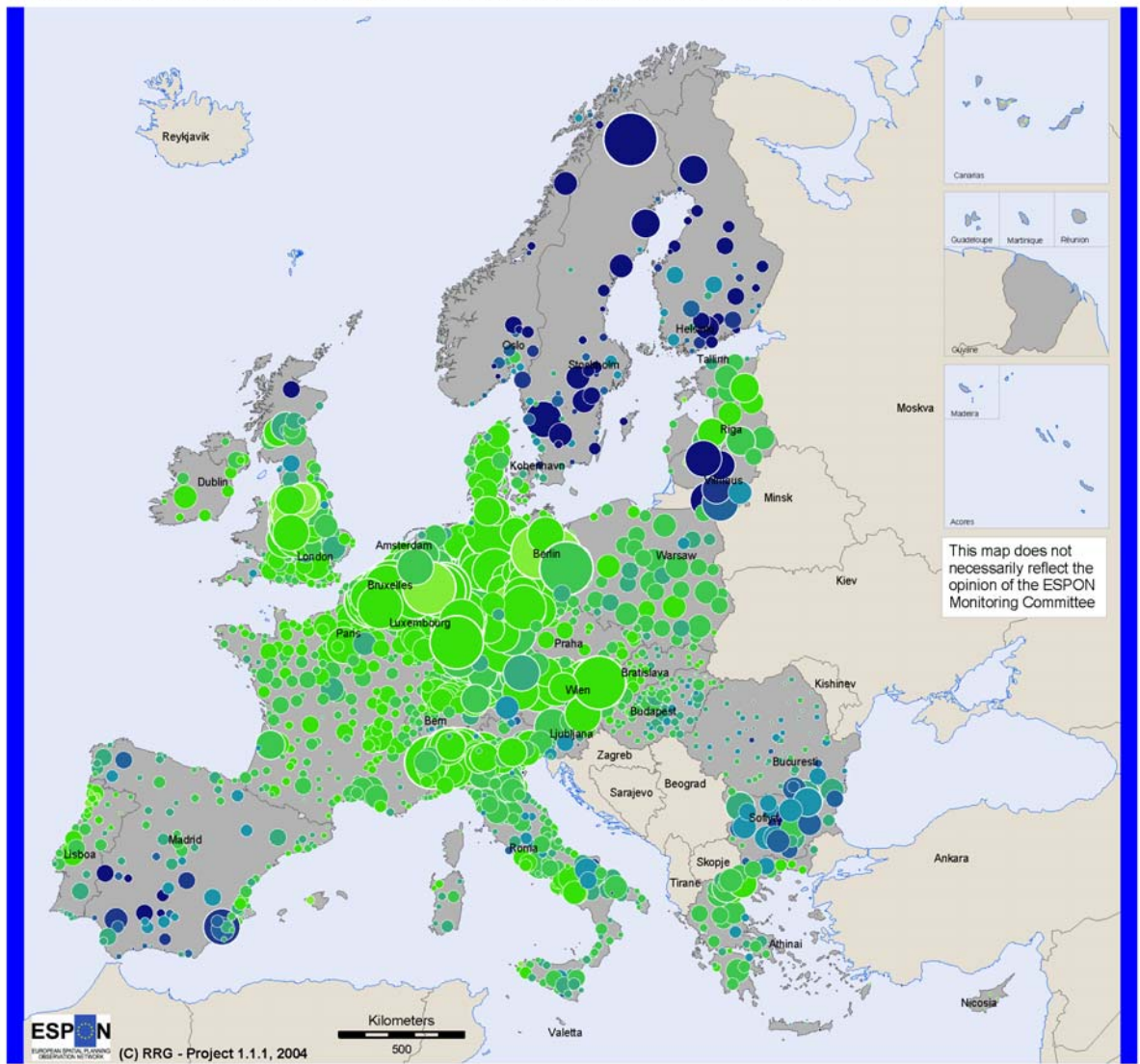


Figure 24. Proportion of country area covered by PUSHs.

Differences between isochrones and Potential Urban Strategic Horizons



Geographical Base: Eurostat GISCO

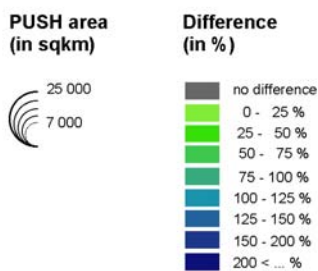


Figure 25. Differences in extent between isochrones and PUSHs.

These proportions range from some 25 % for Norway up to some 98 % for Belgium and Luxembourg. The average proportion is about 66 percent of the overall country territory. When looking into more detail, three groups of countries can roughly be differentiated:

- Those countries with a small proportion of PUSHs, i.e. the three Scandinavian countries Norway, Sweden and Finland, plus the smallest two new EU Member States Malta and Cyprus, plus Ireland, Spain and Romania. Their proportions range from 25 % up to 40 % for Romania.
- The majority of countries showing a rather balanced proportion between 60 % and 85 %, including all other new EU Member States, plus the old Member States Portugal, France, UK, Greece and Austria and Italy, as well as Switzerland. A gradual increase in the territories covered can be observed from Portugal (almost 60 %) to Bulgaria with some 85 %.
- Lastly, those countries with highest proportions of PUSH areas on the overall territory with more than 90 %, featuring Germany (92 %), the Benelux countries as well as Denmark.

Overlapping PUSHs

As a consequence of the great number and high density of FUA centroids in many regions, their *Potential Urban Strategic Horizons* overlap each other to some extent. The degree of overlaps is analysed in two ways: First, the number of other FUA centroids located within the origin PUSH is counted; second, the proportion of the origin PUSH area overlapped by other PUSHs is calculated.

Figure 27 then plots the number of other FUA centroids located within the origin PUSH. From the point of view of the entire *Potential Urban Strategic Horizon*, this number can be considered as an indicator for polycentricism. Numbers of zero indicate that apart from the origin FUA centroid there is no other FUA centroid located within the *Potential Urban Strategic Horizon* of the origin FUA. They can be found in the Nordic countries, in the Baltic countries, in many parts of Poland and Romania and Spain, and in southern France and Ireland. These 247 PUSHs can be considered as monocentric PUSHs (see frequency distribution shown as a separate bar diagram in Figure 27). The greater this number, the more polycentric the *Potential Urban Strategic Horizon* are. More than five other FUA centroids located within the *Potential Urban Strategic Horizon* of a FUA can be found in many parts of Germany, Italy, around the Mediterranean Sea in Spain, in northern Portugal and parts of Denmark (altogether, this is the case for 571 PUSHs). Furthermore, highest numbers give an indication for urban sprawl. These areas can be found in the Benelux countries, in western Germany (Rhine-Ruhr area, Frankfurt-Karlsruhe-Stuttgart), central England (Liverpool, Manchester, Birmingham), northern Italy (Torino-Milano-Venezia) and parts of Switzerland.

The following Figure 28 analyses the proportion of *Potential Urban Strategic Horizon* overlapped by other PUSHs. This picture is even more significant than the previous one. For almost all PUSHs located in the Benelux countries, in Germany, Switzerland, Austria, Italy, Denmark and Hungary and Bulgaria, this proportion amounts to more than 50 % of their area, very often even more than 90 % of their area. In other words, more than 50 % of these *Potential Urban Strategic Horizons* are also located in the proximity of other FUAs. Proportions of less than 50 % can be found in the Nordic countries and in the Baltic countries, in Poland and Romania, in southern France and many parts of Spain. As it can be seen from the frequency distribution shown in Figure 26, they account for some 17 % of all PUSHs,

whereas the remaining 83 % of all PUSHs have more than half of their territory overlapped with other PUSHs. In 948 cases even more than 90 % of their territory is shared with other PUSHs. Obviously, there is a clear relationship between the number of other FUA centroids located within a *Potential Urban Strategic Horizon* and the proportion of their territory overlaid by these other PUSHs, as Figure 26 demonstrates.

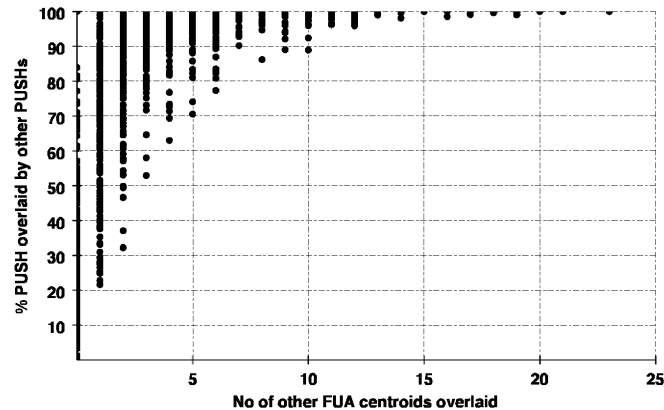


Figure 26. Relationship between number of other FUA centroids and proportion of PUSH overlaid by other PUSHs.

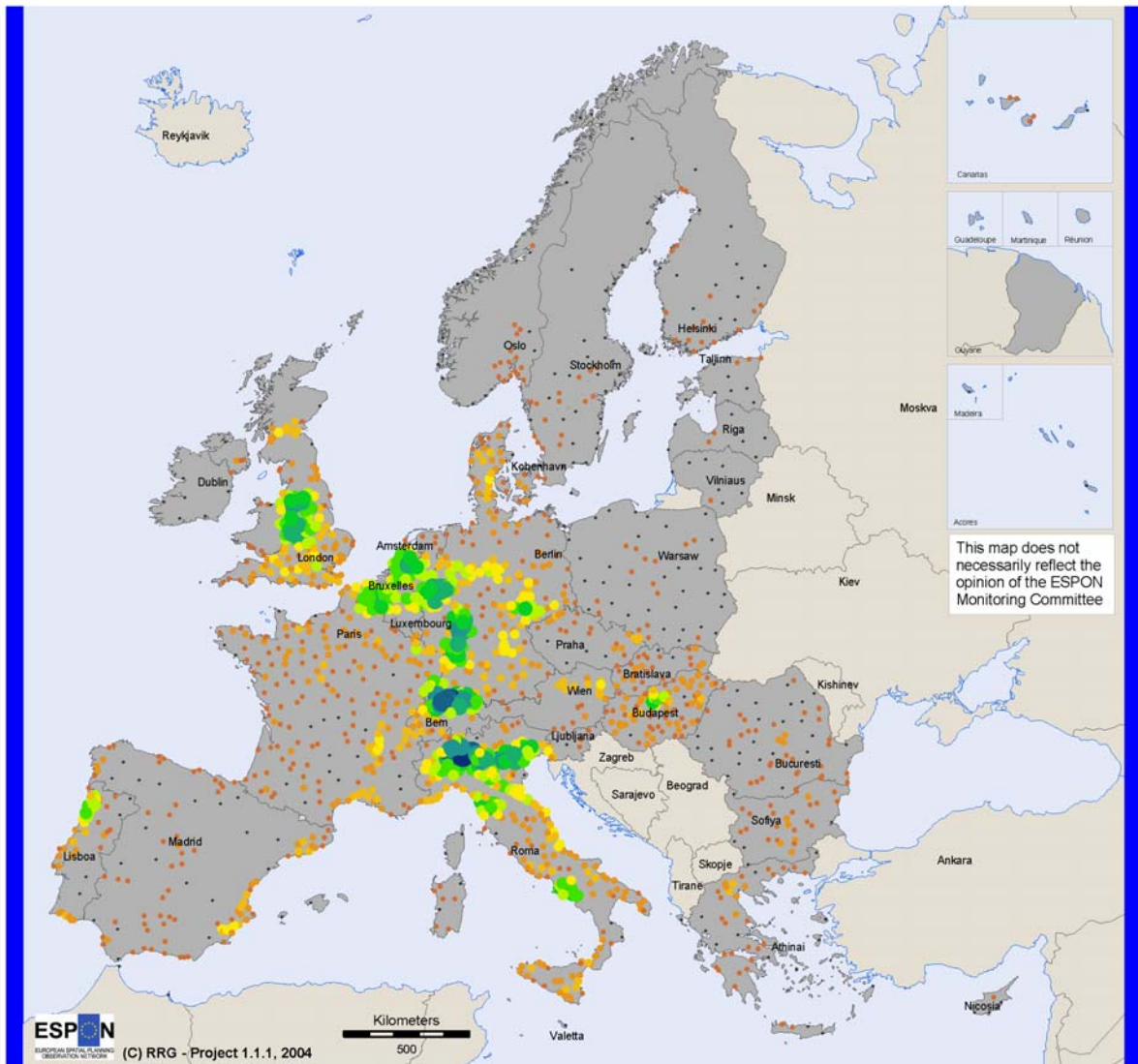
When merging all those *Potential Urban Strategic Horizon* together that overlap each other by at least 33 % of their territory, the following picture is revealed (Figure 29). This significantly reduces the number of entities from 1,595 PUSHs to 649 merged PUSHs. In particular in high density countries such as the Netherlands, Belgium, Germany, northern Switzerland and northern Italy, or southern England these merged PUSHs can be considered as delimited agglomerated areas with overall population numbers between 20,000 and 22 millions with 1.1 million inhabitants on average. These areas are called *Polycentric Integration Areas* (PIAs) and are further analysed in ESPON Project 1.1.1 final report.

Number of assignments

As a rule, municipalities are assigned to one PUSH, or to no PUSH if they are not overlapped by any isochrones. However, in countries with high population densities and a great number of FUAs many municipalities are assigned not just to one PUSH but to several PUSHs, i.e. they are located in *Potential Urban Strategic Horizons* of several FUAs, which are overlapping each other (see previous chapter). The highest number of such assignments can be found in the Benelux countries, northern Switzerland and western Germany where some municipalities are assigned to more than 20 PUSHs (Figure 30). Hence, Figure 30 consequently reproduces the findings presented in Figure 20 (top) from its specific point of view.

From the point of view of the municipalities, the number of assignments can be considered as an indicator of polycentricism. Null assignment means that the municipality represents sparsely populated rural peripheral areas without any centres at all; the greater the number of assignments, the higher the level of polycentricism. As Figure 27 shows, polycentric regions can be found in the Randstad area in the Netherlands, in western parts of Belgium (triangle Brussels-Antwerp-Gent), in western Germany (Rhine-Ruhr area, Frankfurt-Karlsruhe-Stuttgart), in northern Switzerland (Zurich-Basel-Mulhouse), northern Italy (Torino-Milano-Venezia) and in the heart of England (Liverpool-Manchester-Birmingham).

Number of other FUA centroids located in Potential Urban Strategic Horizons



Geographical Base: Eurostat GISCO

- 0
- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10
- 11 - 12
- 13 - 14
- 15 - 16
- 17 - 18
- 19 - 20
- 21 - 23

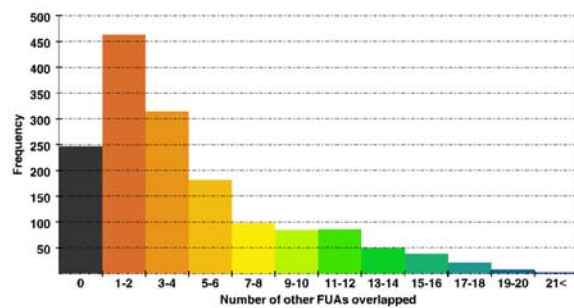
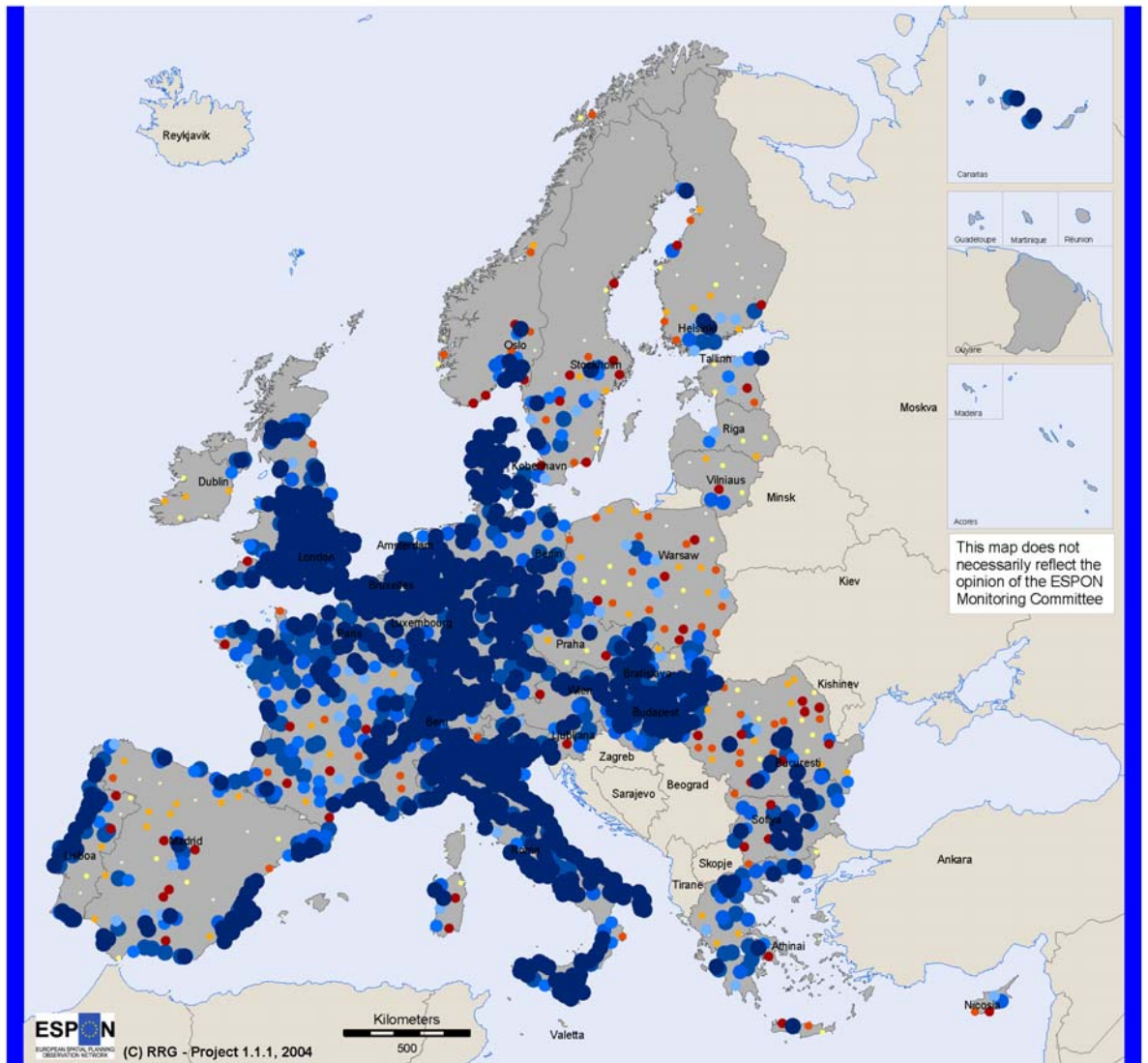


Figure 27. Number of other FUA centroids located in Potential Urban Strategic Horizons.

Proportion of PUSH area overlapped by other PUSHs (in %)



Geographical Base: Eurostat GISCO

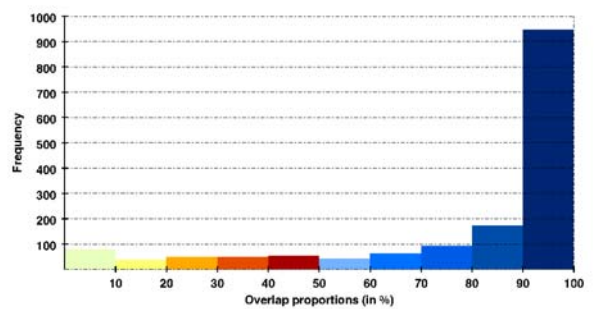
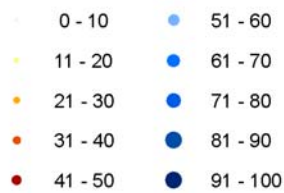
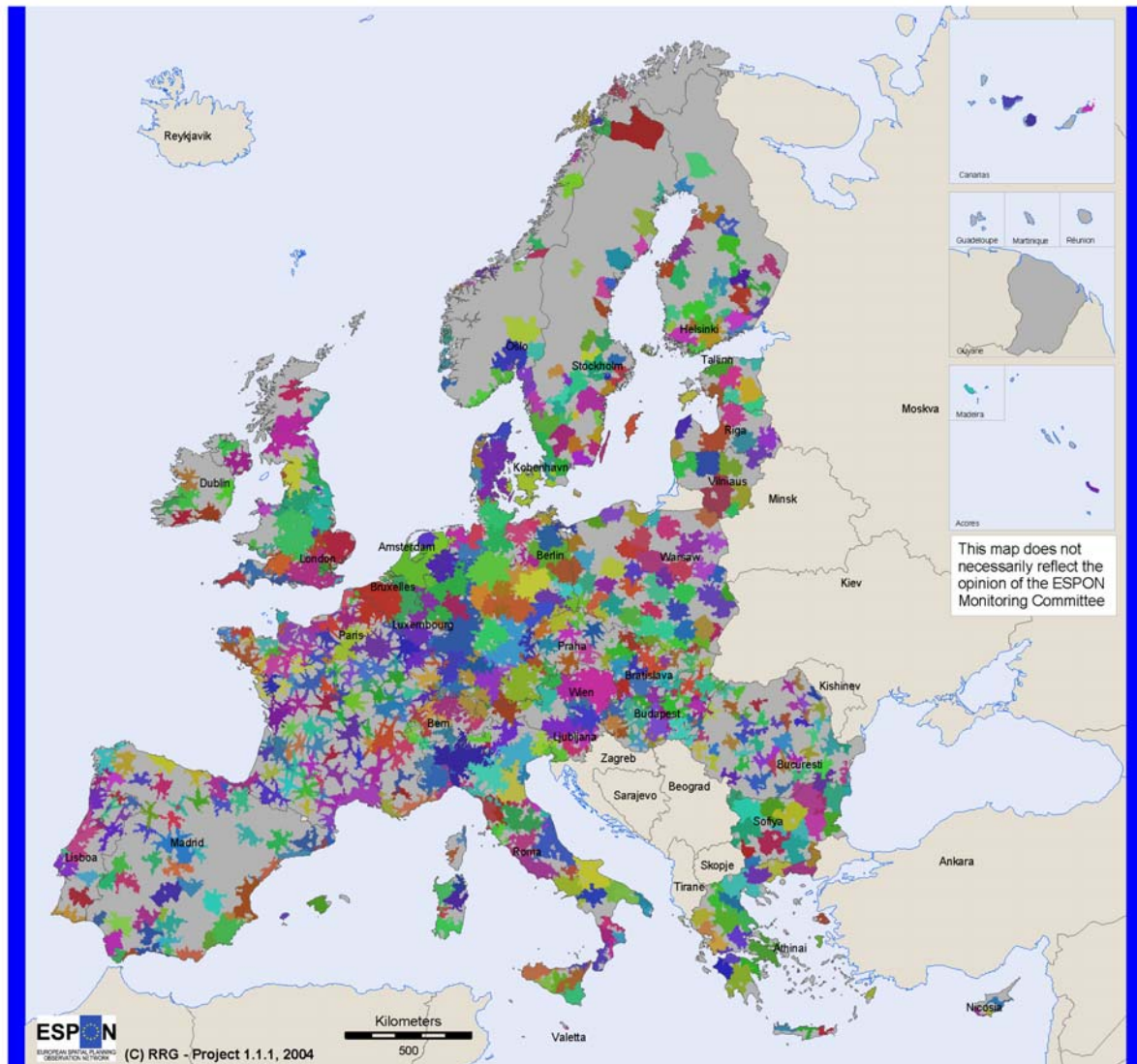


Figure 28. Proportion of PUSH area overlapped by other PUSHs.

Overlapping PUSHs merged to Polycentric Integration Areas (PIAs)



Geographical Base: Eurostat GISCO

Figure 29. Overlapping PUSHs merged together to Polycentric Integration Areas (PIAs).

On the other hand, there are also many monocentric areas such as Greater London or Paris (as the most prominent ones), but also many parts of Spain (for example, Madrid) or Greece. The Baltic countries and Poland also include many monocentric areas in this sense. Most parts of the Nordic countries can be considered as sparsely populated rural areas, lacking even any centre at all.

Although many municipalities are assigned to more than one PUSH, it is quite interesting to differentiate these relationships. To do so, the different assignments were ranked according to the overall population of the PUSH, into 1st order assignment, 2nd order assignments, 3rd order assignments etc.. For this purpose five population groups of PUSHs are distinguished:

- Group 1: More than 5 million inhabitants
- Group 2: 1 to 5 million inhabitants
- Group 3: 250,000 to 1 million inhabitants
- Group 4: 50,000 to 250,000 inhabitants
- Group 5: less than 50,000 inhabitants

If a municipality is assigned to just one PUSH, the ranking rule is quite simple as there is only one first-order ranking to the respective PUSH. If a municipality is assigned to more than one PUSH, the ranking rules are more complex applying the following criteria:

The first order assignment represents always the relationship to that specific PUSH representing the highest population group. If a municipality is assigned to two or more PUSHs representing the same population group (for example, to two PUSHs belonging to population Group 2), the first order assignment is the relationship to that PUSH with the higher number of inhabitants, followed by the second order assignment to the other PUSH of population Group 2 with the lower number of inhabitants etc. The maximum order assignment for a municipality is, of course, equivalent to the total number of PUSHs assigned to it.

The different population groups were used as a proxy for the importance of a PUSH. So the ranking of the assignments is based on the assumption that the functional linkage of a municipality to a higher level FUA centroid is more important than to a lower level FUA centroid, even if the latter one is located closer-by, because greater PUSHs offer more contact opportunities, market potentials, higher levels of services, more and better shopping facilities etc.

Figure 31 then represents the first order assignments as straight lines between the municipality centre and the FUA centroid (so-called *spider lines*). In many countries the first order assignments reveal clearly delineated catchment areas, which are clearly separated from each other by rural municipalities. Examples of this can be found in the Nordic countries, in the Baltic countries, in Poland, Romania, Bulgaria and Greece, and in Spain. In all other countries, the catchment areas are interconnected with each other (but, by definition, are not overlapping), forming continuous shapes. Particularly in France, but to some degree also in Italy or Portugal, the interconnections follow the high quality road network, leaving rural areas between the most important transport arteries.

Notwithstanding the special importance of the first order assignments, the lower order assignments play also an important role for daily activities such as shopping, services of local government bodies, education, health care or leisure activities. Therefore, Figure 32 represents the first and second and third order assignments of municipalities to FUA centroids, again represented by *spider lines* between the municipality centres and the FUA centroids. The picture immediately becomes more complex to interpret, as now many municipalities are connected to more than one PUSH. As already shown in Figure 31, for many municipalities the first order assignment is the one and only assignment (see Nordic countries, Baltic countries, Poland, Romania, Spain or Ireland), but for municipalities located in the Benelux countries, western Germany, northern Italy and northern Switzerland, or England several hierarchical levels of assignments can be observed.

To enable further analysis of the relationships, the spider lines are stored as an individual GIS layer. Within this layer there is an individual link available for each *municipality-to-FUA* relationship. Altogether, there are 318,786 relations stored in the layer. For each link the following attributive information are available: A unique FUA identifier (integer number) and the SABE municipality code to enable identification of the origin (i.e. the municipality) and destination (i.e. the FUA centroid), as well as the ISO country codes of both the municipality and FUA centroid (both codes used to be the same, but there are also cross-border relationships that could so be analysed), and the level of the assignment (1 = first order assignment; 2 = second order assignment; 3 = third order assignment etc.).

Potential Urban Strategic Horizons overlapping in each municipality (10 % criterion)

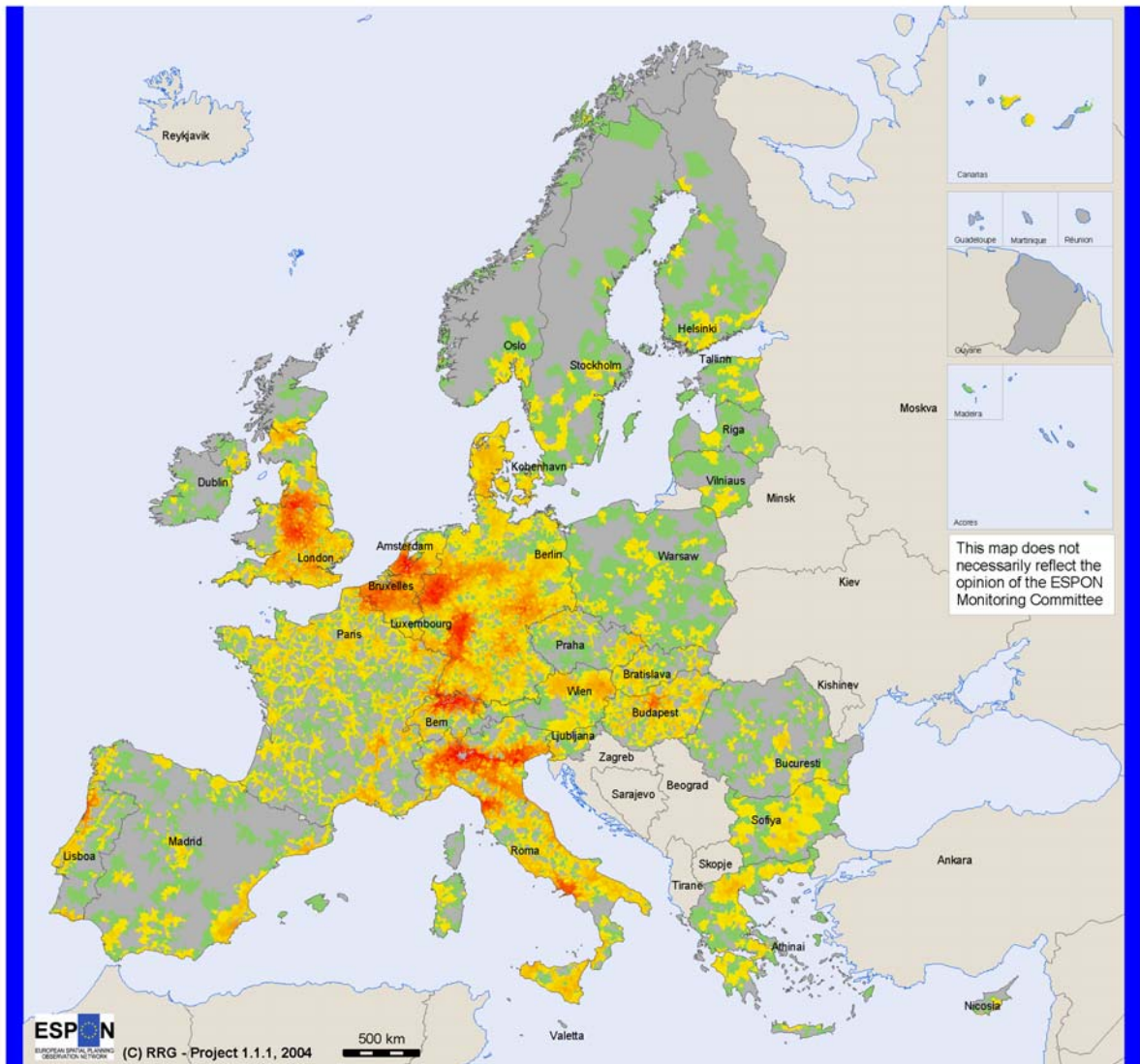
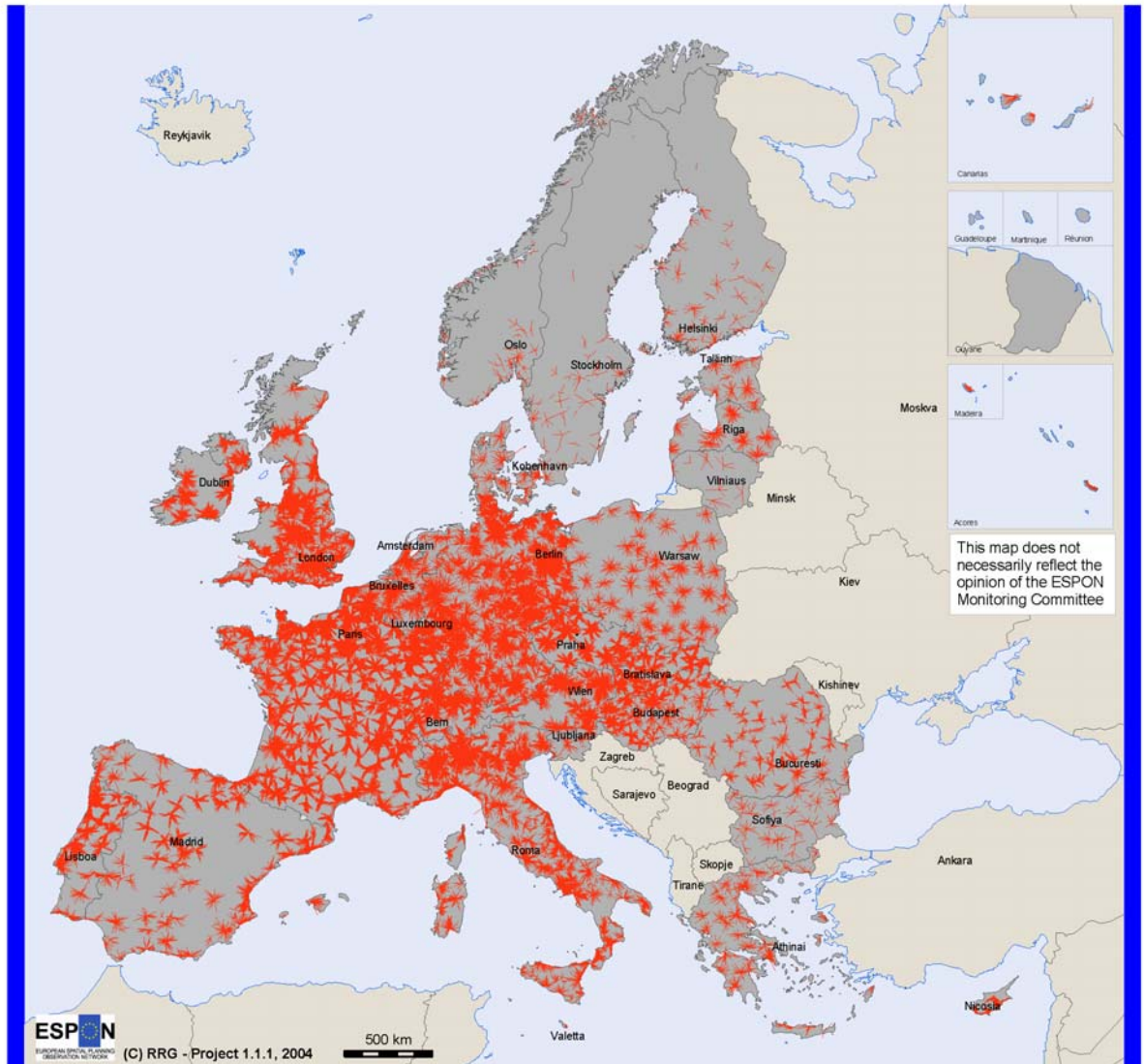


Figure 30. Potential Urban Strategic Horizons overlapping in each municipality.

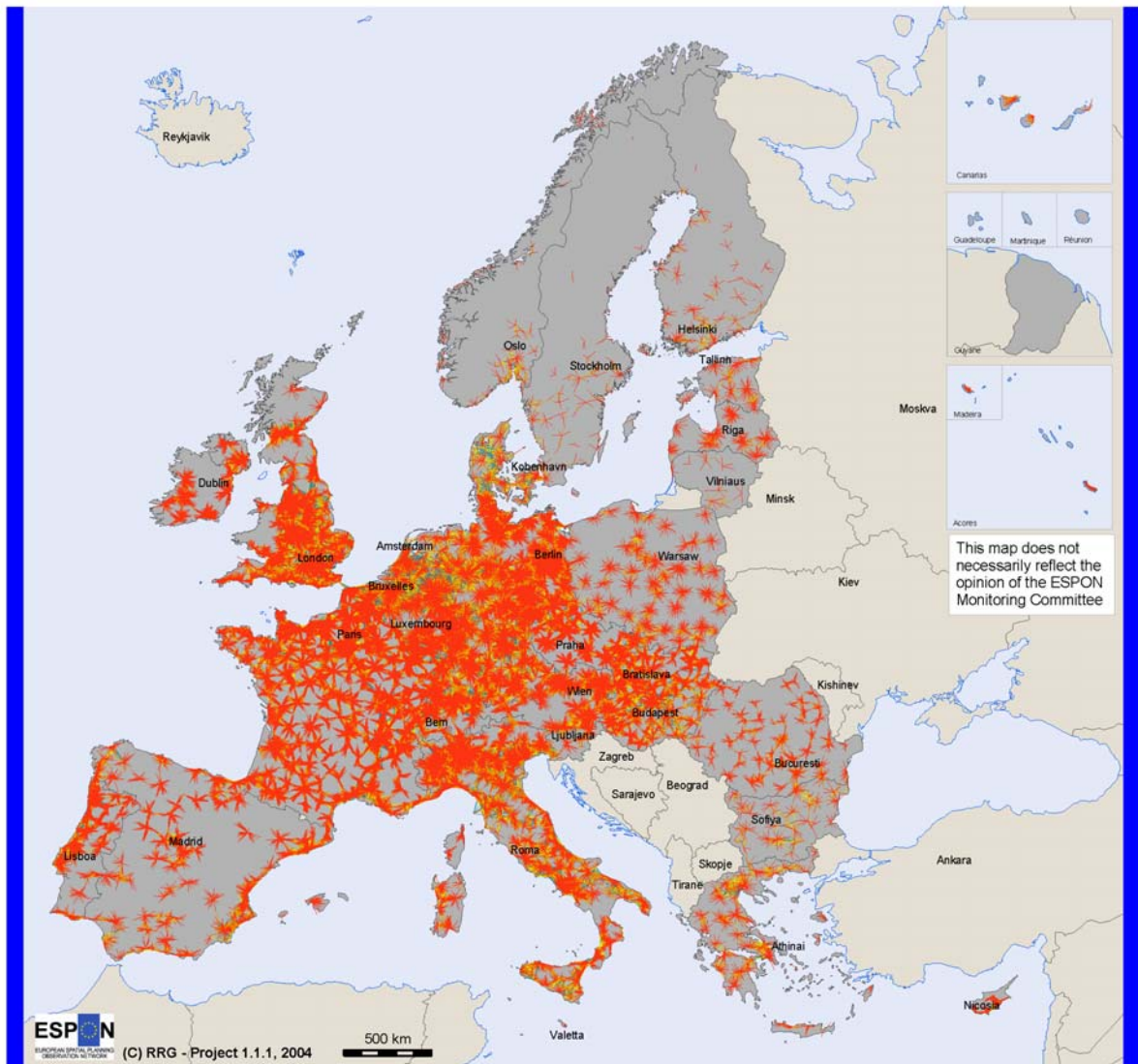
Municipalities assigned to most relevant Potential Urban Strategic Horizon



— Municipalities assigned to most relevant PUSH

Figure 31. First-order assignments of municipalities to FUA centroids.

Municipalities assigned to next Potential Urban Strategic Horizons



Geographical Base: Eurostat GISCO

- Most important PUSH
- Second important PUSH
- Third important PUSH
- Other potential PUSHs

Figure 32. First, second and third order assignments of municipalities to FUA centroids.

PUSH population

As described in Chapter 5, preliminary population figures for FUAs based on national statistical sources were already collected in previous steps of ESPON Project 1.1.1. As now the *Potential Urban Strategic Horizons* are delimited by the assignment of municipalities, new total population figures for PUSHs have also been calculated based on NUTS 5 population numbers. Figure 34 illustrates the PUSH population differentiated by five population classes. In general, a huge range of population numbers can be observed. There is a maximum population number of almost 13 million people (Düsseldorf, Germany) compared against a minimum number of some 20,000 (Mariehamn, Finland).

There are 700 PUSHs with more than 1 million inhabitants (most of them located in central Europe), 328 PUSHs between 500,000 and 1 million inhabitants (particularly located in France and Poland), 288 PUSHs with more than 250,000 and less than 500,000 inhabitants (mostly located in East European countries), 202 PUSHs with more than 100,000 and less than 250,000 inhabitants (in Spain, Baltic countries and Nordic countries) and finally there are 77 PUSHs with less than 100,000 inhabitants (most of them in the Nordic countries as well as on Greek islands).

Comparing the newly calculated PUSH population figures with the FUA figures provided by national statistical offices reveals interesting results as well (Figure 33).

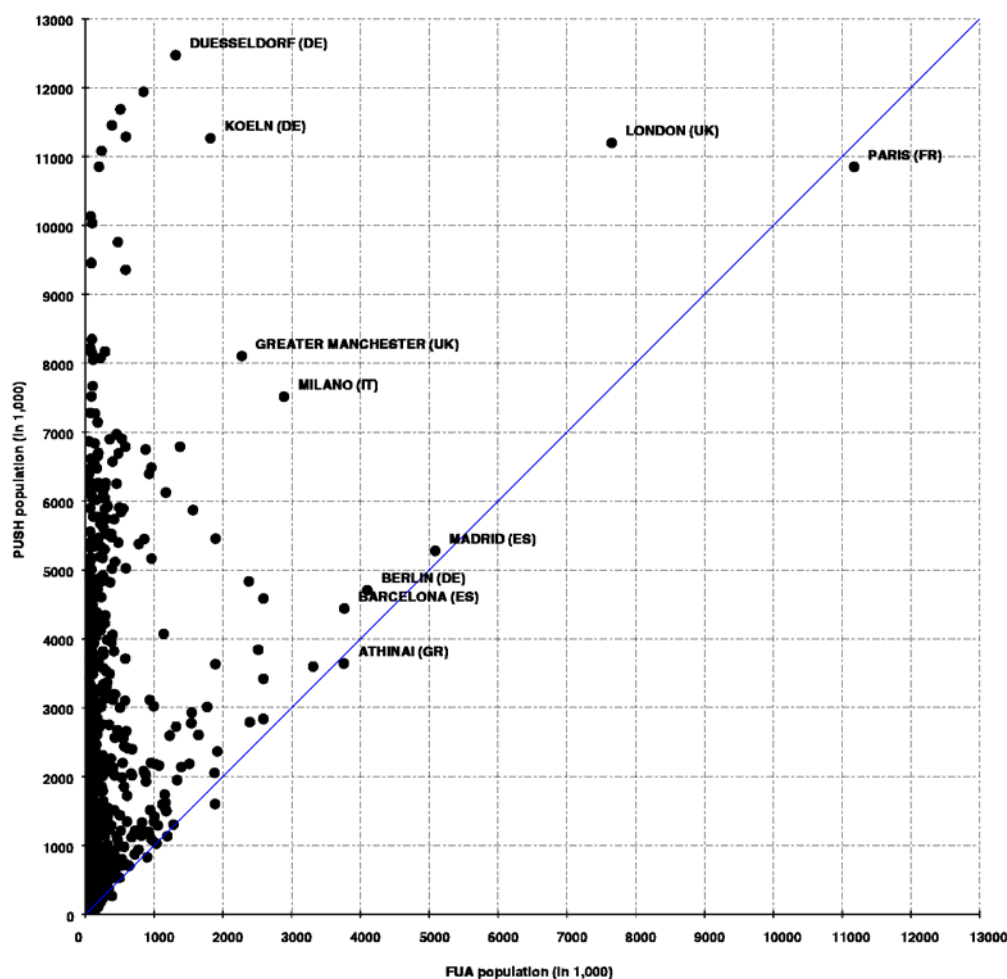
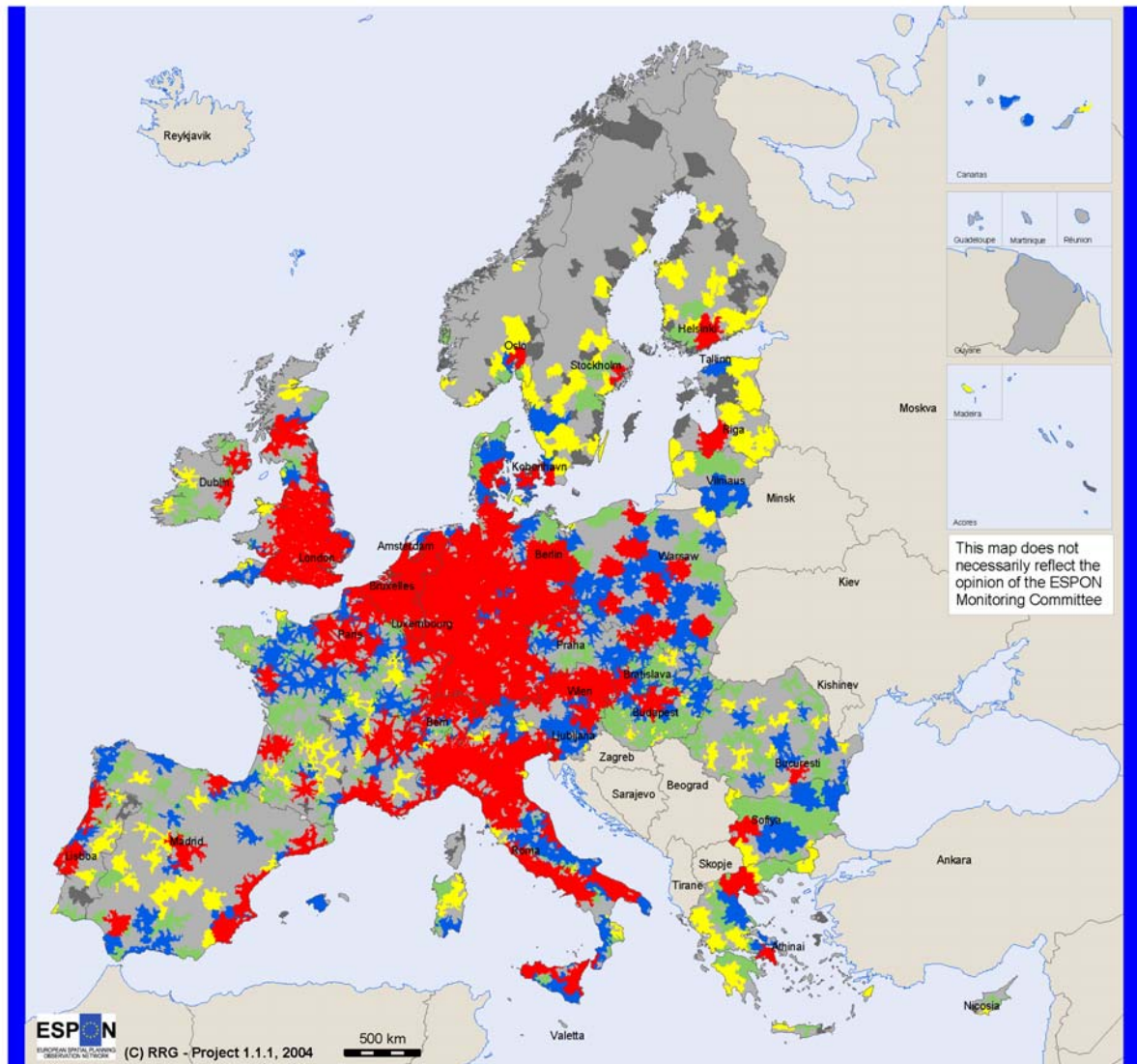


Figure 33. Comparison of PUSH population figures with national statistics on FUAs.

PUSH population



This map does not necessarily reflect the opinion of the ESPON Monitoring Committee

Geographical Base: Eurostat GISCO

Inhabitants

- 1,000,000 < ...
- 500,000 - 1,000,000
- 250,000 - 500,000
- 100,000 - 250,000
- ... < 100,000

Figure 34. PUSH population.

Apart from some exceptions, most national statistics underestimate the FUA population compared to the calculated PUSH population, either because the national approaches use another (narrower) delimitation (if there is any FUA delimitation), or the statistics provide population figures for the FUA centre only but not for all municipalities assigned.

Taking both together, the result is that the new figures are up to 10 times higher than population figures derived from national statistics. There are only 36 cases where the national sources provide higher numbers than the new calculated figures. Apart from Paris and Athens which are identified in Figure 33, this mainly concerns FUAs/PUSHs in Sweden, Finland and Norway, such as Oslo, Bergen, Stockholm, Gothenburg, Oulu or Kajaani. However, the difference between the old and the new numbers in these cases are on average 13 percent, i.e. the range of values is identical and the differences can be neglected.

Border crossing PUSHs

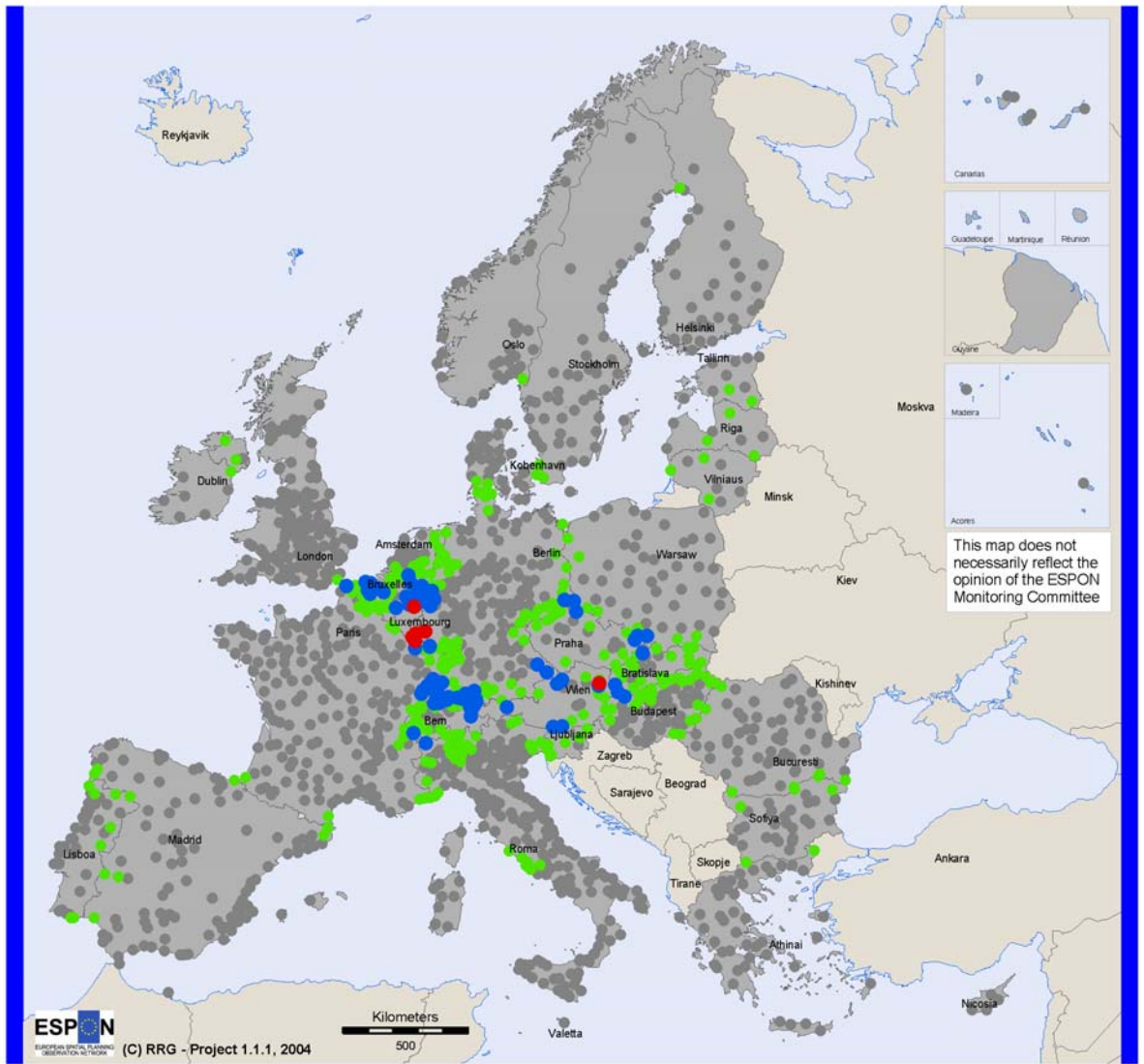
The spatial extent of most *Potential Urban Strategic Horizons* is restricted to that country where the relevant FUA centroid is located, i.e. they do not cross borders. However, in central Europe there are also many *Potential Urban Strategic Horizons* crossing borders (Figure 35), i.e. their potential area is trans-national in nature and covers two or more countries. In most of these cases, two neighbouring countries are concerned (e.g. Portugal and Spain, Spain and France etc.), but sometimes three or even four countries are covered. Such cases can be found in the border regions of Belgium, Germany, Luxembourg and the Netherlands, as well as France, Germany and Switzerland, or Austria, Czech Republic and Germany, and in other places. Although the number of multi-national PUSHs is rather low compared to uni-national PUSHs, they have significant importance for spatial development in Europe. Annex 5 provides a list of those 373 PUSHs that are trans-national in nature, indicating the number of countries concerned.

Summary of Findings

The main findings of the PUSH analysis so far can be summarised as follows:

- The *Potential Urban Strategic Horizons* are greater than the isochrones for all PUSHs. In particular PUSHs in Finland, Norway and Sweden gain above-average after approximation to municipalities. However, the greatest *Potential Urban Strategic Horizons* can be found in Benelux countries, and western German.
- The proportion of country territories covered by *Potential Urban Strategic Horizons* ranges from some 20 % for Norway up to 95 % for Luxembourg.
- Many *Potential Urban Strategic Horizons* overlap each other (exceptions: Czech Republic, Spain, Finland, Ireland, Lithuania, Latvia, Norway, Poland, Romania, Sweden)
- In other cases *Potential Urban Strategic Horizons* for important FUAs such as capital cities are smaller than expected. This is mainly due to difficult physical or topographical criteria of the region in which the FUA centroid is located (for example, location at seaside, or within mountain areas). Therefore, as an example, the *Potential Urban Strategic Horizons* for Copenhagen, Stockholm, Amsterdam, Zurich, Hamburg and other cities are small compared to other (probably less important) PUSHs.

Transnational Potential Urban Strategic Horizons



- Border crossing PUSHs
 - 4 countries concerned
 - 3 countries concerned
 - 2 countries concerned
- Non-border crossing PUSHs
 - Other PUSHs

Figure 35. Trans-national Potential Urban Strategic Horizons.

- Many municipalities are assigned to more than one PUSH, i.e. they are located in the vicinity (or catchment area) of more than one PUSH. Some of them are assigned even to more than 20 PUSHs. However, it seems applicable to rank these assignments into hierarchical classes (first order assignment, second order assignment, third order assignment etc.) as not all assignments do have the same importance.
- Even at the national level there is no relationship between the *Potential Urban Strategic Horizons* (their extent) and their overall population.
- The range of total population figures for all PUSHs is rather great (some 20,000 as the minimum, and some 13 millions at maximum). 700 PUSHs have a total population of more than 1 million inhabitants, whereas only 77 have less than 100,000 inhabitants.
- Apart from some few exceptions, national population figures on FUA population tend to underestimate the overall population compared to the new population figures calculated for PUSHs.
- In some countries the capital city also yields the greatest *Potential Urban Strategic Horizons*. To some extent this could be expected as in many countries there is a strong political emphasis to push and further promote (transport) infrastructures for their capital cities. Such cases are: Vienna, Berlin, Madrid, Paris, Budapest, Luxembourg, Oslo, and Bratislava.
- Many *Potential Urban Strategic Horizons* are trans-national (cross-borders). This may lead to situations where the sum of all PUSH areas or the area of the greatest PUSH is greater than the overall country area (e.g. see Luxembourg).

7. Settlement Structures in Potential Urban Strategic Horizons

In addition to the findings presented in the previous chapter this chapter is dedicated to assess the degree of monocentricity or polycentricity of *Potential Urban Strategic Horizons* by looking at their settlement structures, as the shape, extent and number of settlements within a PUSH might also be used as a proxy for measuring the degree of polycentricity. The basic assumptions for this type of analysis are as follows:

If the settlement structure of a particular PUSH is characterised by large continuous spread out settlements without particular groupings, this structure could be considered as ‘sprawl’; if the settlement structure of a particular PUSH is characterised by a grouped settlement dominated by a large settlement area with no secondary groupings, one might consider this PUSH as monocentric; in contrast, if there are several larger spread out settlements each grouped together with smaller ones this settlement structure might be called polycentric.

However, as shown later, this is a theoretical based ideal situation, which in practice is difficult to assess.

7.1 Proportion of Settlement Areas on PUSH Areas

The proportion of the settlement areas on the PUSH areas is shown in Figure 37. Percentages range from some 1 % (in the Nordic countries) up to some 40 % in the Benelux countries, and in the London and Paris metropolitan areas. Considerable high proportions can also be found in the Copenhagen / Malmø area, around Budapest, Naples, Lyon, in the area of

Liverpool/Manchester and Birmingham, and in Switzerland. Melilla and Ceuta have to be considered special cases as they are lacking hinterland. The average proportion over all PUSHs is 7.3 %.

7.2 Settlement Structures

Usually, the overall settlement area within a PUSH is split up in several individual settlements of different size. The small-scale analysis of their spatial configuration allows assessing the PUSH settlement structure. Four main types of settlement structures are to be distinguished (Figure 36):

Sparsely populated PUSHs (or rural PUSHs)

There are only few relatively small settlements scattered within the PUSH, with rather great distances between all of them. Parts of the population are also living outside continuous settlement areas in the country side.

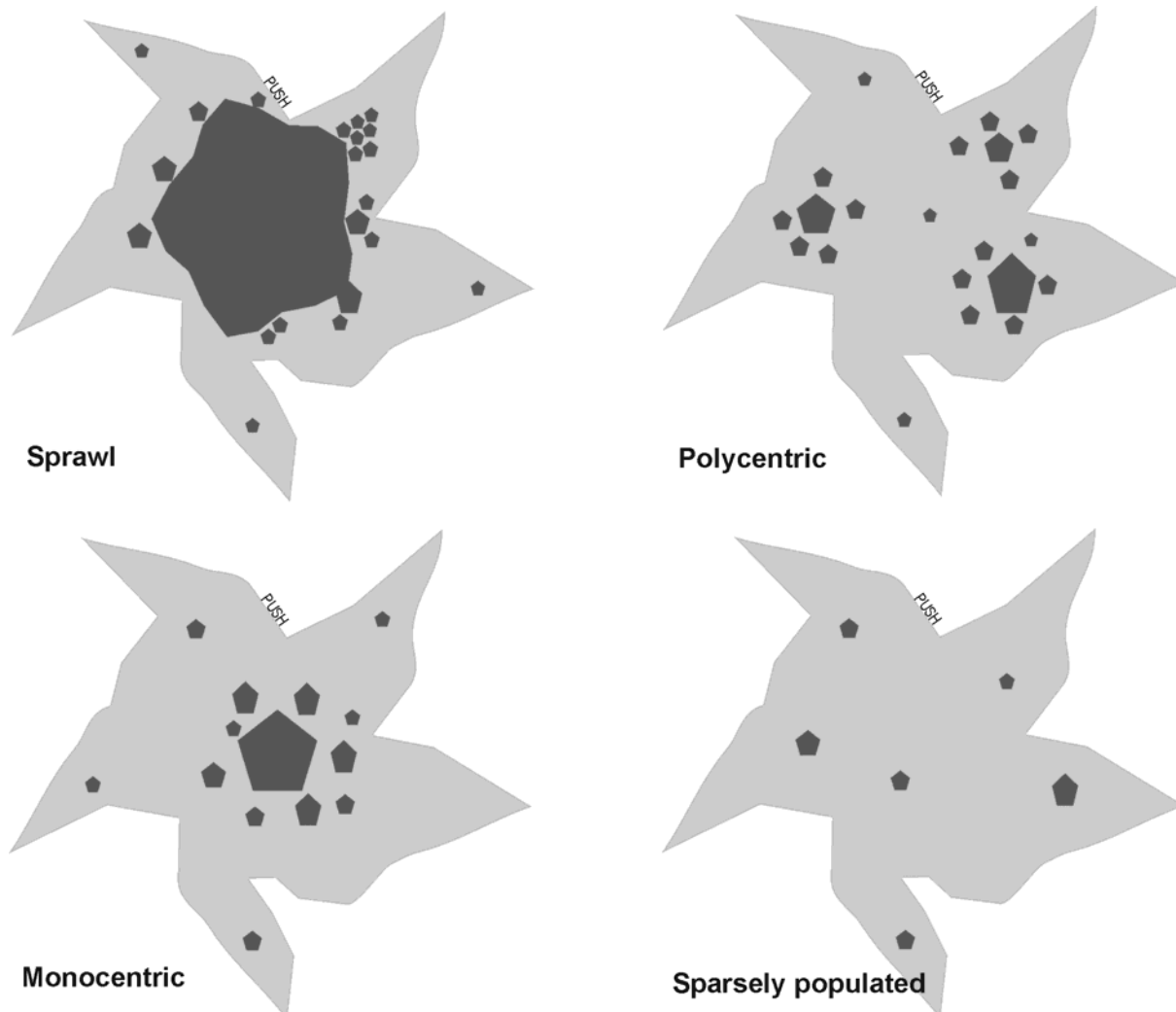


Figure 36. Different types of settlement structures (schematic representation).

Proportion of settlement areas in each Potential Urban Strategic Horizon (in %)

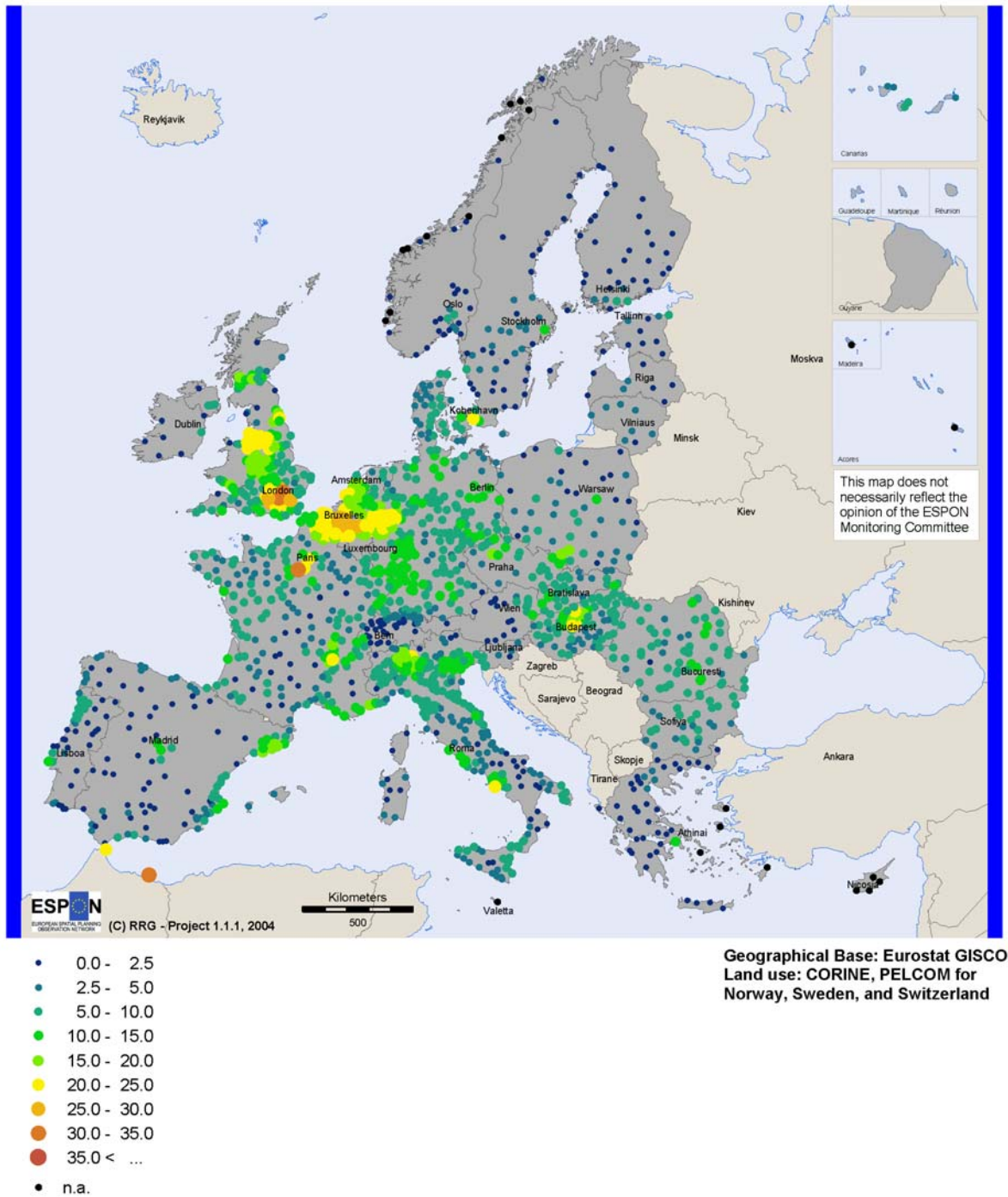


Figure 37. Proportion of settlement areas in each Potential Urban Strategic Horizon.

Polycentric PUSHs

Polycentric PUSHs are characterised by several larger spread out settlements each grouped together with a number of smaller ones ('satellite settlement areas'). Within one PUSH two or more of such groupings can be observed. The distances between settlements within a grouping are rather small, whereas the distances between the groupings are rather great. There are only some few small settlements outside the groupings.

Monocentric PUSHs

If the settlement structure is characterised by a grouped settlement dominated by a large settlement area with no secondary groupings and only small settlements elsewhere within the PUSH, this structure can be considered as monocentric. The distance between the dominant settlement area and its satellite settlements is rather small.

Sprawl

If the settlement structure is characterised by large continuous spread out settlements without particular groupings, which cover to a great degree the overall PUSH area, this can be considered as 'sprawl'.

As this differentiation is derived from theoretical considerations it is of course difficult to identify these categories in reality. As outlined in the following section, two approaches have been used to analyse the settlement structures in detail: Gini coefficients and concentration indices.

7.3 Gini Coefficients and Concentration Indices

There are a lot of statistical indicators available measuring the degree of polarisation of a given list of values or the spatial distribution of events. Unfortunately, most of them can only be applied on point features (e.g. Nearest-Neighbourhood-Statistics, *G*-, *F*- and *K*-functions; see O'Sullivan and Unwin, 2003, 77ff), which is not appropriate here. Among others, two types of indicators have been applied here in order to assess the spatial settlement structures within PUSHs:

The *Gini coefficient* measures the area between the accumulated distribution of sorted indicator values and the straight line representing an equal distribution in a Lorenz diagram. The Gini coefficient ranges from zero (equal distribution) to one (extreme polarisation). Here, the Gini coefficient is applied on the areas of the different settlement units within a PUSH. However, in the context of analysing spatial settlement structures, this coefficient could be interpreted as either rural or disperse settlement patterns, or, to some extent, also as a polycentric settlement structure (Gini coefficient close to zero); or it can be interpreted as monocentric settlement patterns or even settlement sprawl (Gini coefficient close to one).

However, as the Gini coefficient is applied on the settlement areas, it does not take into account the distance between or the relative location of the individual settlement units against each other. Therefore, in a second step a so-called *area concentration index* was developed and applied, taking account of both the size of the settlement areas and their relative location against each other.

The *area concentration index* is calculated for each settlement unit within a PUSH separately. For each settlement unit *j* the area concentration index C_j is calculated as follows

$$C_j = \frac{\sum_k A_k f(d_{jk})}{\sum_j \sum_k A_k f(d_{jk})} \quad (1)$$

where A_k is the area of settlement unit k (in km^2) and $f(d_{jk})$ is a function of the distance between settlement units j and k , with

$$f(d_{jk}) = \frac{1}{d_{jk}} \quad (2)$$

and d_{jk} measured in km. Similar to the Gini coefficient, the *area concentration index* ranges also between zero (no spatial concentration) and one (extreme concentration). However, in contrast to the Gini coefficient where only one coefficient for each PUSH is provided, the *area concentration index* is derived for all settlement units within a PUSH individually. Therefore, the indices for all settlement units within a PUSH are further processed in that the maximum, minimum and average concentration indices and also the range and the ratios between the minimum and maximum indices per PUSH are calculated.

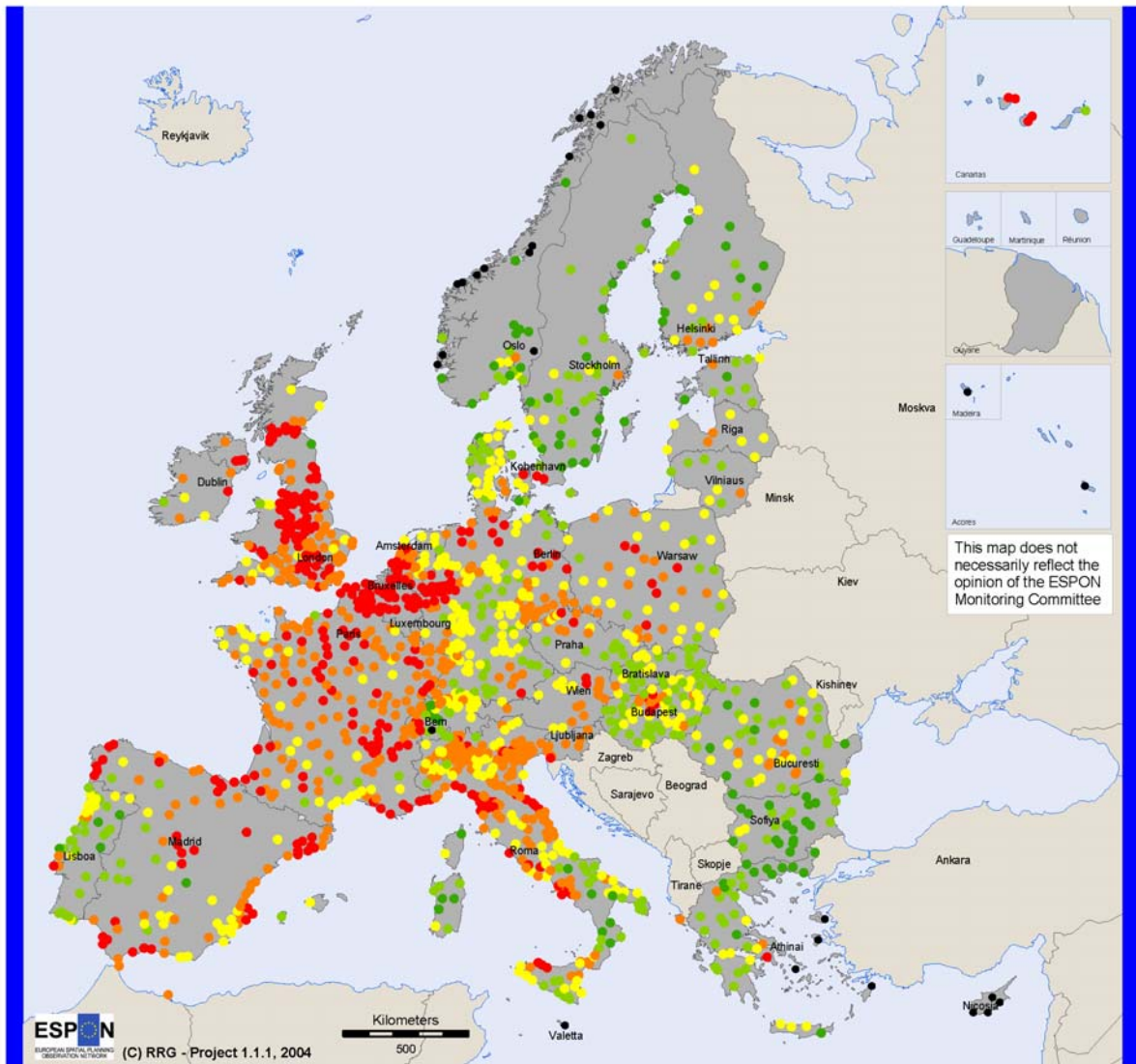
Together with the proportion of settlement areas on the total PUSH area this information can be interpreted as follows:

- If there is a high maximum concentration index and a high proportion of settlement areas on the total PUSH area, the settlement structure can be considered as *sprawl*.
- In contrast, if there is a small maximum concentration index the settlement structure can be considered as *rural*.
- If there is a medium to high maximum concentration index, and if the ratio of the areas of the greatest and second greatest settlement unit is below 0.5 (i.e. the size of the second greatest settlement unit is less than one half of the size of the greatest settlement unit, so the greatest one is dominating), the settlement structure can be considered as *monocentric*.
- If there is a medium to high maximum concentration index, and if the ratio of the areas of the greatest and second greatest settlement unit is greater than 0.5 (i.e. the size of the second greatest settlement unit is more than one half of the size of the greatest settlement unit, so that at least two centres can be identified within the PUSH), the settlement structure can be considered as *polycentric*.

7.4 Settlement Areas and Gini Coefficients



Figure 38 presents the Gini coefficients for the individual PUSHs. Most PUSHs in Norway and Sweden, but also in Estonia, Bulgaria, Greece, Portugal and southern Italy show relatively small coefficients, i.e. have a rather equal distribution of the size of the individual settlement units, which hints on a more rural, disperse or, in particular cases, polycentric settlement structure. On the other end of the spectrum, high Gini coefficients can be found in the Netherlands, Belgium, parts of Germany and France, northern Italy but also in parts of Spain rather indicating an uneven distribution of the size of the settlement areas and so hinting to monocentric settlement patterns or even sprawl.

Size of settlement areas within PUSHs: GINI coefficients



Geographical Base: Eurostat GISCO

GINI coefficients

- ... < 0.550
 - 0.550 - 0.675
 - 0.675 - 0.750
 - 0.750 - 0.825
 - 0.825 < ...
 - n.a.
-  polycentric, disperse, sparsely populated
 monocentric, sprawl

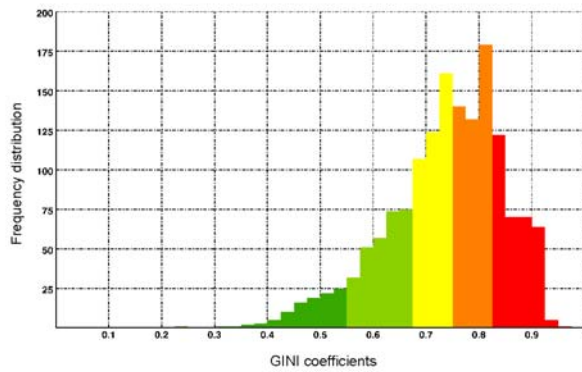


Figure 38. Settlement areas within PUSHs: Gini coefficients.

The frequency distribution of the Gini coefficients reveals that the majority of coefficients has values of more than .5, i.e. tend to indicate uneven settlement structures, whereas only few coefficients have a value below .5, i.e. tend to indicate a rather even settlement structure.

Figure 39 correlates the Gini coefficients with the proportion of the settlement area on the total PUSH (left), and with the number of settlement areas within a particular PUSH (right). Although there are slight tendencies that (a) the higher the Gini coefficients the higher the proportions are, and (b) the higher the Gini coefficients the greater the number of settlement areas is, both correlations are weak and do not provide unambiguous results.

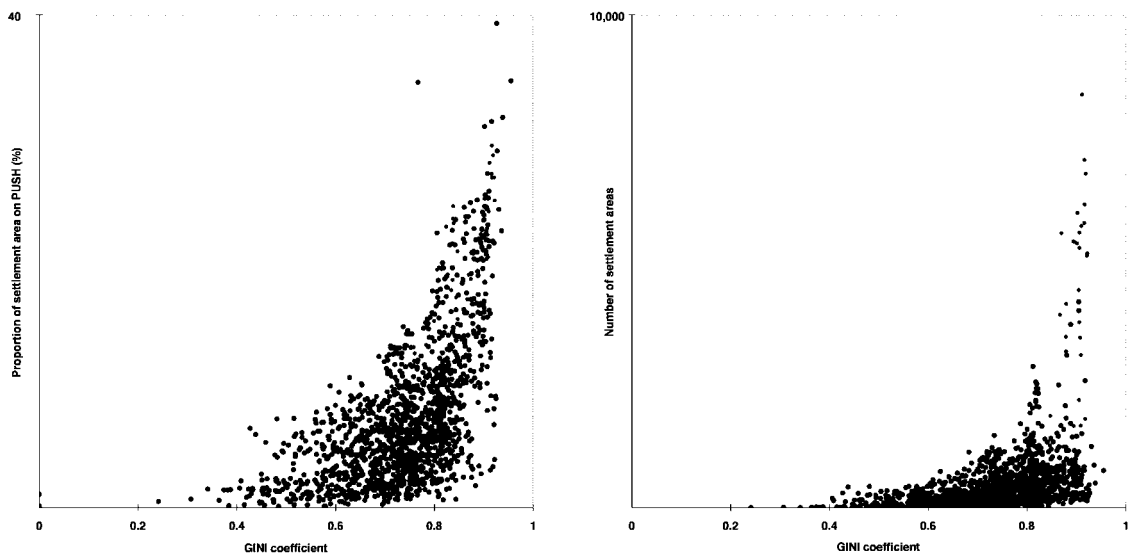


Figure 39. Gini coefficients: Correlated with the proportion of settlement area on total PUSH (left); correlated with the number of settlements (right).

Similar to Figure 39, Figure 40 correlates the Gini coefficients against the mean distance between the settlement units (left), and against the distance between the greatest and second greatest settlement area (right). As shown in the graphs, both correlations are even weaker than those illustrated in Figure 38, i.e. there is no relationship between the distances between settlement areas and the Gini coefficients.

Similar results can be observed when correlating the Gini coefficients against the proportion of settlement areas on the PUSHs (in %), as shown in Figure 41. Again, a tendency can be observed indicating that the higher the proportion of settlement areas on the PUSHs is, the higher are also the Gini coefficients (for example, Belgium Germany, or the Netherlands, see Figure 44), but there are also numerous exceptions from this tendency and even counter-tendencies in some countries (e.g. for Greece, Spain or Bulgaria; as shown in Figure 43, or Austria, Italy, Poland and the Czech Republic).

In contrast to this, another relationship yields clearer results which can also be detected in Figures 41 to 43: The greater the total settlement area within a PUSH (which is represented by the radii of the circles) is, the higher is also their proportion on the total PUSH area.

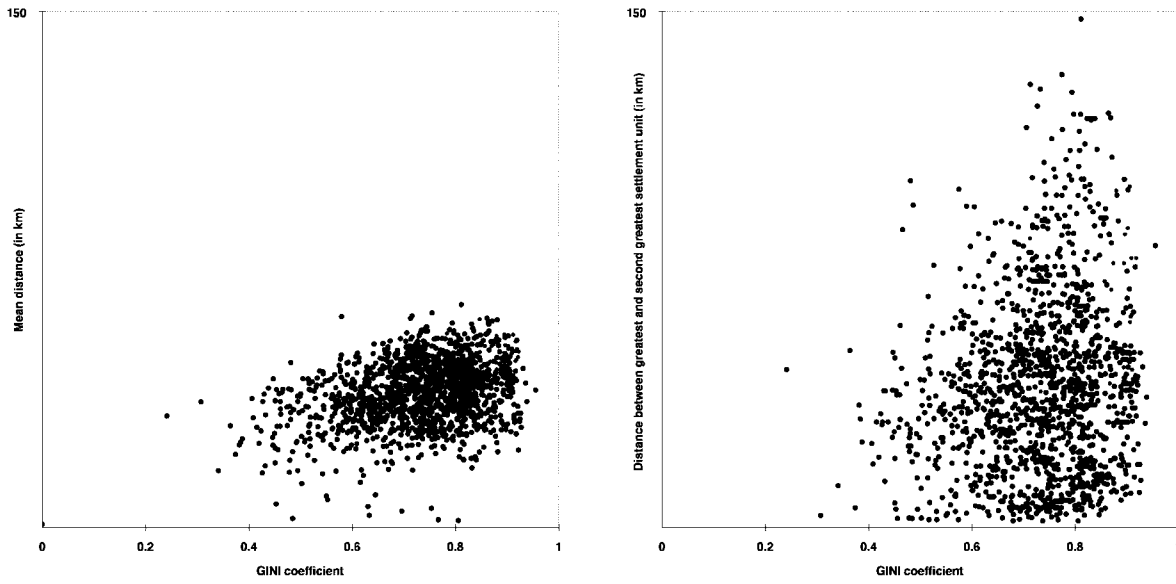


Figure 40. Gini coefficients: Correlated with the mean distances between settlement areas (left); correlated with the distance between the greatest and second greatest settlement area within a PUSH (right).

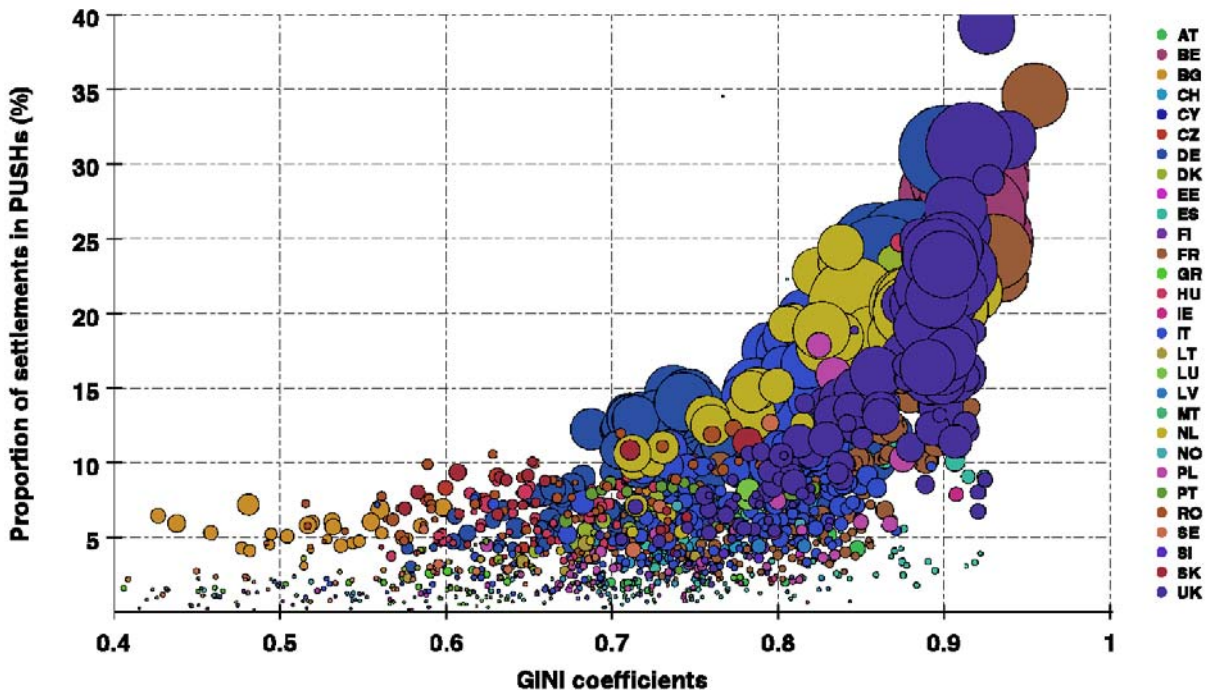


Figure 41. Gini coefficients and proportion of settlement area on total PUSH area.

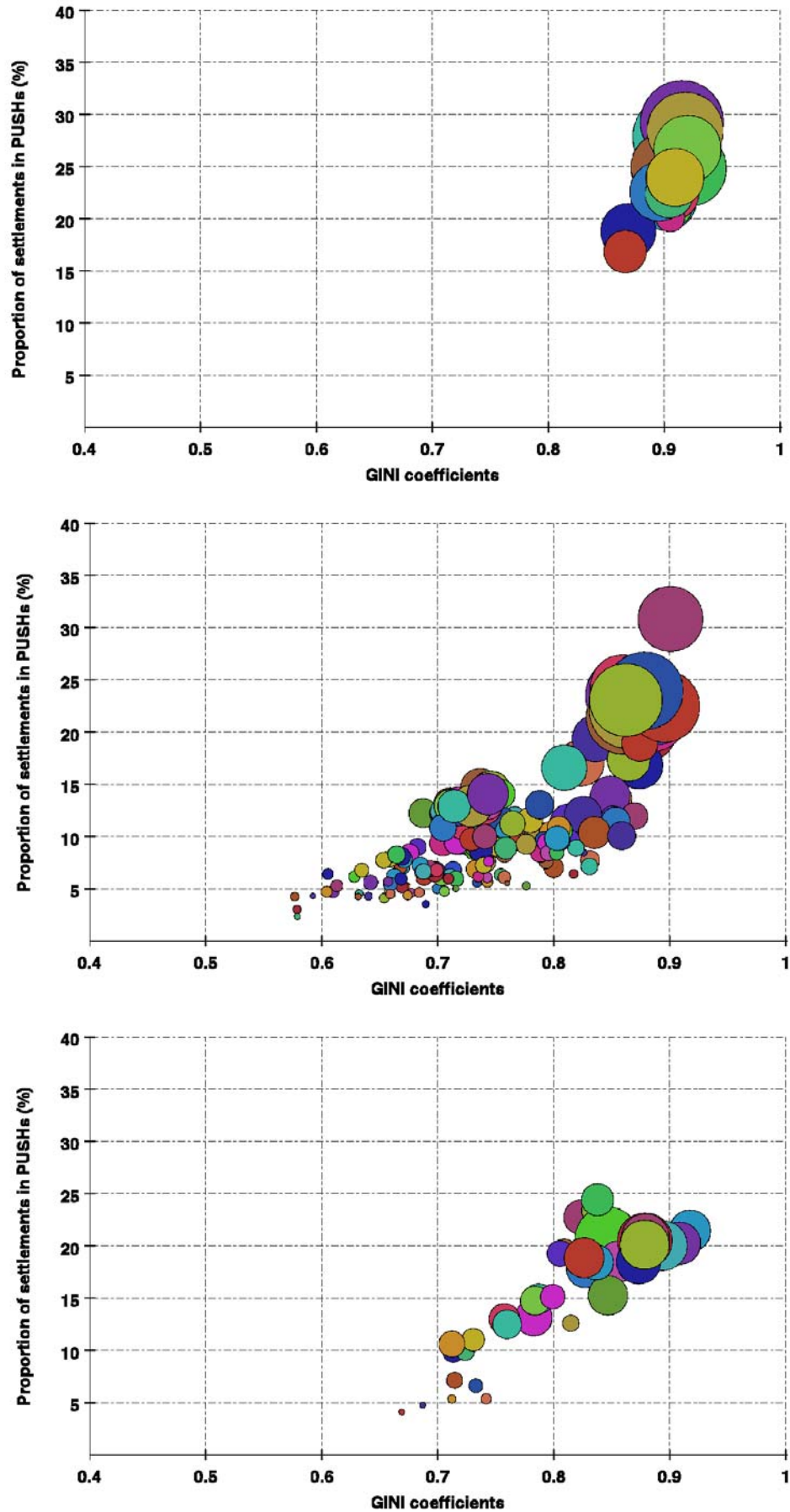


Figure 42. Gini coefficients and proportion of settlement area in PUSHs for Belgium (top), Germany (middle), the Netherlands (bottom).

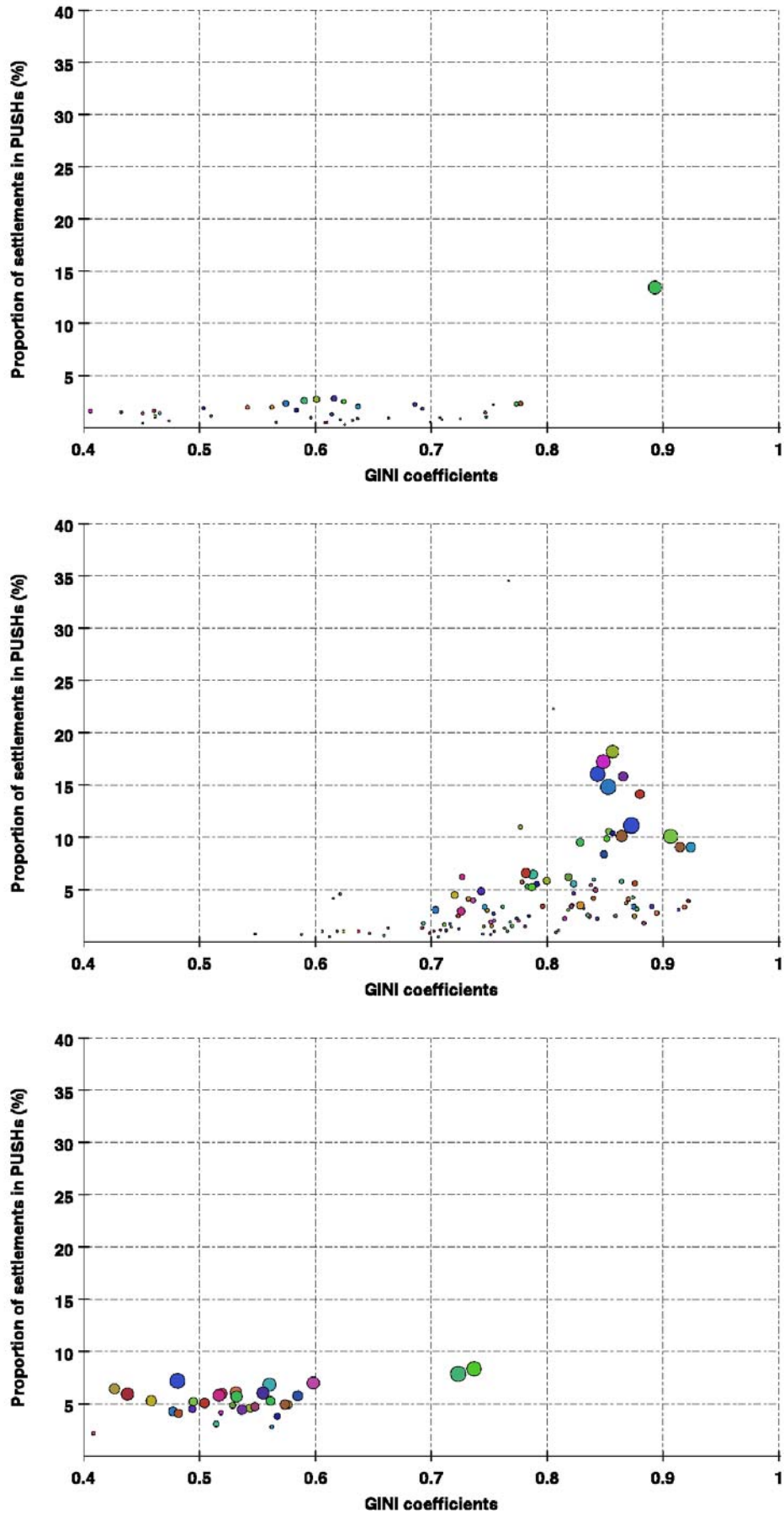


Figure 43. Gini coefficients and proportion of settlement area in PUSHs for Greece (top), Spain (middle), Bulgaria (bottom).

7.5 Analysis of the Area Concentration Indices

As already mentioned, the *area concentration index* can be considered as another indicator for analysing the monocentricity or polycentricity of the PUSH settlement structures. In contrast to the Gini coefficient this index does not only take account of the actual size of each settlement unit, but considers also their relative location (i.e. the distances between them). Unlike the Gini coefficient which provides one number per PUSH, there is one *area concentration index* for each settlement unit within a PUSH. As the actual range of this index depends on the number of settlement units available per PUSH, all indices were standardised at the PUSH average index so that the indices are comparable across all PUSHs. Moreover, it is possible to record the maximum and minimum standardised *area concentration indices* for each PUSH, the range of indices as well as their ratios, which can then be used for further analysis.

Figure 45 then shows the standardised maximum *area concentration indices* for each PUSH. As per definition the maximum standardised index is always greater than the average, all index values are above 100. Indices close to 100 indicate polycentric, disperse or sparsely populated (rural) settlement structures, i.e. a rather even distribution. The higher the index value, the more indications are given for a monocentric settlement structure or even for sprawl.

Highest index values can be found in entire Belgium, in the Rhine-Ruhr-Area, around Hamburg, Berlin and Munich in Germany, around Paris and Lyon in France, in northern Italy, around London, Birmingham, Liverpool and Manchester in the UK, and to some degree in areas in Poland and Spain. These areas can either be considered as monocentric or as sprawl.

In contrast, lowest index values close to 100 can be found in the Nordic countries, in parts of Eastern Europe (Hungary, Romania, Bulgaria or Greece), southern Italy and Spain. Here it can be assumed that the settlement structure tends to be rather rural, disperse, or polycentric.

Figure 44 demonstrates that although there is a relationship between both, the Gini coefficient and the *area concentration index* are not measuring exactly the same phenomena. There is an obvious tendency that the greater the Gini coefficient the higher the area concentration index, but there are also significant exceptions.

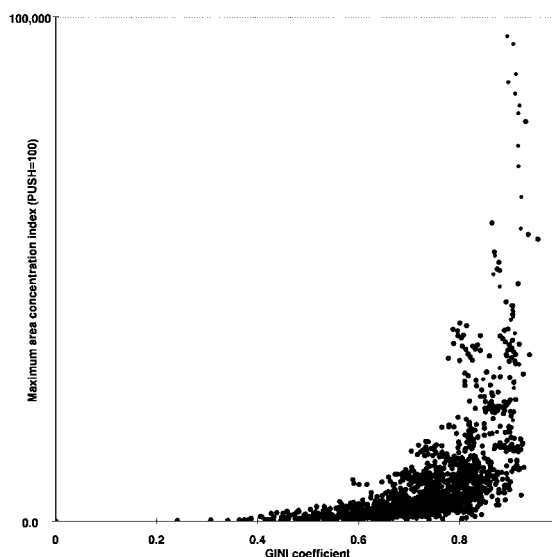
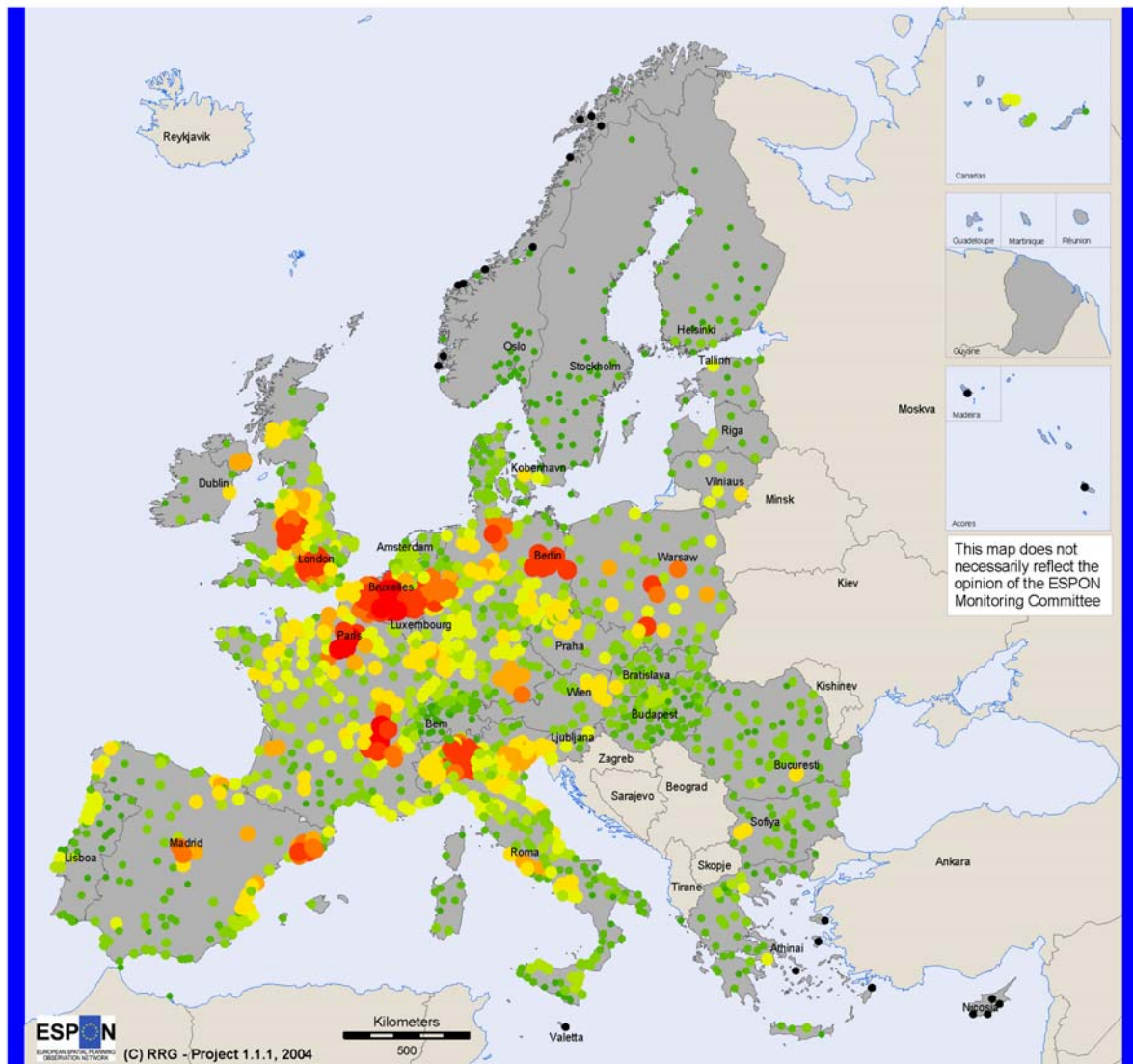


Figure 44. Relationship between the Gini coefficient and the area concentration index.

Maximum area concentration index (PUSH=100)



Geographical Base: Eurostat GISCO

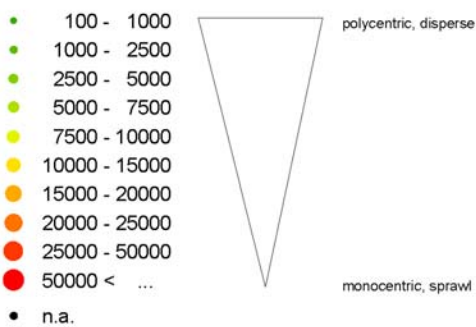


Figure 45. Maximum area concentration index (PUSH=100).

According to this figure high Gini coefficients cannot directly be considered as monocentric or even as sprawl, as at the same time all types of *area concentration indices* are possible.

But nevertheless, it becomes obvious that taking the *area concentration index* as the sole indicator for polycentricity/monocentricity one can hardly differentiate at both ends of the spectrum whether the settlement structure is rather monocentric or sprawl (at the one end of the spectrum), or whether it is polycentric, disperse or even rural (at the other end of the spectrum). Therefore, two other indicators have been added to the analysis to determine the degree of polycentricity of PUSHs, namely the proportion of the total settlement area on the overall PUSH area (to differentiate between monocentric and sprawl and between rural and non-rural), and the ratio between the size of the second greatest and the greatest settlement area (to differentiate between monocentric and polycentric), as explained further below.

7.6 Assessment of the Degree of Polycentricity

Altogether, three types of indicators have been combined to assess the degree of polycentricity: the standardised maximum *area concentration index*, the proportion of the settlement area on the total PUSH area, and the ratio between the size of the second greatest and the greatest settlement area. If all three of them were sorted, the three graphs shown in Figure 46 are obtained.

Whereas there is an even distribution of the ratio of the area sizes of the second greatest and greatest settlement unit (all values between zero and 1 can be observed) (Figure 46, right), there are rather uneven distributions of the maximum standardised *area concentration index* (Figure 46, middle) and the proportion of settlement areas (Figure 46, left), both with strong bias towards lower indicator values.

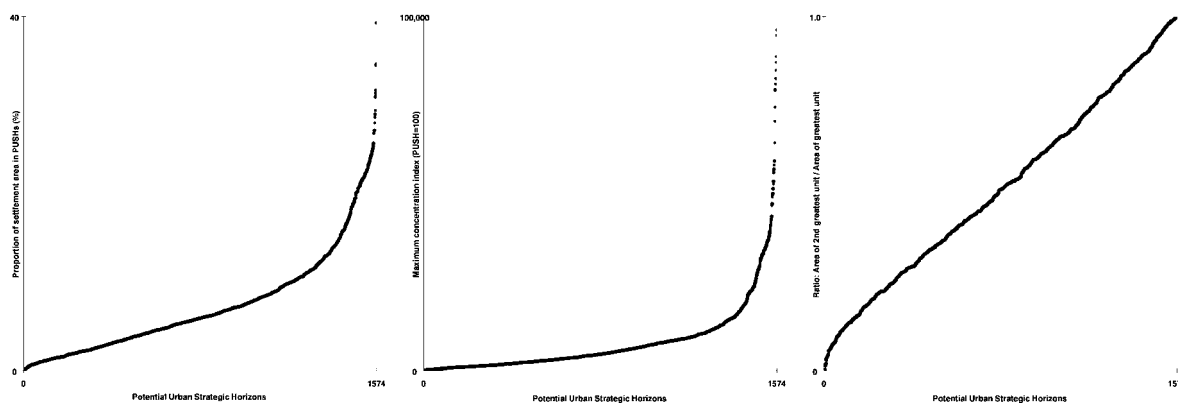


Figure 46. Indicator distributions: proportion of settlement areas on total PUSH area (left), maximum area concentration index (middle); ratio size of the second greatest / greatest settlement unit.

Note: 24 PUSHs have been excluded from this type of analysis as no settlement areas for them were included in the CORINE and PELCOM layer. Thus, the graphs show 1595-21 = 1574 PUSHs.

Using this indicator composition, the four types of settlement structures distinguished can be operationalised as follows:

Sprawl Maximum standardised *area concentration index* > 45,000 and a

	proportion of settlement area > 20 %
<i>Sparsely populated, rural</i>	Maximum standardised <i>area concentration index</i> <500
<i>Monocentric</i>	Maximum standardised <i>area concentration index</i> >500 and < 45,000 and a ratio area second greatest/greatest unit < 0.5
<i>Polycentric</i>	Maximum standardised <i>area concentration index</i> >500 and < 45,000 and a ratio area second greatest/greatest unit > 0.5

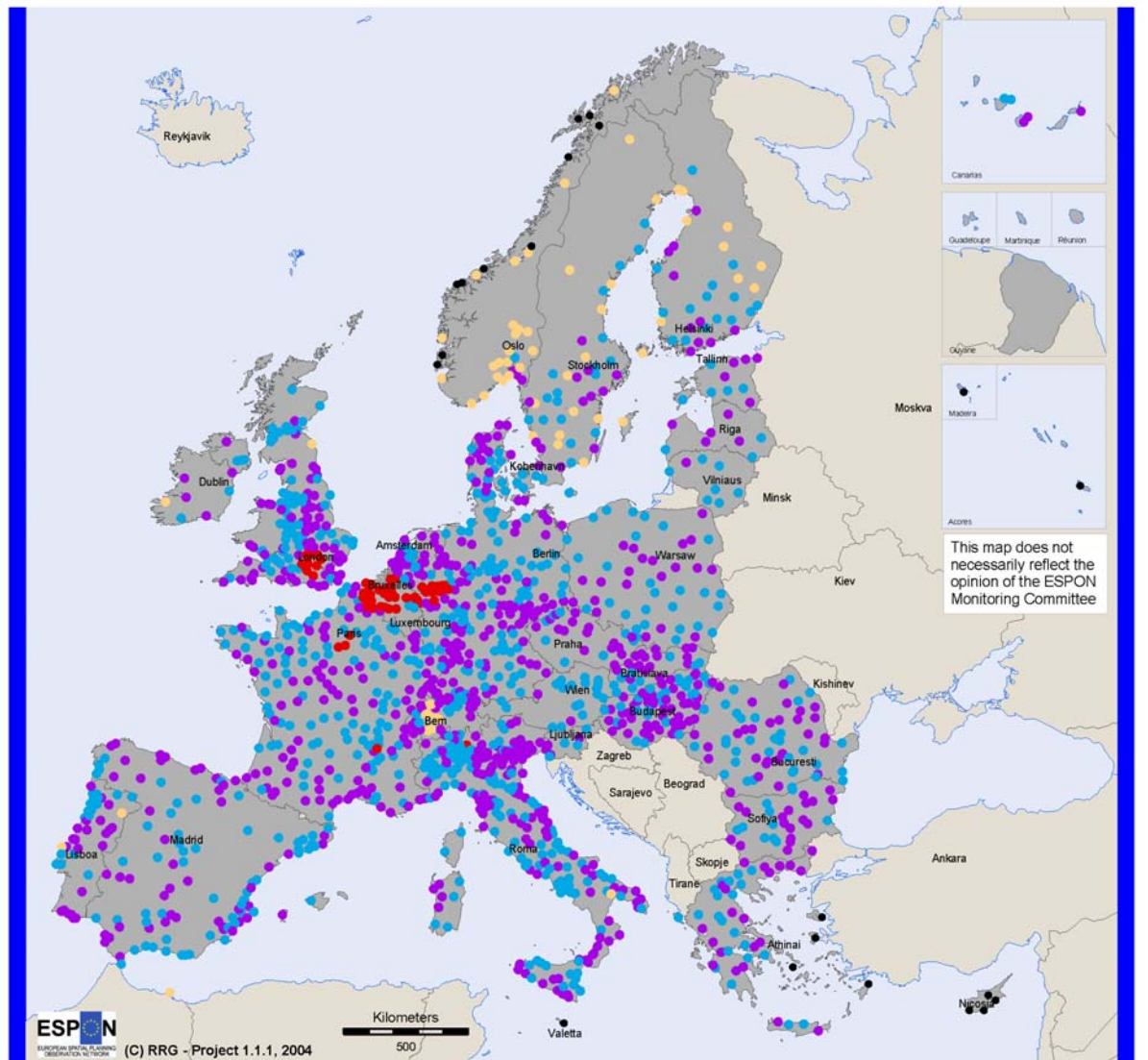
The results of this assignment are shown in Figure 47. There are 58 PUSHs assigned to ‘sprawl’ (located in Belgium, the Rhine-Ruhr area in Germany, around Paris and Lyon in France, as well as London), and 61 PUSHs are considered sparsely populated (rural) (located in the Nordic countries, Switzerland, and some places in Ireland, the UK, and southern Italy). 716 PUSHs tend to have a monocentric settlement structure and finally 739 PUSHs are polycentric. The latter two categories are more or less evenly scattered across Europe.

Figure 48 presents an alternative version of this assignment, where the ‘rural’ category has been removed and assimilated into the monocentric and polycentric categories (by removing the lower threshold of 500 of the maximum standardised *area concentration index* for both monocentric and polycentric categories). Most of the ‘rural’ PUSHs in the Nordic countries and in Switzerland have been assimilated to monocentric PUSHs, but some of them and all former ‘rural’ PUSHs in Ireland, the UK, Portugal and Italy have now been assigned as polycentric. As a result, now 58 PUSHs are assigned to sprawl (nothing changed compared to Figure 13), but 740 are considered monocentric and 776 polycentric (compared to 716 and 739, respectively).

Sample maps of PUSHs representing sprawl (e.g. Brussels), monocentric settlement structures (e.g. Hamburg), polycentric settlement structures (e.g. Rotterdam) and rural settlement structures (e.g. Gjovik) are provided in Figure 49 that overlays the *Potential Urban Strategic Horizons* with the relevant settlement areas. The locations of the FUA centroids are also shown in the maps as small black dots.

When comparing the four sample maps it is obvious that in case of the Brussels PUSH there is comparable little space left between the settlements; although Brussels itself shows the greatest proportions of continuous settlements, there are other cities close by (such as Antwerp) which altogether contribute to urban sprawl. In the case of the Hamburg PUSH it becomes clear that this is a rather monocentric one dominated by Hamburg; the settlements of the cities of Kiel and Lübeck (the next greatest cities in the Hamburg PUSH) are significantly smaller than Hamburg. In contrast, the Rotterdam PUSH must be considered polycentric, comprising several equally-sized continuous settlement areas (Rotterdam, the Hague, Amsterdam, Utrecht etc.). Finally, the Gjovik PUSH represents sparsely populated areas with only few small settlement areas.

Classification of PUSHs according to their settlement structure

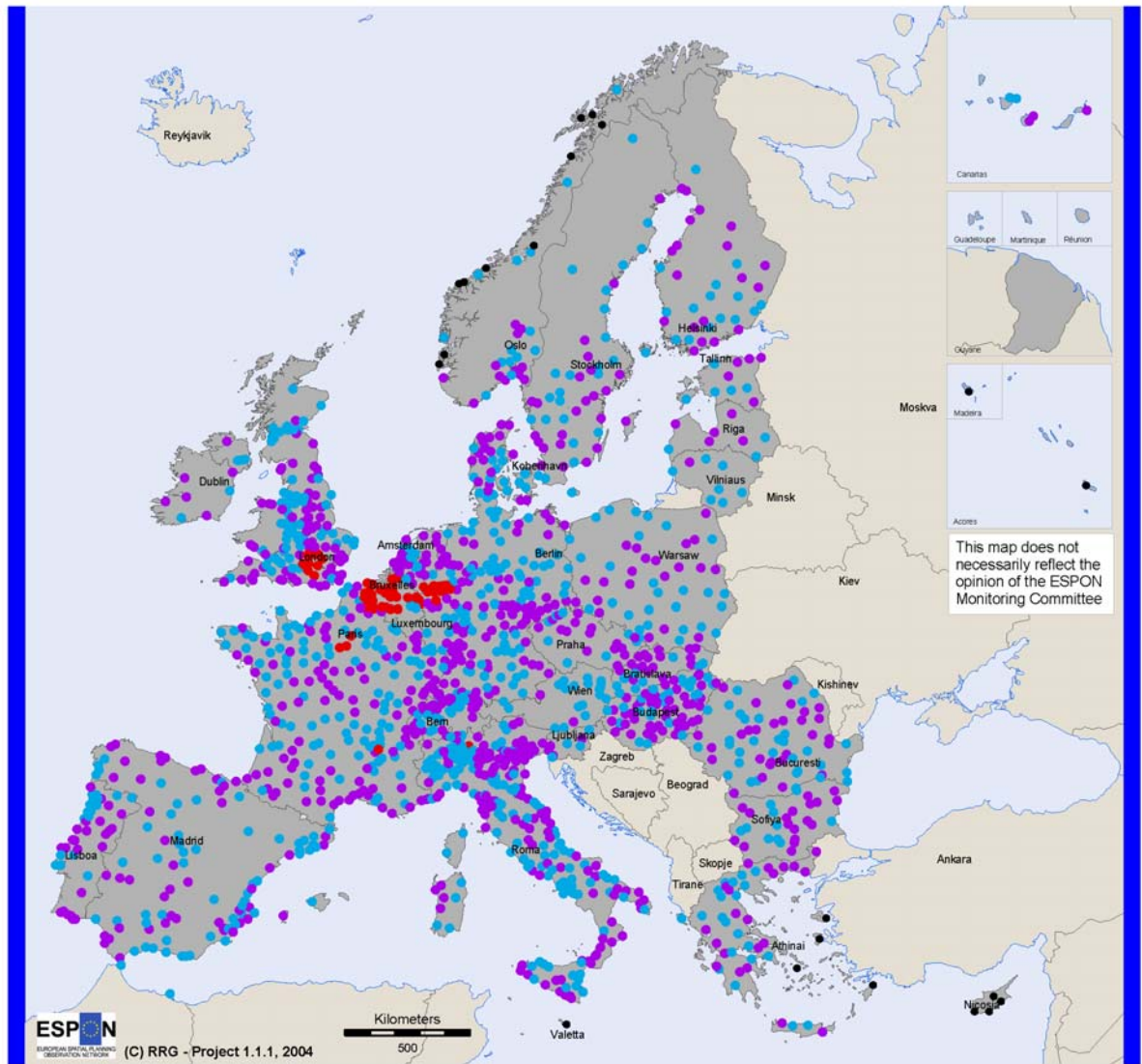


Geographical Base: Eurostat GISCO

- Sprawl
- Monocentric
- Polycentric
- Sparsely populated
- n.a.

Figure 47. Classification of PUSHs according to their settlement structures (4 classes).

Classification of PUSHs according to their settlement structure

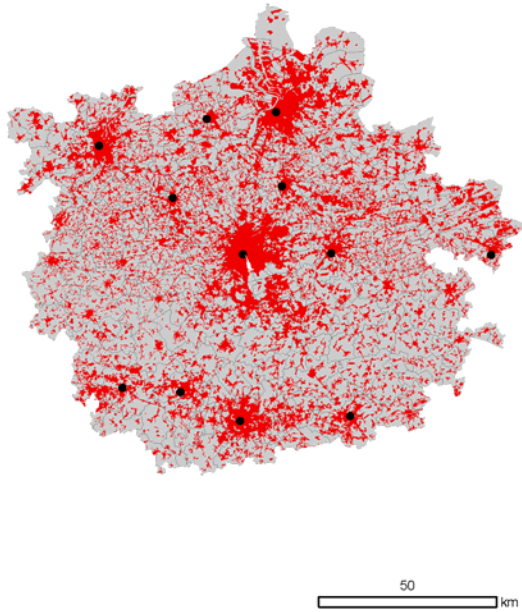


Geographical Base: Eurostat GISCO

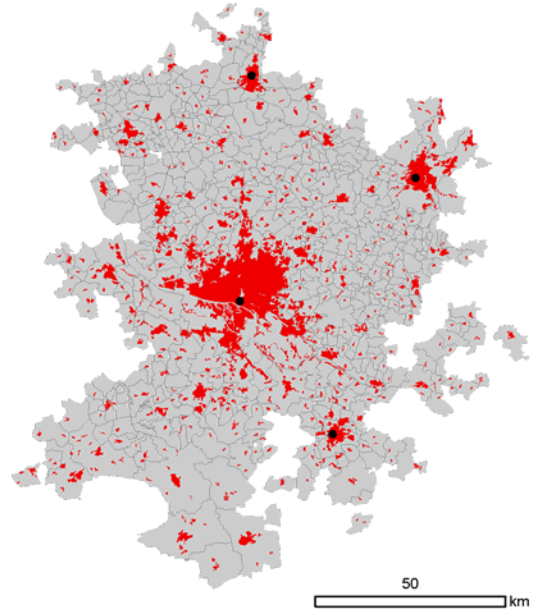
- Sprawl
- Monocentric
- Polycentric
- n.a.

Figure 48. Classification of PUSHs according to their settlement structures (3 classes).

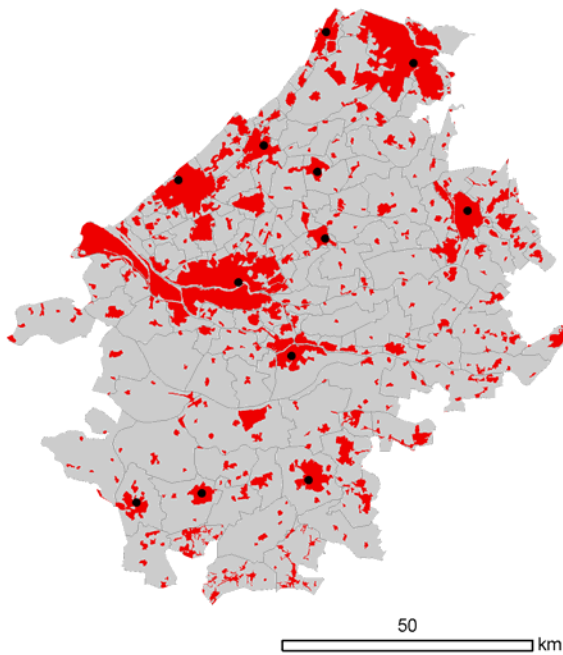
Sprawl: The Brussels PUSH



Monocentric: The Hamburg PUSH



Polycentric: The Rotterdam PUSH



Sparsely populated: The Gjovik PUSH

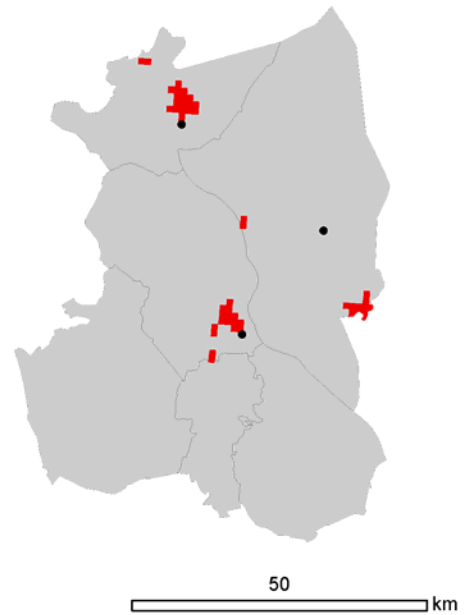


Figure 49. Sample maps for different types of settlement structures: Sprawl – Brussels (top left); monocentricity – Hamburg (top right); polycentricity – Rotterdam (bottom left); rural – Gjøvik (bottom right).

8. Approaches to Polycentricity

8.1 Different Indicators to Measure Polycentricity

Although it was not the core objective of this study to determine the degree of polycentricity of a PUSH (which is one of the main overall objectives of ESPON Project 1.1.1), several indicators are calculated in the context of this study that potentially can also be used to measure the degree of polycentricity at different spatial levels and from different perspectives. Meso-scale indicators try to compare the level of polycentricity of the PUSHs as such with each other, whereas micro-scale indicators try to assess the level of polycentricity within a *Potential Urban Strategic Horizon* based on an analysis of their settlement structures. As the perspectives change, of course, the outcomes differ.

The calculation of meso-scale and micro-scale indicators tries to reflect the hypothesis developed in the ESPON Project 1.1.1's third interim report, whereof "... polycentricity can occur at different territorial scales, from the regional to the national and the European [level]" (Nordregio 2003, 46).

However, as discussed further below in more detail, all indicators calculated here are restricted to assess morphological aspects of polycentricity rather than relational aspects.

Meso-scale indicators

At the meso scale, the *number of PUSHs assigned to each municipality* can be seen as a measure of polycentricity from the point of view of the municipalities. This indicator counts the number of PUSHs which overlap the municipality territory; in other words, the higher this number, the more FUA centres can be reached within 45 minutes from a certain municipality.

According to this indicator (see Figure 30), the most polycentric regions in Europe can be found in Belgium and the Netherlands, in western Germany, northern Switzerland and northern Italy. In contrast, the most monocentric or sparsely populated/rural areas can be found in Nordic regions, Poland, Romania and Spain.

From the point of view of the *Potential Urban Strategic Horizon* itself, the *number of other FUA centroids located within the PUSH* can also be interpreted as a measure for polycentricity. The higher this number is, so the closer the different FUA centres to each other are, the more they form polycentric areas. The outcome of this indicator is similar to the previous one (Figure 27). Highest numbers can again be found in Belgium and the Netherlands, in western Germany, northern Switzerland and northern Italy, plus areas in the UK, Hungary, Portugal and southern Italy. *Potential Urban Strategic Horizons* with no other FUA centroid located inside can be considered as sparsely populated/rural.

The drawback of both indicators is that they were based on counting principles, and they do not take into account the functional importance of the different PUSHs (or, in other words, each PUSH is treated equally and no distinction was made of the PUSH concerned has a population of 1 million inhabitants or 100,000 inhabitants only). Moreover, the distance to the FUA centres and the relative position to each other, respectively, is also treated in a simplified way in these two indicators: the centres were counted if they were located within 45 minutes travel time, otherwise not. These drawbacks were partly overcome by ranking the PUSH

assignments to the municipalities into different hierarchical levels (first order assignment, second order assignment etc.).

Micro-scale indicators

Micro-scale indicators try to assess the level of polycentricity within each *Potential Urban Strategic Horizon* individually by analysing their settlement structure.

The *Gini coefficient applied* to settlement areas evaluates whether the size of the different settlement units within a PUSH is evenly distributed (no spatial concentration, polycentric or disperse, index value of zero), or whether there are few settlement areas dominating over the others (extreme concentration, monocentric or sprawl, index value of one). According to this indicator (see Figure 39), most PUSHs in France, Belgium, the UK, and many parts of Italy can be considered rather monocentric or even sprawl, whereas most PUSHs in Germany, the Nordic countries and the new EU member states can be characterised as polycentric, disperse or even rural. However, as the Gini coefficient only takes account of the size of the individual settlement units but does not consider the distances between them or their spatial configuration, one can hardly distinguish whether a Gini index close to one hints on a either monocentric structure or even at sprawl, or whether a Gini index close to zero hints on a either polycentric structure, disperse structure or even rural structure.

Therefore, the standardised maximum *area concentration index* was introduced that took not only the size of the individual settlement units but also their relative position into account. Low index values hint on polycentric or disperse structures, whereas high index values hint on monocentric structures or even sprawl. According to Figure 45, which displays the results of this indicator, *Potential Urban Strategic Horizons* characterised as monocentric or as sprawl can be found in Belgium, western Germany, around Hamburg and Berlin, London, Paris and Lyon, Milano, Madrid, Barcelona and parts of Poland. Although this indicator overcomes some of the problems associated with the Gini coefficient, it is still somewhat difficult to distinguish between monocentricity and sprawl on the one hand and polycentricity and disperse/rural structures on the other hand.

Eventually, a *combined approach* was applied using the *area concentration index*, the proportion of the settlement area on the total PUSH area, and the ratio between the size of the second greatest and the greatest settlement area in order to be able to distinguish between monocentricity and sprawl on the one end of the spectrum and between polycentricity and disperse/rural structures on the other end. PUSHs characterised as sprawl can clearly spatially be separated from the others, as for PUSHs characterised as sparsely populated/rural. In contrast, there is no clear pattern of the spatial distribution of polycentric or monocentric PUSHs through Europe (see Figure 47).

As the micro-scale indicators have potentials to overcome the drawbacks of the meso-scale indicators, their accuracy depend to a high degree on the quality of the input data used, as discussed in the following chapter. Taking all indicators calculated together, they provide a broad picture of polycentricity in Europe, each highlighting different aspects. Depending on the type of analysis, or perspective chosen, meso-scale or micro-scale indicators can be assessed. Of course, partly they yield similar results, but partly they are in contradiction.

So, *Potential Urban Strategic Horizons* characterised as polycentric at the micro-scale need not necessarily be characterised as polycentric at the meso or even European scale, as

different aspects at different scales influence this characterisation. As the ESPON Project 1.1.1's third interim report already pointed out (Nordregio 2003, 3), polycentricity has two complementary aspects, a morphological one (distribution of cities and urban areas, relative position to each other, numbers etc.), and a relational one (information or goods or person flows, co-operations, institutional networking etc.), which lead to different results when assessing different spatial levels. For example, a PUSH characterised as monocentric at the micro-scale (one settlement unit is dominating all other as revealed through the analysis of the settlement structure) might be characterised as polycentric at the national or European scale if the PUSH is well embedded in international trade flows or deeply involved in institutional networking with other PUSHs. But also other examples can be found: PUSHs might be characterised as polycentric at the micro-scale which do not have any or only poor connections and functional linkages in a specialised economy to other PUSHs.

However, all indicators of polycentricity calculated here are, by the inherent nature of the approach chosen, restricted to analyse the morphological aspects of polycentricity, and do not look into the relational aspects. They analyse the number and spatial distribution of cities and settlement areas, their size and relative position and distance in space and time between each other, but do not look into the functions they offer, the economic or institutional linkages they have or networks they are embedded in.

Nevertheless, in particular the micro-scale analysis offers potentials to assess how functional linkages (if they exist) or specialised economies or any other relational aspect is spatially organised within the territory of the *Potential Urban Strategic Horizon*, i.e. they contribute to answer whether or not these functions are spatially concentrated in one or several settlement units. As this is quite an interesting and important aspect, the last chapter is dedicated to give some critical remarks on the approach chosen in order to address specific problems or drawbacks associated with the approach in order to improve the methodology for further research.

9.2 Some Critical Remarks

As shown in the various figures and graphs, the results of this micro-scale polycentricity analysis are not that clear and not as promising as one wishes. The reasons for this are manifold, with respect to the input layer used, the modelling technique applied and with respect to principle considerations. Some critical remarks on the methodology should, thus, be given here.

(1) Input layer: The land cover layers used

The spatial resolution and accuracy of both the CORINE and PELCOM land use layer cause some of the distortions (particularly for Norway, Sweden and Switzerland cause by the PELCOM dataset). Firstly, both layers do not include small settlement units that fall under a certain accuracy threshold of the original satellite and aerial images used to derive these layers. Thus, there is a tendency of underestimation of the total settlement area within a particular PUSH. This holds particular true for some linear (transport) infrastructure areas that are missing. Secondly, in relation to this, all boundaries of the settlement units have been approximated to grid cells. Third, some of the settlement boundaries in both layers seem counter-intuitive to the human perception, for example when the Seine River subdivides Paris into several individual settlement units, or if small agricultural or forest areas is subdividing continuous settlement units into two parts. Such 'artificial' boundaries then cause distortions when counting the number of settlement units and assessing their relative position within the

PUSHs. Therefore, the sole number of settlement units within PUSHs seems not an appropriate measure, but this clearly has also consequences for the Gini coefficient and the *area concentration index*.

(2) *Modelling techniques*

Usual statistical measures for describing indicator distributions such as the Gini coefficient are lacking explicit *spatial* components. Although they provide good pictures of the general distribution (equal distribution, extreme polarisation), but fail to provide statements on the spatial configuration. The *area concentration index* tries to compensate for that to some degree as it not only takes into account the size of the settlement units but also the distances between all of them, but it remains nevertheless difficult to distinguish whether a distribution with two or more settlement units with high concentration indices can be considered monocentric, polycentric or even sprawl. This is not a problem of statistical theory as such, but becomes particular relevant in relation to the problems with the input layers as described under bullet 1.

Again, taking Paris as an example, as it's settlement area in the CORINE land cover layer is subdivided into several polygons (Figure 50), than the maximum standardised *area concentration index* of each of these units is significant lower than the index as if there would only be one overall polygon representing Paris. In the same sense this holds also true for the calculation of the Gini coefficient. Furthermore, the average distances between all individual settlement units for the Paris PUSH is also affected by this.

(3) *Principle considerations*

Even when the quality and accuracy of the input layers were improved, and so the problems with the modelling techniques solved, some principle considerations would remain:

As long as the *Potential Urban Strategic Horizon* overlap each other in many areas (which is the basic assumption in this study) and so the same settlement area belong to several PUSHs, one has to expect that the PUSHs comprise several small but also several great settlement units (for example, the centroid area of one of the neighbouring PUSHs), which at the end lead to an overrepresentation of polycentric PUSHs. Sometimes the settlement unit of the origin PUSH considered is smaller than one or several other settlement units within the PUSH which represent other FUA centroids. In contrast, in other area such as Belgium or the Rhine-Ruhr-Area in Germany this overlapping helps to identify sprawl.

A good example to demonstrate this problem is the *Potential Urban Strategic Horizon* of Münster, located some 50 km airline-distance northeast of Dortmund in Northrhine-Westfalia (Figure 51). The city of Münster is the central agglomeration for the area called 'Münsterland' which is basically a rural area dominated by agriculture. However, as illustrated by Figure 51, the PUSH of Münster not only comprises the rural areas but also significant parts of the Ruhr-Area including the cities of Essen, Bochum, Dortmund and Hamm, all of them having greater settlement units as Münster itself. So, from the point of view of the 'Münsterland', the city of Münster would be considered monocentric, yielding strong functional linkages to the surrounding smaller municipalities; however, looking at the overall PUSH, the Münster PUSH must be seen as polycentric as many smaller municipalities located between the city of Münster and the Ruhr-Area do also have strong relationships to Dortmund, Bochum or Essen.

Moreover, even in areas where the different *Potential Urban Strategic Horizons* do not overlap each other (such as in the Nordic countries) it turned out to be difficult to differentiate between monocentric and polycentric PUSHs. Usually, even in these areas the PUSHs overlap several municipalities, each of them having at least one settlement unit. If one of these units shows a significantly greater size (and so a higher *area concentration index*) than the others it seems clear to have a monocentric PUSH, but what if all units have a similar *area concentration index*, which moreover might be, compared to the rest of Europe, rather small (for example, see Gjovik in Figure 49 bottom right)? This in fact is the reason why Figure 47 introduced the ‘rural’ category.

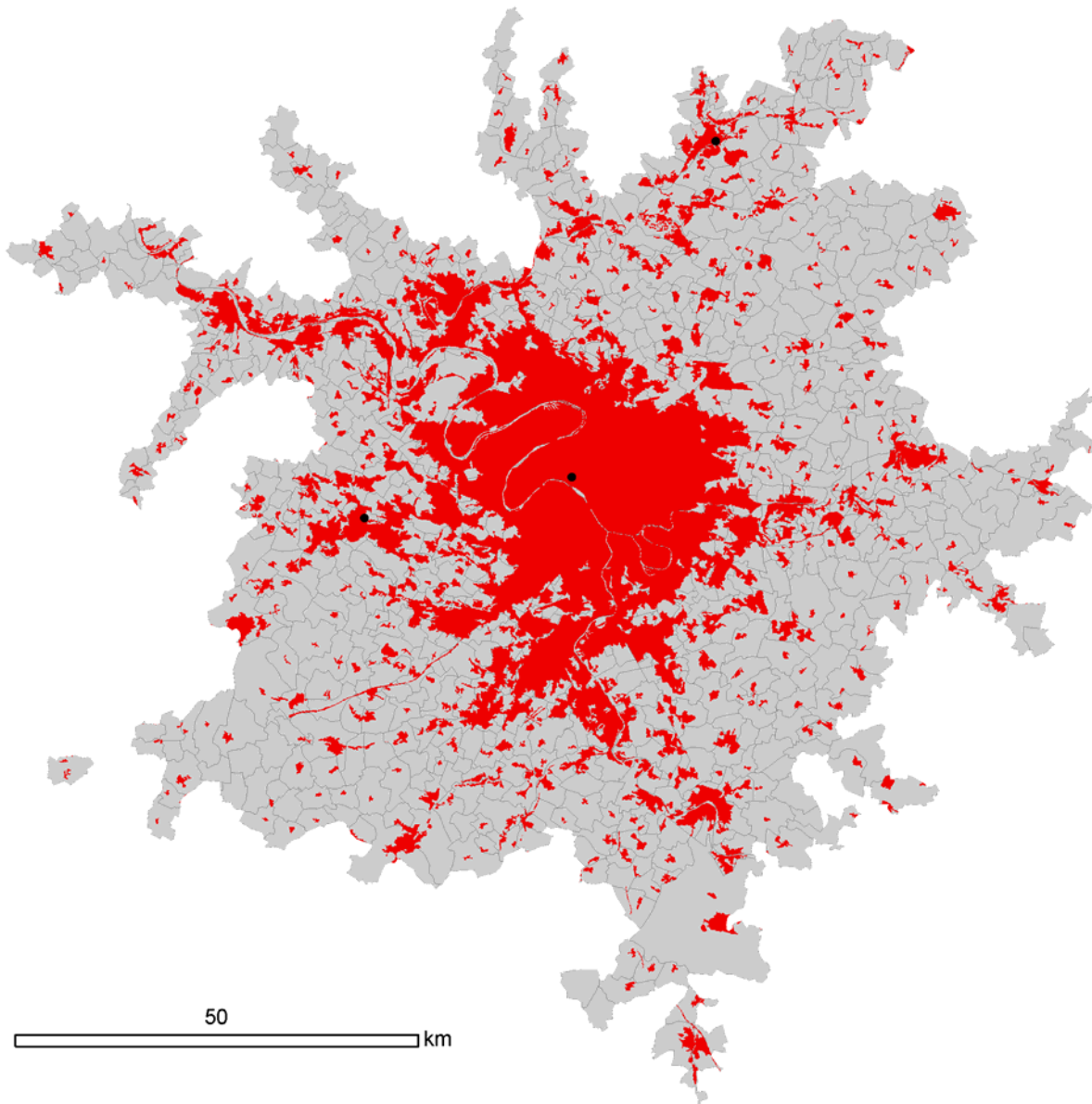


Figure 50. The Potential Urban Strategic Horizon of Paris.

Taking all these drawbacks together the explanatory power of the settlement structure assignment must unfortunately be seen as rather weak. As regard the ‘sprawl’ category the results can be considered reliable, but there are many fundamental problems in differentiating monocentric from polycentric PUSHs.

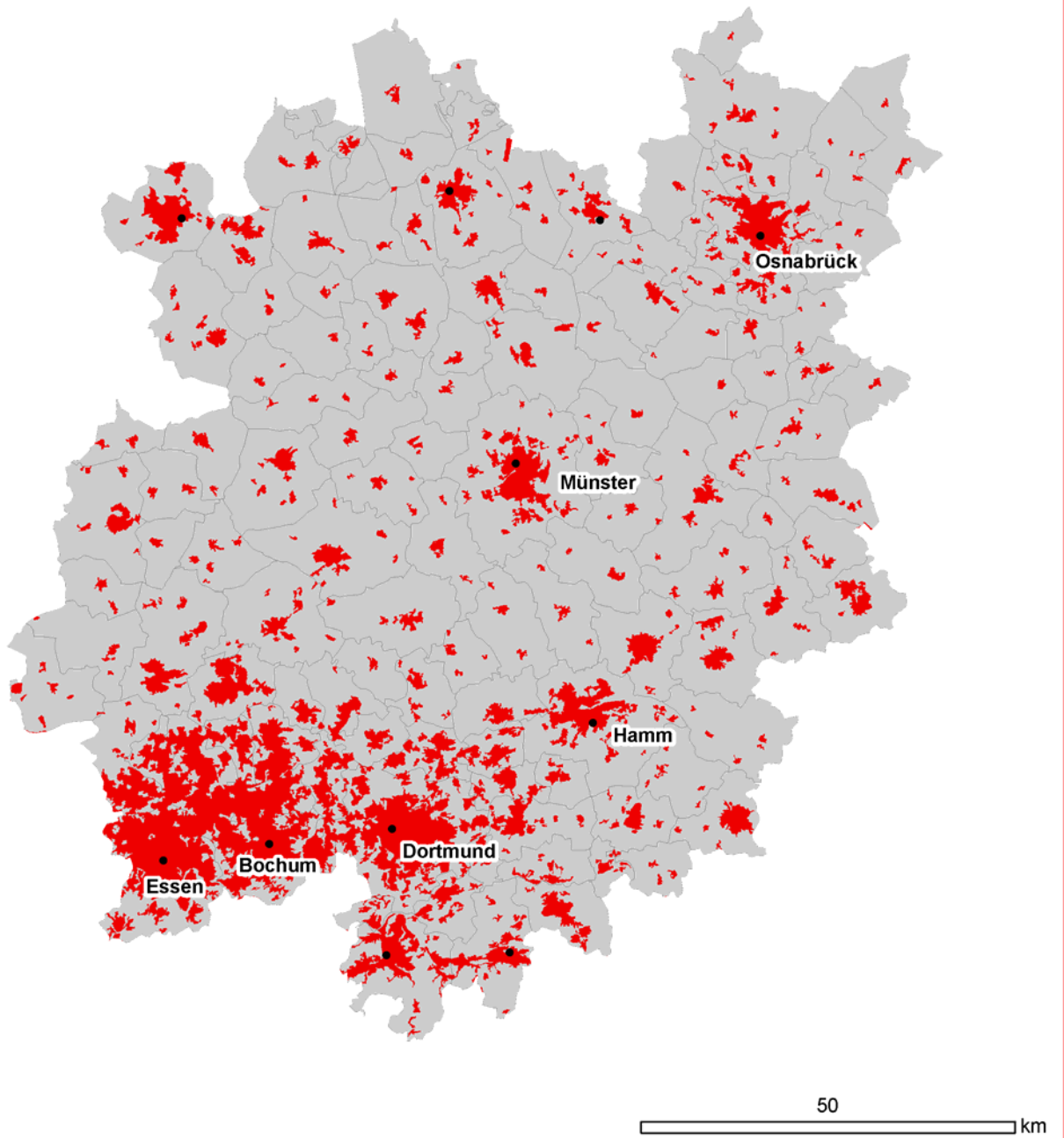


Figure 51. The Potential Urban Strategic Horizon of Münster.

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Annex

Annex 1. The GIS Database Developed

During this study several GIS layers and tables were developed to store the outcomes of the calculation and analysis results. The following sections will introduce and briefly describe this database.

Isochrones layers

For each FUA centroid there is one individual polygon layer representing the 45 min isochrones calculated. As there are 1,595 FUAs considered, there are also 1,595 isochrones layers. The names of these layers are as follows

ISO<no>

where <no> represents an unique sequential integer identification number for each FUA centroid, ranging from 1 to 1595. As these layers are already overlaid with the municipality layer, they contain several polygons each, and they also contain some attributes for identifying the municipalities concerned, as Table A1 shows.

Table A1. Important attributes of the isochrones layers.

Attribute	Description
AREA	Polygon area (in m ²)
FUAID	FUA identification number (1 – 1595)
CMRGCD97	SABE municipality code
CMFTTP	Type of polygon 'M' = Mainland
MUNINAME	Name of the municipalities

The FUA identification number (**FUAID**) can be used to link information from/to the FUA centroids point layer, or, as shown later, to the **PUSHINF** info table. Similarly, the SABE municipality code (**CMRGCD97**) can be used to link information from/to the municipality layer. The **CMFTTP** attribute describing the type of polygons has been used to remove those parts of the isochrones that extent into the sea or into other water bodies.

Municipality layer and list of municipalities

As already described in Chapter 4.3 there is a polygon layer representing municipality boundaries for the whole of the study area (EU27+2) called **ESPMUNIS**. This layer contains all NUTS 5 entities within the study area. However, sometimes there are several polygons representing one municipality (for example, in the case of islands), and there are also cases where the municipality boundaries extent into the sea or into other water bodies (in the Netherlands and in the Nordic countries). For the sake of completeness, this layer also contains special areas not belonging to any municipality (for example, military complexes). For many types of analysis it is, however, important to have only one record per NUTS 5 entity. Thus, in a first step a region feature class was build on top of the polygon feature class, where a region is a single entity comprising one or several base polygons representing same attribute values. In a second step, moreover, an info table giving a list of municipalities was

also constructed, where each record exactly corresponds to one municipality. This info table called **MUNICIP.LIST** was then used to store the outcomes of the calculations, in particular it stores the assignment of the municipalities to the PUSHs. Its main attributes are given in Table A2.

*Table A2. Important attributes of the info table **MUNICIP.LIST**.*

Attribute	Description
CMRGCD97	SABE municipality code
MUNINAME	Name of the municipality
TOTMUNAREA	Total municipality area (in m ²)
MAINLANDAREA	Mainland municipality area (in m ²)
SEEAREA	Municipality area extending into waters (in m ²)
NURGCDDL0	ISO country code
POPULATION90	Total municipality population in 1990/1991
POPULATION00	Total municipality population in 2000/2001
ISO45_10	Assignment to PUSHs
COUNT10	Total number of assignments
COUNT10_1	Number of assignments to PUSHs with less than 100,000 inhabitants
COUNT10_2	Number of assignments to PUSHs with > 100,000 and < 250,000 inhabitants
COUNT10_3	Number of assignments to PUSHs with > 250,000 and < 500,000 inhabitants
COUNT10_4	Number of assignments to PUSHs with > 500,000 and < 1 million inhabitants.
COUNT10_5	Number of assignments to PUSHs with more than 1 million inhabitants

Again, the SABE municipality code (**CMRGCD97**) can be used to link information from/to the municipality layer. **TOTMUNAREA** represents the full municipality area, summing up both the mainland parts of the municipalities and, if applicable, those parts of the municipalities that extend into water bodies. In contrast, the attributes **MAINLANDAREA** and **SEEAREA** represent the area of the mainland parts and water parts of the municipalities, respectively. **NURGCDDL0** represents the ISO country code. **POPULATION90** represents the total municipality population in 1990/1991 (but is unfortunately not available for all countries), whereas **POPULATION00** represents the total municipality population in 2000/2001. The most important attribute of this table in the context of this study is called **ISO45_10** that stores the assignments to the PUSHs. **ISO45** represents the 45-minute isochrones, whereas **_10** represents the 10 % threshold applied when approximating the isochrones to the municipalities. This attribute contains a list of all PUSH/FUA identifier for those PUSHs to which the municipality was assigned to (or, in other words, which overlap over the municipality territory), separated by comma and sorted in ascending order. For example, if a municipality was assigned to PUSHs 142, 148, 385, 1094 and 1097, this attribute has a string value as follows

,142,148,385,1094,1097,

If the municipality were only assigned to two PUSHs 142 and 148, the string would be

,142,148,

This means, the number of elements in the string corresponds to the number of assignments of the municipality to PUSHs. In order to have a clear selection processes during the analysis phase, there is not only a comma between the elements of the list, but also before the first and

after the last element. If a municipality is not assigned to any PUSH, than this attribute is empty.

The attribute **COUNT10** counts the total number of assignments for a municipality, and so corresponds to the number of elements in the strings in **ISO45_10**. **COUNT10_1**, **COUNT10_2**, **COUNT10_3**, **COUNT10_4** and **COUNT10_5** then differentiates this overall number by the number of assignments to the respective size classes of the PUSH.

FUA layer and list of PUSHs

Similarly to the municipality layer and the list of municipalities info table, there is also a point layer representing the location of the FUA centroids called FUAs as well as there is an info table called **PUSHINFOS** representing a list of all PUSHs and storing the analysis results.

Both the FUA layer and the info table contain 1,595 features, each feature representing one FUA and PUSH, respectively. The point layer only stores the **FUAID** (see Table A1) and the co-ordinates only, whereas the info table contains a comprehensive list of all relevant attributes, as shown in Table A3.

Again, the FUA identification number (**FUAID**) can be used to link information from/to the FUA centroids point layer. The attribute **PUSHAREA** represents the total PUSH area after approximation to the municipalities (using the 10% threshold), whereas **ISOAREA** represents the area of the underlying isochrones. **POPOLD** provides the population figures collected from various national sources, whereas **POPNEW** provides total PUSH population figures calculated as the sum of the NUTS 5 population numbers of all municipalities assigned to this PUSH. The population classification in **POPGROUP** then is based on **POPNEW**. The description of all other attributes should be self-explaining.

Table A3. Attributes of the info table PUSHINFOS.

Attributes	Description
NAME	FUA name
FUAID	FUA identification number (1 – 1595)
PUSHAREA	Total PUSH area (in km ²)
ISOAREA	Isochrones area (in km ²)
POPNEW	Total PUSH population as of 2000/2001
POPOLD	Total FUA population according to national statistics
POPGROUP	PUSH population class 1 = less than 100,000 inhabitants 2 = 100,000 to 250,000 inhabitants 3 = 250,000 to 500,000 inhabitants 4 = 500,000 to 1,000,000 inhabitants 5 = more than 1,000,000 inhabitants
NOCOUNTRIES	Number of countries concerned (1-4)
CENTOVER	Number of other FUA centroids located within particular PUSH
OVERLAYPROP	Proportion of PUSH area overlaid by other PUSHs
SETTLEAREA	Total settlement area (in km ²)
SETTLEANZ	Number of settlement units within the PUSH
SETAREAPRO	Proportion of settlement area on total PUSH area (in %)
MINAREA	Smallest settlement area in PUSH (in km ²)

Table A3. Attributes of the info table FUAINFOS (cont.).

Attributes	Description
SECMAXAREA	Area of the 2 nd greatest settlement area in PUSH (in km ²)
MAXAREA	Largest settlement area in PUSH (in km ²)
MEANAREA	Average settlement area in PUSH (in km ²)
STDAREA	Standard deviation of settlement areas in PUSH (in km ²)
GINI	Gini coefficient of settlement areas
MEANDIST	Average distance between all settlement areas within a PUSH (in km)
DIST1_2	Distance between the largest and 2 nd largest settlement unit (in km)
MAXCONST	Maximum standardised area concentration index (PUSH=100)
MAX2CONST	2nd highest standardised area concentration index (PUSH =100)
MINCONST	Minimum standardised area concentration index (PUSH =100)
MEANCONST	Average standardised area concentration index (PUSH =100)
RANGECONST	Range between maximum & minimum standardised area concentration index
RMAXMAX2	Difference between highest & 2 nd highest standardised area concentration index
RMAXMEAN	Difference between highest & average standardised area concentration index
RMAX2MEAN	Difference between 2 nd highest & average standardised area concentration index
RATIOMAXMAX2	Ratio between 2 nd highest and highest standardised area concentration index
RATIOMAXMEAN	Ratio between average and highest standardised area concentration index
RATIOMAXMIN	Ratio between minimum and highest standardised area concentration index
STRUCTURE	Settlement structure assignment 1 = Sprawl 2 = sparsely populated/rural 3 = monocentric 4 = polycentric
STRUCTURE2	Settlement structure assignment (alternative) 1 = Sprawl 3 = monocentric 4 = polycentric

Settlement areas

During the study phase the original settlement polygon layer derived from the CORINE and PELCOM layers has been overlaid with the municipality layer in order to assign municipality codes and other information to this layer. Afterwards this layer contains the following polygon feature class attributes (Table A4):

Table A4. Attributes of the settlement layer.

Attributes	Description
GRID_CODE	Settlement code 0 = No settlement area 1 = Settlement area
CMRGCD97	SABE municipality code
MUNINAME	Name of municipality
ISO45_10	Assignment to FUAs

GRID_CODE is used to distinguish settlement areas from non-settlement areas (inner polygons). Again, the SABE municipality code (**CMRGCD97**) can be used to link information from/to the municipality layer. The information stored in the **ISO45_10** attribute is the same

as in the respective attribute of the **MUNICIP.LIST** info table, i.e. it provides information within which FUAs the settlement area is located. The structure of this character attribute is the same as describe above.

Spider lines layer

As describe in Chapter 6.5 and visualised in Figure 31 and 32, the assignments of municipalities to PUSHs have been ranked into hierarchical levels (first order assignment, second order assignment, third order assignment etc.). These rankings were transformed into straight lines, each line connecting the municipality centre to the respective PUSH/FUA centroid, which are stored in a line layer called **SPIDER**. As for many municipalities there are several assignments, and so there are several straight lines connecting the municipality centre to several PUSHs/FUAs, the outcome looks like spider nets. The attributes associated with the links are as follows:

Table A5. Attributes of the spider layer.

Attributes	Description
FUAID	FUA identification number (1 – 1595)
CMRGCD97	SABE municipality code
FUA_CC	ISO country code of FUA
MUNIS_CC	ISO country code of municipality
LEVEL	Level of assignment (1 to 25) 1 = first order assignment 2 = second order assignment 3 = third order assignment ...

The **FUAID** and **CMRGCD97** attributes can be used to identify (or select) the origins and destinations of the spider lines. **FUA_CC** and **MUNIS_CC** represent the ISO country codes of both the origin and destination, i.e. they can be used to identify cross-border relationships (international relations). Finally, the **LEVEL** stores the ranking of the different assignments. For all municipalities that are assigned to any FUA, there is at least a first order assignment. The degree and number of lower level assignment than depends on the overall number of assignments for a particular municipality.

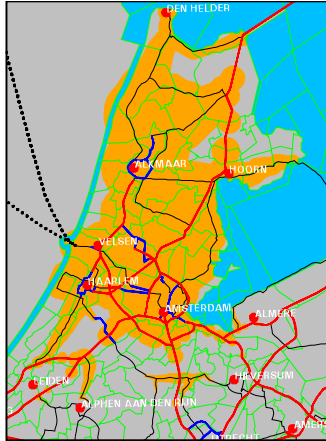
The merged PUSHs layer

There was also a specific layer constructed call **PUSHREG** that merged all those *Potential Urban Strategic Horizons* together that overlapped each other with at least 33 % of their territories. The merged PUSHs are stored as non-continuous regions in this layer. There are only two attributes associated with the regions. The first one is called **FUAID** and stores the PUSH/FUA identification number of that PUSH that contributed most to the merged PUSH regions. The second one is called **TOTPOP** and represents the overall population number for the regions.

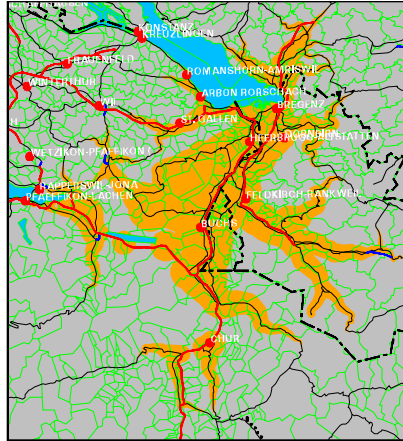
Annex 2. Gallery of Isochrones

Please note that the scale of the following maps is differing, in order to show as much detail of the isochrones as possible. The choice of the isochrones is rather arbitrary, and just reflects the intention to show some sample maps.

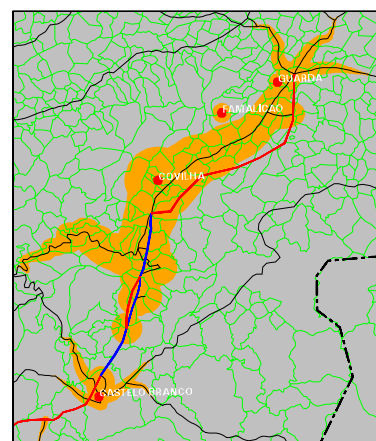
Alkmar (NL)



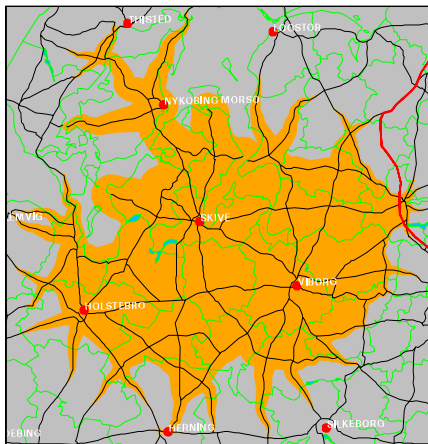
Buchs (CH)



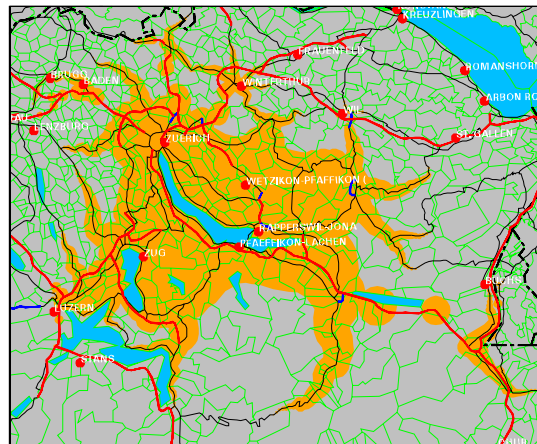
Covilha (PT)



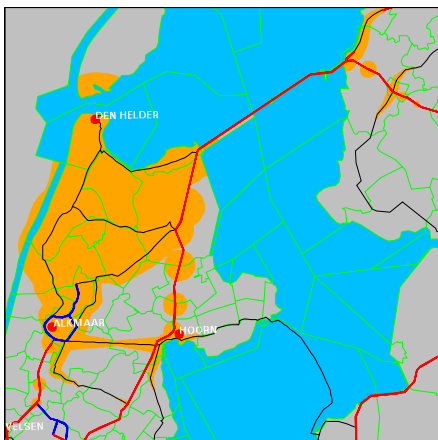
Skive (DK)



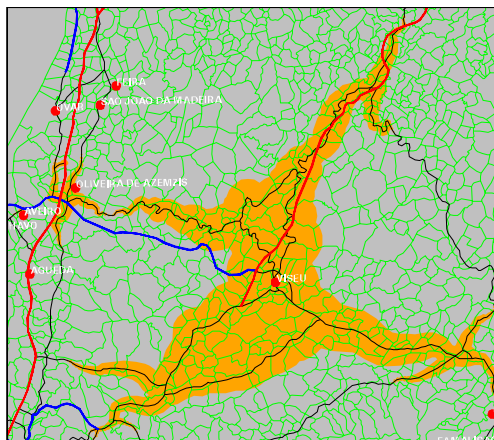
Pfäffikon-Lachen (CH)



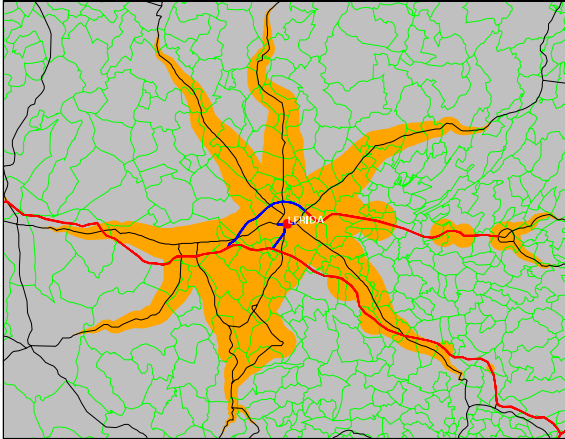
Den Helder (NL)



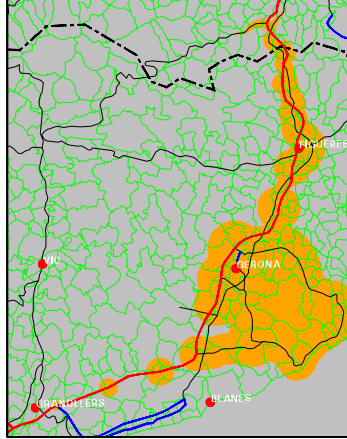
Visen (PT)



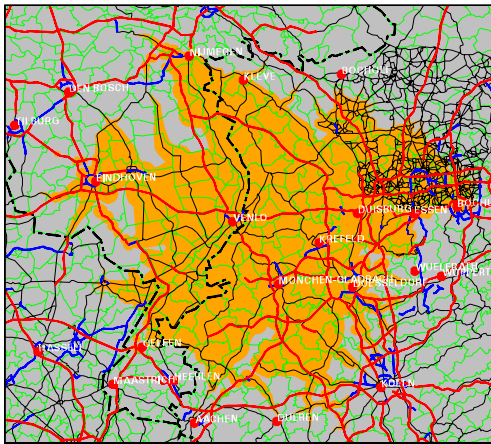
Lerida (ES)



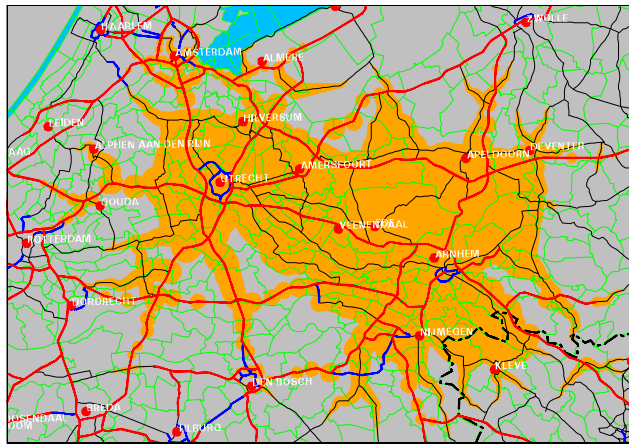
Gerona (ES)



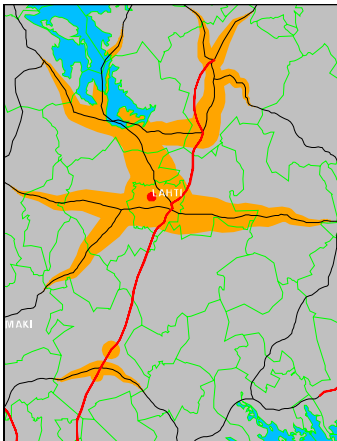
Venlo (NL)



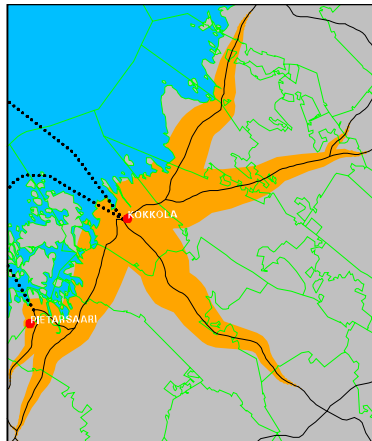
Veenendal (NL)



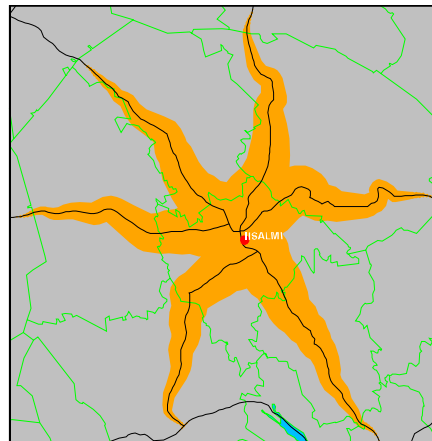
Lahti (FI)



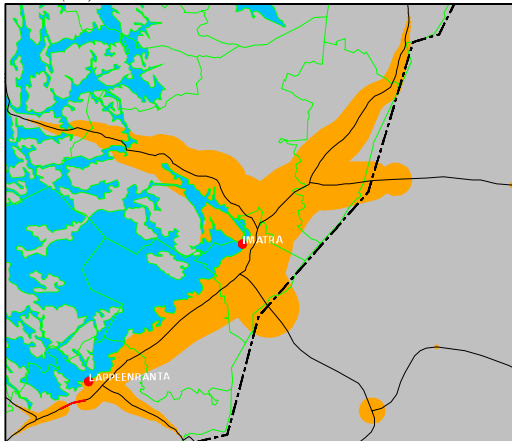
Kokkola (FI)



Ilsalmi (FI)



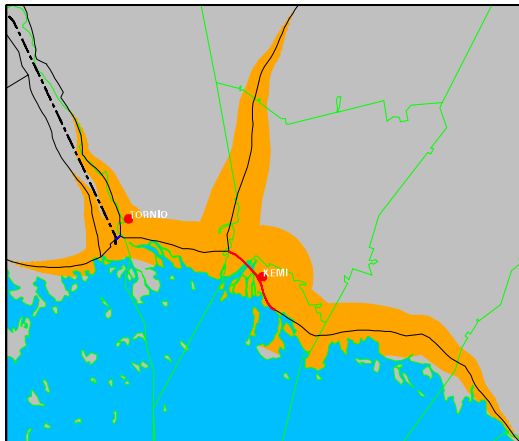
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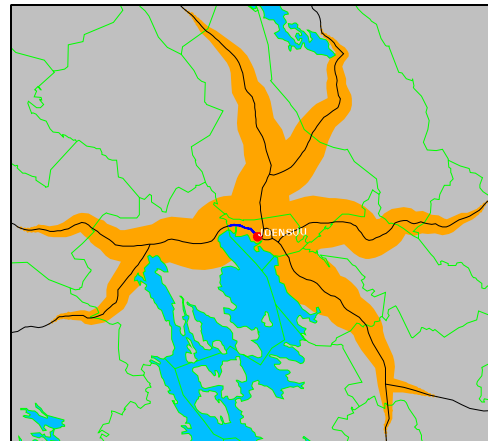
Forssa (FI)



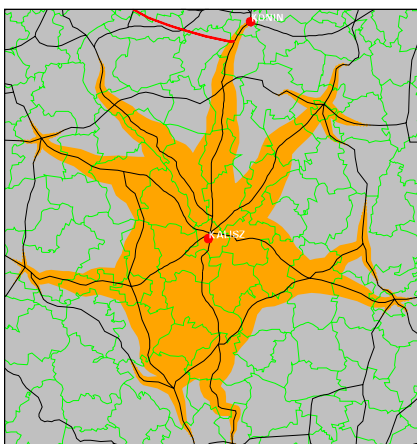
Kemi (FI)



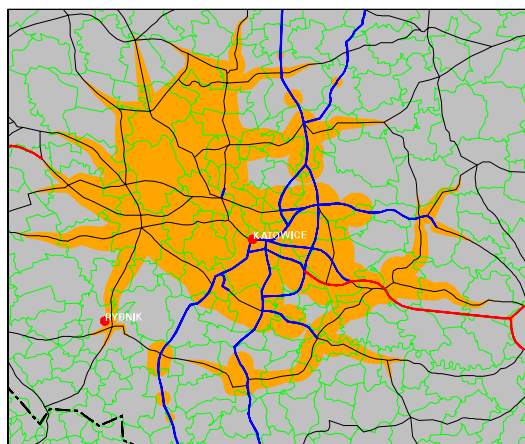
Joensuu (FI)



Kalisz (PL)



Katowice (PL)



Annex 3. List of PUSHs According to Different Overlay Criteria

The meanings of the abbreviation in the table header are as follows:

- Iso* = Area of the isochrones in km²
Full area = Area of / number of municipalities assigned to the PUSH using the 100 % criterion
50 % = Area of / number of municipalities assigned to the PUSH using the 50 % criterion
10 % = Area of / number of municipalities assigned to the PUSH using the 10 % criterion
5 % = Area of / number of municipalities assigned to the PUSH using the 5 % criterion

CC	ID	Name	Area (in km ²)					No of municipalities			
			iso	Full area	50 %	10 %	5 %	Full area	50 %	10 %	5 %
AT	133	AMSTETTEN	5969	4060	5621	8321	8999	153	200	259	277
AT	1094	BADEN-TRAIKIRCHEN	6502	4385	6211	8810	9434	192	259	328	347
AT	1222	BREGENZ	4668	2413	4568	7104	7862	171	252	321	334
AT	136	BRUCK/MUR-KAPFENBERG	2935	985	2780	5037	5532	35	80	141	154
AT	134	DORNBIRN	3902	1839	3743	6093	6916	137	212	288	300
AT	135	FELDKIRCH-RANKWEIL	3721	1672	3414	6205	6672	121	186	258	270
AT	1095	GRAZ	5783	3677	5280	8622	9449	251	303	379	394
AT	1096	INNSBRUCK	2947	843	2334	6192	6895	68	112	168	178
AT	137	KLAGENFURT	4802	2621	4248	7491	8278	55	78	113	122
AT	138	KLOSTERNEUBURG	7035	5008	7029	8872	9281	194	251	310	325
AT	139	KREMS AN DER DONAU	6378	4443	6070	8613	8977	146	180	233	242
AT	1075	LEOBEN	3043	634	2590	6069	6642	31	79	159	177
AT	140	LEONDING	6143	3986	6118	8470	8936	185	267	347	362
AT	141	LINZ	6584	4455	6351	8763	9642	197	270	352	370
AT	142	MOEDLING	7061	4790	6706	9413	10062	206	266	342	362
AT	143	SALZBURG	5934	3533	5785	8687	9284	123	174	241	255
AT	144	SANKT POELTEN	7144	4855	7124	9191	10056	180	226	273	287
AT	1217	STEYR	5243	3422	4806	7588	8150	143	197	267	286
AT	145	TRAUN	6038	3778	5899	8326	8915	178	269	349	367
AT	146	VILLACH	5311	2329	5279	8259	8587	47	81	116	122
AT	147	WELS	7056	5151	6713	9117	9773	252	309	371	388
AT	1097	WIEN	8399	5938	8457	10735	11353	231	311	385	401
AT	148	WIENER NEUSTADT	6654	4173	6695	8891	9536	212	270	341	354
AT	149	WOLFSBERG	3966	1583	3713	6482	6807	42	98	160	173
BE	811	AALST	7188	4579	6732	10142	10848	152	193	255	268
BE	623	ANTWERPEN	8547	5777	8100	11808	12724	159	200	256	272
BE	630	BRUGGE	5250	3828	5154	6815	7270	85	117	170	180
BE	758	BRUXELLES/BRUSSEL	8735	5784	8601	11824	12427	177	229	292	303
BE	624	CHARLEROI	6275	4152	5843	8876	9407	112	154	229	244
BE	629	GENT	7695	5409	7569	9800	10551	156	200	257	272
BE	760	HASSELT	7874	5495	7664	10385	11059	131	192	247	261
BE	761	IEPER	4561	2775	4587	6269	6664	112	179	252	272
BE	762	KORTRIJK	7211	4495	7428	9418	9891	212	322	428	455
BE	625	LA LOUVIERE	6545	4211	6390	8710	9099	140	209	275	290
BE	759	LEUVEN	8569	6288	8408	10753	11843	186	229	280	299
BE	627	LIEGE	7743	5028	7482	10894	12128	122	156	211	232
BE	757	MECHELEN	7222	4420	6782	10055	11307	151	193	244	260
BE	1211	MONS	6397	4496	5996	9123	9532	207	282	395	422
BE	1207	MOUSCRON	5775	3541	5847	7870	8220	189	275	385	408
BE	813	NAMUR	7365	4883	7266	9808	10439	125	170	225	234
BE	763	OOSTENDE	4022	2501	3987	5273	5500	59	90	130	139
BE	764	ROESELARE	5621	3530	5545	7104	7502	120	185	262	283
BE	812	SINT NIKLAAS	6792	4122	6707	9689	10511	136	179	232	245
BE	626	TOURNAI	8012	5888	7773	10472	10922	427	521	650	673
BE	628	VERVIERS	7121	4769	6968	9414	10243	113	143	181	193
BG	1332	ASENOVGRAD	2762	73	1910	6661	7320	1	7	19	21
BG	327	BLAGOEVGRAD	1761	0	1809	2937	4687	0	5	9	13
BG	328	BURGAS	2447	0	2381	4797	6521	0	5	9	12
BG	329	DIMITROVGRAD	3373	569	2288	6040	7670	1	5	12	16
BG	345	DOBRICH	3710	635	3082	6539	7023	2	6	17	20
BG	330	GABROVO	2276	0	827	5772	5772	0	2	10	10
BG	1054	HASKOVO	2535	0	2358	4628	5284	0	5	10	12
BG	333	KARDZHALI	2164	0	1681	5347	7044	0	4	11	16
BG	96	KARLOVO	1904	0	1450	4895	4895	0	2	11	11

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BG	331	KAZANLAK	1995	0	1571	5630	5899	0	3	10	11
BG	332	KYUSTENDIL	1627	0	958	2828	3612	0	1	7	9
BG	94	LOVECH	2634	0	1800	5316	7926	0	2	9	14
BG	334	MONTANA	3991	1309	3877	7041	7578	4	11	21	23
BG	335	PAZARDZHNIK	2981	271	1863	6249	7313	3	8	20	23
BG	336	PERNIK	2413	0	2426	5930	6177	0	3	12	14
BG	95	PETRICH	1670	43	1283	3876	4761	1	6	14	16
BG	337	PLEVEN	2751	0	1559	5590	7871	0	3	12	17
BG	338	PLOVDIV	3328	136	3956	6943	9227	2	12	20	26
BG	339	RAZGRAD	3789	1031	3380	7241	9162	2	7	17	21
BG	821	RUSE	2583	191	1936	6177	6264	3	12	29	30
BG	340	SHUMEN	2551	309	2503	5252	5688	1	6	13	14
BG	341	SILISTRA	2343	290	1956	5090	6277	2	11	25	30
BG	342	SLIVEN	2685	107	1471	6547	8140	1	2	10	12
BG	343	SOFIA	3027	0	2710	6746	8838	0	5	14	18
BG	344	STARA ZAGORA	3837	350	4205	6288	7335	2	8	13	15
BG	1055	TARGOVISHTE	3476	393	3083	7059	7786	1	6	15	17
BG	346	VARNA	2360	238	1145	5865	6598	1	6	15	17
BG	1056	VELIKO TARNOVO	3267	178	2242	6846	7948	1	5	14	18
BG	347	VIDIN	2313	388	2024	3915	4192	1	8	19	21
BG	1527	VRACA	2714	0	2626	5598	7241	0	6	14	18
BG	348	YAMBOL	2682	107	2695	6519	10621	1	3	8	14
CH	1219	AARAU	5244	3796	5269	6612	7185	566	681	787	811
CH	1169	ARBON RORSCHACH	3233	1818	2898	5112	5516	168	226	302	316
CH	1156	BADEN	5780	4225	5712	7362	7580	560	676	785	804
CH	150	BASEL	5425	3557	5387	7333	7686	500	643	811	839
CH	1057	BELLINZONA	2232	949	2278	3296	3690	181	281	365	386
CH	151	BERN	3548	2132	3419	5294	5644	342	469	594	619
CH	152	BIEL (BE)	2825	1835	2765	3798	4020	284	373	467	484
CH	1157	BRIG	1683	387	1472	3102	3691	39	80	130	143
CH	1158	BRUGG	5180	3764	5107	6474	6982	517	609	704	728
CH	1	BUCHS	3340	1373	2958	5926	6499	104	188	280	301
CH	1159	BURGDORF	3331	2113	3121	4613	4922	334	433	547	567
CH	1160	CHIASSO-MENDRISIO	5568	4470	5551	6807	7145	636	723	814	834
CH	153	CHUR	2962	1154	2505	5484	5787	99	164	239	248
CH	1058	FRAUENFELD	3843	2619	3736	4975	5212	253	326	408	418
CH	1227	FRIBOURG	1423	669	1311	2229	2652	127	201	290	312
CH	417	GENEVE	2793	1680	2804	3930	4128	230	319	405	421
CH	1161	GRENCHEN	2651	1688	2599	3540	3831	277	372	472	500
CH	1061	SOLOTHURN	4018	2742	3830	5331	5703	432	540	664	689
CH	823	ST, GALLEN	3356	2130	3084	4944	5315	184	240	319	333
CH	1224	STANS	2925	1496	2716	4582	5000	173	236	329	342
CH	157	THUN	1889	877	1654	3049	3296	149	212	283	296
CH	1171	VEVEY	1940	1077	1753	3039	3207	177	252	332	350
CH	1172	WETZIKON-PFAFFIKON (	3791	2809	3631	4891	5199	291	373	462	480
CH	1173	WIL	4009	2760	3922	5483	5779	240	323	415	433
CH	158	WINTERTHUR	5646	4284	5592	7242	7473	440	512	592	612
CH	1174	YVERDON	2067	1144	1985	3077	3299	244	329	421	434
CH	1175	ZOFINGEN	4379	2972	4307	5634	6074	477	586	691	722
CH	159	ZUERICH	5314	4099	5031	6848	7166	479	551	656	676
CH	1062	ZUG	3722	2437	3510	5435	5821	292	375	477	499
CY	1176	LARNACA	961	530	945	1282	1460	32	52	70	74
CY	1335	LIMASSOL	891	424	813	1342	1470	36	64	92	101
CY	1337	NICOSIA	1057	577	1012	1567	1598	37	58	85	88
CY	1336	PAPHOS	500	228	453	733	838	33	49	69	72
CZ	97	BRNO	2679	1202	2624	3965	4352	145	256	368	395
CZ	163	CESKE BUDEJOVICE	2538	1129	2314	3981	4476	112	173	246	261
CZ	164	CHOMUTOV	3194	1739	3130	4713	5300	133	210	292	310
CZ	1198	DECIN	1913	933	1783	3224	3552	75	124	184	201
CZ	165	FRYDEK-MISTEK	3109	1764	3034	4273	4740	118	162	204	215
CZ	166	HAVIROV	1855	939	1762	3091	3299	61	98	138	147
CZ	167	HRADEC KRALOVE	2876	1738	2763	3901	4076	227	311	414	431
CZ	168	JIHLAVA	3377	1963	3229	4899	5083	223	321	437	455
CZ	1208	KARLOVY VARY	2460	1160	2248	4107	4478	69	122	175	190
CZ	169	KARVINA	2067	966	1985	3225	3739	64	103	139	152
CZ	170	KLADNO	1700	962	1824	2352	2563	150	193	247	268
CZ	1197	LIBEREC	2332	1158	2207	3527	3793	102	163	238	254
CZ	177	MLADA BOLESLAV	2202	1245	1991	3564	3921	138	204	284	300
CZ	178	MOST	3431	2208	3423	4763	5041	197	260	335	349
CZ	181	OLOMOUC	1682	929	1588	2496	2804	96	139	204	218

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CZ	182	OPAVA	2005	1028	1808	3217	3463	73	104	147	156
CZ	183	OSTRAVA	3087	1852	2943	4500	4957	110	153	209	221
CZ	184	PARDUBICE	1657	877	1635	2449	2727	104	183	252	274
CZ	185	PLZEN	3749	2094	3698	5433	5880	192	298	392	411
CZ	187	PRAHA	3461	2000	3281	5082	5499	233	379	532	569
CZ	188	PREROV	2898	1734	2748	4020	4675	207	271	354	369
CZ	190	PROSTEJOV	2750	1504	2620	3940	4488	181	275	363	391
CZ	192	TEPLICE	2977	1746	2817	4382	4574	142	214	295	306
CZ	197	USTI NAD LABEM	2566	1390	2455	3675	3910	124	189	257	272
CZ	199	ZLIN	3519	2374	3333	4646	5056	236	302	382	400
DE	471	AACHEN	8359	5152	8365	11140	11776	103	147	190	199
DE	439	AALEN	4480	2406	4565	6453	6938	72	121	183	202
DE	1201	ALTENBURG	5759	4115	5621	7550	8126	302	386	488	522
DE	451	AMBERG IN DER OBERPF	3111	1101	2815	5278	5683	31	78	149	162
DE	447	ANSBACH	4880	2411	4602	7659	8163	81	146	225	241
DE	475	ARNSBERG	5066	2406	5427	7182	7261	26	52	72	74
DE	456	ASCHAFFENBURG	6248	3587	6397	8813	9510	155	226	292	306
DE	1036	AUE	4245	2963	4114	5839	6075	204	253	319	330
DE	429	AUGSBURG	4779	2337	4738	7265	7733	97	172	246	263
DE	473	BAD HERSFELD	2321	770	2080	4072	4567	21	54	92	103
DE	798	BAD KREUZNACH	3907	2208	3684	5835	6396	258	362	488	517
DE	465	BAD NAUHEIM	6566	4019	6365	9549	10338	106	167	248	269
DE	522	BAD OEYNHAUSEN	4917	2071	4853	7911	8817	56	85	129	140
DE	437	BADEN BADEN	4311	1968	4269	6192	6555	115	183	280	306
DE	796	BAMBERG	5859	3504	5753	8226	8894	153	227	309	328
DE	1039	BAUTZEN	4697	2710	4302	6585	7498	133	180	260	272
DE	795	BAYREUTH	5801	2962	5293	8650	9391	125	207	307	329
DE	1027	BERLIN	10933	8685	11057	12926	13375	465	559	657	678
DE	484	BIELEFELD	5865	2948	5321	8989	10023	44	74	121	131
DE	480	BOCHOLT	6687	4030	6952	9050	10157	52	86	111	120
DE	516	BOCHUM	9949	6644	9946	12773	13424	91	121	153	160
DE	511	BONN	7550	4754	7230	10014	10849	189	267	367	388
DE	1048	BRANDENBURG	7197	5303	6809	9312	9748	305	384	464	478
DE	487	BRAUNSCHWEIG	7115	4607	6633	9828	10703	161	211	289	304
DE	497	BREMEN	5795	2593	5157	9450	10893	47	92	168	191
DE	960	BREMERSHAVEN	2970	1631	3151	4238	4478	49	66	87	92
DE	436	BUEHL	3592	1893	3517	5459	5979	92	154	242	264
DE	496	CELLE	5796	2911	5201	9616	10320	55	90	155	171
DE	1042	CHEMNITZ	5871	4074	5409	8053	8449	256	318	412	431
DE	462	COBURG	3853	1651	3683	6008	6633	72	139	211	228
DE	1047	COTTBUS	4499	2924	4170	6942	7030	172	220	289	294
DE	1348	CUXHAVEN	1136	336	1124	1921	2162	8	26	48	52
DE	455	DARMSTADT	7312	4834	6947	9715	10507	224	306	416	452
DE	791	DEGGENDORF	4400	2310	4253	6717	7342	80	130	197	212
DE	1049	DESSAU	7070	5227	7076	8937	9857	358	457	545	578
DE	482	DETMOLD	4976	2377	4561	7820	8456	35	59	106	118
DE	470	DILLENBURG	4259	1922	3934	6519	7521	84	145	215	233
DE	517	DORTMUND	8104	5284	8229	10575	11106	72	99	127	131
DE	1040	DRESDEN	4884	2601	4566	7397	8073	130	209	302	322
DE	472	DUEREN	6254	3988	5739	8972	9610	53	86	145	160
DE	512	DUESSELDORF	10130	6934	10327	13147	14344	93	134	179	200
DE	518	DUISBURG	10432	7302	10277	13261	14229	96	128	170	183
DE	408	EBERSWALDE-FINOW	8518	5831	8490	10493	10687	324	406	480	494
DE	1203	EISENACH	4969	2851	4705	6994	7794	140	208	271	289
DE	500	EMDEN	2422	574	2051	4438	5041	19	38	65	75
DE	1045	ERFURT	4694	2974	4562	6570	6944	215	278	384	404
DE	452	ERLANGEN	4659	1977	4239	8099	9083	109	175	272	298
DE	519	ESSEN	9718	6554	9584	12355	13388	87	120	154	165
DE	469	EUSKIRCHEN	7476	4544	7456	10113	10673	110	185	278	292
DE	504	FLENSBURG	5130	3368	4882	6750	7000	192	234	288	300
DE	510	FRANKFURT AM MAIN	7253	4510	7116	10568	11114	181	260	368	390
DE	1196	FRANKFURT AN DER ODE	6781	4613	6710	10178	10436	276	330	373	387
DE	1037	FREIBERG	4402	2624	4177	6408	6911	147	208	302	322
DE	426	FREIBURG IM BREISGAU	3799	1603	3480	6094	6672	86	165	276	300
DE	430	FREISING	5056	3015	4938	7450	8022	102	160	232	248
DE	904	FRIEDBERG (HESSEN)	6591	4076	6526	9213	10052	107	169	245	267
DE	1210	FRIEDRICHSDORF	6563	3965	6565	9230	9745	110	184	275	296
DE	507	FUERTH	6107	3304	5701	9311	9941	141	212	294	310
DE	468	FULDA	3629	1661	3253	6159	6883	41	78	137	149
DE	419	GARMISCH-PARTENKIRCH	3685	1816	3433	5931	6205	58	108	176	185
DE	1202	GERA	7310	5471	7150	9105	9570	467	545	644	666

DE	905	GIESSEN	6115	3319	5938	8865	9642	95	151	237	254
DE	1053	GOERLITZ	2934	1023	3144	4753	5056	53	95	135	143
DE	476	GOETTINGEN	5617	3076	5290	8247	9383	108	159	217	233
DE	481	GOSLAR	5685	2989	5517	8061	8187	121	167	222	227
DE	1043	GOTHA	4511	2192	4278	6443	7094	149	225	304	331
DE	1025	GREIFSWALD	3244	2023	3210	4506	4823	108	160	217	231
DE	1038	GREIZ	4954	3348	4958	6553	6934	226	311	407	427
DE	800	GUMMERSBACH	5248	3042	5187	7111	7651	65	99	150	163
DE	1204	HAGEN	8835	5900	8666	12012	12643	82	103	139	146
DE	1030	HALBERSTADT	5708	3886	5696	7432	8157	235	299	366	377
DE	1035	HALLE	6707	4779	6649	8389	8762	394	487	583	604
DE	524	HAMBURG	7413	5130	6909	10180	11179	348	437	551	582
DE	802	HAMELN	6114	3571	6110	8289	8826	101	133	165	174
DE	477	HAMM	7662	4394	7196	10507	11879	54	81	113	126
DE	461	HANAU	6784	4331	6650	9498	9939	151	213	294	307
DE	523	HANNOVER	7127	4700	6877	10247	10750	99	141	199	209
DE	449	HEIDELBERG	6691	4215	6725	9131	9606	235	331	434	447
DE	435	HEIDENHEIM	4263	1754	4211	6719	7414	64	132	211	236
DE	443	HEILBRONN	4508	1839	4104	7294	8166	95	159	243	273
DE	485	HERFORD	6572	3440	6343	9642	10550	54	98	141	153
DE	486	HILDESHEIM	7226	4638	7042	10196	11223	121	161	215	230
DE	463	HOF	5598	3784	5504	7267	7921	191	253	332	354
DE	1199	HOYERSWERDA	3354	1519	3209	5581	6040	91	155	235	257
DE	488	IBBENBUEREN	5666	2975	5181	8913	9863	50	81	126	137
DE	790	INGOLSTADT	4184	1486	3885	6810	7337	44	102	167	183
DE	521	ISERLOHN	6462	3566	6258	9181	10227	52	80	106	118
DE	1050	JENA	5809	3951	5698	7875	8383	366	455	564	594
DE	450	KAISERSLAUTERN	7430	5195	6998	9576	10516	512	611	745	774
DE	441	KARLSRUHE	5990	2647	5725	9316	9812	169	276	410	436
DE	520	KASSEL	5666	2992	5535	8515	9349	69	111	154	168
DE	424	KAUFBEUREN	3171	1281	2990	5121	5582	54	114	185	201
DE	422	KEMPTEN (ALLGAEU)	5277	3444	5055	7568	7955	124	174	238	251
DE	906	KIEL	5079	3680	4770	6712	6974	280	346	445	462
DE	801	KLEVE	5412	2996	5033	8066	9156	46	76	109	122
DE	464	KOBLENZ	5026	3219	4764	7136	7531	466	616	748	777
DE	513	KOELN	9656	6599	9241	12820	13369	110	166	255	273
DE	421	KONSTANZ	3845	2279	3821	5394	5723	187	257	320	338
DE	1206	KREFELD	9623	6408	9381	12097	13005	85	122	158	172
DE	460	KULMBACH	4121	1923	3987	6290	6995	77	138	213	230
DE	444	LANDAU IN DER PFALZ	6600	4780	6303	8610	9014	344	408	506	527
DE	901	LANDSHUT	4550	1806	4400	7538	8165	57	117	206	222
DE	1034	LEIPZIG	7456	5212	7209	9869	10529	323	436	572	603
DE	466	LIMBURG	6489	4015	6498	8784	9291	375	479	594	624
DE	495	LINGEN	3977	1657	4126	6034	6703	33	68	88	98
DE	478	LIPPSTADT	4337	1490	4128	7062	8149	19	38	70	78
DE	420	LOERRACH	4066	2337	4180	5707	6173	320	457	588	623
DE	1216	LUDWIGSHAFEN AM RHEI	8098	5618	7774	10802	11082	374	460	576	590
DE	502	LUEBECK	5988	4139	6199	7455	7707	268	338	409	424
DE	499	LUENEBURG	3760	1198	3511	6141	6796	65	130	203	222
DE	1033	MAGDEBURG	5307	3271	5166	7442	7981	194	275	372	399
DE	457	MAINZ	7685	4866	7441	10339	10983	319	472	626	667
DE	509	MANNHEIM	7834	5409	7503	10320	10666	347	434	536	559
DE	799	MARBURG AN DER LAHN	3193	1498	2856	5425	5939	25	50	90	95
DE	425	MEMMINGEN	6530	4092	6352	8805	9487	157	213	287	310
DE	1200	MERSEBURG	6394	4488	6183	8492	8818	372	469	584	603
DE	491	MINDEN	5447	2983	5058	7422	8539	69	101	140	154
DE	515	MONCHEN-GLADBACH	7679	4292	7492	10261	11373	64	102	146	162
DE	428	MUENCHEN	5656	2874	5141	8867	10048	115	184	291	315
DE	483	MUENSTER	7876	4712	8112	10631	11570	60	100	128	137
DE	409	NAUMBURG	5818	3900	5774	7577	8275	366	463	575	600
DE	505	NEU-ULM	5263	2845	5280	7433	7992	123	192	255	270
DE	1195	NEUBRANDENBURG	6585	4552	6500	8368	8858	241	313	383	409
DE	792	NEUMARKT	3581	1414	3203	6370	6871	59	94	167	179
DE	503	NEUMUNSTER	6170	4284	6310	8078	8481	324	408	508	528
DE	1063	NEURUPPIN	9257	6966	9288	11107	11772	379	440	516	535
DE	448	NEUSTADT AN DER WEIN	7017	4977	6836	8916	9626	369	462	573	602
DE	1031	NORDHAUSEN	5881	3991	5761	7443	8006	255	313	381	403
DE	494	NORDHORN	4919	2184	4742	7784	8163	42	70	101	108
DE	508	NURNBERG	5727	3024	5472	8493	9368	130	197	267	289
DE	459	OFFENBACH AM MAIN	7541	4849	7308	10720	11427	198	269	374	398
DE	431	OFFENBURG	4093	1820	3809	6420	7011	115	213	312	342
DE	498	OLDENBURG	5839	3223	5715	8606	9500	38	65	108	124

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DE	489	OSNABRUECK	7708	4663	7078	11379	11927	79	110	161	169
DE	479	PADERBORN	6338	3208	6570	8825	9738	33	65	98	106
DE	434	PASSAU	5054	3118	4897	7077	7525	137	197	271	288
DE	492	PEINE	6478	3555	6024	9846	10929	84	146	223	241
DE	789	PFORZHEIM	5732	3191	5560	8526	9011	146	234	336	358
DE	445	PIRMASENS	3609	2099	3527	5106	5703	184	263	370	403
DE	1052	PLAUEN	4551	2678	4202	6497	7227	160	222	323	355
DE	1029	POTSDAM	9687	7611	9763	11440	11856	422	501	584	601
DE	423	RAVENSBURG	4166	2595	4055	6124	6357	109	152	213	225
DE	442	REGENSBURG	4719	1897	4612	7583	8208	64	126	193	210
DE	1193	RENDSBURG	5453	4127	5358	6882	7157	310	389	490	510
DE	432	REUTLINGEN	4753	2726	4602	7051	7233	109	162	242	250
DE	490	RHEINE	6961	3492	6651	10126	11015	60	95	134	143
DE	1041	RIESA	4810	3086	4569	6626	7177	132	177	260	276
DE	896	ROSENHEIM	5529	3352	5527	8188	8702	120	176	241	255
DE	1024	ROSTOCK	2781	1752	2715	3665	3811	106	140	184	191
DE	1044	RUDOLSTADT	4138	2723	4074	5607	6027	215	286	370	390
DE	903	RUESSELSHEIM	8735	5904	8669	11639	12146	330	457	610	638
DE	410	SAALFELD	4149	2263	3925	5900	6377	169	255	346	372
DE	446	SAARBRUECKEN	5271	3031	5184	7266	7682	222	372	549	589
DE	803	SALZGITTER	6506	3536	6407	8969	10193	110	162	232	251
DE	411	SCHOENEBECK (ELBE)	5411	3864	5582	7002	7250	235	300	388	404
DE	793	SCHWABACH	6348	3508	5915	9226	9974	137	202	280	298
DE	900	SCHWAEBISCH GMUEND	3137	950	3061	5566	6005	51	101	180	194
DE	797	SCHWEINFURT	5350	3424	5125	7465	8204	145	207	276	296
DE	1026	SCHWERIN	5015	3131	4843	6952	7329	170	255	359	374
DE	514	SIEGEN	4088	1910	3781	6570	7253	121	171	237	250
DE	897	SINGEN	3663	2039	3424	5317	5631	131	185	256	269
DE	902	SPEYER	6730	4549	6704	8714	9356	310	398	481	511
DE	1028	STENDAL	3940	2192	3775	5806	6082	114	189	263	282
DE	1194	STRALSUND	2609	1523	2626	3453	3860	78	121	159	169
DE	440	STRAUBING	3317	1395	3058	5621	6350	51	97	155	171
DE	438	STUTTGART	5825	3312	5499	8494	9411	172	248	321	338
DE	1209	SUHL	2607	1324	2423	4239	4840	79	133	188	207
DE	453	TRIER	6084	4768	5991	7557	7870	404	481	581	605
DE	433	TUEBINGEN	4665	2544	4449	6992	7685	114	164	246	264
DE	506	ULM	4942	2580	4804	7443	8040	112	180	270	286
DE	427	VILLINGEN-SCHWENNING	4282	2632	4328	6188	6652	83	132	191	205
DE	794	WEIDEN IN DER OBERPF	3902	1773	3867	5647	6546	63	115	169	189
DE	898	WEIL	4493	2607	4424	6191	6797	363	499	659	702
DE	1051	WEIMAR	6669	5084	6587	8230	8431	408	475	561	578
DE	899	WEINGARTEN	4595	2120	4398	7505	7956	127	208	311	334
DE	467	WETZLAR	5845	3715	5576	8181	8605	151	216	316	328
DE	458	WIESBADEN	7469	4857	7174	10401	10945	348	485	638	664
DE	501	WILHELMSHAVEN	1733	252	1932	2402	2896	4	19	26	32
DE	1023	WISMAR	4123	2917	4020	5466	5903	162	216	276	293
DE	1032	WITTENBERG	7250	5554	6806	9104	9376	318	380	485	498
DE	959	WOLFEN	6133	4469	5923	8044	8568	310	390	503	525
DE	493	WOLFSBURG	5004	2629	4963	7134	7745	98	163	235	258
DE	474	WUELFRATH	5740	3159	5716	7941	8670	47	71	103	112
DE	454	WUERZBURG	5874	3040	5561	8800	9322	142	212	301	321
DE	1205	WUPPERTAL	9462	6150	9458	12295	13257	84	119	155	167
DE	1046	ZWICKAU	5831	4456	5617	7701	8180	311	384	480	504
DK	1192	AABENRAA	4107	2287	4008	6067	6100	36	69	108	110
DK	825	AALBORG	4296	2109	4562	6259	6628	8	19	27	29
DK	1345	AARHUS	3678	2067	3547	5844	6082	14	22	33	34
DK	807	ESBJERG	2542	1108	2614	4151	4305	5	12	18	19
DK	815	FREDERIKSHAVN	1956	745	2023	2950	2950	3	8	11	11
DK	92	GRENAA	1175	278	1213	1489	2108	2	7	8	10
DK	93	HADERSLEV	3419	860	3469	4879	5324	4	21	33	37
DK	637	HERNING	5046	2204	5225	7628	8114	8	19	29	32
DK	639	HJOERRING	2334	1104	2634	3307	3513	5	10	13	14
DK	1347	HOLBAEK	2096	445	1726	3780	3978	5	23	45	47
DK	638	HOLSTEBRO	4075	1512	4076	5965	6219	6	15	24	25
DK	805	HORSSENS	3628	1550	3686	4924	5509	11	20	28	32
DK	961	KOEBENHAVN	1617	330	1523	3071	3559	13	33	48	52
DK	634	KOLDING	4945	1862	4663	7952	8091	11	28	43	44
DK	1555	LEMVIG	1722	685	1558	2988	3077	3	7	12	13
DK	1551	LOGSTOR	1902	592	1494	3378	3945	3	7	13	16
DK	1550	MARIBO	1711	704	1910	2529	2529	5	14	18	18

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DK	635	NAESTVED	3099	1462	3291	4342	4869	11	24	35	40
DK	1545	NAKSKOV	1971	636	1952	2711	2923	5	15	19	21
DK	1546	NYKOBING MORSO	2069	657	1919	2952	3263	2	7	12	13
DK	1079	NYKOEING F	2127	768	2143	2923	3055	6	17	21	22
DK	632	ODENSE	2793	1524	2932	3643	3643	15	26	31	31
DK	633	RANDERS	4861	2788	4727	6728	7492	18	27	36	40
DK	1064	RIBE	3805	1759	4147	5249	6428	8	20	25	31
DK	1346	RINGKOEING	2782	1615	2581	4260	4755	6	9	14	16
DK	1065	ROENNE	271	30	318	432	432	1	3	4	4
DK	636	SILKEBORG	3917	1683	3610	6011	6393	9	20	28	30
DK	4	SKIVE	3879	1449	4221	5003	6614	6	19	22	26
DK	809	SLAGELSE	3299	1582	3054	4960	5183	14	26	43	46
DK	963	SOENDERBORG	1635	731	1810	2544	2930	12	28	42	48
DK	808	SVENDBORG	1893	1015	2042	2397	2472	9	17	21	22
DK	47	THISTED	1552	557	1553	2271	2712	1	5	9	11
DK	1530	TONDER	3384	1793	3322	4710	5111	42	67	93	98
DK	806	VEJLE	5316	2641	5183	7830	8736	15	30	43	46
DK	804	VIBORG	4964	2569	4694	7062	7280	12	23	34	35
EE	395	KOHTLA-JARVE	1660	273	1336	2994	3384	6	12	21	23
EE	103	KURESSAARE	2204	621	2563	2686	2686	3	13	14	14
EE	98	NARVA	1027	90	834	1220	1953	3	7	9	13
EE	104	PAIDE	3858	1158	3017	6296	6844	8	18	31	33
EE	99	PARNU	3056	477	2970	4962	6421	8	16	23	26
EE	101	RAKVERE	3847	1378	3731	5834	6647	12	23	33	36
EE	396	TALLINN	2672	1191	2253	4704	5472	9	15	24	26
EE	397	TARTU	4805	1785	4910	7509	8617	16	33	44	49
EE	100	VILJANDI	3724	1232	3424	6034	6657	11	19	30	33
EE	102	VORU	4705	1842	4788	6563	7239	11	29	40	45
ES	649	ALBACETE	2756	162	2133	5533	6378	3	11	32	36
ES	650	ALCAZAR DE SAN JUAN	1985	0	1405	4998	5335	0	13	27	29
ES	651	ALCOY	2051	873	1975	3283	3621	42	79	103	113
ES	652	ALGECIRAS	1064	85	1216	2584	2584	1	7	13	13
ES	653	ALICANTE	2412	711	2179	3547	5115	20	49	74	80
ES	654	ALMERIA	1617	97	1370	3592	4089	5	21	43	48
ES	655	ALZIRA	3140	1856	2972	4499	4982	118	161	189	198
ES	656	ANDUJAR	1081	90	473	3333	3466	2	7	22	25
ES	657	ARANJUEZ	1608	134	1321	3352	4069	6	24	44	50
ES	836	ARRECIFE	810	584	849	849	849	6	7	7	7
ES	658	AVILA	2764	1159	2529	4732	4934	43	76	125	133
ES	659	AVILES	1518	238	1647	2856	3367	6	18	30	32
ES	660	BADAJOS	1908	118	557	4917	5113	8	17	40	43
ES	661	BARCELONA	2108	1091	2022	3151	3417	73	117	155	163
ES	663	BENIDORM	975	277	876	1747	1887	10	24	35	38
ES	664	BILBAO	2332	935	2205	4188	4474	64	97	131	138
ES	662	BLANES	515	98	434	960	1067	8	19	41	46
ES	665	BURGOS	1923	606	1884	3170	3724	40	72	102	112
ES	666	CACERES	2005	61	2338	3871	4928	2	11	23	30
ES	847	CADIZ	1923	525	1571	3507	4736	6	10	15	19
ES	849	CARTAGENA	1603	45	1310	2887	3309	2	8	14	16
ES	667	CASTELLON DE LA PLAN	2257	1018	2239	3401	3600	40	70	94	99
ES	1354	CEUTA	86	19	19	19	19	1	1	1	1
ES	774	CIEZA	2061	73	1165	4765	5350	3	15	28	32
ES	845	CIUDAD REAL	2200	38	1072	4755	5694	2	12	30	34
ES	1570	COLLADOVILLALBA	2808	863	2898	4707	5090	26	52	82	90
ES	668	CORDOBA	1998	42	1785	5719	5895	2	10	27	28
ES	851	DENIA	772	277	737	1220	1573	28	44	59	65
ES	669	DON BENITO	1205	65	524	3529	3590	1	9	24	26
ES	671	DURANGO	1951	1123	1865	2729	3197	70	98	115	119
ES	689	EIBAR	3227	670	2329	8114	8237	21	37	64	67
ES	1391	EJIDO (EL)	1163	35	930	2217	2756	1	14	35	42
ES	672	ELCHE	2287	736	1968	4427	5178	22	42	59	68
ES	850	ELDA	2236	333	2090	3903	5474	6	27	47	53
ES	673	FERROL	890	279	727	1667	1800	10	18	30	32
ES	674	FIGUERES	1088	433	982	1766	2071	37	67	102	113
ES	675	GANDIA	1648	788	1666	2542	2722	52	85	123	129
ES	18	GERONA	1567	804	1627	2209	2434	52	82	108	116
ES	676	GIJON	1571	398	1626	2871	3098	7	18	31	32
ES	677	GRANADA	1805	370	1108	4347	4872	22	46	81	89
ES	854	GRANOLLERS	1300	464	1152	2277	2393	39	75	117	123

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ES	678	GUADALAJARA	1826	523	1660	3369	3973	18	47	79	88
ES	679	HUELVA	1073	237	751	2639	2864	4	12	28	29
ES	26	IBIZA	571	572	572	572	572	5	5	5	5
ES	680	IGUALADA	1023	263	935	1994	2286	14	46	81	94
ES	681	JAEN	2227	48	2082	4614	5676	2	18	40	51
ES	773	JEREZ DE LA FRONTERA	2818	506	2286	5008	5118	5	12	21	22
ES	844	LA CORUNA	1212	310	971	2245	2950	7	18	29	35
ES	696	LA OROTAVA	1581	1051	1647	1916	1916	21	27	29	29
ES	772	LAS PALMAS DE GRAN C	1037	763	1163	1267	1564	16	18	19	21
ES	777	LEON	2403	868	2450	4024	4790	15	44	68	78
ES	19	LERIDA	2992	863	2411	5432	5960	38	72	115	123
ES	682	LINARES	1385	70	819	3190	4215	2	9	25	33
ES	683	LOGRONO	2125	798	1877	3400	3792	42	92	141	151
ES	684	LORCA	1813	0	2684	3747	4729	0	5	11	14
ES	685	LUCENA	1913	109	1764	3941	4133	4	17	32	34
ES	965	LUGO	2565	163	2277	5720	5848	2	16	43	45
ES	770	MADRID	3250	1367	3087	4895	5956	35	62	100	114
ES	848	MALAGA	1140	168	942	2711	2976	5	13	28	32
ES	686	MANRESA	2114	826	1894	3688	3962	43	84	145	153
ES	687	MARBELLA	675	10	621	1726	1726	1	9	17	17
ES	855	MATARO	1746	825	1705	2744	2986	65	100	135	147
ES	1143	MELILLA	113	13	13	13	13	1	1	1	1
ES	688	MERIDA	1556	84	582	3480	5117	5	12	32	35
ES	690	MONDRAGON O ARRASATE	362	37	267	855	855	2	10	26	26
ES	691	MONTILLA	1512	82	1346	3386	3580	3	14	25	27
ES	692	MOTRIL	827	110	636	1850	2208	1	18	39	45
ES	693	MURCIA	2890	275	2507	6633	7683	16	39	59	61
ES	694	ONTINYENT	2755	1379	2329	5004	5098	68	89	118	123
ES	697	ORENSE	2376	533	1898	4692	5659	14	33	61	70
ES	695	ORIHUELA	2709	713	2335	4743	5817	24	44	62	65
ES	776	OVIEDO	1995	309	1311	3949	4198	5	18	35	39
ES	778	PALENCIA	1300	403	1041	2464	2659	15	31	58	63
ES	698	PALMA DE MALLORCA	3029	2012	3326	3408	3408	39	49	50	50
ES	699	PAMPLONA	2246	692	1920	4550	4861	35	72	122	128
ES	700	PONFERRADA	1524	195	1124	2851	3288	6	20	38	42
ES	701	PONTEVEDRA	2141	537	1916	4257	4542	18	49	88	93
ES	702	PUERTOLLANO	1470	38	1090	4106	4106	2	9	22	22
ES	1390	ROQUETAS DE MAR	949	101	588	1973	2761	3	11	29	33
ES	1309	SAGUNTO	992	322	840	1745	1807	21	32	57	61
ES	703	SALAMANCA	1947	649	1936	3122	3314	32	73	109	116
ES	670	SAN SEBASTIAN	1666	628	1607	2640	3289	51	91	134	143
ES	704	SANLUCAR DE BARRAMED	1559	278	551	3329	3831	3	6	14	16
ES	705	SANTA CRUZ DE TENERI	1439	696	1613	1776	1897	15	26	28	30
ES	706	SANTA LUCIA	1150	813	1117	1441	1441	12	16	20	20
ES	707	SANTANDER	1167	348	985	1991	2332	15	30	54	59
ES	708	SANTIAGO DE COMPOSTE	2941	782	2534	5268	5985	11	31	64	70
ES	846	SEGOVIA	2052	694	1717	3347	3990	22	55	86	96
ES	709	SEVILLA	2559	349	1787	6525	6525	17	35	62	62
ES	710	TALAVERA DE LA REINA	1738	249	1312	3873	4179	3	22	52	57
ES	711	TARRAGONA	1985	1197	1907	2881	3184	73	93	114	122
ES	712	TOLEDO	2315	611	2229	4139	5495	15	43	74	83
ES	713	TORRELAVEGA	1649	562	1624	2489	3118	21	43	57	64
ES	1389	TORREVIEJA	1623	365	1206	2621	4008	20	32	40	46
ES	714	UBEDA	1593	70	1546	3380	3734	2	13	23	28
ES	715	UTRERA	1836	0	1909	4183	4325	0	11	16	17
ES	852	VALENCIA	2799	1216	2909	4420	4761	78	120	159	166
ES	780	VALL D'UIXO (LA)	2009	814	1931	3301	3566	44	73	100	106
ES	779	VALLADOLID	1654	416	1486	3090	3347	13	38	71	78
ES	716	VELEZ MALAGA	904	71	519	1941	2172	4	13	28	34
ES	853	VIC	1541	599	1365	2728	3137	35	63	106	118
ES	818	VIGO	1691	474	1423	2740	3348	28	67	109	119
ES	775	VILAFRANCA DEL PENED	2414	1355	2418	3542	3890	90	132	174	188
ES	843	VILAGARCIA	1918	588	1628	3368	3534	12	24	46	48
ES	717	VILANOVA I LA GELTRU	1247	723	1065	1890	2064	45	63	93	97
ES	1388	VINAROS	1772	551	1751	2898	3505	13	30	44	48
ES	718	VITORIA-GASTEIZ	1891	158	1876	3625	3919	12	50	93	103
ES	719	XATIVA	2991	992	2962	4174	6240	81	129	163	180
ES	720	ZAMORA	1794	779	1466	3171	3297	24	43	80	84
ES	721	ZARAGOZA	2005	142	1150	4328	4799	10	28	57	64
FI	200	FORSSA	2055	616	1524	3778	5881	3	6	12	17
FI	1066	HAMEENLINNA	1955	184	1595	5646	6590	1	6	17	19

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FI	412	HELSINKI	1716	6	288	5126	7727	1	3	15	18
FI	201	IISALMI	1827	0	869	5535	6937	0	1	5	6
FI	202	IMATRA	1096	0	591	3116	3537	0	2	5	6
FI	1557	JAMSA	1665	0	806	3822	5488	0	1	8	11
FI	203	JOENSUU	1616	0	458	5004	6245	0	2	7	9
FI	1187	JYVASKYLA	2421	0	1233	5675	6700	0	4	12	13
FI	418	KAJAANI	1234	0	0	2498	7217	0	0	2	5
FI	204	KEMI	696	0	0	2530	4320	0	0	3	4
FI	205	KOKKOLA	1398	0	0	5082	5082	0	0	9	9
FI	413	KOTKA	1003	0	35	4577	5875	0	1	8	11
FI	1188	KOUVOLA	1952	45	562	5149	6096	1	3	11	12
FI	1184	KUOPIO	1315	0	505	3141	5718	0	1	4	7
FI	206	LAHTI	1405	154	685	4366	4366	1	2	9	9
FI	207	LAPPEENRANTA	1059	0	0	2652	3287	0	0	5	6
FI	90	LOHJA	1677	6	1140	5865	5865	1	4	15	15
FI	1359	MARIEHAMN	375	0	20	953	1738	0	1	4	5
FI	1186	MIKKELI	1783	98	1254	5305	6512	1	2	8	9
FI	208	OULU	1258	0	394	3660	5725	0	1	8	11
FI	1542	PIETARSAARI	839	0	0	3737	4365	0	0	5	7
FI	209	PORI	1661	139	600	4599	5570	1	3	12	14
FI	91	RAAHE	941	0	0	4040	4040	0	0	7	7
FI	210	RAUMA	1208	0	212	3017	3542	0	1	8	10
FI	211	RIIHIMAKI	2161	0	1005	6752	8654	0	4	18	22
FI	212	ROVANIEMI	1714	101	101	7980	7980	1	1	2	2
FI	213	SALO	1186	0	405	2945	3450	0	3	15	16
FI	1185	SAVONLINNA	932	0	0	3913	4333	0	0	4	5
FI	1183	SEINAJOKI	2821	124	2813	5554	5731	1	6	12	13
FI	1532	TAMMISAARI	1009	0	214	4465	4611	0	1	7	8
FI	1189	TAMPERE	2580	0	1566	5916	7591	0	6	18	21
FI	214	TORNIO	1120	0	0	4708	4708	0	0	4	4
FI	215	TURKU	2060	344	1675	4411	4954	3	12	26	27
FI	1357	VAASA	1256	0	0	4666	6894	0	0	6	9
FI	216	VARKAUS	1458	0	1265	3848	3848	0	4	6	6
FR	525	ABBEVILLE	3297	2111	3195	4438	4759	262	386	511	543
FR	865	AGEN	2622	1201	2657	3853	4143	89	155	216	234
FR	1352	AJACCIO	767	311	820	1273	1307	18	32	50	53
FR	1099	ALBERTVILLE	2235	948	2133	3704	3980	103	175	258	273
FR	728	ALBI	1399	629	1232	2170	2485	53	90	132	144
FR	882	ALENCON	2931	1702	2836	4199	4531	159	241	337	357
FR	526	ALES	2117	1117	2041	3216	3397	101	154	219	230
FR	527	AMIENS	4634	3234	4489	6171	6456	419	572	747	782
FR	528	ANGERS	3048	1492	2981	4417	4897	96	153	216	236
FR	529	ANGOULEME	2276	1186	2253	3293	3540	87	160	229	244
FR	860	ANNECY	3177	2083	3020	4380	4563	228	308	410	425
FR	884	ANNEMASSE	2689	1640	2600	3752	4355	212	287	365	388
FR	530	ANNONAY	1429	596	1357	2210	2658	67	125	183	203
FR	1100	ARCACHON	967	131	726	2060	2221	7	22	49	52
FR	1101	ARGENTAN	2000	1174	1821	2979	3193	116	182	281	298
FR	531	ARLES	3188	948	3343	5404	5933	51	101	172	190
FR	1076	ARMENTIERES	3820	1629	3721	5737	6266	173	295	429	469
FR	874	ARRAS	4102	2567	3834	5670	6118	419	578	757	793
FR	1102	AUBENAS	1930	1166	1916	2708	2953	91	127	164	176
FR	863	AUCH	2257	1171	2272	3310	3431	86	152	215	226
FR	532	AURILLAC	1602	800	1504	2421	2648	43	77	124	133
FR	533	AUTUN	2842	1479	2702	4160	4485	90	160	237	254
FR	534	AUXERRE	3449	1907	3323	5056	5446	151	222	320	341
FR	535	AVIGNON	3867	1984	3418	6301	6657	101	165	237	252
FR	880	BAR-LE DUC	1692	793	1657	2596	2826	68	119	179	195
FR	536	BASTIA	819	266	902	1207	1320	22	58	73	79
FR	1103	BAYEUX	2283	1256	2282	3151	3382	181	303	394	417
FR	731	BAYONNE	2686	1295	2641	3956	4243	72	131	182	192
FR	537	BEAUNE	3068	1572	2921	4420	4999	159	280	395	432
FR	729	BEAUVAIS	3868	2778	3763	5086	5404	342	448	584	615
FR	883	BELFORT	2834	1575	2666	4129	4400	249	370	491	515
FR	538	BERGERAC	2388	1310	2267	3510	3730	108	166	242	259
FR	539	BESANCON	2317	1147	2153	3483	3910	169	289	417	452
FR	540	BETHUNE	926	511	863	1361	1479	86	139	192	209
FR	730	BEZIERS	2923	1859	2973	3951	4262	113	161	214	225
FR	732	BLOIS	3985	2628	3731	5580	6213	159	217	299	319
FR	733	BORDEAUX	4802	2627	4615	7361	8126	253	326	408	436
FR	873	BOULOGNE-SUR-MER	1739	985	1750	2455	2546	122	190	256	267

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FR	888	BOURG-EN-BRESSE	3398	2153	3329	4594	4875	170	278	380	405
FR	541	BOURGES	3515	1718	3260	5415	5731	77	134	212	221
FR	817	BREST	1224	680	1093	1828	2070	40	63	89	97
FR	864	BRIVE-LA-GAILLARDE	2766	1503	2668	4249	4534	85	142	222	234
FR	734	CAEN	2851	1956	2743	3877	4131	279	366	469	494
FR	1256	CAHORS	1913	734	1749	3296	3679	58	108	178	189
FR	735	CALAIS	1980	894	1996	3122	3339	99	194	271	285
FR	542	CAMBRAI	4324	3034	4087	5924	6262	427	533	678	700
FR	543	CARCASSONNE	1835	924	1646	2862	3058	81	132	192	203
FR	544	CASTRES	1491	665	1423	2250	2566	50	89	133	148
FR	545	CHALON-SUR-SAONE	3261	1926	3090	4565	4957	185	284	396	418
FR	1572	CHALONS-EN-CHAMPAGNE	4212	2656	4030	5647	5832	210	305	406	420
FR	859	CHAMBERY	3665	2209	3561	5287	5832	236	360	502	538
FR	546	CHARLEVILLE-MEZIERES	2630	1068	2469	4368	5037	125	211	282	300
FR	547	CHARTRES	4393	2856	4338	5970	6366	219	330	469	501
FR	1106	CHATEAU-GONTIER	1392	559	1303	2252	2508	32	66	116	126
FR	1107	CHATEAU-THIERRY	3229	1622	3004	4998	5457	189	341	524	559
FR	1104	CHATEAUBRIANT	3007	1436	2911	4533	4874	61	113	169	179
FR	1105	CHATEAUDUN	2315	1070	2248	3564	3913	70	136	214	233
FR	785	CHATEAUROUX	3151	1447	3015	4819	5140	51	109	168	179
FR	548	CHATELLERAULT	1315	467	1258	2276	2415	24	61	99	106
FR	549	CHAUMONT	2885	1372	2808	4301	4530	110	193	282	298
FR	868	CHERBOURG	1544	1289	1511	1816	1862	144	171	200	205
FR	550	CHOLET	2335	828	2037	3987	4286	43	90	156	168
FR	736	CLERMONT-FERRAND	3499	2161	3287	5063	5361	175	247	338	356
FR	1108	CLUSES	2080	879	1959	3489	3611	103	173	243	256
FR	551	COGNAC	965	275	784	1769	1908	25	59	115	124
FR	552	COLMAR	3723	1900	3550	5540	6078	194	317	459	488
FR	553	COMPIEGNE	3765	2366	3755	4981	5306	301	457	618	661
FR	554	CREIL	4415	3296	4389	5558	5830	425	553	704	738
FR	1109	DAX	2045	877	2045	3248	3574	49	107	159	175
FR	870	DIEPPE	1464	793	1445	2144	2314	114	188	259	277
FR	27	DIGNE	1335	461	1150	2369	2558	24	46	86	92
FR	737	DIJON	3597	2241	3419	5141	5452	233	336	466	496
FR	1110	DINAN	1449	616	1394	2432	2765	55	93	139	152
FR	1111	DINARD	1340	700	1349	2060	2172	57	91	124	132
FR	788	DOLE	2716	1257	2645	4109	4403	172	303	453	479
FR	738	DOUAI	2987	1644	2853	4418	4780	265	392	534	568
FR	555	DRAGUIGNAN	1928	1013	1812	2906	3074	27	51	85	88
FR	556	DREUX	1995	820	1864	3240	3547	87	183	292	318
FR	837	DUNKERQUE	2674	1382	2625	3858	4180	80	146	215	230
FR	1112	ELBEUF	3356	2014	3147	4671	5105	286	407	561	599
FR	879	EPERNAY	2739	1416	2645	4131	4418	149	245	348	368
FR	893	EPINAL	1495	568	1565	2326	2524	70	133	197	212
FR	872	EVREUX	2456	1589	2378	3376	3546	218	298	399	419
FR	869	FECAMP	115	60	117	144	144	10	18	23	23
FR	891	FORBACH	4371	2471	4163	6336	6642	223	335	471	508
FR	557	FOUGERES	3263	2094	2984	4870	5110	121	173	268	285
FR	558	FREJUS	1661	710	1739	2447	2811	20	51	74	86
FR	559	GAP	1453	716	1287	2462	2787	45	76	123	133
FR	560	GRENOBLE	2711	1307	2593	4178	4544	141	245	334	355
FR	1113	GUEBWILLER	1442	419	1333	2493	2706	56	143	238	258
FR	1067	GUERET	1148	415	1031	1865	2002	25	52	82	89
FR	1114	GUINGAMP	2303	1226	2078	3348	3708	93	132	183	194
FR	561	HAGUENAU	4075	1997	3899	6064	6467	209	336	464	492
FR	1115	ISSOIRE	2109	992	2000	3327	3651	106	169	249	268
FR	562	ISTRES	1988	893	1320	3636	3714	26	45	80	84
FR	563	LA ROCHE-SUR-YON	2764	1328	2688	4069	4519	48	96	151	165
FR	564	LA ROCHELLE	1182	453	1131	1875	2071	35	68	107	117
FR	1116	LANNION	1638	896	1631	2388	2639	68	102	134	144
FR	565	LAON	2935	1940	2846	3898	4242	245	339	455	487
FR	739	LAVAL	2577	1164	2339	4025	4415	63	120	200	220
FR	1567	LE CREUSOT	2425	1425	2404	3383	3675	135	198	271	287
FR	1212	LE HAVRE	1592	952	1507	2289	2442	101	173	251	272
FR	740	LE MANS	3152	1433	2943	4844	5539	108	186	280	306
FR	566	LEPUY-EN-VELAY	1692	768	1645	2486	2652	48	89	127	135
FR	567	LIBOURNE	4476	2746	4456	6172	6774	288	370	453	467
FR	875	LILLE	5300	3004	4980	7715	8204	282	387	508	533
FR	741	LIMOGES	3614	1949	3686	5172	5629	85	140	194	211
FR	568	LISIEUX	3375	2438	3321	4326	4569	301	390	489	512
FR	569	LONS-LE-SAUNIER	2418	1502	2348	3374	3592	186	265	348	361

FR	867	LORIENT	1180	332	1109	1935	2339	20	42	64	75
FR	1117	LOURDES	1411	519	1318	2246	2702	113	187	253	272
FR	1118	LUNEL	2732	1263	2428	4677	4967	95	149	215	227
FR	892	LUNEVILLE	1692	824	1643	2500	2770	97	175	252	274
FR	742	LYON	4833	3225	4759	6353	6648	312	432	551	571
FR	887	MACON	3649	2345	3516	4971	5299	229	326	438	465
FR	1119	MARMANDE	1698	789	1647	2606	2824	94	163	235	249
FR	743	MARSEILLE-AIX-EN-PRO	3293	1878	3278	4681	4775	69	103	133	136
FR	889	MAUBEUGE	4994	3377	4770	6951	7418	206	263	336	360
FR	1120	MAYENNE	2804	1483	2686	4142	4629	85	147	219	239
FR	744	MENTON	1386	561	1269	2322	2484	53	92	125	130
FR	745	METZ	5669	4148	5481	7341	7925	492	596	737	777
FR	570	MILLAU	1333	374	1176	2297	2707	12	45	83	95
FR	571	MONT-DE-MARSAN	2265	1184	1965	3657	3971	66	101	162	170
FR	1121	MONTARGIS	2095	751	2058	3466	3834	52	118	189	208
FR	572	MONTAUBAN	2414	884	2321	3791	4098	48	123	209	228
FR	573	MONTBELIARD	1989	1126	1858	2869	3311	193	282	386	415
FR	1122	MONTBRISON	600	195	538	1085	1206	18	46	79	85
FR	1098	MONTELMAR	2632	1824	2509	3589	3845	111	148	212	224
FR	1123	MONTEREAU-FAUT-YONNE	2801	1485	2638	4230	4484	136	231	353	374
FR	574	MONTLUCON	2000	892	1842	3041	3480	52	94	150	168
FR	746	MONTPELLIER	3730	2138	3767	5621	5838	161	222	280	289
FR	1124	MORLAIX	1894	726	1704	3249	3524	40	85	151	160
FR	575	MOULINS	2402	1109	2297	3597	3821	49	97	155	166
FR	576	MULHOUSE	4693	2721	4662	6444	6848	337	487	643	674
FR	577	NANCY	3398	2056	3306	4766	5096	253	372	503	535
FR	578	NANTES	3452	1263	3300	5860	6272	61	124	195	210
FR	579	NARBONNE	1940	663	1906	3070	3396	43	104	167	182
FR	580	NEVERS	2840	1276	2670	4303	4506	64	122	189	201
FR	857	NICE	1173	558	1011	1954	1978	46	74	103	105
FR	581	NIMES	3964	2052	3366	6375	6590	144	205	277	290
FR	582	NIORT	3232	1757	3078	4948	5302	117	185	268	287
FR	1125	NOGENT-LE-ROTHOU	1956	971	1887	3042	3536	74	130	196	224
FR	1126	OLORON-STE-MARIE	1122	450	946	2038	2291	43	71	108	121
FR	583	ORLEANS	3220	1357	2914	5267	5635	89	156	253	272
FR	1127	PAMBIERS	1000	405	976	1564	1652	52	96	138	144
FR	876	PARIS	6554	5057	6352	8126	8478	686	824	968	996
FR	747	PAU	2591	1204	2456	3990	4427	148	248	361	390
FR	748	PERIGUEUX	1916	811	1818	2977	3258	50	106	164	181
FR	749	PERPIGNAN	1709	712	1667	2512	2914	59	103	147	160
FR	750	POITIERS	2666	862	2585	4525	5072	50	120	193	215
FR	1128	PONTARLIER	2734	1529	2516	4014	4270	161	268	386	410
FR	1129	PONTIVY	1181	310	1160	2070	2244	16	47	73	81
FR	1068	PRIVAS	2178	1077	2149	3219	3437	83	147	208	222
FR	751	QUIMPER	1967	1073	1823	3183	3389	38	62	104	109
FR	1130	REDON	1452	407	1386	2584	2710	18	48	85	92
FR	878	REIMS	3924	2305	3904	5447	6013	241	362	482	518
FR	584	RENNES	4113	2508	3910	5970	6537	143	207	294	315
FR	886	ROANNE	1534	760	1479	2339	2537	49	95	143	155
FR	585	ROCHEFORT	1646	871	1590	2419	2510	61	103	150	155
FR	862	RODEZ	1759	713	1618	2744	3084	29	61	102	112
FR	858	ROMANS-SUR-ISERE	1538	833	1519	2262	2383	57	109	161	172
FR	1131	ROMORANTIN-LANTHENAY	1548	674	1351	2535	2746	27	54	96	106
FR	871	ROUEN	4715	3565	4628	6025	6237	457	571	709	735
FR	1132	ROUSSILLON	2005	1196	1845	2990	3177	121	178	263	277
FR	1134	SAINT-AVOLD	4351	2728	4261	6031	6494	285	406	530	557
FR	1135	SAINT-OMER	2061	938	1936	3218	3468	126	211	322	351
FR	586	SAINT BRIEUC	2305	1199	2179	3569	3819	80	125	187	199
FR	752	SAINT CHAMOND	4094	2981	4028	5220	5439	269	341	435	451
FR	587	SAINT DIE	1899	861	1955	2825	3046	85	154	211	227
FR	588	SAINT DIZIER	2124	1014	1972	3300	3629	88	153	238	254
FR	753	SAINT ETIENNE	3218	2020	3165	4307	4637	172	255	332	360
FR	589	SAINT LO	3598	2680	3514	4528	4780	282	369	463	484
FR	1133	SAINT LOUIS	5074	3164	4998	6962	7478	448	596	766	807
FR	590	SAINT MALO	1036	491	955	1550	1749	38	70	101	111
FR	816	SAINT NAZAIRE	1657	772	1570	2623	2880	29	50	77	87
FR	877	SAINT QUENTIN	3475	2136	3379	4728	5040	333	470	601	631
FR	591	SAINTE	2617	1436	2648	3764	4042	103	178	252	270
FR	592	SALON-DE-PROVENCE	3929	1658	3612	6496	6919	64	112	176	190
FR	1136	SARREBOURG	953	477	856	1643	1769	70	115	177	192
FR	593	SARREGUEMINES	4098	2104	3897	6303	6784	188	299	448	487
FR	1218	SAUMUR	2627	1003	2572	4075	4542	67	141	211	233

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FR	594	SEDAN	2839	1022	2706	4380	5241	108	192	262	286
FR	595	SENS	3741	2171	3645	5344	5783	162	264	372	402
FR	856	SETE	1629	669	1531	2575	3049	44	93	143	154
FR	596	SOISSONS	3149	2099	3077	4323	4623	282	384	507	539
FR	754	STRASBOURG	4104	1952	4100	5990	6677	199	322	437	459
FR	597	TARBES	2837	1574	2741	4056	4471	254	381	498	528
FR	1137	THANN	2931	1450	2797	4324	4646	197	317	434	456
FR	890	THIONVILLE	4813	3236	4556	6610	7035	310	403	521	550
FR	598	THONON-LES-BAINS	1026	587	961	1568	1807	85	121	172	181
FR	1138	TOUL	3551	2318	3501	4875	5225	237	348	480	512
FR	819	TOULON	1890	651	1599	3300	3505	28	54	91	96
FR	784	TOULOUSE	3483	1684	3252	5308	5710	170	260	361	391
FR	881	TOURS	3369	1405	3290	5308	5813	78	169	256	275
FR	1139	TROUVILLE-SUR-MER	2475	1623	2381	3377	3506	195	284	396	411
FR	755	TROYES	3285	1636	3187	4766	5207	138	244	339	363
FR	599	TULLE	2352	1168	2198	3622	3874	62	112	170	181
FR	786	VALENCE	2140	1141	2029	3138	3350	95	159	230	244
FR	756	VALENCIENNES	5859	3956	5739	7846	8381	341	479	625	660
FR	866	VANNES	1893	737	1718	3218	3301	41	75	123	129
FR	1140	VENDOME	2375	977	2360	3803	4068	70	133	209	223
FR	787	VERDUN	4022	2501	3935	5469	5824	245	362	481	507
FR	600	VESOUL	2623	1695	2627	3501	3713	198	274	342	357
FR	885	VICHY	2619	1492	2452	3871	4221	99	152	228	243
FR	601	VIENNE	4000	2555	3799	5521	6059	250	356	480	511
FR	602	VIERZON	3288	1342	2943	5799	6076	47	101	187	198
FR	861	VILLEFRANCHE-SUR-SAO	3061	1820	2968	4231	4638	203	306	409	432
FR	603	VILLENEUVE-SUR-LOT	2450	1331	2417	3593	3772	90	155	218	228
FR	1213	VIRE	3226	2084	3175	4225	4439	223	315	411	430
FR	1141	VITRY-LE-FRANCOIS	1950	994	1722	3090	3327	76	120	198	212
FR	1142	VOIRON	2346	1302	2237	3493	3803	131	211	297	317
GR	648	AGRINION	2787	718	2888	4813	5055	7	16	26	27
GR	1145	AIYION	1743	817	1776	2409	3376	9	14	19	23
GR	647	ALEXANDROUPOLIS	2240	642	2259	3345	3609	1	7	10	12
GR	1146	AMALIAS	1963	959	1806	2964	3247	8	15	24	26
GR	769	ARGOS	2681	712	2690	4633	5631	8	19	31	36
GR	1069	ARTA	2025	583	2041	3307	3573	7	18	27	30
GR	1144	ATHINAI	1950	933	1653	3249	3517	79	94	114	116
GR	1568	CORFU	91	0	137	137	137	0	3	3	3
GR	832	DRAMA	2889	826	2341	5923	6363	7	15	24	27
GR	1070	EDHESSA	2685	557	2168	5358	5637	6	15	29	31
GR	1147	ERMROUPOLIS	84	35	103	103	103	2	3	3	3
GR	1330	GIANNITSA	4252	1688	3977	6917	7227	23	44	60	62
GR	1559	IERAPETRA	428	0	399	1188	1188	0	1	4	4
GR	829	IOANNINA	3524	1543	3164	5387	6289	16	28	39	42
GR	835	IRAKLION	983	203	771	1889	1992	4	10	19	21
GR	1148	KALAMATA	2577	713	2448	4257	5350	9	22	36	42
GR	642	KARDHITSA	3155	1127	3085	5223	6536	13	30	42	47
GR	782	KATERINI	3490	1211	3326	5017	5793	11	29	45	51
GR	645	KAVALLA	2834	1009	2587	4476	4985	8	18	24	26
GR	640	KHALKIS	2361	532	1911	4675	4780	13	29	55	57
GR	827	KHANIA	649	74	557	1621	1743	4	11	21	22
GR	768	KHIOS	807	475	846	846	846	6	8	8	8
GR	1080	KILKIS	3428	1330	3220	5432	6065	23	36	48	52
GR	834	KOMOTINI	2583	737	2765	3870	4361	5	14	17	19
GR	814	KORINTHOS	1957	470	1822	3958	4000	6	16	31	32
GR	646	KOZANI	4078	1420	4081	6414	6999	8	21	36	40
GR	828	LAMIA	2190	195	1891	4661	4740	2	11	25	26
GR	643	LARISA	4403	1453	4521	6836	7510	12	32	48	52
GR	1078	LEVADHIA	2002	111	1980	3942	3942	1	15	27	27
GR	826	MITILINI	1187	723	1347	1347	1347	8	12	12	12
GR	1149	NAOUSA	2409	717	2647	4137	4967	9	18	26	31
GR	1150	ORESTIAS	1903	426	1526	3344	3344	2	6	9	9
GR	767	PATRAI	2169	838	1834	3953	4571	9	17	29	32
GR	783	PIRGOS	2408	1364	2307	3580	3892	10	18	29	31
GR	781	PTOLEMAIS	3121	889	3273	5145	6269	8	21	30	35
GR	1355	RETHIMNON	640	0	769	1289	1365	0	9	17	18
GR	962	RODHOS	877	614	794	1027	1408	7	8	9	10
GR	1331	SERRAI	3381	823	3104	5466	8404	7	22	32	39
GR	831	THESSALONIKI	5276	2642	5065	7678	8267	39	55	67	71
GR	1151	THIVA	2528	381	2262	4123	5177	8	25	46	52

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GR	644	TRIKKALA	3567	1354	3302	5703	5958	16	29	43	45
GR	641	TRIPOLIS	3801	1009	4261	6285	7026	10	28	42	47
GR	830	VEROIA	4634	1380	4433	7497	7845	14	33	52	56
GR	1074	VOLOS	1949	503	1436	3989	4381	11	18	31	34
GR	833	XANTHI	3136	1097	3124	4383	5415	7	17	23	25
HU	110	AJKA	1094	437	1096	1882	1924	27	48	84	87
HU	349	BAJA	1868	430	1699	3001	3576	11	32	58	66
HU	1578	BALATONALMADI	2007	543	1838	3526	3866	29	62	116	128
HU	126	BALATONFURED	1830	566	1563	3207	3414	42	79	137	146
HU	118	BALMAZUJVAROS	780	0	810	1542	2142	0	4	11	13
HU	350	BEKESCSABA	1927	402	1889	3463	3769	5	23	39	42
HU	120	BERETTYOUJFALU	1995	516	1868	3761	4883	12	30	54	64
HU	116	BUDAORS	2781	1126	2443	4388	5024	51	94	142	160
HU	351	BUDAPEST	3788	1526	3549	6173	6734	74	131	202	218
HU	352	CEGLED	1748	304	1662	3420	3961	3	17	47	51
HU	353	DEBRECEN	2101	159	1934	4062	4381	5	20	41	48
HU	354	DUNAKESZI	2558	1037	2407	4110	4782	53	105	157	177
HU	355	DUNAUJVAROS	1362	282	1200	2321	2710	9	26	49	55
HU	111	EGER	2203	1112	2139	3392	3807	44	79	112	121
HU	356	ESZTERGOM	1206	392	1200	1823	2031	28	61	85	93
HU	1564	FEHERGYARMAT	1257	568	1083	1898	2119	35	59	81	92
HU	1562	FONYOD	1318	292	1222	2427	2621	16	52	97	106
HU	357	GODOLLO	3312	1481	2986	5755	6253	66	118	190	204
HU	119	GYAL	1817	615	1705	2989	3580	29	65	99	117
HU	112	GYONGYOS	2134	833	1885	3551	3872	30	66	113	124
HU	358	GYOR	3586	2092	3393	5451	5809	110	163	244	254
HU	359	HAJDUBOSZORMENY	1453	0	1294	2964	3165	0	12	31	33
HU	113	HAJDUSZOBOSZLO	1584	64	1573	3084	3846	1	15	27	34
HU	360	HATVAN	2764	1008	2802	4302	5030	44	95	144	161
HU	361	HODMEZOVASARHELY	1580	43	1560	2906	3064	1	14	27	29
HU	362	JASZBERENY	1795	401	1668	3075	3590	9	36	65	79
HU	363	KALOCSA	982	177	824	2007	2222	5	17	36	40
HU	364	KAPOSVAR	1740	830	1933	2602	2905	53	95	121	130
HU	365	KARCAG	873	0	897	1851	2079	0	5	15	17
HU	366	KAZINCBARCIKA	1620	626	1488	2639	2949	46	95	142	155
HU	367	KECSKEMET	2280	414	2442	4429	5007	4	29	54	61
HU	368	KESZTHELY	1868	626	1864	3142	3372	49	108	167	176
HU	127	KISKOROS	2170	617	1888	4010	4599	10	24	51	55
HU	369	KISKUNFELEGYHAZA	1805	315	1245	3811	4320	6	13	39	44
HU	370	KISKUNHALAS	1865	248	1690	3426	3859	3	19	40	45
HU	117	KISVARDA	1300	669	942	1617	1731	31	44	62	67
HU	1333	MAKO	1807	157	1654	3224	3958	5	20	41	46
HU	371	MATESZALKA	1751	739	1667	2624	2719	39	73	96	101
HU	372	MISKOLC	1684	539	1552	2866	3176	35	80	130	141
HU	373	MOHACS	1234	365	1043	1994	2224	22	45	77	84
HU	124	MOR	1735	593	1671	2873	3520	21	47	88	103
HU	374	MOSONMAGYAROVAR	1849	562	1731	3074	3407	21	58	112	125
HU	375	NAGYKANIZSA	1826	776	1509	2747	2912	41	74	124	132
HU	129	NAGYKATA	1708	451	1686	3232	3418	11	28	60	65
HU	376	NYIREGYHAZA	2670	1424	2548	4243	4751	42	71	108	115
HU	377	OROSHAZA	996	0	787	1849	2549	0	7	17	21
HU	822	OROSZLANY	1129	246	1059	2179	2594	12	34	68	77
HU	378	OZD	1283	598	1153	2036	2052	44	78	113	114
HU	379	PAKS	1505	70	1356	2635	3261	4	25	53	63
HU	380	PAPA	2117	947	2047	3438	3638	54	89	149	155
HU	381	PECS	1672	756	1485	2522	2835	55	106	159	166
HU	130	PILISVOROSVAR	1856	741	1721	3244	3448	43	76	127	134
HU	121	PUSPOKLADANY	1250	68	1216	2572	2749	2	12	30	32
HU	1539	RACKEVE	881	159	788	1697	1726	8	27	48	49
HU	1538	RETSAG	2060	1095	2055	2878	3038	64	118	171	182
HU	382	SALGOTARIJAN	1472	638	1464	2322	2441	37	79	135	143
HU	131	SARKAD	1124	156	1124	2220	2467	2	13	27	31
HU	125	SAROSPATAK	921	252	981	1404	1574	22	51	76	84
HU	123	SARVAR	2430	1273	2319	3559	3824	101	155	213	222
HU	383	SATORALJAUJHELY	941	288	954	1550	1694	30	61	89	97
HU	384	SIOFOK	2482	725	2490	4068	4399	33	71	122	132
HU	385	SOPRON	3479	1965	3276	5158	5445	126	179	239	249
HU	122	SZARVAS	1766	270	1959	3396	3604	3	18	35	39
HU	386	SZEGED	2011	309	1494	3358	4034	7	20	40	45
HU	387	SZEKESFEHERVAR	2028	674	1860	3574	4017	27	56	95	108
HU	388	SZEKSZARD	1626	451	1627	2918	3131	18	43	79	84

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HU	114	SZENTENDRE	2059	1182	1944	3165	3525	52	79	122	135
HU	389	SZENTES	1850	216	1814	3498	3967	5	19	36	39
HU	132	SZERENC	1091	360	895	2025	2215	17	41	67	76
HU	390	SZOLNOK	1651	69	1382	3356	3699	2	21	44	48
HU	391	SZOMBATHELY	3396	2038	3184	4937	5322	120	178	266	283
HU	392	TATABANYA	1254	294	1142	2407	2718	15	42	77	84
HU	128	TISZAFURED	1233	403	951	2306	2599	5	17	36	42
HU	115	TISZUJVAROS	1167	239	927	2440	2510	15	37	59	60
HU	393	VAC	1989	940	1826	3206	3393	52	88	142	151
HU	394	VESZPREM	2187	918	2249	3448	3774	44	82	132	148
HU	1223	ZALAEGERSZEG	2635	1511	2539	3752	4141	128	181	238	251
IE	766	CORK	2541	1447	2534	3624	3976	141	189	232	248
IE	765	DUBLIN	2976	1615	2949	4133	4442	351	406	461	477
IE	1215	DUNDALK	3288	2130	3194	4461	4835	114	156	208	222
IE	1360	GALWAY	2755	1230	2539	4395	4728	78	121	181	193
IE	810	LIMERICK	5227	3757	5113	6930	7399	229	282	355	373
IE	1152	TRALEE	1964	1015	1873	2940	3009	46	75	114	117
IE	1214	WATERFORD	3405	2477	3387	4408	4733	190	231	282	295
IT	914	ADRANO	1857	238	1930	3490	4076	17	40	61	67
IT	971	AGRIGENTO	2144	1219	1795	3294	3745	21	29	44	47
IT	1381	ALASSIO	1386	733	1306	2083	2351	63	82	113	119
IT	936	ALBA	4919	3483	4898	6141	6454	199	259	315	331
IT	1320	ALCAMO	2259	622	2089	3635	3834	18	31	43	48
IT	895	ALESSANDRIA	5759	3860	5485	7819	8197	222	319	424	446
IT	1310	ALGHERO	1790	539	1872	2679	2746	8	25	44	45
IT	1271	ANCONA	1367	507	1472	2346	2478	17	35	59	65
IT	934	AOSTA	1779	349	1811	3303	3415	25	77	114	120
IT	1307	APRILIA	3136	1128	3495	4122	4265	25	36	50	54
IT	1266	AREZZO	3897	1973	4031	6069	6299	27	48	73	74
IT	957	ARZIGNANO	2714	1419	2718	4019	4403	73	123	172	186
IT	1275	ASCOLI PICENO	2769	1689	2632	4050	4526	57	77	103	112
IT	1247	ASTI	6391	4419	6437	8106	8717	279	365	460	482
IT	979	AVELLINO	4192	2530	4010	5905	6446	203	248	305	318
IT	983	AVERSA	3398	2172	3435	4491	4935	156	219	263	274
IT	926	AVEZZANO	1719	216	1551	3443	3763	6	34	75	85
IT	1579	AVIGLIANA	3821	1735	3796	6012	6549	113	202	284	305
IT	911	BAGHERIA	1962	840	1565	3507	3638	28	42	62	65
IT	1319	BARCELLONA POZZO DI	1111	304	981	1728	2204	22	42	71	78
IT	1577	BARGA	1339	175	1465	2441	2972	5	27	47	54
IT	977	BARI	2550	648	2416	4671	5485	14	30	47	50
IT	1303	BARLETTA	2614	911	2434	4169	4988	7	18	35	39
IT	954	BASSANO DEL GRAPPA	3381	1956	3189	4883	5295	95	137	204	218
IT	1313	BATTIPAGLIA	4957	3614	4871	6288	6813	167	212	269	282
IT	946	BELLUNO	2327	610	1970	4380	4981	15	51	111	121
IT	985	BENEVENTO	4740	2816	4629	6732	7045	163	221	291	305
IT	1010	BERGAMO	6608	5004	6519	8326	8997	534	640	770	803
IT	1004	BIELLA	4070	2457	3831	5821	6337	195	272	365	392
IT	918	BISCEGLIE	1306	172	1342	2639	3137	2	12	22	26
IT	1242	BOLOGNA	5981	3018	5549	9480	10183	59	91	137	151
IT	1017	BOLZANO	2996	1296	2550	4916	5791	58	99	169	180
IT	1370	BORGOMANERO	6062	4462	5940	8011	8378	398	494	627	653
IT	1011	BRESCIA	6773	4648	6749	8813	9290	316	422	535	554
IT	1363	BRESSANONE	1588	291	1590	3197	3661	11	37	70	81
IT	1353	BRINDISI	1716	834	1790	2467	2890	11	25	38	44
IT	1362	BRUNICO	1529	198	1021	3688	3801	7	24	54	56
IT	1229	BUSTO ARSIZIO	7375	6205	7275	8604	8845	703	788	901	922
IT	967	CAGLIARI	2070	451	1604	3884	3971	12	33	56	59
IT	1324	CALTAGIRONE	2597	445	2651	4938	5353	8	23	34	38
IT	972	CALTANISSETTA	3472	929	3236	5545	6504	14	36	55	63
IT	986	CAMPOBASSO	2045	964	1895	2981	3386	36	63	92	98
IT	1252	CARMAGNOLA	5871	4133	5658	7702	8094	219	290	404	423
IT	1243	CARPI	4598	2452	4591	7301	7939	58	102	150	160
IT	990	CARRARA	2796	903	2773	4590	4837	35	66	102	109
IT	1248	CASALE MONFERRATO	6877	4871	6926	8654	9013	260	368	494	522
IT	1385	CASARANO	811	228	668	1280	1576	13	29	45	49
IT	984	CASERTA	4354	2901	4244	5817	6076	209	260	309	320
IT	1308	CASSINO	3311	1491	3063	5291	5891	53	102	169	187
IT	955	CASTELFRANCO VENETO	4073	2393	3599	6327	6926	107	157	242	257
IT	980	CASTELLAMMARE DI STA	3085	2034	2942	4483	4723	161	203	253	262
IT	1573	CASTELNUOVODIGARFAGN	1053	134	962	1869	2137	5	19	37	43

IT	1321	CASTELVETRANO	2718	1624	2764	3936	4006	17	28	41	43
IT	1325	CATANIA	3341	1497	3077	5179	5298	45	64	88	90
IT	974	CATANZARO	2135	947	2108	3368	3508	37	65	102	105
IT	1296	CERIGNOLA	3916	1210	3899	6567	6918	9	28	50	55
IT	1269	CESENA	3005	708	3031	4732	5190	18	44	70	76
IT	1374	CHIARI	5213	3739	5075	6697	7083	346	433	523	540
IT	932	CHIAVARI	2406	961	2245	3801	3981	49	81	119	125
IT	1251	CHIERI	5095	3411	4704	7031	7593	222	297	391	414
IT	1274	CHIETI	2644	1370	2433	4135	4291	57	92	148	156
IT	1377	CIRIE'	4148	2193	3967	6324	6852	155	233	334	347
IT	1571	CITTADELLA	5104	3496	4771	7104	7713	167	216	277	290
IT	989	CIVITAVECCHIA	1283	149	554	3193	3234	3	6	14	15
IT	1232	COMO	5879	4651	5874	7221	7596	657	743	850	877
IT	949	CONEGLIANO	4450	2433	4238	6833	7314	88	138	193	207
IT	1569	COPPARO	1101	78	1227	2364	2364	3	16	30	30
IT	1282	CORTONA	2833	803	2506	4926	5724	12	28	50	59
IT	976	COSENZA	2687	1527	2544	4246	4668	66	88	116	120
IT	1373	COSSATO	3646	2179	3333	5280	5694	170	243	358	381
IT	941	CREMA	6101	4449	6065	7410	7623	396	479	567	588
IT	1015	CREMONA	6130	4423	6281	7822	8128	244	310	388	403
IT	975	CROTONE	1161	625	990	2007	2188	9	15	29	32
IT	1255	CUNEO	3436	1787	3356	4928	5651	76	128	165	180
IT	1367	DARFO BOARIO TERME	1977	882	1793	3079	3343	92	149	211	227
IT	1234	DESENZANO DEL GARDA	5011	3015	4806	6953	7560	164	239	326	353
IT	940	DESIO	5714	4282	5599	7067	7402	496	607	735	763
IT	1364	DOMODOSSOLA	1801	891	1855	2545	2766	60	91	116	125
IT	1312	EBOLI	5122	3736	5075	6407	6886	164	208	246	259
IT	1265	EMPOLI	2131	687	1756	4066	4418	22	42	71	76
IT	915	ENNA	2555	857	2099	5051	5901	9	21	43	50
IT	928	FABRIANO	1732	120	1758	3417	3653	4	19	31	35
IT	1268	FAENZA	4154	1478	4253	6505	7308	24	53	82	88
IT	1002	FANO	1433	599	1507	2497	2816	20	37	58	63
IT	1238	FELTRE	2660	663	2750	4478	4693	29	84	129	135
IT	1276	FERMO	2272	1406	2023	3321	3693	65	86	110	116
IT	1239	FERRARA	4881	2040	4360	7393	8269	54	103	162	179
IT	1244	FIDENZA	4336	2283	4112	6236	6714	85	129	196	208
IT	995	FIRENZE	4710	2306	4320	8001	8695	48	73	115	124
IT	1297	FOGGIA	3279	166	3033	6448	7175	4	21	52	59
IT	1278	FOLIGNO	1954	385	1697	3674	4146	5	17	33	38
IT	997	FORLI'	3233	1095	3282	5218	5360	19	40	64	68
IT	1305	FORMIA	1960	815	1989	3158	3483	22	45	71	83
IT	1254	FOSSANO	4262	2682	4029	5803	6288	128	185	244	262
IT	923	FROSINONE	4465	2333	4080	7353	7831	73	112	146	158
IT	938	GALLARATE	6930	5447	6971	8185	8672	614	733	843	876
IT	1315	GALLIPOLI	1479	467	1371	2503	2544	23	49	74	77
IT	1323	GELA	2306	1020	2323	3547	4606	7	17	25	30
IT	1013	GENOVA	2622	1566	2483	3933	4517	73	110	156	167
IT	913	GIARRE	2013	464	1704	3977	4844	36	60	84	94
IT	1314	GINOSA	695	0	570	1828	1828	0	2	9	9
IT	1302	GIOIA DEL COLLE	3703	1303	3606	6112	6938	21	42	55	61
IT	1523	GIOIA TAURO	1975	1176	1975	3028	3174	53	74	98	102
IT	1273	GIULIANOVA	2258	1182	2097	3566	4182	45	68	109	116
IT	948	GORIZIA	2961	1066	2933	5260	5953	54	96	133	139
IT	1284	GROSSETO	1458	0	1578	2879	3622	0	8	14	18
IT	1379	GUASTALLA	2950	1232	2811	4633	5174	38	64	111	125
IT	1281	GUBBIO	1914	185	1573	3842	4129	4	13	33	35
IT	909	IGLESIAS	1503	83	1330	2999	3527	2	21	41	46
IT	1267	IMOLA	4827	1906	4816	7351	8293	31	56	85	96
IT	1259	IMPERIA	1581	913	1545	2290	2550	76	99	128	136
IT	1558	ISEO	1398	534	1300	2291	2669	42	100	165	180
IT	922	ISERNIA	2893	1044	2832	4644	5060	38	98	154	166
IT	935	IVREA	4730	2910	4496	6751	7401	201	280	383	409
IT	1272	JESI	420	176	257	847	1028	4	9	24	28
IT	1289	L'AQUILA	3492	1240	3267	5505	5810	30	66	114	125
IT	1261	LA SPEZIA	2392	803	2483	3903	4336	33	64	92	99
IT	1581	LAMEZIA TERME	1056	351	873	1968	2133	9	32	72	78
IT	931	LANCIANO	1585	794	1413	2541	2766	39	62	97	104
IT	987	LATINA	1526	671	1650	2267	2328	6	22	36	37
IT	1298	LECCE	2064	844	2157	3130	3388	28	51	73	79
IT	937	LECCO	4188	2796	4095	5490	5880	415	535	672	697
IT	1246	LEGNAGO	3399	1617	3327	5124	5871	63	119	182	195

IT	1326	LENTINI	2332	977	1757	4461	4461	22	37	64	64
IT	1286	LIVORNO	2364	1014	2238	3528	3920	28	47	72	75
IT	943	LODI	6632	5094	6618	8102	8337	444	540	652	673
IT	1552	LONIGO	3497	1744	3495	5250	5546	79	143	218	230
IT	992	LUCCA	3710	1680	3599	5502	6309	42	72	115	128
IT	1241	LUGO	4042	1276	4027	6514	7024	20	42	74	78
IT	1365	LUINO	2378	1533	2373	3238	3547	282	366	446	466
IT	939	LUMEZZANE	1481	772	1478	2225	2417	50	81	124	132
IT	929	MACERATA	1864	484	1930	3000	3109	17	46	77	81
IT	1386	MACOMER	2201	450	2257	3940	4434	16	50	70	77
IT	1376	MANERBIO	5697	4079	5411	7478	7987	275	347	432	457
IT	1295	MANFREDONIA	1682	300	1601	3812	3812	4	9	20	20
IT	1014	MANTOVA	5493	3559	5579	7163	7782	113	167	221	230
IT	968	MARSALA	1798	1135	1578	2444	2506	8	13	23	25
IT	1299	MARTINA FRANCA	2226	393	2347	4234	4365	10	25	43	44
IT	1262	MASSA	2728	857	2591	4473	5014	31	62	99	106
IT	1301	MATERA	3061	231	2644	5802	6451	2	18	41	47
IT	1383	MELFI	2568	837	1952	4922	5190	13	36	60	65
IT	945	MERANO	2253	808	1988	3859	5058	49	80	114	123
IT	1318	MESSINA	1552	528	1463	2717	2948	33	62	104	111
IT	1231	MILANO	8769	6689	8619	10863	11381	686	836	994	1024
IT	910	MILAZZO	1015	172	944	1793	2021	18	42	70	77
IT	998	MODENA	4999	2796	4799	7774	8706	61	97	154	166
IT	1328	MODICA	1521	211	1557	2655	2707	3	12	18	19
IT	951	MONFALCONE	2850	1167	2134	5463	5603	57	89	133	138
IT	953	MONTEBELLUNA	3728	2116	3401	5947	6317	93	134	202	214
IT	933	MONTECATINI-TERME	3488	1323	3305	5558	5800	36	64	100	104
IT	1548	MONTICHIARI	5562	3824	5429	7371	7834	213	289	378	399
IT	982	NAPOLI	3651	2327	3390	5058	5447	185	232	285	298
IT	917	NARDO'	1344	422	1374	2444	2568	12	32	66	71
IT	921	NOCERA INFERIORE	3486	2162	3352	5113	5401	177	222	274	283
IT	919	NOLA	3955	2564	3792	5570	6057	207	254	299	312
IT	1228	NOVARA	8500	6804	8267	10422	10768	512	631	784	819
IT	1250	NOVI LIGURE	4622	2803	4425	6374	6879	150	219	324	355
IT	1311	NUORO	2642	963	2486	4468	4841	14	35	53	58
IT	1368	ODERZO	3487	2111	3258	5363	5767	74	100	144	156
IT	907	OLBIA	1322	121	1253	2376	2679	2	9	15	19
IT	908	ORISTANO	1399	234	1182	2637	3259	12	34	63	73
IT	1544	ORZINUOVI	3709	2432	3652	4926	5238	184	262	359	378
IT	927	OSIMO	816	146	641	1483	1719	8	18	37	40
IT	1016	PADOVA	5610	3502	5347	7747	8347	163	220	282	298
IT	1372	PALAZZOLO SULL'OGLIO	5073	3367	4986	6740	7214	343	440	556	585
IT	970	PALERMO	1823	879	1465	2794	3202	28	38	52	56
IT	1387	PALMI	2058	1188	2063	3071	3211	53	76	99	104
IT	1245	PARMA	4965	2507	4864	7389	7927	73	123	187	200
IT	1008	PAVIA	6054	4414	5802	7863	8186	332	419	540	561
IT	1279	PERUGIA	3196	751	3337	5241	6361	8	27	46	54
IT	1003	PESARO	1756	665	1754	2934	3551	23	45	66	75
IT	1291	PESCARA	2455	1222	2297	3708	4043	53	83	132	141
IT	1001	PIACENZA	5933	3994	5820	7974	8391	255	315	413	432
IT	1253	PINEROLO	3605	2076	3449	5180	5576	112	158	221	234
IT	1285	PIOMBINO	575	0	392	1480	1480	0	5	14	14
IT	1263	PISA	2911	1284	2480	4575	5030	32	56	89	95
IT	993	PISTOIA	4641	2314	4568	6973	7505	51	84	116	124
IT	1283	POGGIBONSI	3702	1403	3502	6222	7314	24	50	81	95
IT	1264	PONTEDERA	3540	1504	3253	5473	5891	40	62	91	98
IT	1020	PORDENONE	5068	3157	4944	7557	7783	118	170	230	238
IT	952	PORTOGRUARO	4561	2895	4423	6236	6385	117	152	194	200
IT	1540	PORTOTOLLE	644	0	376	1785	1853	0	4	17	18
IT	1304	POTENZA	3226	1397	2923	5594	6340	26	53	90	101
IT	994	PRATO	2964	838	2758	5340	5894	24	51	89	98
IT	1329	RAGUSA	1809	367	1886	3324	3360	5	15	23	24
IT	1240	RAVENNA	3680	1265	3811	5302	5536	14	37	60	65
IT	1317	REGGIO DI CALABRIA	1520	735	1479	2160	2404	21	43	73	82
IT	999	REGGIO NELL'EMILIA	5172	2491	5021	7705	8308	57	108	166	176
IT	924	RIETI	1774	283	1425	3671	4166	11	34	62	66
IT	996	RIMINI	2243	552	2429	4169	4503	18	40	65	74
IT	1366	RIVA DEL GARDA	1869	813	1769	2963	3176	41	71	113	121
IT	988	ROMA	3610	2169	3467	5317	5801	27	58	99	109
IT	1536	ROSIGNANOMARITTIMO	1429	423	1355	2805	3230	8	22	42	46
IT	1316	ROSSANO	1173	306	1074	2079	2166	6	17	37	39
IT	950	ROVERETO	2887	1069	2654	4855	5264	51	107	184	202

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IT	1000	ROVIGO	2846	1097	2302	4902	6020	51	87	152	173
IT	978	SALERNO	3600	1861	3442	5259	5640	145	201	258	270
IT	1371	SALO'	2797	1132	2286	4629	4893	68	114	202	213
IT	930	SAN BENEDETTO DEL TR	2979	1578	2708	4340	4954	60	91	129	139
IT	1375	SAN BONIFACIO	5127	3243	5053	7053	7629	150	211	282	298
IT	1237	SAN DONA' DI PIAVE	4422	2411	4668	6109	6434	94	137	189	199
IT	920	SAN GIUSEPPE VESUVIA	2702	1880	2589	3730	4074	152	187	230	240
IT	1258	SAN REMO	1301	659	1231	2140	2500	58	86	124	132
IT	1294	SAN SEVERO	2903	281	2447	5117	6065	4	20	42	50
IT	1382	SANTA CROCE SULL'ARN	3012	832	2761	5099	5804	28	53	89	97
IT	966	SASSARI	2535	932	2687	3757	3989	25	39	51	53
IT	958	SASSUOLO	2604	1270	2455	4003	4494	24	45	76	84
IT	1260	SAVONA	3859	2481	3716	5010	5241	130	178	243	256
IT	1235	SCHIO	2931	1548	2821	4415	4915	76	128	189	201
IT	1322	SCIACCA	1616	549	1487	2960	3175	6	22	34	37
IT	1270	SENIGALLIA	1680	662	1626	2670	3147	24	43	67	74
IT	1535	SESTOCALLENDE	5864	4262	5688	7631	8257	462	581	724	756
IT	894	SIENA	2811	714	2580	5479	6874	7	26	51	59
IT	1327	SIRACUSA	1258	319	1081	2341	2707	5	13	24	27
IT	1233	SONDRIO	1263	268	1099	2556	2708	21	60	94	100
IT	1290	SORA	1991	814	1943	3274	3800	29	60	90	97
IT	1384	SORRENTO	1335	780	1296	1923	2098	71	97	132	140
IT	925	SULMONA	2059	710	1988	3680	4062	27	60	100	110
IT	1378	SUZZARA	3914	2270	4000	5429	5800	67	99	141	149
IT	1300	TARANTO	2592	739	2147	4504	4869	14	26	45	49
IT	1277	TERAMO	2315	1123	2218	3702	4066	37	54	87	96
IT	912	TERMINI IMERESE	1771	793	1457	3417	3453	23	40	61	63
IT	1293	TERMOLI	2436	951	2102	3603	4327	20	52	81	90
IT	1280	TERNI	2167	74	2107	4576	5135	5	34	68	76
IT	1306	TERRACINA	1628	597	1488	2717	2973	9	21	44	47
IT	1369	THIENE	4102	2248	3847	5846	7043	114	179	238	259
IT	1006	TORINO	7154	4743	7011	9954	10352	304	395	510	533
IT	981	TORRE ANNUNZIATA	3149	2055	2961	4507	4850	164	204	255	265
IT	1249	TORTONA	6630	4487	6587	8526	8798	269	353	467	483
IT	969	TRAPANI	2160	1361	2069	2561	3115	15	24	31	33
IT	1012	TRENTO	2420	1054	2038	3907	4452	64	103	173	192
IT	1230	TREVIGLIO	5854	4246	5729	7460	7972	440	556	687	715
IT	1019	TREVIStO	5440	3659	5423	7476	7822	145	181	238	252
IT	1022	TRIESTE	2047	524	1687	4435	4695	31	52	74	80
IT	1021	UDINE	4078	2125	3743	6558	7455	97	140	187	200
IT	956	VALDAGNO	1814	649	1659	2863	3376	29	70	119	138
IT	1009	VARESE	3976	2762	3978	5094	5439	395	498	602	626
IT	1292	VASTO	2113	707	1919	3459	3594	29	64	99	104
IT	1288	VELLETRI	3771	1503	4202	5547	5831	44	62	91	97
IT	1236	VENEZIA	4139	2218	4198	5894	6539	95	138	194	211
IT	1257	VENTIMIGLIA	1765	792	1585	2723	2912	72	111	145	151
IT	1580	VERBANIA	1029	208	947	1946	2045	13	40	72	76
IT	942	VERCELLI	7210	5303	6979	9219	9708	336	420	555	584
IT	1005	VERONA	5075	2538	5041	7658	8216	104	190	285	303
IT	991	VIAREGGIO	2910	1135	2721	4793	5284	32	65	98	108
IT	916	VIBO VALENTIA	1986	829	1960	3067	3408	38	76	116	130
IT	1018	VICENZA	4761	2658	4569	6999	7707	138	199	272	289
IT	1007	VIGEVANO	6321	4451	6311	8009	8424	307	427	551	580
IT	1380	VIGNOLA	2931	1306	2833	4603	5321	29	49	80	90
IT	1287	VITERBO	2237	433	1922	4222	4941	13	34	66	75
IT	973	VITTORIA	1412	0	1306	3279	3430	0	7	19	22
IT	947	VITTORIO VENETO	4171	2128	3862	6316	7330	76	120	167	189
IT	944	VOGHERA	6071	3820	5749	8527	8968	243	319	455	478
LT	403	ALYTUS	3463	40	2738	9343	13966	1	3	7	10
LT	404	KAUNAS	2976	0	1646	7899	7899	0	2	7	7
LT	1344	KLAIPEDA	1663	93	1423	2723	4961	1	2	5	6
LT	108	MARIJAMPOLE	2905	0	1414	10574	12553	0	2	11	14
LT	405	PANEVEZYS	2720	50	2217	7645	12328	1	2	6	9
LT	406	SIAULIAI	1774	0	80	8659	8792	0	1	9	10
LT	109	TELSIAI	3046	0	2642	4325	9990	0	2	3	7
LT	407	VILNIUS	2948	399	2518	6647	10068	1	2	5	7
LU	838	ESCH-SUR-ALZETTE	5238	3792	5066	6832	7250	303	369	473	498
LU	631	LUXEMBOURG	6051	4039	5830	8128	8967	324	425	540	572
LV	398	DAUGAVPILS	3456	1073	4139	5532	5776	15	34	47	49
LV	107	JEKABPILS	4859	1727	5324	7290	7940	18	43	62	67

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LV	399	JELGAVA	4844	2987	4560	7513	7995	31	46	63	66
LV	400	LIEPAJA	2094	768	2105	3448	3816	12	21	30	33
LV	105	REZEKNE	3992	1660	3897	6219	6713	25	46	67	70
LV	401	RIGA	4801	2630	4828	7040	7294	23	38	56	59
LV	106	VALMIERA	4952	2662	4507	6932	7837	33	47	62	69
LV	402	VENTSPILS	2566	1191	2554	3910	4545	7	15	21	23
MT	1356	VALLETTA	90	70	89	109	135	32	38	41	43
NL	5	ALKMAAR	2118	736	1837	3726	3909	24	43	70	73
NL	1582	ALMERE	4053	1799	3555	6727	7857	42	78	113	124
NL	6	ALPHEN AAN DEN RIJN	4227	2329	4193	5822	6877	81	116	150	165
NL	604	AMERSFOORT	4638	1727	4352	7870	9200	42	74	122	138
NL	605	AMSTERDAM	5559	3284	4931	8822	9745	85	122	168	177
NL	606	APELDOORN	4473	2050	4542	6675	7274	26	59	93	100
NL	607	ARNHEM	4859	1807	4481	7345	9123	42	72	110	127
NL	7	ASSEN	3167	1194	3250	4775	6513	9	26	36	45
NL	8	BERGEN OP ZOOM	4855	2497	4572	7671	8647	45	79	132	144
NL	608	BREDA	6039	2854	5789	9361	9879	57	108	179	191
NL	13	DEN BOSCH	7279	4031	6716	10484	11887	73	121	177	197
NL	12	DEN HAAG	3127	1341	3103	4906	5491	64	90	121	133
NL	23	DEN HELDER	857	273	702	2110	2110	6	9	25	25
NL	9	DEVENTER	4677	1868	4402	7395	8274	22	47	96	104
NL	609	DORDRECHT	6054	3159	5991	8530	9671	81	122	163	173
NL	1594	EDE	5264	2354	4770	8543	9219	46	87	135	145
NL	610	EINDHOVEN	6527	3665	6353	9617	10152	62	104	154	165
NL	10	EMMEN	2405	0	1905	4111	5180	0	14	37	44
NL	611	ENSCHDEDE	5023	2311	4995	7927	8304	32	57	87	92
NL	839	GEELEN	6417	3758	5939	9110	9820	92	133	187	197
NL	11	GOUDA	2680	939	2415	4857	5636	37	70	118	131
NL	612	GRONINGEN	3667	1147	2843	6812	6889	16	32	56	57
NL	613	HAARLEM	3426	1337	3148	5352	5884	45	86	123	132
NL	614	HEERLEN	6922	4140	6727	9996	10531	94	139	184	195
NL	14	HILVERSUM	5029	2575	4428	8184	8733	57	90	145	155
NL	24	HOORN	2394	896	2378	4134	4548	28	51	83	90
NL	615	LEEWARDEN	1803	365	1169	3896	4689	5	12	28	31
NL	616	LEIDEN	3491	1728	3340	5202	5809	66	99	138	148
NL	28	LELYSTAD	2405	688	1379	5339	6866	10	23	56	67
NL	617	MAASTRICHT	6002	3565	5892	8438	9417	92	141	185	198
NL	618	NIJMEGEN	6162	3087	5898	9067	9856	58	91	134	145
NL	15	ROOSENDAAL	5494	3088	5123	8386	9400	56	90	142	157
NL	619	ROTTERDAM	4882	2118	4716	7325	8489	73	107	146	160
NL	620	TILBURG	5762	3075	5153	9035	9590	51	84	146	159
NL	621	UTRECHT	4958	2175	4445	8084	9325	57	94	155	165
NL	22	VEENENDAAL	5468	2426	5118	8805	9432	49	93	153	160
NL	16	VELSEN	3477	1473	3322	5308	5938	47	89	122	128
NL	17	VENLO	8778	5334	8808	11718	12251	84	127	166	174
NL	622	ZWOLLE	4514	1769	3980	7253	7869	15	32	50	56
NO	1361	ALESUND	373	0	345	624	1085	0	2	4	5
NO	1073	ARENDAL	1123	0	599	3147	4275	0	2	8	9
NO	1177	ASKIM	1399	69	1059	3175	3175	1	7	18	18
NO	1340	BERGEN	872	0	565	2052	3153	0	1	5	8
NO	217	BODO	592	0	0	3752	5591	0	0	1	3
NO	218	DRAMMEN	1654	0	1773	3499	4456	0	8	16	18
NO	1178	ELVERUM	1668	0	1225	4701	7015	0	1	6	8
NO	219	FREDRIKSTAD	857	0	304	2670	2670	0	2	10	10
NO	220	GJOVIK	1653	0	256	3957	6469	0	1	6	10
NO	1179	HALDEN	1876	0	979	4951	4951	0	2	10	10
NO	1071	HAMAR	1045	0	0	3862	3862	0	0	6	6
NO	415	HARSTAD	875	0	0	3111	3111	0	0	5	5
NO	221	HAUGESUND	850	0	364	2865	2865	0	1	7	7
NO	1524	HONEFOSS	1726	0	421	4262	4262	0	2	9	9
NO	222	KONGSBERG	1943	0	2089	4789	4988	0	5	12	13
NO	1180	KONGSVINGER	1559	0	1154	4163	5309	0	2	6	8
NO	1342	KRISTIANSAND	1093	0	759	2918	2918	0	2	8	8
NO	1181	KRISTIANSUND	448	0	107	1497	1783	0	1	4	5
NO	223	LARVIK	1211	0	1254	3245	3430	0	4	11	12
NO	1526	LEIRVIK	291	0	223	827	1306	0	1	3	4
NO	1554	LEVANGER	862	0	0	2673	5277	0	0	3	5
NO	224	LILLEHAMMER	1627	0	476	5199	5455	0	1	6	7
NO	1182	MO I RANA	2123	0	0	6214	6214	0	0	2	2

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NO	416	MOLDE	589	0	0	1590	2718	0	0	3	4
NO	225	MOSS	1068	104	796	2779	2779	1	6	15	15
NO	1338	NARVIK	990	0	0	2628	4161	0	0	2	4
NO	1547	NOTODDEN	988	0	0	2951	3512	0	0	4	5
NO	226	OSLO	2608	467	2558	4301	6152	5	15	24	28
NO	1525	SKIEN	966	0	200	3287	3287	0	1	8	8
NO	1534	SORTLAND	1652	0	819	4310	6895	0	1	5	7
NO	414	STAVANGER	840	0	512	2061	2710	0	2	8	9
NO	227	STEINKJER	1054	0	0	3523	5083	0	0	4	5
NO	228	TONSBERG	771	0	497	2262	2262	0	4	11	11
NO	820	TROMSO	1103	0	0	4366	4366	0	0	1	1
NO	824	TRONDHEIM	520	0	0	1705	1705	0	0	4	4
NO	1529	ULSTEIN	275	0	135	1237	1237	0	1	4	4
PL	229	BIALA PODLASKA	2920	962	2784	4394	4621	9	20	34	35
PL	230	BIALYSTOK	2544	216	1710	4970	5948	2	11	27	33
PL	231	BIELSKO-BIALA	2209	624	2113	3846	4019	15	43	85	93
PL	232	BYDGOSZCZ	3499	1248	3473	5777	6630	9	23	39	44
PL	233	CHELM	2832	1058	2571	4578	4882	11	24	38	40
PL	234	CZESTOCHOWA	4058	2113	3939	5900	6412	22	42	63	67
PL	235	ELBLAG	2690	791	2480	4669	5678	8	19	32	38
PL	236	GDANSK	3016	1751	2753	4424	5543	16	26	40	48
PL	237	GORZOWWIELKOPOLSKI	3766	1584	2974	6152	6833	10	21	36	43
PL	238	GRUDZIADZ	3590	1998	3370	5631	6076	22	32	48	52
PL	239	JELENIA GORA	2080	592	2070	3218	3778	10	30	48	56
PL	240	KALISZ	3013	1037	2993	5414	5802	11	25	45	48
PL	241	KATOWICE	3415	1323	3395	5354	5984	20	48	71	81
PL	242	KIELCE	4090	1887	4043	6043	6443	17	35	48	51
PL	243	KONIN	3048	1125	2869	5367	5900	12	27	49	54
PL	244	KOSZALIN	2887	1005	3004	3877	4502	8	19	23	26
PL	245	KRAKOW	3592	1595	3608	5508	5947	20	42	65	72
PL	246	KROSNO	2750	853	2593	4573	4906	18	38	60	65
PL	247	LEGNICA	3565	1556	3364	5546	6503	19	32	45	51
PL	248	LESZNO	3201	1290	3225	4786	5783	11	25	34	41
PL	249	LODZ	3585	1467	3173	6240	6792	20	36	63	68
PL	250	LOMZA	2940	905	2408	5041	6748	9	20	36	43
PL	251	LUBLIN	4184	1963	4163	6482	6667	20	43	63	65
PL	252	NOWY SACZ	2762	1010	2519	4306	5048	19	38	64	74
PL	253	OLSZTYN	4267	1015	4320	6648	7308	9	22	31	34
PL	254	OPOLE	3685	1416	3513	6406	7305	14	28	49	56
PL	255	OSTROLEKA	1837	237	1430	4126	4643	3	13	30	33
PL	256	PIOTRKOWTRYBUNALSKI	3765	1849	3445	5768	6398	19	34	54	60
PL	257	PLOCK	4122	1680	4070	6476	6992	18	38	59	63
PL	258	POZNAN	4412	2285	4534	6476	7570	20	35	52	58
PL	259	PRZEMYSL	2310	665	1658	2925	3442	11	22	33	36
PL	260	RADOM	3717	1330	3690	5744	6791	17	34	53	61
PL	261	RYBNIK	2113	872	1964	3400	3854	17	31	54	64
PL	262	RZESZOW	3801	1686	3838	6011	6628	21	44	66	73
PL	263	SIEDLCE	3347	999	3126	5426	5958	12	27	45	50
PL	264	SKIERNIEWICE	2897	1123	2726	5271	5803	16	32	58	63
PL	265	SLUPSK	2706	896	2645	4673	5138	6	15	24	25
PL	266	SUWALKI	3282	1130	2380	5063	8851	8	16	27	31
PL	267	SWINOUJSCIE	1214	537	957	2144	2270	33	49	65	69
PL	268	SZCZECIN	3973	1934	4169	5943	6963	82	120	152	161
PL	269	TARNOW	3089	886	2797	5539	6553	11	33	63	72
PL	270	TORUN	3843	1832	3928	6001	6542	19	39	56	60
PL	271	WALBRZYCH	1912	709	1753	3321	3816	14	28	47	51
PL	272	WARSZAWA	4081	1966	3792	6392	7492	40	60	84	95
PL	273	WLOCLAWEK	3595	1435	3457	5792	6497	15	34	57	62
PL	274	WROCLAW	2878	453	2318	5547	6464	5	19	43	48
PL	275	ZAMOSC	3189	1146	3279	5289	6519	12	32	46	54
PL	276	ZIELONA GORA	3409	1384	2897	5324	6453	9	18	36	42
PT	1583	AGUEDA	1511	778	1380	2416	2637	73	120	178	192
PT	1592	ALBUFEIRA	1252	278	1118	2370	2640	11	29	45	48
PT	842	AVEIRO	2053	981	1974	3129	3323	89	170	258	272
PT	1587	BARCELOS	2421	1961	2410	2864	2968	448	522	608	622
PT	32	BEJA	2603	816	2472	4991	5573	16	29	47	53
PT	723	BRAGA	4010	3159	3944	5044	5190	726	830	914	935
PT	33	BRAGANCA	1564	673	1533	2476	2656	39	75	103	110
PT	34	CALDAS DA RAINHA	1716	990	1644	2489	2634	55	89	122	128

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PT	725	CASTELO BRANCO	3104	1293	2958	4937	5485	43	83	117	124
PT	35	CHAVES	1538	687	1418	2223	2896	50	84	124	133
PT	841	COIMBRA	2924	1551	2636	4559	5003	111	170	251	260
PT	21	COVILHA	1180	394	1045	2072	2286	32	66	101	109
PT	840	EVORA	1746	377	1423	3211	4083	13	24	46	52
PT	36	FAFE	892	555	830	1296	1332	144	206	281	289
PT	1565	FAMALICAO	748	312	684	1243	1353	25	49	83	88
PT	722	FARO	1361	426	1180	2463	2643	16	32	45	47
PT	1584	FEIRA	1739	1084	1693	2516	2598	161	234	315	325
PT	1563	FELGUEIRAS	1069	492	1115	1592	1725	18	44	65	69
PT	37	FIGUEIRA DA FOZ	1886	755	1797	2946	3289	55	105	158	171
PT	727	FUNCHAL	732	735	735	735	735	52	52	52	52
PT	38	GUARDA	1924	1041	1853	2867	3227	87	141	196	208
PT	724	GUIMARAES	2491	1935	2495	3013	3202	480	575	661	681
PT	39	ILHAVO	1935	1002	1838	2885	3107	88	152	218	235
PT	1153	LEIRIA	4211	2855	4215	5426	5841	153	209	256	275
PT	771	LISBOA	2985	1174	3022	4588	5454	161	216	259	271
PT	1593	LOULE	1344	379	1139	2422	2797	14	31	48	51
PT	40	MARINHA GRANDE	2628	1361	2333	3969	4184	77	111	171	185
PT	25	OLHAO	1159	305	1051	2061	2458	13	27	42	44
PT	1585	OLIVEIRA DE AZEM?IS	2047	1107	1968	3032	3300	110	192	276	292
PT	1589	OVAR	2011	1242	1960	2725	2892	172	248	331	346
PT	1586	PACOS DE FERREIRA	2783	2126	2757	3487	3598	517	621	716	732
PT	1154	PAREDES	1537	732	1234	2785	2979	128	153	191	200
PT	1543	PENAFIEL	2259	1684	2172	2876	3029	384	454	540	554
PT	41	PENICHE	324	102	269	602	707	8	19	34	38
PT	1351	PONTA DELGADA	735	654	731	813	826	49	54	58	59
PT	42	PORTIMAO	1020	371	818	1877	1918	16	25	37	38
PT	726	PORTO	2632	2028	2591	3218	3376	438	532	606	624
PT	43	SANTAREM	4216	2759	3992	6102	6228	141	185	251	262
PT	1155	SANTO TIRSO	2406	1835	2337	3068	3235	444	534	641	667
PT	44	SAO JOAO DA MADEIRA	1822	1137	1789	2575	2701	161	222	305	316
PT	1591	SILVES	803	192	719	1477	1729	11	20	31	34
PT	1590	TORRES NOVAS	3278	1791	3223	5131	5698	103	157	209	221
PT	45	TORRES VEDRAS	2227	1234	1947	3718	3830	151	189	241	247
PT	1588	VIANA DO CASTELO	1826	1412	1772	2321	2445	256	331	399	410
PT	46	VILA REAL	1756	883	1662	2656	2919	114	186	258	275
PT	20	WISEU	2216	1208	2166	3279	3360	111	180	247	255
RO	277	ALBA IULIA	1268	263	1107	2567	3211	3	12	30	33
RO	964	ALEXANDRIA	1113	177	1115	2022	2338	3	16	29	34
RO	278	ARAD	1473	267	1356	2556	3218	2	12	24	29
RO	279	BACAU	931	244	824	1759	2022	6	15	33	37
RO	280	BAIA MARE	908	148	866	1763	1940	3	12	23	25
RO	281	BALS	1212	297	1266	2114	2413	6	24	41	44
RO	282	BIRLAD	1236	346	1081	2479	2646	4	14	33	35
RO	283	BISTRITA	953	229	706	1735	2258	3	10	20	25
RO	284	BLAJ	805	94	601	1720	1960	2	10	24	28
RO	285	BOTOSANI	1047	200	934	2013	2231	4	14	29	33
RO	286	BRAILA	1623	253	1395	3365	3555	3	15	29	31
RO	287	BRASOV	1705	281	1510	3856	4034	7	18	44	45
RO	288	BUCURESTI	1823	748	1619	3411	3744	18	35	61	67
RO	289	BUZAU	1472	276	1275	2474	2970	6	21	41	49
RO	290	CALARASI	1995	121	1849	4454	5504	1	12	29	31
RO	291	CIMPINA	856	92	845	1619	1649	4	18	28	29
RO	292	CIMPULUNG	881	237	679	2048	2236	8	16	33	35
RO	293	CLUJ-NAPOCA	1372	233	1299	2564	3006	2	16	33	39
RO	294	CODLEA	1437	302	985	2939	3367	5	14	35	40
RO	1349	CONSTANTA	1042	128	760	2325	2586	2	10	23	25
RO	295	CRAIOVA	1485	474	1446	2812	2834	9	23	45	46
RO	296	DEVA	1257	278	1049	2428	2884	6	17	33	38
RO	1072	DROBETA-TURNU SEVERI	1468	159	1087	2558	2931	4	16	33	37
RO	297	FOCSANI	1029	171	952	1843	2209	5	19	32	37
RO	298	GALATI	1369	343	1055	2230	2314	3	12	23	24
RO	1081	GIURGIU	1932	231	1485	4340	5425	4	11	29	35
RO	300	HUNEDOARA	569	22	512	1040	1252	1	9	16	18
RO	301	IASI	838	131	743	1623	1623	2	12	25	25
RO	302	LUGOJ	1056	288	946	2266	2628	4	11	25	29
RO	1350	MANGALIA	596	104	428	1503	1635	2	3	10	12
RO	303	MEDIAS	949	53	855	1921	2083	2	14	27	29
RO	304	MERCUREA-CIUC	1071	8	926	2362	2524	1	11	23	25
RO	1084	MIOVENI	1099	368	945	2104	2265	9	21	37	41

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RO	305	ODORHEIU SECUIESC	686	103	465	1320	1856	2	6	13	16
RO	299	ONESTI	776	164	583	1652	1932	4	11	22	27
RO	306	ORADEA	1542	294	1515	2852	3204	6	21	38	43
RO	307	PETROSENI	1056	0	951	2326	3001	0	7	14	17
RO	1082	PIATRA NEAMT	773	134	720	1487	2004	2	12	20	22
RO	308	PITESTI	1422	442	1221	2575	2704	10	25	47	50
RO	309	PLOIESTI	1401	337	1295	2412	3114	9	32	57	62
RO	310	RESITA	1056	0	913	2019	2459	0	9	19	24
RO	311	RIMNICU VILCEA	1309	468	1097	2369	2575	13	25	45	50
RO	312	ROMAN	1383	294	1466	2320	2408	8	25	41	43
RO	313	SACELE	1510	269	1539	2944	3533	6	18	34	40
RO	314	SATU MARE	1528	353	1473	2625	2801	12	34	56	61
RO	1083	SFINTU GHEORGHE	1106	145	1055	2345	2453	4	16	29	30
RO	315	SIBIU	922	192	534	2316	2491	2	7	22	24
RO	316	SLATINA	1235	405	1199	2064	2616	8	23	38	48
RO	317	SLOBOZIA	1596	114	1193	3769	4213	1	13	35	37
RO	318	SUCEAVA	875	293	854	1601	1846	7	17	31	35
RO	319	TIMISOARA	1503	404	1211	2737	3468	5	14	27	32
RO	320	TIRGOVISTE	1338	439	1119	2577	2691	12	27	50	52
RO	321	TIRGU JIU	1355	366	1216	2300	2812	5	17	30	34
RO	322	TIRGU MURES	1141	205	1012	2099	2508	6	22	39	45
RO	323	TULCEA	727	0	704	1161	1433	0	5	10	12
RO	324	TURDA	1033	237	888	2092	2178	5	14	28	29
RO	325	VASLUI	1324	268	1290	2379	2555	5	21	36	38
RO	1085	VOLUNTARI	1769	756	1617	3252	3593	18	34	58	63
RO	326	ZALAU	1206	397	1028	2157	2505	7	15	30	34
SE	49	BORAAS	1961	0	971	6448	6661	0	1	9	11
SE	50	ESKILSTUNA	901	0	227	2882	3529	0	1	4	5
SE	1190	FAGERSTA	1438	0	761	3581	3581	0	2	6	6
SE	88	FALKENBERG	1389	0	0	5238	5238	0	0	3	3
SE	51	FALUN	1259	0	0	3541	4797	0	0	3	5
SE	76	GAEVLE	1423	0	0	5707	8282	0	0	4	5
SE	52	GOETEBORG	1733	59	507	5469	6785	1	3	11	13
SE	1358	HAERNOESAND	632	0	0	3182	3182	0	0	2	2
SE	53	HALMSTAD	1555	0	0	4498	6028	0	0	3	5
SE	1191	HELSINGBORG	1296	0	518	3692	4484	0	2	16	21
SE	89	HUDIKSVALL	989	0	0	4722	7144	0	0	1	2
SE	54	JOENKOEPIG	1584	0	0	3465	5575	0	0	4	6
SE	55	KALMAR	1252	0	0	3406	7069	0	0	3	5
SE	87	KARLSHAMN	1016	0	0	3483	4592	0	0	4	5
SE	56	KARLSKOGA	809	0	513	2818	2818	0	1	4	4
SE	1343	KARLSKRONA	721	0	0	4579	4579	0	0	2	2
SE	57	KARLSTAD	1350	0	0	2844	4656	0	0	4	6
SE	58	KIRUNA	1315	0	0	20594	20594	0	0	1	1
SE	81	KOEPIG	1117	0	227	4589	4589	0	1	7	7
SE	59	KRISTIANSTAD	2032	0	196	4220	6647	0	1	5	9
SE	60	LIDKOEPIG	1072	0	450	2726	2726	0	1	4	4
SE	61	LINKOEPIG	1896	0	0	6816	6816	0	0	6	6
SE	84	LJUNGBY	1105	0	0	3917	5968	0	0	3	5
SE	62	LULEAA	940	0	0	4895	4895	0	0	1	1
SE	63	MALMOE	2178	566	1303	6185	7041	12	20	35	38
SE	77	MARIESTAD	1093	0	0	3964	4414	0	0	5	6
SE	64	NORRKOEPING	1656	0	0	5996	8069	0	0	4	5
SE	65	NYKOEPIG	1311	0	0	3482	4976	0	0	3	5
SE	66	OEREBRO	1669	0	207	5870	5870	0	1	9	9
SE	1339	OERNSKOELDSVIK	977	0	0	8444	8444	0	0	1	1
SE	78	OESTERSUND	1294	0	0	2502	9332	0	0	1	2
SE	86	OSKARSHAMN	1092	0	0	4032	5225	0	0	3	4
SE	67	SKELLEFTEAA	1445	0	0	9978	9978	0	0	1	1
SE	68	SKOEVDE	1759	0	1369	4470	5892	0	3	6	8
SE	1341	STOCKHOLM	1612	68	879	3811	3939	2	10	19	20
SE	69	SUNDSVALL	1327	0	0	5697	7641	0	0	2	3
SE	83	TRANAAS	796	0	439	2157	2157	0	1	4	4
SE	70	TROLLHAETTAN	1750	0	1789	3241	3873	0	4	6	8
SE	71	UDDEVALLA	1853	0	1078	4284	4284	0	2	8	8
SE	72	UMEEA	1351	0	0	5776	5776	0	0	2	2
SE	73	UPPSALA	2089	0	2968	4899	5116	0	4	9	10
SE	82	VAERNAMO	1656	0	1388	6194	6194	0	1	5	5
SE	79	VAESTERAAS	1471	0	1319	5094	5094	0	2	7	7
SE	85	VAESTERVIK	762	0	0	3590	3590	0	0	1	1
SE	80	VAEXJOE	1641	0	1923	3452	5891	0	1	3	5

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SE	74	VARBERG	1168	0	0	3540	6029	0	0	2	4
SE	75	VISBY	710	0	0	3163	3163	0	0	1	1
SI	29	CELJE	2081	306	1803	3768	4180	5	27	47	50
SI	1088	KOPER	1257	210	655	2430	3067	6	20	42	46
SI	1086	LJUBLJANA	2432	402	1938	5067	5799	9	21	45	51
SI	1087	MARIBOR	3806	1789	3646	5378	6383	100	149	195	213
SI	31	NOVA GORICA	2287	685	2142	3567	4451	43	70	98	107
SI	30	NOVO MESTO	513	0	324	1365	1542	0	2	8	10
SK	160	BANOVCE NAD BEBRAVOU	1551	673	1498	2562	2662	91	156	215	224
SK	161	BANSKA BYSTRICA	1907	578	1671	3416	3917	54	104	166	183
SK	162	BARDEJOV	1130	554	1076	1558	2299	54	99	134	142
SK	1077	BRATISLAVA	4547	2763	4451	6437	6857	211	280	359	373
SK	171	KOSICE	1826	785	1866	2755	2918	90	162	226	241
SK	172	LEVICE	2423	1671	2291	3228	3456	167	210	258	269
SK	173	LIPTOVSKY MIKULAS	1187	399	999	2329	2505	56	87	133	141
SK	174	LUCENEC	2211	912	2208	3349	3810	83	149	215	228
SK	175	MARTIN	1485	645	1375	2668	2978	89	145	201	217
SK	176	MICHALOVCE	1994	1112	1739	2547	2693	115	164	221	230
SK	179	NITRA	3136	1994	3137	4192	4551	217	300	373	391
SK	180	NOVE ZAMKY	2802	1492	2759	3983	4226	108	176	244	256
SK	1089	POPRAD	1284	469	1149	2187	2443	34	65	92	101
SK	186	POVAZSKA BYSTRICA	1703	907	1627	2501	2787	116	167	219	235
SK	1090	PRESOV	1928	964	1855	2825	3072	133	214	285	299
SK	189	PRIEVIDZA	1655	1144	1524	2204	2273	99	136	191	197
SK	191	SENICA	2209	1010	2129	3456	3753	68	127	193	209
SK	1092	SKALICA	2919	1688	2840	4289	4516	129	198	265	284
SK	1334	STUROVO	1646	839	1623	2536	2725	48	80	123	130
SK	1093	SVIDNIK	1754	731	1621	3046	3219	92	135	180	188
SK	193	TOPOLCANY	2058	1087	2024	3014	3304	130	203	275	295
SK	194	TREBISOV	1495	799	1429	2101	2204	80	128	181	194
SK	195	TRENCIN	2023	1055	2120	2935	3063	111	185	253	263
SK	196	TRNAVA	3359	2176	3299	4383	4700	202	274	356	375
SK	1595	TVRDOSIN	1143	326	1103	2049	2388	26	50	71	77
SK	198	ZIAR NAD HRONOM	2309	1145	2214	3421	3761	97	162	239	250
SK	1091	ZILINA	2086	811	2066	3347	3742	108	178	241	260
UK	1516	ABERDEEN	1736	430	1349	3299	4046	64	76	88	92
UK	1475	ABERGELE/RHYL/PRESTA	230	61	170	415	474	10	22	38	42
UK	1407	ANDOVER	2882	1455	2445	4051	4216	108	154	215	221
UK	1414	ASHFORD	2777	1785	2754	3559	3803	212	290	359	376
UK	1438	AYLESBURY	3047	1392	2797	4933	5376	318	474	670	699
UK	1503	AYR	3115	1165	2806	5093	5117	144	200	262	269
UK	1449	BANBURY	4298	2729	4073	5763	6583	196	294	397	435
UK	1518	BANGOR	1612	912	1464	2515	2638	67	82	102	105
UK	1485	BARNLEY	5678	3795	5378	7929	8219	394	495	606	620
UK	1397	BARNSTAPLE	1525	415	1654	2691	2854	34	58	78	82
UK	1406	BASINGSTOKE	3833	2023	3596	5566	5933	240	370	494	523
UK	1427	BATH	4074	2382	3946	5820	6297	221	273	349	364
UK	1453	BEDFORD/KEMPSTON	3739	1955	3480	5700	6167	215	305	422	439
UK	1494	BELFAST	2904	1560	2635	4733	4959	264	302	352	357
UK	1517	BERWICK UPON TWEED	763	227	468	1515	1588	11	16	32	33
UK	1576	BIRMINGHAM	6264	4059	5823	8785	9459	482	593	712	737
UK	1480	BLACKBURN/DARWEN	4921	3377	4681	6661	7272	537	633	721	740
UK	1490	BLACKPOOL	2317	1343	2148	3364	3658	237	307	396	412
UK	1575	BOLTON	5818	3905	5537	7498	7929	624	740	846	873
UK	1521	BOSTON	3912	2189	3667	6109	6554	112	164	223	233
UK	1403	BOURNEMOUTH	2221	1114	1970	3337	3516	111	153	194	203
UK	1437	BRACKNELL	4134	2651	3833	5793	6387	784	902	1046	1091
UK	1574	BRADFORD	6216	4873	5653	7706	8061	441	519	593	611
UK	1400	BRIDGWATER	1671	1052	1518	2368	2624	82	112	148	160
UK	1493	BRIDLINGTON	1902	337	1960	3188	3365	30	53	73	78
UK	1410	BRIGHTON/WORTHING/LI	2436	1469	2315	3337	3547	190	258	326	340
UK	1426	BRISTOL	3972	2333	3640	5708	6199	242	307	392	412
UK	1484	BURNLEY/NELSON	4933	3515	4427	6859	7124	482	567	667	683
UK	1469	BURTON UPON TRENT	6415	4451	5779	8647	9361	591	701	854	882
UK	1455	BURY ST, EDMUNDS	3338	1259	2916	5978	6333	86	157	265	281
UK	48	CAMBRIDGE	2748	900	2613	4893	5203	95	157	250	263
UK	1468	CANNOCK/GREAT WYRLEY	6958	5025	6705	8979	9269	523	626	724	735
UK	1413	CANTERBURY/BLEAN	2054	1362	1938	2695	2886	168	206	244	252
UK	1421	CARDIFF	1484	638	1287	2739	3104	101	152	228	244

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UK	1497	CARLISLE	2805	543	2083	5828	7182	61	91	137	145
UK	1425	CHELTENHAM/CHARLTON	4877	3197	4485	6850	7458	236	321	426	452
UK	1479	CHESTER	5782	4387	5567	6951	7530	529	611	701	722
UK	1442	CLACTON-ON-SEA/LITTL	1268	641	1071	1891	2107	70	98	144	156
UK	1441	COLCHESTER	2264	1056	1875	3465	3851	119	174	257	273
UK	1474	COLWYN BAY	1003	195	1058	1817	1957	42	64	87	93
UK	1448	COVENTRY/BEDWORTH	6792	4602	6546	8777	9421	544	654	761	789
UK	1409	CRAWLEY	3204	1939	2951	4395	4627	423	565	719	754
UK	1460	CREWE	5117	3647	4811	6519	6913	411	514	629	666
UK	1498	DARLINGTON	2734	1478	2528	3977	4509	256	316	369	384
UK	1467	DERBY	5778	3922	5417	7456	7868	464	576	688	713
UK	1487	DONCASTER	5536	3178	4958	8098	8355	281	373	468	482
UK	1416	DOVER	1665	1132	1610	2159	2401	124	155	195	210
UK	1566	DUDLEY	5783	3843	5363	7797	8328	457	546	651	671
UK	1514	DUNDEE	1928	543	1317	3445	4238	89	109	134	136
UK	1512	DUNFERMLINE	3265	1671	2642	5470	6668	227	289	353	374
UK	1395	EASTBOURNE	1447	668	1220	2308	2477	107	146	197	204
UK	1511	EADINBURGH	4159	1960	3722	6482	7106	231	313	405	427
UK	1399	EXETER	1733	481	1302	3623	3865	64	97	158	167
UK	1510	FALKIRK	2671	1084	2131	4663	4878	281	370	453	468
UK	1393	FALMOUTH/PENRYN	1182	596	1115	1830	1888	41	54	72	73
UK	1522	FELIXSTOWE	914	245	711	1736	2094	44	72	120	131
UK	1507	GLASGOW	5029	2946	4749	7054	8548	429	491	549	557
UK	1424	GLOUCESTER	3554	2538	3364	4747	5223	173	226	284	305
UK	1473	GRANTHAM/GREAT GONER	4854	3325	4526	6544	7042	244	323	418	434
UK	1458	GREAT YARMOUTH	1592	934	1461	2327	2472	90	112	145	149
UK	1483	GREATER MANCHESTER	7468	5603	7148	9201	9913	737	836	943	979
UK	1506	GREENOCK	2224	1357	1995	3319	3620	267	326	377	383
UK	1408	GUILDFORD	4532	2801	4207	6107	6543	702	860	1028	1068
UK	1435	HARLOW	3786	2287	3649	4829	5180	771	907	1053	1084
UK	1491	HARROGATE	4917	3104	4284	6779	7337	221	269	336	352
UK	1501	HARTLEPOOL	1802	684	1710	2864	3164	192	273	337	347
UK	1412	HASTINGS/BEXHILL	2274	1451	2126	2999	3190	149	194	246	260
UK	1561	HUDDERSFIELD	6601	5160	6090	8094	8833	539	628	729	750
UK	1560	HULL	1660	196	912	3579	3884	37	52	85	93
UK	1515	INVERNESS	1923	272	691	5516	6300	18	27	43	46
UK	1443	IPSWICH	1620	625	1526	2677	2945	77	132	176	186
UK	1505	IRVINE	3320	1842	3343	4715	5695	262	312	362	373
UK	1489	KENDAL	2965	734	2448	5571	6022	81	124	181	192
UK	1445	KIDDERMINSTER	6041	4247	5709	7625	8439	433	505	590	619
UK	1504	KILMARNOCK	3404	1976	3251	4986	5858	288	327	377	384
UK	1454	KING'S LYNN	3327	1431	3332	5456	5715	66	118	180	189
UK	1509	KIRCALDY	2279	1099	1988	3312	3914	174	229	282	292
UK	1556	LEEDS	6442	4924	5957	7939	8641	398	460	538	559
UK	1466	LEICESTER	4509	3013	4164	6247	6737	318	413	535	561
UK	1472	LINCOLN	4686	2593	4665	6914	7446	166	237	315	335
UK	1553	LISBURN	2751	1395	2309	4152	4477	252	287	337	344
UK	1478	LIVERPOOL	4508	3254	4207	5853	6075	524	610	694	710
UK	1418	LLANELLI	633	200	525	1317	1573	33	61	89	92
UK	1436	LONDON	4911	2931	4533	6983	7551	1070	1264	1450	1490
UK	1502	LONDONDERRY	2341	1097	2253	3949	4111	86	112	148	152
UK	1465	LOUGHBOROUGH	5257	3354	4827	7319	7924	400	501	628	654
UK	1457	LOWESTOFT	1612	975	1564	2338	2596	87	112	140	148
UK	1520	LURGAN	3201	1720	2883	5228	5699	246	293	361	372
UK	1434	LUTON/DUNSTABLE	3986	2151	3844	5877	6425	629	813	1015	1056
UK	1411	MAIDSTONE	3582	2081	3319	4953	5278	487	657	805	843
UK	1464	MANSFIELD	5343	3481	5177	7310	7641	421	508	603	620
UK	1471	MELTON MOWBRAY	5715	3959	5571	7530	8225	372	470	575	608
UK	1549	MIDDLESBROUGH	1358	442	1227	2417	2934	108	155	199	214
UK	1433	MILTON KEYNES	2753	1745	2507	4048	4435	181	238	302	323
UK	1519	NEWPORT	5466	3744	4987	7271	7743	369	451	544	561
UK	1396	NEWTON ABBOT	919	274	735	1892	2048	55	73	104	113
UK	1452	NORTHAMPTON	5232	3350	4936	7250	8073	324	411	518	550
UK	1456	NORWICH	3272	2189	3146	4407	4440	146	172	205	207
UK	1463	NOTTINGHAM	5347	3607	5052	7170	7927	451	526	613	642
UK	1430	OXFORD	2815	1234	2584	4643	5333	111	167	243	265
UK	1513	PERTH	2670	306	2077	5299	6574	89	149	208	220
UK	1451	PETERBOROUGH	3868	2101	3506	5972	6669	130	197	274	293
UK	1394	PLYMOUTH	1681	611	1559	2906	3305	62	89	119	126
UK	1420	PONTYPRIDD	503	188	503	886	889	42	69	96	97
UK	1541	POOLE	2479	1350	2366	3850	4112	116	163	211	220
UK	1405	PORTSMOUTH	1992	852	1736	3387	3723	130	176	245	262

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UK	1488	PRESTON	5136	3520	4737	6587	7461	586	660	736	752
UK	1429	READING/WOKINGHAM	2896	1544	2731	4287	4867	477	610	745	785
UK	1537	ROCHDALE	6165	4216	6054	7749	8452	588	702	791	817
UK	1447	RUGBY	3097	1805	2883	4570	4956	168	247	344	368
UK	1402	SALISBURY	3803	1764	3565	5661	6346	146	229	318	343
UK	1486	SCUNTHORPE	3802	2101	3207	5657	6626	112	163	235	254
UK	1482	SHEFFIELD	5724	3847	5551	7360	8401	389	492	604	634
UK	1459	SHREWSBURY	4702	3033	4385	6533	7211	252	317	409	432
UK	1432	SLOUGH	2411	1605	2237	3510	3658	636	759	912	937
UK	1404	SOUTHAMPTON/EASTLEIG	2860	1246	2519	4253	4756	162	227	292	311
UK	1440	SOUTHEND	1740	902	1472	2549	2768	260	373	498	520
UK	1470	SPALDING/PINCHBECK	3643	1802	3183	5825	6447	112	160	223	236
UK	1392	ST, AUSTELL	2036	1175	1874	2870	3188	48	80	118	124
UK	1462	STAFFORD	7077	5379	6730	8993	9525	522	598	702	722
UK	1431	STEVENAGE	3473	1727	3194	5216	5824	588	770	958	1007
UK	1508	STIRLING	3927	1827	3321	7213	8032	357	439	507	520
UK	1533	STOKE	7318	5863	6994	8914	9287	551	660	789	818
UK	1423	STROUD	4395	2964	4150	6204	6798	241	301	383	412
UK	1500	SUNDERLAND/WHITBURN	2537	1403	2284	3834	4391	292	347	395	405
UK	1417	SWANSEA	1077	449	924	1746	2020	76	112	153	163
UK	1428	SWINDON	2204	908	2060	3590	3913	97	152	218	230
UK	1398	TAUNTON	2228	1019	2011	3602	3889	86	132	189	202
UK	1461	TELFORD	5385	3797	5066	6994	7327	351	432	519	537
UK	1415	THANET	715	331	696	1103	1184	70	95	119	128
UK	1439	THETFORD	4233	2473	3986	6470	6981	134	196	275	292
UK	1531	TORQUAY	861	326	737	1535	1932	53	77	106	115
UK	1422	TROWBRIDGE	3595	1836	3426	5365	5998	180	237	310	324
UK	1499	TYNESIDE	3115	1963	2856	4565	4830	298	333	365	374
UK	1481	WAKEFIELD	5857	4110	5228	7591	8217	364	448	557	584
UK	1477	WARRINGTON	6365	4502	6335	8049	8358	676	789	880	906
UK	1446	WARWICK/LEAMINGTON	6878	5324	6566	8561	9169	467	563	679	711
UK	1450	WELLINGBOROUGH	4209	2505	3817	6133	6633	203	293	407	429
UK	1419	WESTON-SUPER-MARE	2456	1527	2098	3468	3812	162	207	261	274
UK	1496	WHITEHAVEN	1209	392	778	2577	2711	44	53	71	75
UK	1476	WIGAN	5345	3911	5215	6833	7076	631	724	818	836
UK	1528	WOLVERHAMPTON	6630	4715	6451	8557	9364	492	591	687	719
UK	1444	WORCESTER	6719	5240	6388	8355	9063	431	492	581	603
UK	1495	WORKINGTON	1240	393	883	2509	2732	47	60	76	80
UK	1401	YEOVIL	4213	3056	4063	5303	5765	166	211	270	283
UK	1492	YORK	5323	3355	4813	7129	7698	185	236	296	308

Annex 4. Basic Indicators on PUSHs

The following list provides basic indicators on the *Potential Urban Strategic Horizons* as calculated in this study. The meanings of the abbreviations in the table header are as follows:

<i>Pop</i>	= total population in PUSH in 2000/2001
<i>Centr</i>	= number of other FUA centroids located within the PUSH concerned
<i>Cent %</i>	= percentage of PUSH territory overlaid by other PUSH territories
<i>Settle</i>	= Total settlement area within PUSH (in km ²)
<i>Set %</i>	= percentage of settlement areas on total PUSH area
<i>GINI</i>	= Gini coefficient applied to settlement area
<i>Mean dist</i>	= average distance between all settlement units within the PUSH concerned (in km)
<i>ACI</i>	= Standardised maximum area concentration index
<i>Struc</i>	= Settlement structure (1 =sprawl; 2 =sparsely populated/rural; 3 = monocentric; 4 = polycentric; -99 = indicator not calculated due to a lack of data on settlements)

CC	ID	Name	Pop	Centr.	Cent %	Settle	Set %	Gini	Mean dist	ACI	Struc
AT	133	AMSTETTEN	1068928	6	93	168,02	2	0,7153	55,3	4356	3
AT	1094	BADEN-TRAIKIRCHEN	2648580	6	100	649,25	7	0,7687	41,7	13045	3
AT	1222	BREGENZ	1636331	12	100	264,66	4	0,7260	41,7	1455	4
AT	136	BRUCK/MUR-KAPFENBERG	627558	2	89	120,68	2	0,7544	44,7	2919	3
AT	134	DORNBIRN	1387291	10	100	202,28	3	0,7263	35,9	1400	4
AT	135	FELDKIRCH-RANKWEIL	1188185	10	96	161,65	3	0,7346	34,1	1292	4
AT	1095	GRAZ	1147871	4	82	172,35	2	0,8043	55,9	4720	3
AT	1096	INNSBRUCK	564229	1	61	121,98	2	0,7577	46,8	4069	3
AT	137	KLAGENFURT	630065	2	95	117,54	2	0,7069	46,6	2680	3
AT	138	KLOSTERNEUBURG	2581934	6	100	632,57	7	0,7605	40,9	12800	3
AT	139	KREMS AN DER DONAU	2215726	4	83	369,14	4	0,8479	48,7	9963	3
AT	1075	LEOBEN	641878	2	80	118,90	2	0,7558	44,0	2946	3
AT	140	LEONDING	1234862	5	100	163,72	2	0,7077	43,3	4248	3
AT	141	LINZ	1262024	5	98	169,95	2	0,7111	46,2	4488	3
AT	142	MOEDLING	2721970	6	100	681,03	7	0,7623	42,7	13099	3
AT	143	SALZBURG	1096964	1	45	187,62	2	0,6937	48,4	2244	4
AT	144	SANKT POELTEN	2437363	6	97	476,54	5	0,8296	45,7	10669	3
AT	1217	STEYR	1126070	5	100	161,03	2	0,6845	41,7	3677	3
AT	145	TRAUN	1231993	5	100	161,18	2	0,7097	43,0	4173	3
AT	146	VILLACH	615801	1	70	119,95	1	0,7214	45,9	3196	3
AT	147	WELS	1328900	5	100	181,12	2	0,6993	49,0	4601	3
AT	1097	WIEN	2930963	8	99	746,89	7	0,7643	46,6	12864	3
AT	148	WIENER NEUSTADT	2577068	5	98	641,90	7	0,7744	45,0	13367	3
AT	149	WOLFSBERG	832174	2	94	133,30	2	0,7801	54,9	3010	4
BE	811	AALST	6104048	12	100	2902,34	29	0,9190	51,9	82467	1
BE	623	ANTWERPEN	6397817	11	100	2870,78	25	0,9220	51,2	64345	1
BE	630	BRUGGE	3219959	10	100	1494,24	22	0,9075	44,5	26455	1
BE	758	BRUXELLES/BRUSSEL	6489124	11	100	3320,31	28	0,9115	56,1	88692	1
BE	624	CHARLEROI	3822325	7	99	1989,67	22	0,8941	49,4	96216	1
BE	629	GENT	5907594	12	100	2586,34	27	0,9166	51,3	70400	1
BE	760	HASSELT	5479786	11	100	2598,71	25	0,9016	52,8	39968	1
BE	761	IEPER	3136592	10	100	1328,43	21	0,9092	42,8	37281	1
BE	762	KORTRIJK	4872204	14	100	2168,72	23	0,9063	49,9	41668	1
BE	625	LA LOUVIERE	4309585	10	100	2147,31	24	0,9063	49,6	94667	1
BE	759	LEUVEN	6254910	10	100	3169,05	29	0,9164	54,1	80936	1
BE	627	LIEGE	3713499	8	96	2081,71	19	0,8698	52,8	52689	3
BE	757	MECHELEN	5744479	10	100	2714,16	27	0,9159	48,5	74433	1
BE	1211	MONS	4839901	13	100	2195,63	24	0,9101	50,9	84828	1
BE	1207	MOUSCRON	4175333	12	100	1800,12	22	0,9048	46,1	41948	1
BE	813	NAMUR	4226528	7	96	2230,07	23	0,8963	53,0	87084	1
BE	763	OOSTENDE	2096601	7	100	1061,47	20	0,9055	41,6	20052	1
BE	764	ROESELARE	3689328	11	100	1598,65	22	0,9061	43,9	40585	1
BE	812	SINT NIKLAAS	5674402	10	100	2548,11	27	0,9210	49,6	58040	1
BE	626	TOURNAI	5348063	15	100	2339,07	22	0,9021	52,0	42818	1
BE	628	VERVIERS	3344020	7	98	1589,41	17	0,8668	48,2	49000	3
BG	1332	ASENOVGRAD	876792	3	96	379,80	6	0,5321	43,4	2889	3
BG	327	BLAGOEVGRAD	205984	0	41	81,96	3	0,5624	29,0	1232	4
BG	328	BURGAS	366366	0	0	182,06	4	0,5671	35,5	2306	3

BG	329	DIMITROVGRAD	555222	3	100	316,88	5	0,5043	43,3	2340	4
BG	345	DOBRICH	616795	1	80	448,24	7	0,5604	43,4	2723	4
BG	330	GABROVO	464298	3	100	333,18	6	0,5849	42,2	2636	4
BG	1054	HASKOVO	370284	2	100	217,74	5	0,4938	38,2	1365	4
BG	333	KARDZHALI	411472	3	53	164,78	3	0,5144	43,2	1830	4
BG	96	KARLOVO	623466	2	92	241,07	5	0,5768	45,9	2283	3
BG	331	KAZANLAK	460522	3	100	259,12	5	0,5437	44,7	2472	4
BG	332	KYUSTENDIL	176658	0	84	117,61	4	0,5184	23,7	1511	4
BG	94	LOVECH	357682	1	85	280,59	5	0,5613	38,7	1946	3
BG	334	MONTANA	351988	1	71	312,97	4	0,5367	45,5	1334	4
BG	335	PAZARDZHIK	812915	1	46	308,11	5	0,5738	38,5	2848	3
BG	336	PERNIK	1510003	2	90	495,00	8	0,7370	39,7	13296	3
BG	95	PETRICH	198201	0	37	84,50	2	0,4085	31,9	879	4
BG	337	PLEVEN	402420	1	47	334,23	6	0,5195	40,0	1536	3
BG	338	PLOVDIV	874153	2	100	403,53	6	0,5168	41,9	2877	3
BG	339	RAZGRAD	621645	3	92	521,45	7	0,4810	47,9	2171	4
BG	821	RUSE	523151	2	87	379,72	6	0,5315	41,4	1950	3
BG	340	SHUMEN	340663	2	88	338,14	6	0,4266	36,7	1505	4
BG	341	SILISTRA	298499	1	77	265,57	5	0,4947	36,7	1410	3
BG	342	SLIVEN	372835	1	100	279,57	4	0,4769	40,3	1711	4
BG	343	SOFIA	1519028	1	69	530,85	8	0,7234	38,9	13832	3
BG	344	STARAZAGORA	483826	2	92	333,27	5	0,4583	38,9	1972	4
BG	1055	TARGOVISHTA	400699	2	100	419,08	6	0,4378	40,6	1693	4
BG	346	VARNA	615078	1	73	410,47	7	0,5982	40,8	2932	4
BG	1056	VELIKOTARNOVO	404206	1	74	413,36	6	0,5549	42,8	2547	4
BG	347	VIDIN	231363	0	32	190,34	5	0,5285	32,1	1493	4
BG	1527	VRACA	335461	1	76	265,32	5	0,5478	42,6	1274	4
BG	348	YAMBOL	355717	1	64	266,86	4	0,4818	40,1	1896	4
CH	1219	AARAU	3345754	20	100	288,92	4	0,7452	41,6	3192	4
CH	1169	ARBONRORSCHACH	1541372	13	100	198,28	4	0,7274	41,4	1218	4
CH	1156	BADEN	3502920	21	100	298,13	4	0,7470	42,9	3399	4
CH	150	BASEL	3117760	19	99	547,46	7	0,8188	45,4	6218	4
CH	1057	BELLINZONA	1058793	6	90	220,98	7	0,8093	22,7	6628	3
CH	151	BERN	1525465	12	97	58,47	1	0,5433	45,3	471	2
CH	152	BIEL (BE)	1280732	11	100	49,12	1	0,5441	35,4	383	2
CH	1157	BRIG	329286	6	81	41,86	1	0,6550	34,7	729	4
CH	1158	BRUGG	3136987	19	100	299,35	5	0,7504	43,1	3763	4
CH	1	BUCHS	1121087	9	99	117,38	2	0,7380	30,9	1069	4
CH	1159	BURGDORF	1714027	13	100	104,95	2	0,7227	40,2	1027	4
CH	1160	CHIASSO-MENDRISIO	6339088	17	100	1326,50	19	0,8253	38,1	31915	3
CH	153	CHUR	618088	4	63	67,11	1	0,6975	30,0	737	4
CH	1058	FRAUENFELD	2362040	15	100	183,19	4	0,7344	36,3	3856	3
CH	1227	FRIBOURG	783293	5	92	23,12	1	0,6440	31,7	438	2
CH	417	GENEVE	1516049	6	99	413,41	11	0,8160	39,2	6253	4
CH	1161	GRENCHEN	1278928	11	100	63,42	2	0,4989	38,2	399	2
CH	1162	HEERBRUGG-ALTSTATEN	1553854	12	100	209,68	3	0,7446	37,8	1373	4
CH	2	INTERLAKEN	521925	2	77	19,31	1	0,5434	25,4	369	2
CH	1163	KREUZLINGEN	2186415	14	100	274,78	5	0,7411	47,4	4410	3
CH	1225	LA CHAUX-DE-FONDS	462025	4	93	36,13	1	0,8056	34,1	2505	4
CH	154	LAUSANNE	1227810	6	98	92,05	2	0,8263	39,6	2263	4
CH	1164	LENZBURG	3111876	18	100	258,30	4	0,7298	40,5	2611	4
CH	1059	LIESTAL	2035012	14	100	298,10	6	0,7722	31,4	4505	4
CH	1165	LOCARNO	558161	6	98	88,84	4	0,7810	26,9	2297	4
CH	1166	LUGANO	4612990	12	100	920,79	18	0,8579	33,2	22309	3
CH	155	LUZERN	1845763	10	99	91,54	2	0,6705	34,5	1054	3
CH	1167	MONTHEY	654618	5	93	46,05	2	0,8304	20,2	967	4
CH	1226	NEUCHATEL	912586	8	100	48,47	2	0,8247	47,7	1291	4
CH	1220	OLTEN	3255504	19	100	299,46	4	0,7744	43,3	3391	4
CH	3	PFAEFFIKON-LACHEN	1968286	10	100	89,29	2	0,7332	26,7	917	3
CH	1221	RAPPERSWIL-JONA	2471492	15	100	110,09	2	0,7276	34,5	1487	3
CH	1168	ROMANSHORN-AMRISWIL	1469006	13	100	192,06	4	0,7340	43,8	1137	4
CH	156	SCHAFFHAUSEN	2701251	13	100	356,33	5	0,6898	45,6	5190	3
CH	1170	SIERRE	230895	2	96	2,41	0	0,0000	1,0	100	2
CH	1060	SION	304203	3	100	3,73	0	0,5774	29,2	324	2
CH	1061	SOLOTHURN	2256317	18	100	188,07	4	0,7492	34,6	2175	3
CH	823	ST. GALLEN	1583645	12	100	171,66	3	0,7311	37,3	1104	4
CH	1224	STANS	1619629	10	92	70,76	2	0,6657	40,9	919	3
CH	157	THUN	886758	6	98	38,07	1	0,5404	31,9	418	2
CH	1171	VEVEY	709239	4	99	21,21	1	0,8435	36,8	1316	3
CH	1172	WETZIKON-PFAFFIKON (	2289584	13	100	107,80	2	0,7499	32,5	1772	3
CH	1173	WIL	2548758	18	100	230,19	4	0,7688	50,7	3283	3

Potential Strategic Urban Horizons • Annex

CH	158	WINTERTHUR	2954427	18	100	239,85	3	0,7106	43,1	4070	3
CH	1174	YVERDON	717236	4	99	39,47	1	0,7893	34,9	3025	3
CH	1175	ZOFINGEN	2897144	18	100	245,85	4	0,7796	40,8	2400	4
CH	159	ZUERICH	3114942	19	100	204,84	3	0,7069	45,7	3636	3
CH	1062	ZUG	2402335	12	100	103,39	2	0,6963	31,1	1214	3
CY	1176	LARNACA	256319	0	74	0,00	0	0,0000	0,0	0	-99
CY	1335	LIMASSOL	203885	0	49	0,00	0	0,0000	0,0	0	-99
CY	1337	NICOSIA	329378	1	58	0,00	0	0,0000	0,0	0	-99
CY	1336	PAPHOS	71611	0	30	0,00	0	0,0000	0,0	0	-99
CZ	97	BRNO	806928	0	50	307,27	8	0,5888	34,5	8256	3
CZ	163	CESKE BUDEJOVICE	434470	0	11	169,44	4	0,7214	37,4	4251	3
CZ	164	CHOMUTOV	1058324	4	99	351,02	7	0,7762	44,9	9408	3
CZ	1198	DECIN	1105265	3	93	351,77	11	0,8582	41,1	11681	3
CZ	165	FRYDEK-MISTEK	1465131	4	96	497,96	11	0,7418	34,2	6650	3
CZ	166	HAVIROV	1447410	5	100	454,47	14	0,7497	29,9	5660	3
CZ	167	HRADEC KRALOVE	687937	1	57	253,10	6	0,7332	36,9	5633	4
CZ	168	JIHLAVA	451459	0	13	167,45	3	0,6285	43,4	2652	4
CZ	1208	KARLOVY VARY	446003	1	60	182,70	4	0,6776	42,1	1745	4
CZ	169	KARVINA	1502935	5	100	449,73	14	0,7897	34,2	6056	3
CZ	170	KLADNO	1542517	1	100	400,38	17	0,8069	27,0	10410	4
CZ	1197	LIBEREC	750765	2	89	277,45	8	0,8059	39,9	4000	4
CZ	177	MLADA BOLESLAV	1709298	2	79	444,24	12	0,8449	45,2	14919	4
CZ	178	MOST	879640	4	94	306,13	6	0,7057	40,0	3505	4
CZ	181	OLOMOUC	476233	2	88	224,72	9	0,6458	31,8	3268	4
CZ	182	OPAVA	1002410	4	73	338,62	10	0,7242	33,5	7389	3
CZ	183	OSTRAVA	1742952	5	98	564,24	13	0,7345	35,0	6578	4
CZ	184	PARDUBICE	517361	1	93	170,20	7	0,7553	30,7	5104	4
CZ	185	PLZEN	569703	0	21	238,75	4	0,6467	40,9	5058	3
CZ	187	PRAHA	1952721	2	67	597,14	12	0,7511	39,2	14894	4
CZ	188	PREROV	783233	3	97	373,60	9	0,6308	37,0	3382	4
CZ	190	PROSTEJOV	741431	3	86	343,43	8	0,5997	38,2	3504	4
CZ	192	TEPLICE	1284977	5	100	399,33	9	0,8127	43,7	11113	3
CZ	197	USTI NAD LABEM	807214	4	99	274,47	7	0,7497	38,4	3692	4
CZ	199	ZLIN	786595	2	83	356,94	7	0,6228	37,1	2311	4
DE	471	AACHEN	6790763	12	100	2264,22	20	0,8807	60,4	28659	1
DE	439	AALEN	1622557	5	97	457,46	7	0,6679	48,3	3321	4
DE	1201	ALTENBURG	2584555	9	100	846,58	11	0,8048	48,8	11583	4
DE	451	AMBERG IN DER OBERPF	1420923	5	100	413,82	8	0,7354	50,3	7663	3
DE	447	ANSBACH	1866688	6	91	502,33	6	0,7091	50,3	9938	3
DE	475	ARNSBERG	3796543	6	96	1003,43	14	0,8559	43,3	11854	4
DE	456	ASCHAFFENBURG	4387082	11	98	1114,32	13	0,7262	49,7	8263	3
DE	1036	AUE	1645871	6	99	583,31	10	0,7912	38,6	8728	4
DE	429	AUGSBURG	3199499	5	81	863,74	11	0,7648	55,0	18652	3
DE	473	BAD HERSFELD	470254	1	98	186,65	5	0,6045	42,3	1972	4
DE	798	BAD KREUZNACH	2643802	5	96	637,28	11	0,7577	45,1	8387	3
DE	465	BAD NAUHEIM	4599524	15	100	1203,35	12	0,7082	51,4	8402	3
DE	522	BAD OEYNHAUSEN	3269946	8	100	929,02	12	0,7799	48,8	12059	3
DE	437	BADEN BADEN	2490240	8	99	716,82	12	0,7575	46,6	8896	4
DE	796	BAMBERG	2153296	8	100	577,03	7	0,6933	54,9	10257	3
DE	1039	BAUTZEN	1545724	3	97	587,70	9	0,8195	47,8	10461	4
DE	795	BAYREUTH	1900836	7	98	539,02	6	0,7158	61,5	9313	3
DE	1027	BERLIN	4709288	4	100	1460,41	11	0,8138	49,9	38785	3
DE	484	BIELEFELD	3105324	9	100	879,16	10	0,7474	48,4	5382	4
DE	480	BOCHOLT	6496778	9	99	1598,69	17	0,8651	51,6	21648	3
DE	516	BOCHUM	11456998	16	100	2808,52	22	0,8840	54,6	22615	1
DE	511	BONN	6752211	8	99	1701,98	17	0,8096	52,8	9374	4
DE	1048	BRANDENBURG	4258902	3	100	1070,99	11	0,8538	54,4	29588	3
DE	487	BRAUNSCHWEIG	2754613	8	100	945,25	9	0,7045	52,4	13909	3
DE	497	BREMEN	2085562	2	80	702,45	7	0,8002	48,2	10364	4
DE	960	BREMERHAVEN	1265379	2	99	429,13	10	0,8448	40,7	8588	3
DE	436	BUEHL	2303399	8	100	668,37	12	0,7664	44,6	9039	4
DE	496	CELLE	2668634	6	92	897,72	9	0,7347	49,8	14152	3
DE	1042	CHEMNITZ	2569893	9	100	866,83	11	0,8062	50,7	8505	4
DE	462	COBURG	1022776	4	95	316,31	5	0,6996	46,8	3642	4
DE	1047	COTTBUS	637834	1	80	332,86	5	0,7058	43,5	4009	3
DE	1348	CUXHAVEN	346175	1	89	130,43	6	0,7599	29,0	5347	3
DE	455	DARMSTADT	5847314	16	100	1450,03	15	0,7369	51,9	7403	4
DE	791	DEGGENDORF	1058320	4	93	306,90	5	0,6592	53,5	4759	4
DE	1049	DESSAU	2045620	7	100	803,15	9	0,7588	54,8	8523	4
DE	482	DETMOLD	2509957	7	100	740,25	9	0,7246	43,0	5745	3

DE 470	DILLENBURG	1759867	9	96	613,36	9	0,6827	46,4	6534	3
DE 517	DORTMUND	9357662	12	100	2301,90	22	0,8906	49,0	22867	1
DE 1040	DRESDEN	2022188	7	98	747,80	10	0,8055	48,1	12427	4
DE 472	DUEREN	6562773	10	100	1749,76	19	0,8366	55,1	11426	4
DE 512	DUESSELDORF	12475385	18	100	3097,35	24	0,8635	59,8	25455	1
DE 518	DUISBURG	11688116	15	100	2923,46	22	0,8647	57,1	23059	1
DE 408	EBERSWALDE-FINOW	4204898	1	87	1168,18	11	0,8410	50,6	36819	3
DE 1203	EISENACH	1128497	4	97	417,48	6	0,6686	49,6	4843	3
DE 500	EMDEN	794664	1	78	282,20	6	0,8173	37,4	9753	3
DE 1045	ERFURT	1171344	6	100	445,11	7	0,6857	43,3	4319	4
DE 452	ERLANGEN	2096355	7	99	573,30	7	0,6977	45,7	9550	3
DE 519	ESSEN	11290198	15	100	2803,74	23	0,8802	54,2	22653	1
DE 469	EUSKIRCHEN	6871086	8	96	1737,58	17	0,8241	55,0	10047	4
DE 504	FLENSBURG	740216	5	94	296,35	4	0,6742	45,3	3318	3
DE 510	FRANKFURT AM MAIN	5456553	15	100	1401,97	13	0,7186	52,6	8167	4
DE 1196	FRANKFURT AN DER ODE	4130616	1	77	1031,59	10	0,8589	56,2	32793	3
DE 1037	FREIBERG	2006745	4	100	707,43	11	0,8037	45,5	12104	4
DE 426	FREIBURG IM BREISGAU	2263724	9	97	586,69	10	0,7744	51,5	5152	4
DE 430	FREISING	3005136	3	100	775,84	10	0,7792	47,5	19086	3
DE 904	FRIEDBERG (HESSEN)	4645536	15	100	1209,35	13	0,7114	50,5	8278	3
DE 1210	FRIEDRICHSDORF	4733321	14	100	1216,85	13	0,7145	49,3	8385	3
DE 507	FUERTH	2155692	7	100	587,88	6	0,6883	44,6	9641	3
DE 468	FULDA	780628	1	87	266,83	4	0,5768	45,4	3006	3
DE 419	GARMISCH-PARTENKIRCH	759667	1	90	216,83	4	0,6898	45,4	2590	3
DE 1202	GERA	2803414	13	100	902,78	10	0,8032	53,5	10025	4
DE 905	GIESSEN	3533733	12	100	984,45	11	0,7049	52,6	9980	3
DE 1053	GOERLITZ	759759	2	83	251,02	5	0,7765	38,8	3431	4
DE 476	GOETTINGEN	1521515	2	96	527,20	6	0,6626	51,7	7895	3
DE 481	GOSLAR	1957299	7	100	679,31	8	0,6759	48,1	4984	4
DE 1043	GOtha	1230461	5	100	453,09	7	0,6993	45,3	4264	4
DE 1025	GREIFSWALD	438808	2	97	191,76	4	0,6315	42,9	2448	4
DE 1038	GREIZ	1867133	8	100	636,04	9	0,7938	44,2	7454	4
DE 800	GUMMERSBACH	5327757	7	100	1347,66	19	0,8746	48,3	9238	4
DE 1204	HAGEN	10855167	15	100	2705,03	23	0,8961	55,3	23487	1
DE 1030	HALBERSTADT	1534756	5	100	622,01	8	0,6647	48,9	5326	4
DE 1035	HALLE	2146577	5	100	821,10	10	0,7291	46,6	9880	3
DE 524	HAMBURG	3845206	3	89	1127,81	11	0,8326	47,7	27983	3
DE 802	HAMELN	3009609	7	100	931,29	11	0,7648	49,4	14968	3
DE 477	HAMM	7144188	10	100	1781,80	17	0,8743	54,1	22746	3
DE 461	HANAU	4622172	12	100	1185,86	12	0,7165	48,5	8436	3
DE 523	HANNOVER	3026240	8	100	1014,31	10	0,7379	51,5	15744	3
DE 449	HEIDELBERG	4610521	12	100	1222,96	13	0,7112	52,8	6588	4
DE 435	HEIDENHEIM	1655281	4	95	485,50	7	0,6346	46,3	3446	4
DE 443	HEILBRONN	3990177	5	95	926,93	12	0,7042	49,2	7555	4
DE 485	HERFORD	3129525	9	100	894,37	9	0,7331	49,7	5847	4
DE 486	HILDESHEIM	3094393	9	100	1012,49	10	0,7277	50,6	14174	3
DE 463	HOF	1231872	5	97	429,97	6	0,7169	49,7	4241	4
DE 1199	HOYERSWERDA	1271017	3	99	505,85	8	0,8028	47,5	7005	3
DE 488	IBBENBUEREN	2380273	7	100	610,82	7	0,7134	54,8	3237	4
DE 790	INGOLSTADT	3005370	4	89	773,24	11	0,8111	64,8	17120	3
DE 521	ISERLOHN	8349039	11	100	2061,19	22	0,8976	48,5	23664	1
DE 1050	JENA	1725322	11	100	576,62	7	0,7397	54,0	4165	4
DE 450	KAISERSLAUTERN	3943085	12	96	1136,57	11	0,7545	62,4	8124	4
DE 441	KARLSRUHE	5027176	13	100	1287,16	13	0,7404	57,2	8257	4
DE 520	KASSEL	1425717	2	95	468,09	5	0,6592	46,2	8780	3
DE 424	KAUFBEUREN	773959	2	100	244,11	5	0,6323	41,0	2233	4
DE 422	KEMPTEN (ALLGAEU)	1114026	3	94	316,75	4	0,6539	49,3	2106	4
DE 906	KIEL	1351867	2	99	445,24	6	0,7545	49,8	6820	3
DE 801	KLEVE	4046573	9	100	1042,45	13	0,7881	50,4	9090	4
DE 464	KOBLENZ	2120279	2	89	579,54	8	0,6590	47,0	5867	3
DE 513	KOELN	11269089	15	100	2801,65	22	0,8607	60,8	27005	1
DE 421	KONSTANZ	2185129	15	100	300,65	6	0,7341	47,8	4128	3
DE 1206	KREFELD	11084777	14	100	2771,58	23	0,8632	56,8	23749	1
DE 460	KULMBACH	1016162	4	100	304,78	5	0,6582	44,8	2976	4
DE 444	LANDAU IN DER PFALZ	3787924	13	100	1055,32	12	0,7335	51,7	7408	4
DE 901	LANDSHUT	2741140	5	89	698,78	9	0,7885	57,5	18712	3
DE 1034	LEIPZIG	2443473	7	100	874,06	9	0,7373	51,5	10761	3
DE 466	LIMBURG	4503158	14	100	1171,53	13	0,7428	57,1	8726	3
DE 495	LINGEN	1027960	4	98	279,10	5	0,6774	44,1	1621	4
DE 478	LIPPSTADT	2458361	5	100	681,03	10	0,7684	46,7	5342	4
DE 420	LOERRACH	2468100	16	100	464,61	8	0,7946	39,9	5501	4
DE 1216	LUDWIGSHAFEN AM RHEI	6021139	16	100	1542,91	14	0,7437	58,4	7502	4

DE 502	LUEBECK	3136087	3	96	869,57	12	0,8618	47,5	22398	3
DE 499	LUENEBURG	2792479	1	78	787,28	12	0,8508	38,6	23741	3
DE 1033	MAGDEBURG	1177425	5	98	566,69	7	0,6851	49,3	5820	3
DE 457	MAINZ	5527955	15	100	1377,73	13	0,7400	53,3	7961	4
DE 509	MANNHEIM	5871833	15	100	1499,05	14	0,7460	57,1	7380	4
DE 799	MARBURG AN DER LAHN	1047946	4	99	359,40	6	0,6055	40,2	3168	4
DE 425	MEMMINGEN	1676758	6	100	505,90	6	0,6422	53,4	4030	3
DE 1200	MERSEBURG	2452705	8	100	886,35	10	0,7409	48,4	9572	3
DE 491	MINDEN	2330907	6	98	698,71	9	0,7509	44,1	6217	4
DE 515	MONCHEN-GLADBACH	9760937	14	100	2477,74	24	0,8604	56,3	23391	1
DE 428	MUENCHEN	3636136	5	98	935,13	10	0,7784	50,3	18743	3
DE 483	MUENSTER	6039038	10	100	1495,09	14	0,8492	53,5	18439	3
DE 409	NAUMBURG	2179983	8	100	728,97	10	0,7589	47,5	9574	3
DE 1195	NEUBRANDENBURG	493776	1	61	256,11	3	0,5788	50,2	2793	4
DE 792	NEUMARKT	1824609	7	99	516,58	8	0,7419	46,9	8552	3
DE 503	NEUMUENSTER	3504314	4	98	969,62	12	0,8700	54,0	21584	3
DE 1063	NEURUPPIN	4303151	3	80	1178,57	10	0,8353	57,1	34973	3
DE 448	NEUSTADT AN DER WEIN	3797897	11	100	1061,97	12	0,7199	52,2	7660	4
DE 505	NEU-ULM	1977969	5	100	599,57	8	0,6709	50,7	7332	3
DE 1031	NORDHAUSEN	967548	1	85	399,87	5	0,6130	49,4	1642	4
DE 494	NORDHORN	1738412	6	99	488,66	6	0,7107	50,1	3113	4
DE 508	NURNBERG	2186388	8	100	600,70	7	0,6991	45,1	9250	3
DE 459	OFFENBACH AM MAIN	5443827	14	100	1396,68	13	0,7243	52,7	8197	4
DE 431	OFFENBURG	2343034	6	99	696,99	11	0,7856	46,7	10531	4
DE 498	OLDENBURG	2054740	2	94	673,20	8	0,8316	53,3	11085	4
DE 489	OSNABRUECK	3304198	9	98	878,68	8	0,7399	57,6	5044	4
DE 479	PADERBORN	2614436	6	99	768,64	9	0,7404	52,0	5551	4
DE 434	PASSAU	860120	1	87	171,75	2	0,5790	43,6	1469	4
DE 492	PEINE	2825888	7	100	941,99	10	0,7188	49,7	15089	3
DE 789	PFORZHEIM	4846259	11	99	1155,19	13	0,7118	51,3	7953	4
DE 445	PIRMASENS	1655826	6	99	553,04	10	0,7687	42,8	10516	3
DE 1052	PLAUEN	1612593	7	100	554,71	8	0,7956	49,0	7149	4
DE 1029	POTSDAM	4625242	3	100	1385,19	12	0,8258	49,0	34740	3
DE 423	RAVENSBURG	1325424	5	92	343,36	6	0,6637	46,4	1495	4
DE 442	REGENSBURG	1208552	6	92	412,22	5	0,6694	52,6	4558	4
DE 1193	RENDSBURG	1259689	3	89	429,30	6	0,7576	48,5	6729	3
DE 432	REUTLINGEN	3490789	3	99	818,35	11	0,7028	43,3	8409	3
DE 490	RHEINE	2441179	6	100	625,79	6	0,7036	54,2	3222	4
DE 1041	RIESA	1452492	2	90	561,37	8	0,7577	45,5	8949	4
DE 896	ROSENHEIM	2653877	2	77	587,78	7	0,8310	59,2	22355	3
DE 1024	ROSTOCK	503757	1	79	186,45	5	0,7156	33,4	4417	3
DE 1044	RUDOLSTADT	1123521	6	100	360,72	6	0,7352	45,6	4823	4
DE 903	RUESSELSHEIM	6184618	17	100	1550,54	13	0,7292	55,7	8007	4
DE 410	SAALFELD	1161036	5	97	366,07	6	0,7430	46,9	5142	4
DE 446	SAARBRUECKEN	2204118	6	100	778,38	10	0,7971	46,2	14593	3
DE 803	SALZGITTER	2703910	7	100	891,84	9	0,7164	50,6	13226	3
DE 411	SCHOENEBECK (ELBE)	1077698	3	100	513,28	7	0,6696	43,7	6083	3
DE 793	SCHWABACH	2181294	7	100	602,62	6	0,6978	47,3	9557	3
DE 900	SCHWAEBISCH GMUEND	2715949	3	97	610,57	11	0,7198	41,4	7248	3
DE 797	SCHWEINFURT	1207996	3	96	369,29	5	0,6043	47,5	3260	4
DE 1026	SCHWERIN	822063	2	75	327,43	5	0,6841	50,5	5637	4
DE 514	SIEGEN	2013157	6	99	648,45	10	0,7386	49,5	6372	4
DE 897	SINGEN	1447309	8	99	303,22	6	0,6574	41,3	1506	4
DE 902	SPEYER	4141275	11	100	1110,39	12	0,7174	50,4	6906	4
DE 1028	STENDAL	696124	2	77	347,29	6	0,7094	49,5	5951	3
DE 1194	STRALSUND	335860	1	82	151,39	4	0,5924	38,6	2328	4
DE 440	STRAUBING	950433	4	97	293,74	5	0,6723	47,0	4409	4
DE 438	STUTTGART	4588211	7	100	1060,80	12	0,6877	47,1	8179	4
DE 1209	SUHL	931996	4	92	349,39	8	0,7441	42,9	4446	4
DE 453	TRIER	1384888	3	78	477,84	6	0,7005	47,9	7272	3
DE 433	TUEBINGEN	3598234	3	99	847,27	12	0,6984	43,4	8421	3
DE 506	ULM	2155798	5	100	639,08	8	0,6688	52,1	7104	3
DE 427	VILLINGEN-SCHWENNING	1299258	3	95	382,17	6	0,6282	44,3	1488	4
DE 794	WEIDEN IN DER OBERPF	719078	2	87	252,20	4	0,6402	46,7	1899	4
DE 898	WEIL	2510273	16	100	492,48	8	0,7936	40,5	5676	4
DE 1051	WEIMAR	1512725	8	100	550,31	7	0,6878	50,6	4337	4
DE 899	WEINGARTEN	4270572	14	100	1086,83	14	0,7544	52,8	6503	4
DE 467	WETZLAR	3299395	11	100	916,18	11	0,7053	50,7	10713	3
DE 458	WIESBADEN	5379877	14	100	1348,19	13	0,7226	53,2	8138	4
DE 501	WILHELMSHAVEN	547315	1	93	202,74	8	0,8260	33,3	6437	3
DE 1023	WISMAR	962954	3	99	340,10	6	0,7427	50,3	5111	4
DE 1032	WITTENBERG	1499591	4	91	633,61	7	0,7323	56,7	9043	3

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DE	959	WOLFEN	1901283	5	100	722,70	9	0,7530	46,7	9517	3
DE	493	WOLFSBURG	1468896	5	91	557,91	8	0,6535	44,8	5599	3
DE	474	WUELFRATH	10136490	11	100	2462,36	31	0,9015	46,1	18569	3
DE	454	WUERZBURG	1367088	2	89	422,98	5	0,6098	50,7	2198	4
DE	1205	WUPPERTAL	11943160	15	100	2952,17	24	0,8791	54,8	22807	1
DE	1046	ZWICKAU	2116076	9	100	722,48	9	0,7765	45,5	8089	4
DK	1192	AABENRAA	574527	6	100	247,37	4	0,6908	46,8	2756	4
DK	825	AALBORG	495514	3	97	286,34	5	0,6784	43,9	3369	4
DK	1345	AARHUS	781957	4	100	359,47	6	0,6948	40,3	4715	3
DK	807	ESBJERG	253997	1	93	126,14	3	0,6513	33,2	2002	3
DK	815	FREDERIKSHAVN	342114	2	100	198,35	7	0,7203	35,1	2343	4
DK	92	GRENAA	82278	0	100	70,03	5	0,5985	24,0	880	4
DK	93	HADERSLEV	539450	5	100	247,92	5	0,7182	47,8	1902	4
DK	637	HERNING	485443	5	100	254,14	3	0,6454	47,8	1223	4
DK	639	HJOERRING	364092	2	100	215,75	7	0,7244	34,8	2710	4
DK	1347	HOLBAEK	1490833	2	87	538,77	14	0,8367	40,9	10565	3
DK	638	HOLSTEBRO	372895	5	100	209,26	4	0,6318	45,1	1282	4
DK	805	HORSSENS	817761	4	100	356,81	7	0,7255	42,5	3864	3
DK	961	KOEBENHAVN	2058002	1	80	697,79	24	0,8686	32,2	8427	3
DK	634	KOLDING	904681	7	100	420,85	5	0,7242	53,6	4102	3
DK	1555	LEMVIG	156267	2	100	88,50	3	0,5828	33,4	1356	3
DK	1551	LOGSTOR	292557	2	100	154,82	5	0,7011	38,1	3002	4
DK	1550	MARIBO	167391	2	94	90,97	4	0,5142	35,1	677	4
DK	635	NAESTVED	611592	3	96	280,80	6	0,7171	43,7	3573	3
DK	1545	NAKSKOV	217441	3	100	112,40	4	0,5845	36,4	1121	4
DK	1546	NYKOBING MORSO	147012	2	100	84,95	3	0,5748	35,9	1530	4
DK	1079	NYKOBING F	236815	3	100	121,66	4	0,5860	37,6	1192	4
DK	632	ODENSE	591684	2	95	265,50	7	0,7525	39,4	4855	3
DK	633	RANDERS	766778	3	100	369,00	5	0,6841	43,1	5222	3
DK	1064	RIBE	376267	3	100	190,72	4	0,6802	41,9	1759	4
DK	1346	RINGKOEHING	231653	3	100	123,04	3	0,6526	38,9	1200	4
DK	1065	ROENNE	36440	0	0	19,42	4	0,6178	16,8	717	3
DK	636	SILKEBORG	753546	4	100	334,43	6	0,7106	40,5	4230	3
DK	4	SKIVE	345762	4	100	187,33	4	0,6428	40,1	1346	4
DK	809	SLAGELSE	808068	3	94	377,72	8	0,7267	54,2	4132	3
DK	963	SOENDERBORG	327340	3	100	135,25	5	0,6893	28,9	2548	3
DK	808	SVENDBORG	379273	1	88	163,19	7	0,7780	28,0	4855	3
DK	47	THISTED	102819	1	100	60,70	3	0,5360	32,0	1023	4
DK	1530	TONDER	385022	3	98	167,75	4	0,6873	38,9	3095	3
DK	806	VEJLE	1112002	5	100	485,02	6	0,7375	54,2	3979	4
DK	804	VIBORG	547146	5	100	287,45	4	0,6537	45,8	1326	4
EE	395	KOHTLA-JARVE	177882	1	71	85,50	3	0,6728	34,2	1608	4
EE	103	KURESSAARE	33928	0	0	19,29	1	0,5016	26,5	917	3
EE	98	NARVA	156888	1	100	64,62	5	0,7280	24,2	1519	4
EE	104	PAIDE	96445	0	68	88,84	1	0,5225	42,4	857	4
EE	99	PARNU	94552	0	20	42,72	1	0,5662	33,3	1472	3
EE	101	RAKVERE	146966	1	51	104,04	2	0,6250	42,3	1532	4
EE	396	TALLINN	535835	0	14	182,18	4	0,8134	29,7	9031	3
EE	397	TARTU	213014	0	47	108,82	2	0,6741	40,7	4900	3
EE	100	VILJANDI	93161	0	53	69,06	1	0,5882	41,6	1623	3
EE	102	VORU	106714	0	36	81,13	1	0,5848	42,6	1468	4
ES	649	ALBACETE	225157	0	6	43,66	1	0,7445	33,6	3877	3
ES	650	ALCAZAR DE SAN JUAN	190469	0	13	39,16	1	0,5480	38,6	506	4
ES	651	ALCOY	781882	4	95	111,94	3	0,7962	34,5	5574	3
ES	652	ALGECIRAS	316098	0	19	57,77	2	0,7738	28,4	2287	4
ES	653	ALICANTE	1292866	6	100	210,77	6	0,7997	44,1	5448	4
ES	654	ALMERIA	409676	2	58	39,07	1	0,7021	35,3	2241	3
ES	655	ALZIRA	2141106	6	100	296,62	6	0,7879	43,7	12468	3
ES	656	ANDUJAR	205245	1	58	41,63	1	0,7239	30,5	2036	3
ES	657	ARANJUEZ	3987140	2	78	316,13	9	0,9146	30,6	14759	3
ES	836	ARRECIFE	103044	0	0	38,80	5	0,6214	15,2	727	4
ES	658	AVILA	239260	2	47	74,73	2	0,7698	39,6	3678	4
ES	659	AVILES	847857	2	88	99,18	3	0,8216	26,8	4131	4
ES	660	BADAJOS	330323	1	29	57,04	1	0,6371	33,5	991	4
ES	661	BARCELONA	4443165	5	100	514,86	16	0,8437	34,7	26041	3
ES	663	BENIDORM	866048	3	100	184,45	11	0,8534	38,5	5604	4
ES	664	BILBAO	1517569	2	77	145,96	3	0,8747	36,3	14973	4
ES	662	BLANES	457014	2	84	105,24	11	0,7770	28,5	2363	4
ES	665	BURGOS	201328	0	6	35,26	1	0,8099	27,5	13970	3
ES	666	CACERES	123666	0	9	19,67	1	0,6122	27,6	1293	3

ES 847	CADIZ	587182	2	92	109,41	3	0,8775	26,6	3245	4
ES 849	CARTAGENA	805357	2	100	118,56	4	0,7320	31,7	3465	3
ES 667	CASTELLON DE LA PLAN	1503819	3	91	188,26	6	0,8230	47,7	16034	3
ES 1354	CEUTA	0	0	0	4,29	22	0,8054	2,1	616	3
ES 774	CIEZA	679354	2	77	78,19	2	0,7113	33,8	1642	4
ES 845	CIUDAD REAL	220378	1	45	40,72	1	0,6987	35,6	1009	4
ES 1570	COLLADOVILLALBA	4845786	3	98	486,28	10	0,9067	42,4	21702	3
ES 668	CORDOBA	511432	1	51	111,05	2	0,7515	27,6	2965	3
ES 851	DENIA	456260	2	97	130,02	10	0,8565	30,1	9022	3
ES 669	DON BENITO	170389	1	69	26,63	1	0,5881	31,6	1128	4
ES 671	DURANGO	1260613	2	100	111,27	4	0,8701	30,5	15031	3
ES 689	EIBAR	1779651	7	100	245,96	3	0,7259	46,9	3869	4
ES 1391	EJIDO (EL)	380915	2	89	31,46	1	0,7174	32,3	2362	3
ES 672	ELCHE	1648361	7	97	223,72	5	0,7431	43,8	5165	3
ES 850	ELDA	979200	2	98	130,21	3	0,7463	31,0	5255	3
ES 673	FERROL	566089	1	59	65,12	4	0,9218	22,6	5160	4
ES 674	FIGUERES	370809	2	85	81,75	5	0,8229	41,6	8121	3
ES 675	GANDIA	1761566	4	98	242,70	10	0,8286	45,7	10603	4
ES 18	GERONA	365585	1	71	117,17	5	0,7829	35,1	3933	4
ES 676	GIJON	849062	2	97	98,55	3	0,8210	27,3	4380	4
ES 677	GRANADA	632878	1	45	68,93	2	0,7521	33,7	3654	3
ES 854	GRANOLLERS	4036393	3	100	421,56	18	0,8566	28,3	22547	3
ES 678	GUADALAJARA	3691172	1	43	309,24	9	0,9241	30,9	15258	3
ES 679	HUELVA	321576	0	24	64,91	2	0,7843	32,8	2931	3
ES 26	IBIZA	94334	0	0	23,79	4	0,6156	13,2	1253	4
ES 680	IGUALADA	3006831	3	87	285,20	14	0,8801	24,7	18816	3
ES 681	JAEN	397718	1	67	52,63	1	0,7128	34,6	2399	4
ES 773	JEREZ DE LA FRONTERA	685138	3	94	123,78	2	0,8753	33,8	4201	4
ES 844	LA CORUNA	668670	2	75	68,67	3	0,9134	32,7	10419	4
ES 696	LA OROTAVA	692462	1	86	71,00	4	0,8683	27,7	8462	3
ES 772	LAS PALMAS DE GRAN C	733113	1	100	75,30	6	0,8403	19,7	4293	4
ES 777	LEON	262136	0	5	40,62	1	0,6240	30,3	4680	3
ES 19	LERIDA	328457	0	12	73,20	1	0,6921	38,9	4609	3
ES 682	LINARES	361625	2	93	49,08	1	0,7454	30,1	2308	4
ES 683	LOGRONO	300125	0	29	50,67	1	0,7811	36,9	5041	4
ES 684	LORCA	247259	0	26	38,87	1	0,7657	37,0	2025	3
ES 685	LUCENA	313037	1	91	32,60	1	0,6467	39,7	719	4
ES 965	LUGO	296972	0	25	29,34	1	0,7062	47,1	1923	4
ES 770	MADRID	5280009	1	89	553,82	11	0,8729	34,9	21951	3
ES 848	MALAGA	942522	1	82	134,26	5	0,8418	28,5	3432	3
ES 686	MANRESA	3713966	5	74	380,98	10	0,8644	31,1	22469	3
ES 687	MARBELLA	923244	1	67	170,24	10	0,8515	40,0	3753	3
ES 855	MATARO	4277190	4	100	474,50	17	0,8487	33,8	24704	3
ES 1143	MELILLA	0	0	0	4,65	35	0,7666	2,3	469	2
ES 688	MERIDA	216352	1	83	36,32	1	0,6187	39,3	1087	4
ES 690	MONDRAGON O ARRASATE	229150	1	79	27,30	3	0,8318	17,4	2258	4
ES 691	MONTILLA	527001	2	99	102,30	3	0,7482	33,2	2688	3
ES 692	MOTRIL	526952	2	82	56,89	3	0,8182	42,6	3524	3
ES 693	MURCIA	1442844	6	100	210,67	3	0,7037	41,3	3462	4
ES 694	ONTINYENT	613242	3	89	88,70	2	0,6932	38,2	1714	4
ES 697	ORENSE	369052	0	39	29,76	1	0,6592	49,0	595	4
ES 695	ORIHUELA	1630714	7	100	214,05	4	0,7203	40,4	4676	3
ES 776	OVIEDO	871948	2	75	102,03	3	0,8352	33,0	5803	4
ES 778	PALENCIA	442347	1	27	46,59	2	0,7681	41,2	3904	3
ES 698	PALMA DE MALLORCA	677043	0	0	134,98	4	0,7362	33,1	4707	3
ES 699	PAMPLONA	407773	0	29	42,42	1	0,8077	34,5	8585	3
ES 700	PONFERRADA	157293	0	6	28,76	1	0,7544	25,7	1458	4
ES 701	PONTEVEDRA	927802	3	96	116,90	3	0,8946	48,5	8390	3
ES 702	PUERTOLLANO	153761	1	40	29,43	1	0,7514	33,3	1163	4
ES 1390	PUQUETAS DE MAR	370506	2	100	34,04	2	0,7162	28,9	1888	3
ES 1309	SAGUNTO	507014	2	100	99,68	6	0,7784	26,9	4724	4
ES 703	SALAMANCA	230190	0	24	41,68	1	0,6628	31,9	2936	3
ES 670	SAN SEBASTIAN	854876	1	84	150,30	6	0,8758	43,3	9713	4
ES 704	SANLUCAR DE BARRAMED	587320	2	100	112,52	3	0,8904	30,4	4221	4
ES 705	SANTA CRUZ DE TENERI	713891	1	93	75,31	4	0,8739	28,3	7927	3
ES 706	SANTA LUCIA	747434	1	88	78,07	5	0,8379	20,6	4283	4
ES 707	SANTANDER	453403	1	85	66,77	3	0,7616	21,5	3591	4
ES 708	SANTIAGO DE COMPOSTE	972412	3	81	94,38	2	0,8835	52,9	9664	3
ES 846	SEGOVIA	256113	2	68	74,93	2	0,8433	32,1	5923	3
ES 709	SEVILLA	1503273	1	55	230,89	4	0,8288	33,7	9610	3
ES 710	TALAVERA DE LA REINA	159634	0	13	39,95	1	0,6057	40,4	1441	3
ES 711	TARRAGONA	604935	2	69	158,76	6	0,7911	37,4	5485	4

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ES	712	TOLEDO	583158	1	50	109,72	2	0,7234	35,1	1818	4
ES	713	TORRELAVEGA	443036	1	65	66,81	3	0,7538	23,4	3916	4
ES	1389	TORREVIEJA	1071625	4	100	162,38	6	0,7267	41,4	3494	4
ES	714	UBEDA	328439	2	72	44,23	1	0,7633	35,3	2378	4
ES	715	UTRERA	422251	0	81	93,53	2	0,8152	31,1	2480	4
ES	852	VALENCIA	2142183	5	93	300,65	7	0,7817	37,7	11679	3
ES	780	VALL D'UIXO (LA)	1642078	3	91	220,58	6	0,8185	38,0	12342	3
ES	779	VALLADOLID	515116	1	25	63,41	2	0,7543	33,6	4315	3
ES	716	VELEZ MALAGA	856375	2	89	113,18	6	0,8643	44,1	4939	3
ES	853	VIC	2404558	4	71	228,13	8	0,8491	32,5	17069	3
ES	818	VIGO	764335	2	95	114,17	4	0,8400	29,9	4823	3
ES	775	VILAFRANCA DEL PENED	4483034	6	96	530,72	15	0,8528	41,8	29565	3
ES	843	VILAGARCIA	875770	3	99	111,98	3	0,9186	54,4	10453	3
ES	717	VILANOVA I LA GELTRU	2939278	3	100	307,21	16	0,8657	38,5	24896	3
ES	1388	VINAROS	201653	0	40	58,24	2	0,7754	44,5	5152	4
ES	718	VITORIA-GASTEIZ	813180	1	63	91,41	2	0,8589	36,3	11857	4
ES	719	XATIVA	1927815	5	98	221,27	5	0,7869	36,4	11317	3
ES	720	ZAMORA	275336	1	28	35,74	1	0,7079	46,5	3050	4
ES	721	ZARAGOZA	707138	0	0	107,57	2	0,8366	32,1	16739	3
FI	200	FORSSA	113365	1	54	50,67	1	0,6162	40,9	833	4
FI	1066	HAMEENLINNA	188066	1	94	87,66	2	0,6669	40,8	912	4
FI	412	HELSINKI	1306760	2	82	376,33	8	0,7911	30,5	2904	4
FI	201	IISALMI	50298	0	0	9,67	0	0,3839	24,8	227	2
FI	202	IMATRA	110464	1	46	49,48	2	0,7780	23,0	1671	3
FI	1557	JAMSA	120679	1	27	36,26	1	0,7479	26,9	1735	3
FI	203	JOENSUU	97357	0	0	21,62	0	0,5077	25,0	449	2
FI	1187	JYVASKYLA	178640	0	17	59,83	1	0,6936	23,1	1553	3
FI	418	KAJAANI	47063	0	0	9,75	0	0,5427	15,7	378	2
FI	204	KEMI	54741	1	100	31,93	2	0,5020	12,9	330	2
FI	205	KOKKOLA	93245	1	48	49,52	1	0,6547	28,6	695	4
FI	413	KOTKA	150125	1	25	78,42	2	0,6778	28,7	1213	4
FI	1188	KOUVOLA	131388	0	53	79,15	2	0,7486	32,9	1966	3
FI	1184	KUOPIO	118552	0	0	34,67	1	0,6632	19,2	908	3
FI	206	LAHTI	193696	0	57	83,04	2	0,6942	27,0	1867	3
FI	207	LAPPEENRANTA	108286	1	89	48,82	2	0,7757	23,6	1595	3
FI	90	LOHJA	1125031	1	82	305,11	7	0,8020	28,1	3208	4
FI	1359	MARIEHAMN	18652	0	0	7,67	1	0,5500	9,2	374	2
FI	1186	MIKKELI	69585	0	0	17,74	0	0,5896	23,0	647	3
FI	208	OULU	185167	0	23	56,14	1	0,7169	16,7	1566	4
FI	1542	PIETARSAARI	81836	1	75	45,69	2	0,6605	25,5	628	4
FI	209	PORI	168642	1	23	40,88	1	0,5478	27,5	1197	3
FI	91	RAAHE	47129	0	30	9,15	0	0,5161	29,5	422	2
FI	210	RAUMA	70372	0	35	15,43	1	0,5138	21,1	467	2
FI	211	RIIHIMAKI	1012176	2	100	274,78	4	0,7910	45,5	2610	3
FI	212	ROVANIEMI	56991	0	0	23,73	0	0,6958	4,8	667	3
FI	213	SALO	303230	1	74	107,74	4	0,7828	25,5	2423	3
FI	1185	SAVONLINNA	44087	0	0	6,50	0	0,4560	22,7	238	2
FI	1183	SEINAJOKI	119690	0	6	25,99	0	0,4744	29,7	537	4
FI	1532	TAMMISAARI	85123	1	55	44,39	2	0,6679	35,2	679	4
FI	1189	TAMPERE	381766	0	23	145,96	2	0,7222	28,4	2069	3
FI	214	TORNIO	65125	1	67	40,50	1	0,4781	16,1	308	2
FI	215	TURKU	345113	1	39	128,12	3	0,7360	25,8	2678	3
FI	1357	VAASA	103488	0	17	37,54	1	0,7284	20,4	1722	3
FI	216	VARKAUS	60620	0	0	13,01	0	0,4464	24,0	252	2
FR	525	ABBEVILLE	572868	2	80	226,64	5	0,7705	45,9	11543	3
FR	865	AGEN	317580	2	86	109,01	3	0,7831	42,3	2378	4
FR	1352	AJACCIO	82842	0	0	22,65	2	0,7337	21,2	1766	3
FR	1099	ALBERTVILLE	830706	3	80	303,54	8	0,8581	44,2	9819	4
FR	728	ALBI	235829	1	70	71,73	3	0,7582	34,9	1171	4
FR	882	ALENCON	457729	4	82	152,36	4	0,8087	48,5	8623	3
FR	526	ALES	425497	1	70	86,30	3	0,6536	37,3	2778	4
FR	527	AMIENS	778525	3	88	274,11	4	0,7619	52,1	9424	4
FR	528	ANGERS	572144	2	84	235,36	5	0,7568	38,0	8655	3
FR	529	ANGOULEME	265351	1	43	105,68	3	0,7770	34,0	5397	3
FR	860	ANNECY	1262436	5	91	427,66	9	0,8047	40,0	9343	4
FR	884	ANNEMASSE	1448181	6	100	398,58	11	0,8113	37,8	4791	4
FR	530	ANNONAY	1380726	6	98	350,27	16	0,9007	38,1	12035	4
FR	1100	ARCACHON	735358	1	100	291,67	14	0,8889	28,4	6561	3
FR	1101	ARGENTAN	408648	2	83	131,62	4	0,8558	47,4	8410	3
FR	531	ARLES	1366348	6	100	384,83	7	0,7686	48,3	2689	4
FR	1076	ARMENTIERES	3476723	12	100	1318,16	22	0,9181	42,8	35131	1

FR 874	ARRAS	2499432	9	94	943,93	16	0,9008	46,5	21774	4
FR 1102	AUBENAS	282780	3	88	114,12	4	0,7969	34,0	5661	4
FR 863	AUCH	160028	0	49	49,07	1	0,7237	48,1	1702	4
FR 532	AURILLAC	111324	0	20	54,54	2	0,7658	26,2	9362	3
FR 533	AUTUN	208429	2	62	112,02	3	0,7905	38,2	7113	4
FR 534	AUXERRE	299292	2	53	124,41	2	0,7302	42,9	3140	4
FR 535	AVIGNON	1224479	5	93	310,37	5	0,7135	47,1	2400	4
FR 880	BAR-LE DUC	179569	3	91	71,30	3	0,7908	38,7	2586	4
FR 536	BASTIA	90700	0	0	27,09	2	0,4507	18,8	920	3
FR 1103	BAYEUX	498020	2	92	183,04	6	0,7983	36,9	13634	3
FR 731	BAYONNE	818710	2	82	205,56	5	0,8405	44,9	7220	4
FR 537	BEAUNE	604489	4	99	289,46	7	0,8185	41,2	17944	3
FR 729	BEAUVAIS	2473566	3	94	576,46	11	0,8951	47,0	33938	3
FR 883	BELFORT	1291022	10	97	426,84	10	0,8321	41,2	7747	4
FR 538	BERGERAC	295037	3	75	136,12	4	0,7466	43,7	2392	4
FR 539	BESANCON	492013	4	90	213,19	6	0,7950	50,1	7360	4
FR 540	BETHUNE	954465	2	92	294,20	21	0,9210	31,0	14230	3
FR 730	BEZIERS	776241	3	79	157,50	4	0,7108	42,0	3674	4
FR 732	BLOIS	920308	5	91	360,06	6	0,8422	53,1	8860	4
FR 733	BORDEAUX	1203940	2	86	474,69	6	0,8260	41,8	17910	3
FR 873	BOULOGNE-SUR-MER	687843	4	93	277,12	10	0,8925	44,0	13858	3
FR 888	BOURG-EN-BRESSE	1395889	3	92	455,88	10	0,8412	45,7	33895	3
FR 541	BOURGES	354103	2	82	187,11	3	0,8146	46,2	7542	4
FR 817	BREST	390960	1	60	149,91	8	0,7494	27,3	5082	3
FR 864	BRIVE-LA-GAILLARDE	230643	1	82	83,66	2	0,7960	33,8	9045	3
FR 734	CAEN	619021	6	92	228,59	6	0,8020	38,6	11251	3
FR 1256	CAHORS	191278	1	59	51,57	2	0,6883	43,9	1896	3
FR 735	CALAIS	858960	4	100	340,54	11	0,8814	43,3	14705	3
FR 542	CAMBRAI	2265151	7	93	952,36	16	0,8883	44,8	23726	4
FR 543	CARCASSONNE	269974	1	62	61,63	2	0,6938	43,6	1252	4
FR 544	CASTRES	221505	1	77	62,94	3	0,7517	34,8	1578	4
FR 1572	CHALONS-EN-CHAMPAGNE	554471	4	95	212,96	4	0,7631	43,3	8403	3
FR 545	CHALON-SUR-SAONE	726538	3	90	350,59	7	0,8133	49,8	20198	3
FR 859	CHAMBERY	1638355	5	92	544,03	10	0,8484	56,0	19344	3
FR 546	CHARLEVILLE-MEZIERES	337792	1	91	170,46	4	0,7627	39,8	5749	3
FR 547	CHARTRES	2781274	4	88	611,55	10	0,8891	49,3	21959	3
FR 1104	CHATEAUBRIANT	797393	2	80	222,95	5	0,8286	50,9	9026	4
FR 1105	CHATEAUDUN	533006	5	96	207,96	6	0,8502	46,8	7817	4
FR 1106	CHATEAU-GONTIER	424971	3	90	147,91	7	0,7946	40,3	5878	3
FR 785	CHATEAUROUX	331619	2	61	155,99	3	0,8311	48,4	6106	4
FR 1107	CHATEAU-THIERRY	2316186	3	84	432,71	7	0,8644	59,1	17439	3
FR 548	CHATELLERAULT	301369	1	90	135,51	6	0,7878	34,5	6869	3
FR 549	CHAUMONT	166673	0	28	84,67	2	0,6862	41,9	3157	3
FR 868	CHERBOURG	206527	0	31	63,17	3	0,8133	24,8	6362	3
FR 550	CHOLET	756842	1	74	250,45	6	0,7705	44,2	7766	3
FR 736	CLERMONT-FERRAND	631019	2	72	227,78	5	0,8078	38,9	10601	3
FR 1108	CLUSES	1031267	5	94	317,36	9	0,8070	33,4	5295	4
FR 551	COGNAC	261461	2	85	111,87	6	0,7960	33,9	5236	3
FR 552	COLMAR	2221471	11	96	645,08	11	0,8056	50,8	8700	4
FR 553	COMPIEGNE	3769815	4	96	673,93	13	0,8956	50,6	38102	3
FR 554	CREIL	8156275	3	99	1271,67	22	0,9358	42,0	56866	1
FR 1109	DAX	388497	2	78	172,94	5	0,8448	42,5	6064	4
FR 870	DIEPPE	470668	1	91	184,13	9	0,8271	36,5	16201	3
FR 27	DIGNE	109507	0	32	47,94	2	0,6783	30,3	1094	4
FR 737	DIJON	605018	4	77	284,90	6	0,8106	40,1	14175	3
FR 1110	DINAN	313684	3	95	136,83	6	0,7558	34,8	3816	4
FR 1111	DINARD	238413	2	100	115,17	5	0,7078	27,2	3181	3
FR 788	DOLE	675966	4	95	285,84	7	0,8044	45,7	12610	3
FR 738	DOUAI	2553919	8	97	951,30	21	0,9111	39,4	24126	1
FR 555	DRAGUIGNAN	789859	1	85	308,90	11	0,8666	37,9	8893	3
FR 556	DREUX	1046674	3	86	333,90	10	0,8620	41,2	9047	3
FR 837	DUNKERQUE	1511815	8	96	596,30	14	0,9006	45,2	14327	4
FR 1112	ELBEUF	1078730	2	99	393,53	8	0,8296	42,3	12862	4
FR 879	EPERNAY	506293	3	100	171,74	4	0,7529	36,7	7848	3
FR 893	EPINAL	267807	1	72	124,62	5	0,8007	35,8	4698	3
FR 872	EVREUX	1010444	3	97	346,09	10	0,8466	40,8	6634	4
FR 869	FECAMP	34012	0	0	9,81	7	0,6303	6,2	1017	3
FR 891	FORBACH	2156096	6	100	774,35	12	0,8110	45,8	13931	3
FR 557	FOUGERES	673742	2	93	220,15	5	0,7537	43,5	10253	3
FR 558	FREJUS	1087770	2	100	341,74	14	0,8849	36,9	8373	4
FR 559	GAP	111833	0	33	37,55	2	0,6088	45,0	1326	3
FR 560	GRENOBLE	995292	2	79	355,96	8	0,8517	42,4	21696	3

FR 1113	GUEBWILLER	1085080	8	98	344,56	13	0,8297	33,3	7814	4
FR 1067	GUERET	67534	0	35	25,98	1	0,7696	35,8	2825	3
FR 1114	GUINGAMP	373677	3	90	153,28	5	0,7341	37,9	3702	3
FR 561	HAGUENAU	2047335	7	98	671,98	11	0,7894	45,5	12905	4
FR 1115	ISSOIRE	521357	1	80	185,48	6	0,7952	36,0	8148	3
FR 562	ISTRES	1784777	4	100	453,64	12	0,8587	36,4	7262	3
FR 564	LA ROCHELLE	296518	2	94	127,16	7	0,8144	30,8	6031	3
FR 563	LA ROCHE-SUR-YON	763824	1	62	311,24	8	0,7886	46,8	6977	3
FR 1116	LANNION	258473	2	96	125,84	5	0,6971	35,0	1702	4
FR 565	LAON	620980	2	82	193,16	5	0,7864	44,3	8522	3
FR 739	LAVAL	456668	3	95	159,30	4	0,7683	50,3	8074	3
FR 1567	LE CREUSOT	345055	1	69	121,84	4	0,8335	36,3	12201	3
FR 1212	LE HAVRE	563634	2	97	204,37	9	0,8115	37,1	7911	3
FR 740	LE MANS	525888	1	78	189,18	4	0,7623	42,2	8987	3
FR 566	LEPUY-EN-VELAY	152523	0	35	54,47	2	0,7385	31,8	5424	3
FR 567	LIBOURNE	1147504	1	87	406,84	6	0,8194	40,4	19616	3
FR 875	LILLE	4073971	11	100	1708,30	22	0,9050	45,6	41040	1
FR 741	LIMOGES	363402	0	25	132,65	3	0,7642	36,4	6847	3
FR 568	LISIEUX	793456	3	85	256,99	6	0,8174	43,4	8976	4
FR 569	LONS-LE-SAUNIER	265762	2	73	144,15	4	0,7815	46,3	6483	4
FR 867	LORIENT	374332	0	70	164,07	8	0,7529	30,5	2201	4
FR 1117	LOURDES	334672	2	89	153,87	7	0,8114	30,6	6084	4
FR 1118	LUNEL	1099476	5	100	228,76	5	0,7117	45,9	3385	4
FR 892	LUNEVILLE	450355	3	93	187,79	7	0,8558	35,7	12286	3
FR 742	LYON	2607250	7	98	881,19	12	0,8642	45,8	59185	3
FR 887	MACON	1830793	5	82	605,87	12	0,8688	54,0	53408	3
FR 1119	MARMANDE	273610	2	90	98,74	4	0,7888	42,8	2769	4
FR 743	MARSEILLE-AIX-EN-PRO	2188851	3	99	577,88	12	0,8712	42,7	8645	4
FR 889	MAUBEUGE	2147742	6	96	1202,33	17	0,8887	41,8	37852	4
FR 1120	MAYENNE	346950	3	87	126,08	3	0,7383	46,1	4614	4
FR 744	MENTON	1229534	6	100	313,83	14	0,9038	39,8	9887	4
FR 745	METZ	2020701	10	98	751,25	10	0,8491	53,2	12542	4
FR 570	MILLAU	89451	0	52	23,15	1	0,6269	45,3	1094	3
FR 1121	MONTARGIS	457376	1	56	201,40	6	0,8025	45,1	4507	4
FR 572	MONTAUBAN	856450	2	83	232,98	6	0,8687	40,5	14387	3
FR 573	MONTBELIARD	680075	3	96	255,21	9	0,8186	36,4	8597	4
FR 1122	MONTBRISON	357928	1	78	108,15	10	0,8817	22,1	14626	3
FR 571	MONT-DE-MARSAN	164744	1	39	90,07	2	0,7506	37,1	3782	4
FR 1098	MONTELLIMAR	528046	3	86	201,15	6	0,7918	38,5	6645	3
FR 1123	MONTEREAU-FAUT-YONNE	2180077	1	94	573,41	13	0,8980	48,6	18466	3
FR 574	MONTLUCON	167101	0	55	72,72	2	0,7989	35,3	6942	3
FR 746	MONTPELLIER	1147290	5	91	229,46	4	0,6806	45,2	3702	4
FR 1124	MORLAIX	476155	3	83	184,73	6	0,7640	42,9	5772	3
FR 575	MOULINS	258497	2	78	98,79	3	0,8400	45,1	3726	4
FR 576	MULHOUSE	2238115	12	100	632,56	10	0,7936	46,1	7313	4
FR 577	NANCY	917984	3	98	352,24	7	0,8366	42,2	11706	3
FR 578	NANTES	1171907	3	83	419,59	7	0,8127	44,6	14447	3
FR 579	NARBONNE	609119	4	95	146,16	5	0,7169	49,2	1903	4
FR 580	NEVERS	242396	1	52	100,69	2	0,8028	41,2	5068	4
FR 857	NICE	1173512	4	89	326,49	17	0,9008	30,1	7850	4
FR 581	NIMES	1407503	6	100	332,11	5	0,7245	52,1	3005	4
FR 582	NIORT	454944	2	65	267,58	5	0,7352	51,6	5480	4
FR 1125	NOGENT-LE-ROTROU	262087	2	88	101,31	3	0,7657	47,2	4891	3
FR 1126	OLORON-STE-MARIE	220703	1	71	99,14	5	0,8547	23,4	7572	3
FR 583	ORLEANS	593149	2	77	263,42	5	0,8126	41,5	10545	4
FR 1127	PAMIRS	99027	0	21	38,23	2	0,6420	36,2	686	4
FR 876	PARIS	10853764	2	94	1999,11	24	0,9306	46,3	79273	1
FR 747	PAU	459399	3	92	240,66	6	0,7906	42,8	9153	4
FR 748	PERIGUEUX	209100	1	63	95,73	3	0,7223	34,4	2576	4
FR 749	PERPIGNAN	398232	1	44	94,75	4	0,7570	31,8	4297	3
FR 750	POITIERS	453453	2	69	229,71	5	0,7759	44,9	6126	4
FR 1128	PONTARLIER	733565	5	89	110,74	3	0,7897	42,4	6112	4
FR 1129	PONTIVY	185410	1	74	82,52	4	0,7375	33,3	3746	3
FR 1068	PRIVAS	460267	4	96	184,48	6	0,8039	35,0	7296	3
FR 751	QUIMPER	323424	0	43	125,82	4	0,7019	34,5	3462	3
FR 1130	REDON	285690	1	87	126,17	5	0,7913	37,8	7314	3
FR 878	REIMS	606067	5	95	211,45	4	0,7569	43,0	8129	3
FR 584	RENNES	751849	2	91	253,34	4	0,7416	41,2	10935	3
FR 886	ROANNE	228625	0	49	108,06	5	0,8230	33,2	10961	3
FR 585	ROCHEFORT	368880	2	97	150,54	5	0,8201	35,6	6203	3
FR 862	RODEZ	141413	0	42	40,91	1	0,6123	31,0	1053	4
FR 858	ROMANS-SUR-ISERE	424800	3	97	166,33	7	0,8087	34,4	8661	3

FR	1131	ROMORANTIN-LANTHENAY	223441	2	94	110,39	4	0,8125	37,4	5058	4
FR	871	ROUEN	1217243	3	82	454,66	7	0,7996	43,1	15218	4
FR	1132	ROUSSILLON	2082372	7	99	614,61	21	0,9047	38,1	35884	1
FR	586	SAINT BRIEUC	350500	1	86	151,51	4	0,7397	39,1	4713	3
FR	752	SAINT CHAMOND	2340699	6	100	749,67	14	0,8795	40,2	49716	3
FR	587	SAINT DIE	404977	3	91	172,69	6	0,8133	38,8	4740	4
FR	588	SAINT DIZIER	194926	2	84	84,79	3	0,7269	39,2	3590	3
FR	753	SAINT ETIENNE	2078021	5	98	622,09	14	0,8920	39,3	43520	3
FR	589	SAINT LO	453713	3	79	131,02	3	0,8026	45,7	8497	3
FR	1133	SAINT LOUIS	2691625	17	100	545,30	8	0,8079	42,0	6802	4
FR	590	SAINT MALO	200379	2	100	100,21	6	0,7069	23,9	3105	3
FR	816	SAINT NAZAIRE	732360	2	83	271,33	10	0,8641	34,3	10306	4
FR	877	SAINT QUENTIN	10038152	3	96	1710,05	35	0,9551	40,0	55952	1
FR	1134	SAINT-AVOLD	2025523	5	98	740,26	12	0,8244	45,3	14377	3
FR	591	SAINTES	483216	4	84	217,19	5	0,8144	48,0	4885	4
FR	1135	SAINT-OMER	1312770	6	94	440,98	14	0,9163	45,5	13823	4
FR	592	SALON-DE-PROVENCE	2357166	5	100	586,64	9	0,8209	48,0	9598	3
FR	1136	SARREBOURG	271105	2	84	130,72	8	0,8114	35,9	4043	4
FR	593	SARREGUEMINES	2006554	6	98	723,14	11	0,8142	45,4	15689	3
FR	1218	SAUMUR	766082	2	80	282,27	7	0,8346	48,4	8058	4
FR	594	SEDAN	306836	1	93	162,10	4	0,7416	34,1	6319	3
FR	595	SENS	830329	4	93	336,50	6	0,8069	55,1	7890	4
FR	856	SETE	789244	3	100	163,38	6	0,6813	35,7	3462	4
FR	596	SOISSONS	755214	4	97	231,06	5	0,7968	45,9	8299	3
FR	754	STRASBOURG	1724736	5	96	594,50	10	0,7652	41,3	13718	3
FR	597	TARBES	444901	2	76	216,03	5	0,7857	41,9	8866	4
FR	1137	THANN	1733619	10	96	513,62	12	0,8279	41,0	7556	4
FR	890	THIONVILLE	1630483	5	100	617,85	9	0,7977	47,7	7435	4
FR	598	THONON-LES-BAINS	786190	4	91	196,82	13	0,8165	24,3	4927	4
FR	1138	TOUL	764025	3	86	299,31	6	0,8273	43,2	11051	3
FR	819	TOULON	1857189	1	86	432,69	13	0,8699	42,1	9031	4
FR	784	TOULOUSE	1091475	3	65	312,25	6	0,8276	38,4	14989	3
FR	881	TOURS	749205	4	73	308,39	6	0,8035	45,8	6656	4
FR	1139	TROUVILLE-SUR-MER	816591	3	100	279,28	8	0,8214	44,3	9579	4
FR	755	TROYES	336058	1	65	183,88	4	0,7609	40,1	10680	3
FR	599	TULLE	208162	1	87	84,36	2	0,8140	35,1	9081	3
FR	786	VALENCE	608923	6	99	250,49	8	0,8206	44,4	8733	3
FR	756	VALENCIENNES	4061920	12	99	1687,66	21	0,9050	47,9	42750	1
FR	866	VANNES	432345	2	54	192,72	6	0,7252	39,3	3590	4
FR	1140	VENDOME	510887	3	94	203,03	5	0,8274	44,8	5663	4
FR	787	VERDUN	590083	2	79	211,36	4	0,8001	42,3	3685	4
FR	600	VESOUL	391919	2	54	148,71	4	0,7985	45,5	5440	4
FR	885	VICHY	516422	2	89	178,03	5	0,8551	41,6	9220	3
FR	601	VIENNE	2537439	7	98	836,40	15	0,8778	45,1	51346	3
FR	602	VIERZON	569381	4	90	244,25	4	0,8407	55,5	6787	4
FR	861	VILLEFRANCHE-SUR-SAO	1978306	5	99	658,42	16	0,8744	38,5	50006	3
FR	603	VILLENEUVE-SUR-LOT	283719	2	87	97,48	3	0,7607	41,8	2323	4
FR	1213	VIRE	526709	2	89	159,99	4	0,8466	49,4	13529	3
FR	1141	VITRY-LE-FRANCOIS	222021	3	95	105,41	3	0,7737	42,8	4125	4
FR	1142	VOIRON	1053747	2	96	371,52	11	0,8663	44,3	20360	4
GR	648	AGRINION	208851	0	20	24,89	1	0,6101	34,2	1685	4
GR	1145	AIYION	316388	1	88	23,10	1	0,7075	30,3	2200	3
GR	647	ALEXANDROUPOLIS	161156	1	76	37,31	1	0,5099	35,2	1480	4
GR	1146	AMALIAS	215380	1	100	27,22	1	0,6631	30,9	1549	4
GR	769	ARGOS	259313	2	85	35,82	1	0,6216	36,1	1228	4
GR	1069	ARTA	156817	0	50	16,88	1	0,6082	26,5	1269	4
GR	1144	ATHINAI	3645055	0	48	449,06	13	0,8931	29,9	9463	3
GR	1568	CORFU	57003	0	0	3,04	2	0,7535	5,7	891	3
GR	832	DRAMA	266547	1	72	64,90	1	0,4615	33,0	1015	4
GR	1070	EDHESSA	357027	4	92	104,79	2	0,5415	41,4	2075	3
GR	1147	ERMOUPOLIS	19782	0	0	0,00	0	0,0000	0,0	0	-99
GR	1330	GIANNITSA	1299087	6	100	188,60	3	0,6009	43,1	7281	3
GR	1559	IERAPETRA	64272	0	16	5,06	0	0,4509	23,2	522	4
GR	829	IOANNINA	203246	0	27	16,12	0	0,6252	37,3	1750	3
GR	835	IRAKLION	252290	0	40	15,93	1	0,7250	26,2	2701	3
GR	1148	KALAMATA	238597	1	54	36,56	1	0,6362	37,7	2021	3
GR	642	KARDHITSA	404161	2	83	105,65	2	0,5625	35,0	3904	3
GR	782	KATERINI	944142	3	88	131,57	3	0,6244	41,2	4845	3
GR	645	KAVALLA	317644	2	96	72,24	2	0,4607	36,6	1014	4
GR	640	KHALKIS	657648	1	68	106,76	2	0,7734	43,2	1609	4
GR	827	KHANIA	179394	1	45	12,83	1	0,7093	28,0	1087	4

GR 768	KHIOS	51936	0	0	0,00	0	0,0000	0,0	0	-99
GR 1080	KILKIS	1056045	1	87	154,96	3	0,6161	39,8	7311	3
GR 834	KOMOTINI	245032	2	94	53,39	1	0,4508	36,8	1574	4
GR 814	KORINTHOS	376289	1	81	57,54	1	0,7467	45,4	2504	3
GR 646	KOZANI	280203	2	73	82,79	1	0,6141	35,9	1992	3
GR 828	LAMIA	179622	0	28	30,37	1	0,4736	35,0	1432	3
GR 643	LARISA	571307	3	84	138,43	2	0,6368	44,9	3466	4
GR 1078	LEVADHIA	165537	1	80	37,66	1	0,5961	35,7	1594	3
GR 826	MITILINI	85113	0	0	0,00	0	0,0000	0,0	0	-99
GR 1149	NAOUSA	300377	3	100	77,39	2	0,5035	34,0	632	4
GR 1150	ORESTIAS	102109	0	14	49,34	1	0,4323	32,8	859	4
GR 767	PATRAI	382232	1	87	40,27	1	0,7475	37,1	1786	4
GR 783	PIRGOS	220452	1	82	25,20	1	0,6320	35,6	1922	3
GR 781	PTOLEMAIS	239059	2	87	119,62	2	0,7772	38,0	7188	3
GR 1355	RETHIMNON	167258	1	100	6,97	1	0,6990	43,9	1031	3
GR 962	RODHOS	112694	0	0	0,00	0	0,0000	0,0	0	-99
GR 1331	SERRAI	243600	0	77	87,96	2	0,4059	37,6	958	3
GR 831	THESSALONIKI	1293870	3	73	198,55	3	0,5904	44,4	7506	3
GR 1151	THIVA	410954	2	96	74,45	2	0,6924	40,7	1538	4
GR 644	TRIKKALA	398423	2	76	96,11	2	0,5835	35,9	3586	3
GR 641	TRIPOLIS	218814	1	72	33,78	1	0,5661	44,5	960	4
GR 830	VEROIA	718124	6	100	177,70	2	0,5745	47,1	2240	4
GR 1074	VOLOS	365468	1	80	89,09	2	0,6859	36,6	3228	4
GR 833	XANTHI	293971	2	86	61,01	1	0,4657	40,2	1238	4
HU 110	AJKA	206378	2	93	89,94	5	0,6529	31,5	1556	4
HU 349	BAJA	240142	3	88	138,35	5	0,5968	33,5	990	4
HU 1578	BALATONALMADI	443983	4	100	222,06	7	0,6939	34,2	2152	4
HU 126	BALATONFURED	310146	4	100	177,73	6	0,6646	35,1	2340	4
HU 118	BALMAZUJVAROS	283400	2	100	97,06	6	0,7538	28,3	1826	3
HU 350	BEKESCSABA	300617	3	96	185,93	5	0,6607	33,8	1205	4
HU 120	BERETTYOUJFALU	635624	4	88	237,00	6	0,6864	41,7	2436	4
HU 116	BUDAORS	2780602	9	100	868,48	19	0,8144	36,5	5586	4
HU 351	BUDAPEST	3013587	14	100	1003,33	16	0,7951	42,7	6959	4
HU 352	CEGLED	508202	4	97	246,83	7	0,6980	37,3	1158	4
HU 353	DEBRECCEN	587005	6	95	251,00	6	0,7469	37,9	2538	4
HU 354	DUNAKESZI	2613630	9	100	800,67	19	0,8182	37,0	6303	4
HU 355	DUNAUJVAROS	377262	2	98	209,26	9	0,7093	38,9	2490	3
HU 111	EGER	376343	3	93	213,55	6	0,6536	35,9	1326	4
HU 356	ESZTERGOM	835063	4	98	282,72	15	0,7824	34,5	3043	4
HU 1564	FEHERGYARMAT	299419	2	94	147,56	7	0,6194	29,9	906	4
HU 1562	FONYOD	167112	3	95	140,69	7	0,6867	36,3	2123	4
HU 357	GODOLLO	2793244	12	96	915,99	15	0,7916	41,8	6879	4
HU 119	GYAL	2447615	7	99	718,10	23	0,8430	29,9	4761	4
HU 112	GYONGYOS	1334352	4	98	414,67	12	0,7338	49,9	5814	3
HU 358	GYOR	712669	3	90	395,62	7	0,6249	43,2	2171	4
HU 359	HAJDUBOSZORMENY	438661	4	100	186,38	6	0,6941	34,2	1950	3
HU 113	HAJDUSZOBOSZLO	424444	4	100	179,86	6	0,7028	32,1	1918	3
HU 360	HATVAN	2277384	10	100	673,64	15	0,7857	46,7	6677	3
HU 361	HODMEZOVASARHELY	380458	3	100	153,85	5	0,7124	33,7	1338	4
HU 362	JASZBERENY	464563	6	97	248,43	8	0,6144	38,0	934	4
HU 363	KALOCSA	140563	1	96	97,79	5	0,6016	30,8	1034	4
HU 364	KAPOSVAR	203350	0	61	119,95	5	0,6043	31,7	2400	4
HU 365	KARCAG	143538	2	100	83,06	4	0,7148	34,1	691	4
HU 366	KAZINCBARCIKA	565002	4	98	226,18	8	0,7253	33,4	3859	3
HU 367	KECSKEMET	419325	2	97	203,55	5	0,6850	38,7	1357	4
HU 368	KESZTHELY	261298	3	94	155,13	5	0,6552	33,5	3206	3
HU 127	KISKOROS	252943	2	97	139,84	3	0,6711	39,5	1312	4
HU 369	KISKUNFELEGYHAZA	357084	3	90	141,98	4	0,6769	40,0	1452	3
HU 370	KISKUNHALAS	190027	2	95	89,75	3	0,5946	36,0	634	4
HU 117	KISVARDA	263816	1	78	139,85	9	0,6304	28,1	1931	3
HU 1333	MAKO	342473	1	74	181,70	6	0,6208	37,1	1364	3
HU 371	MATESZALKA	450400	3	93	209,24	8	0,6452	35,8	1892	3
HU 372	MISKOLC	559654	4	97	250,08	8	0,6504	32,8	2923	3
HU 373	MOHACS	340296	3	87	123,54	6	0,7351	29,1	3214	3
HU 124	MOR	343752	1	95	192,84	7	0,6403	40,4	2402	4
HU 374	MOSONMAGYAROVAR	766048	2	98	281,04	9	0,7188	39,7	3877	3
HU 375	MAGYKANIZSA	252060	3	78	140,08	5	0,5943	31,7	1365	4
HU 129	NAGYKATA	994484	4	98	331,67	10	0,7419	36,3	3146	3
HU 376	NYIREGYHAZA	698793	4	92	345,69	8	0,6477	39,4	2790	4
HU 377	OROSHAZA	201448	2	94	100,53	5	0,7506	35,6	1353	4
HU 822	OROSZLANY	650626	3	100	261,69	12	0,7658	39,7	4532	3

HU	378	OZD	285788	2	93	129,45	6	0,7353	30,3	2152	4
HU	379	PAKS	253566	2	100	144,77	5	0,6474	35,1	1399	4
HU	380	PAPA	434826	4	91	202,91	6	0,6211	38,2	2527	3
HU	381	PECS	387797	1	72	145,52	6	0,6478	30,5	4072	3
HU	130	PILISVOROSVAR	2504561	9	100	715,58	21	0,8365	31,5	5811	4
HU	121	PUSPOKLADANY	175686	3	98	111,11	4	0,6434	33,7	692	4
HU	1539	RACKEVE	1470171	2	100	422,05	25	0,8733	34,0	3224	3
HU	1538	RETSAG	678819	5	86	256,02	9	0,7050	40,6	6364	3
HU	382	SALGOTARIJAN	266178	1	94	142,94	6	0,6646	31,4	1954	4
HU	131	SARKAD	195990	1	89	119,01	5	0,6382	29,1	1124	4
HU	125	SAROSPATAK	149021	3	99	93,77	7	0,6169	33,3	881	4
HU	123	SARVAR	317929	2	92	188,59	5	0,5975	34,7	2736	4
HU	383	SATORALJAUJHELY	183992	4	97	111,35	7	0,6480	33,1	1003	4
HU	384	SIOFOK	460942	4	82	281,69	7	0,6920	39,3	2060	4
HU	385	SOPRON	2241723	4	97	578,08	11	0,7894	44,6	12530	3
HU	122	SZARVAS	280218	2	96	151,00	4	0,6993	37,0	1484	4
HU	386	SZEGED	378505	2	94	164,32	5	0,6679	32,6	1463	4
HU	387	SZEKESFEHERVAR	731181	6	91	347,43	10	0,7483	42,0	4550	3
HU	388	SZEKSZARD	257714	3	87	137,40	5	0,5981	33,8	1238	4
HU	114	SZENTENDRE	2518813	9	100	717,46	23	0,8362	31,0	5707	4
HU	389	SZENTES	419012	4	98	166,51	5	0,6951	39,4	1579	4
HU	132	SZERENCS	419848	4	92	168,45	8	0,6878	33,8	2662	3
HU	390	SZOLNOK	389640	2	95	210,92	6	0,6715	35,6	1040	4
HU	391	SZOMBATHELY	404699	1	80	192,75	4	0,5670	36,9	3275	3
HU	392	TATABANYA	1032092	3	96	336,05	14	0,7951	41,3	3979	4
HU	128	TISZAFURED	112297	0	67	91,22	4	0,5822	30,6	551	4
HU	115	TISZUJVAROS	450119	3	91	191,05	8	0,7058	31,9	2386	3
HU	393	VAC	2363061	8	100	646,64	20	0,8619	37,8	6500	4
HU	394	VESZPREM	473822	5	97	215,19	7	0,6820	37,6	2420	4
HU	1223	ZALAEGRSZEG	389405	4	69	192,46	5	0,5953	36,4	2874	4
IE	766	CORK	337917	0	10	79,89	2	0,7957	26,5	3045	3
IE	765	DUBLIN	1423512	0	23	325,28	8	0,9074	27,9	10530	3
IE	1215	DUNDALK	446872	1	64	99,11	2	0,7976	44,8	1846	4
IE	1360	GALWAY	175836	0	17	28,50	1	0,8178	35,6	1774	4
IE	810	LIMERICK	326279	0	26	68,89	1	0,7431	47,4	1583	4
IE	1152	TRALEE	117964	0	30	20,10	1	0,6403	36,9	476	2
IE	1214	WATERFORD	267359	0	1	51,89	1	0,7435	43,0	1479	4
IT	914	ADRANO	1024929	3	93	247,19	7	0,7572	29,1	5696	3
IT	971	AGRIGENTO	498028	2	65	88,77	3	0,6443	37,2	828	4
IT	1381	ALASSIO	501095	5	100	96,33	5	0,8086	41,1	2421	4
IT	936	ALBA	2068655	7	98	325,37	5	0,7759	47,9	12861	3
IT	1320	ALCAMO	1351829	5	100	244,78	7	0,8088	45,7	5053	3
IT	895	ALESSANDRIA	2076385	12	100	391,83	5	0,7056	56,6	8041	3
IT	1310	ALGHERO	269695	1	100	79,52	3	0,6348	32,2	1008	4
IT	1271	ANCONA	845698	7	100	205,23	9	0,8179	42,1	4666	4
IT	934	AOSTA	223448	1	78	67,42	2	0,6912	46,2	2334	4
IT	1307	APRILIA	3488145	4	100	608,22	15	0,8218	35,1	12956	3
IT	1266	AREZZO	1022044	3	86	192,86	3	0,7371	51,3	6077	3
IT	957	ARZIGNANO	1910955	11	99	531,36	13	0,8316	38,7	12803	4
IT	1275	ASCOLI PICENO	691891	4	89	127,44	3	0,7650	37,2	4323	4
IT	1247	ASTI	2642250	12	100	465,81	6	0,7273	53,2	13930	3
IT	979	AVELLINO	4735633	12	100	597,00	10	0,8160	41,3	10318	3
IT	983	AVERSA	4606752	10	100	587,07	13	0,8258	35,3	9088	3
IT	926	AVEZZANO	316843	3	93	90,28	3	0,6944	36,4	4765	3
IT	1579	AVIGLIANA	2278259	7	94	379,84	6	0,7468	36,0	13052	3
IT	911	BAGHERIA	1163858	3	91	166,63	5	0,8306	37,0	5831	3
IT	1319	BARCELLONA POZZO DI	579866	2	95	117,89	6	0,7367	34,5	3422	3
IT	1577	BARGA	546525	5	100	137,83	6	0,7925	25,9	3817	4
IT	977	BARI	1599206	4	99	178,78	4	0,7052	37,1	3618	3
IT	1303	BARLETTA	1236362	4	100	142,92	3	0,7492	41,5	3407	3
IT	954	BASSANO DEL GRAPPA	1850398	13	100	537,97	11	0,8305	35,6	18057	3
IT	1313	BATTIPAGLIA	3927082	11	98	452,79	7	0,7983	47,4	9554	3
IT	946	BELLUNO	771912	7	90	259,53	5	0,8049	31,9	10456	4
IT	985	BENEVENTO	3616596	8	95	469,24	7	0,8129	42,7	10443	3
IT	1010	BERGAMO	6972774	19	99	1486,60	18	0,7960	50,8	37733	3
IT	1004	BIELLA	2078707	8	99	432,85	7	0,7361	48,0	11499	3
IT	918	BISCEGLIE	1080737	3	100	126,04	4	0,7769	30,4	2920	3
IT	1242	BOLOGNA	2400571	11	99	534,13	6	0,7937	53,6	11272	3
IT	1017	BOLZANO	632362	4	92	160,75	3	0,7468	41,8	4229	3
IT	1370	BORGOMANERO	5008654	16	99	1138,97	14	0,8197	45,6	23818	3
IT	1011	BRESCIA	3962133	18	100	989,31	11	0,7340	57,4	10396	4

IT	1363	BRESSANONE	305506	2	100	73,01	2	0,7337	37,4	2095	4
IT	1353	BRINDISI	850342	2	100	207,15	7	0,7213	43,2	2164	4
IT	1362	BRUNICO	249595	2	53	58,40	2	0,7479	39,2	2039	4
IT	1229	BUSTO ARSIZIO	6899875	18	100	1522,17	18	0,8049	44,1	34746	3
IT	967	CAGLIARI	548620	1	45	171,10	4	0,6560	33,6	3760	3
IT	1324	CALTAGIRONE	829387	5	100	164,21	3	0,7177	47,3	2702	3
IT	972	CALTANISSETTA	587863	3	97	102,14	2	0,5920	48,1	772	4
IT	986	CAMPOBASSO	219992	1	84	24,68	1	0,5454	34,4	1390	3
IT	1252	CARMAGNOLA	2610782	10	100	435,14	6	0,7331	45,0	14709	3
IT	1243	CARPI	2514074	10	99	607,46	8	0,7822	51,1	12273	3
IT	990	CARRARA	1388513	10	100	328,21	7	0,8482	45,1	8446	4
IT	1248	CASALE MONFERRATO	1752296	12	100	460,75	5	0,6732	54,2	2645	4
IT	1385	CASARANO	330320	2	100	91,55	7	0,5586	24,1	1102	3
IT	984	CASERTA	4822332	12	99	627,74	11	0,8144	40,6	10495	3
IT	1308	CASSINO	1234236	5	98	224,76	4	0,7614	55,0	9775	3
IT	955	CASTELFRANCO VENETO	2693886	15	100	755,85	11	0,8229	40,3	18265	4
IT	980	CASTELLAMMARE DI STA	4644797	12	100	583,58	13	0,8320	37,5	9085	3
IT	1573	CASTELNUOVODIGARFAGN	256033	2	95	72,39	4	0,7541	29,5	4431	3
IT	1321	CASTELVETRANO	645429	4	100	170,91	4	0,7243	41,6	1568	4
IT	1325	CATANIA	1351285	5	100	330,02	6	0,7207	41,4	5775	3
IT	974	CATANZARO	484746	2	69	74,50	2	0,5281	37,6	1272	4
IT	1296	CERIGNOLA	992208	5	100	101,88	2	0,6597	53,6	1411	4
IT	1269	CESENA	1243758	8	99	294,19	6	0,8151	48,7	6578	4
IT	1374	CHIARI	4770696	16	100	985,98	15	0,7780	47,8	32336	3
IT	932	CHIAVARI	1419712	6	91	209,05	5	0,8711	60,0	7330	4
IT	1251	CHIERI	2530147	9	100	426,24	6	0,7438	42,0	14435	3
IT	1274	CHIETI	980385	7	99	152,75	4	0,7280	45,1	7614	3
IT	1377	CIRIE'	2222332	6	100	376,08	6	0,7502	36,2	14108	3
IT	1571	CITTADELLA	2740526	15	100	761,79	11	0,8178	39,9	17009	4
IT	989	CIVITAVECCHIA	2682915	2	91	446,38	14	0,8681	34,1	10185	3
IT	1232	COMO	6575678	17	100	1391,03	19	0,8211	39,7	32601	3
IT	949	CONEGLIANO	2240910	14	100	696,35	10	0,8198	43,7	16680	4
IT	1569	COPPARO	312946	1	100	76,09	3	0,7601	25,8	7222	3
IT	1282	CORTONA	655938	3	99	163,14	3	0,7083	43,0	3322	4
IT	976	COSENZA	629717	1	72	79,82	2	0,5300	40,9	2078	3
IT	1373	COSSATO	1326166	8	100	413,90	8	0,7153	41,9	4061	4
IT	941	CREMA	5355582	14	100	1075,71	15	0,7882	46,4	35259	3
IT	1015	CREMONA	2189450	13	100	588,87	7	0,6824	50,1	7840	4
IT	975	CROTONE	201333	0	38	37,74	2	0,5735	29,6	1045	4
IT	1255	CUNEO	511757	3	84	114,56	2	0,6211	34,2	1056	4
IT	1367	DARFO BOARIO TERME	1293592	5	83	311,70	10	0,7588	31,2	9451	4
IT	1234	DESENZANO DEL GARDA	2506663	16	100	686,24	10	0,7454	53,2	7793	4
IT	940	DESIO	6693737	17	100	1417,48	20	0,8166	41,0	33189	3
IT	1364	DOMODOSSOLA	286237	3	98	92,48	4	0,6740	21,9	1698	4
IT	1312	EBOLI	3529711	11	100	390,54	6	0,7967	47,6	8654	3
IT	1265	EMPOLI	1732921	9	100	339,14	8	0,8344	33,1	7409	3
IT	915	ENNA	550059	3	90	97,41	2	0,6281	46,7	1395	4
IT	928	FABRIANO	366640	3	94	102,94	3	0,7941	37,5	4526	4
IT	1268	FAENZA	1696892	7	98	366,40	6	0,8229	53,0	9658	3
IT	1002	FANO	831107	5	97	210,44	8	0,8292	45,1	11945	3
IT	1238	FELTRE	952019	8	86	304,35	6	0,8025	31,6	11824	4
IT	1276	FERMO	929209	6	99	199,45	6	0,7794	39,3	4474	4
IT	1239	FERRARA	1925935	6	100	445,86	6	0,7901	54,5	12091	4
IT	1244	FIDENZA	1466823	8	98	381,70	6	0,7278	51,1	5840	4
IT	995	FIRENZE	2037409	10	98	390,72	5	0,8013	42,5	7802	3
IT	1297	FOGGIA	787498	6	100	95,13	1	0,6642	50,6	1324	4
IT	1278	FOLIGNO	536048	3	95	148,97	4	0,7865	35,4	4220	4
IT	997	FORLI'	1461342	7	95	307,57	6	0,8381	47,9	6928	4
IT	1305	FORMIA	575859	2	100	117,87	4	0,6833	42,5	2410	3
IT	1254	FOSSANO	1987069	6	99	317,34	5	0,7742	47,8	12894	3
IT	923	FROSINONE	3821103	6	97	622,99	8	0,8331	58,0	19183	3
IT	938	GALLARATE	6659907	19	100	1471,20	18	0,8123	44,0	34095	3
IT	1315	GALLIPOLI	701982	3	95	189,32	8	0,6171	32,6	1741	4
IT	1323	GELA	499752	3	100	101,14	3	0,6212	39,2	880	4
IT	1013	GENOVA	1221934	4	97	174,93	4	0,8327	46,2	7434	3
IT	913	GIARRE	1325553	4	100	291,99	7	0,7741	43,1	6159	3
IT	1314	GINOSA	233781	1	100	20,74	1	0,5334	27,1	463	2
IT	1302	GIOIA DEL COLLE	1679420	4	100	223,70	4	0,7176	46,8	3494	4
IT	1523	GIOIA TAURO	919745	4	99	160,19	5	0,7534	42,4	4274	4
IT	1273	GIULIANOVA	984420	6	100	170,56	5	0,7870	48,8	9391	3
IT	948	GORIZIA	1062772	6	100	405,51	8	0,8120	38,5	11307	4
IT	1284	GROSSETO	159479	0	57	45,06	2	0,7016	29,8	1401	3

IT	1379	GUASTALLA	1311395	8	100	347,07	7	0,7443	38,8	4908	4
IT	1281	GUBBIO	421783	2	94	125,64	3	0,7562	38,7	5048	3
IT	909	IGLESIAS	459921	1	62	139,10	5	0,7009	34,3	2894	3
IT	1267	IMOLA	2020245	10	100	428,68	6	0,8178	56,3	9836	3
IT	1259	IMPERIA	565696	5	99	114,31	5	0,8164	48,5	2396	4
IT	1558	ISEO	1238792	8	100	301,30	13	0,7527	29,6	7299	4
IT	922	ISERNIA	396043	2	83	65,00	1	0,5874	41,7	1464	4
IT	935	IVREA	2450860	10	97	467,27	7	0,7535	46,6	13546	3
IT	1272	JESI	361441	3	81	98,16	11	0,8149	19,9	3663	4
IT	1261	LA SPEZIA	993723	6	100	243,11	6	0,8490	44,4	8438	3
IT	1581	LAMEZIA TERME	525614	3	100	71,54	3	0,6018	37,1	1702	4
IT	931	LANCIANO	588859	3	94	87,10	3	0,7393	30,2	7157	3
IT	1289	L'AQUILA	517234	4	93	127,31	2	0,6931	48,9	5219	3
IT	987	LATINA	689574	3	100	146,20	6	0,7210	31,4	1945	4
IT	1298	LECCE	880100	3	92	240,28	7	0,6286	35,3	1521	4
IT	937	LECCO	5886728	12	98	1176,13	21	0,8312	38,8	34184	1
IT	1246	LEGNAGO	1566205	6	100	433,68	8	0,7582	43,2	8956	4
IT	1326	LENTINI	1281089	5	100	314,95	7	0,7412	37,8	5331	3
IT	1286	LIVORNO	1282495	10	100	321,73	9	0,8386	36,3	7915	4
IT	943	LODI	6204968	16	100	1295,65	16	0,8006	47,6	39316	3
IT	1552	LONIGO	2125801	13	100	593,35	11	0,8039	44,5	11526	4
IT	992	LUCCA	2356907	16	100	504,11	9	0,8539	45,1	7944	4
IT	1241	LUGO	1773144	8	100	386,84	6	0,8188	53,0	9368	3
IT	1365	LUINO	1971537	10	100	510,26	15	0,8093	27,4	7985	4
IT	939	LUMEZZANE	920062	7	98	236,95	11	0,7354	26,0	7895	3
IT	929	MACERATA	734220	4	95	168,91	5	0,7869	34,1	4737	4
IT	1386	MACOMER	202302	2	92	62,26	2	0,5263	39,7	1115	4
IT	1376	MANERBIO	2790547	17	100	724,26	10	0,7191	50,3	9045	4
IT	1295	MANFREDONIA	647970	4	95	74,07	2	0,6602	37,4	943	4
IT	1014	MANTOVA	1992118	11	100	565,69	8	0,7472	50,0	6979	4
IT	968	MARSALA	444592	3	100	114,53	5	0,7332	30,4	1357	4
IT	1299	MARTINA FRANCA	1084955	3	100	206,17	5	0,7007	44,1	2354	4
IT	1262	MASSA	1364127	10	100	327,63	7	0,8452	43,8	8458	4
IT	1301	MATERA	992888	3	94	124,83	2	0,6835	41,2	3437	3
IT	1383	MELFI	601506	4	93	75,28	1	0,5896	47,8	1799	3
IT	945	MERANO	511793	3	84	123,97	3	0,7710	38,2	4199	3
IT	1318	MESSINA	1158320	6	100	248,40	8	0,7654	48,6	2972	4
IT	1231	MILANO	7516698	23	100	1667,38	15	0,7868	50,0	38068	3
IT	910	MILAZZO	753565	3	100	151,21	8	0,7621	35,7	3306	4
IT	998	MODENA	2283162	10	100	541,28	7	0,7673	46,8	13012	3
IT	1328	MODICA	504692	3	100	132,61	5	0,6323	35,9	967	4
IT	951	MONFALCONE	1140955	7	100	422,77	8	0,8087	40,3	11021	4
IT	953	MONTEBELLUNA	2419548	14	100	706,79	11	0,8222	39,9	16852	4
IT	933	MONTECATINI-TERME	2285556	12	100	487,41	9	0,8497	41,5	8335	4
IT	1548	MONTICHIARI	2719552	16	100	729,19	10	0,7345	52,4	8989	4
IT	982	NAPOLI	4837176	13	100	613,82	12	0,8214	37,8	9554	3
IT	917	NARDO'	751118	3	100	197,33	8	0,6180	34,8	1643	4
IT	921	NOCERA INFERIORE	4723744	13	100	585,60	11	0,8281	40,9	9733	3
IT	919	NOLA	4852057	13	100	616,65	11	0,8196	39,0	9910	3
IT	1228	NOVARA	6477367	20	100	1462,99	14	0,8001	53,8	31870	3
IT	1250	NOVI LIGURE	1845475	10	100	330,47	5	0,7174	51,6	7439	3
IT	1311	NUORO	171281	1	41	46,06	1	0,4638	39,3	1117	3
IT	1368	ODERZO	1684586	10	100	546,74	10	0,8111	40,0	11694	4
IT	907	OLBIA	106189	0	18	76,08	3	0,5981	28,0	2129	3
IT	908	ORISTANO	176359	0	53	52,97	2	0,4967	33,4	892	4
IT	1544	ORZINUOVI	2201863	11	100	548,89	11	0,7093	39,9	8850	4
IT	927	OSIMO	578195	4	95	138,91	9	0,8021	28,0	3629	4
IT	1016	PADOVA	3004470	16	100	812,25	10	0,8180	44,5	15704	4
IT	1372	PALAZZOLO SULL'OGLIO	5558721	18	100	1136,29	16	0,8035	50,7	36371	3
IT	970	PALERMO	1146239	3	100	164,72	6	0,8298	33,6	5489	3
IT	1387	PALMI	935916	4	98	164,63	5	0,7497	42,4	4244	4
IT	1245	PARMA	1796476	10	99	476,33	6	0,7357	50,8	5422	4
IT	1008	PAVIA	5468976	14	100	1145,70	14	0,8103	47,4	29355	3
IT	1279	PERUGIA	643815	4	98	177,61	3	0,7212	38,1	3366	4
IT	1003	PESARO	1029698	6	97	249,11	9	0,8326	49,5	9920	3
IT	1291	PESCARA	969300	7	100	150,37	4	0,7355	44,6	7537	3
IT	1001	PIACENZA	4140496	12	97	822,11	10	0,7968	57,2	36812	3
IT	1253	PINEROLO	2216890	7	93	360,53	7	0,7513	34,1	11830	3
IT	1285	PIOMBINO	170929	1	90	57,09	4	0,7723	29,0	1301	4
IT	1263	PISA	1787034	14	100	407,79	9	0,8427	41,8	8320	4
IT	993	PISTOIA	2383941	12	99	499,93	7	0,8373	43,3	6613	4
IT	1283	POGGIBONSI	1626345	8	100	289,96	5	0,8131	34,9	7330	3

IT	1264	PONTERERA	2181630	14	98	467,62	8	0,8596	40,9	7766	4
IT	1020	PORDENONE	2064164	13	99	763,66	10	0,8122	51,5	11766	4
IT	952	PORTOGRUARO	1783975	10	100	665,24	11	0,8169	48,7	11093	4
IT	1540	PORTOTOLLE	163857	0	68	58,53	3	0,6801	25,0	1030	4
IT	1304	POTENZA	476029	3	77	55,80	1	0,5155	43,0	850	4
IT	994	PRATO	1858674	8	100	355,38	6	0,8096	36,6	7885	3
IT	1329	RAGUSA	518438	4	100	129,88	4	0,6401	35,4	930	4
IT	1240	RAVENNA	1517582	7	100	328,83	6	0,8301	50,6	7412	4
IT	1317	REGGIO DI CALABRIA	783559	4	86	157,57	7	0,7716	34,6	3457	4
IT	999	REGGIO NELL'EMILIA	2314233	11	98	567,45	7	0,7711	51,6	12884	3
IT	924	RIETI	405113	2	93	108,10	3	0,7737	42,1	4264	4
IT	996	RIMINI	1186487	9	92	288,84	7	0,8416	49,8	7889	4
IT	1366	RIVA DEL GARDA	388041	3	96	109,88	4	0,7353	34,5	4503	3
IT	988	ROMA	3599144	3	95	631,53	12	0,8167	38,1	16612	3
IT	1536	ROSIGNANOMARITTIMO	774132	7	100	196,00	7	0,8219	35,5	4270	4
IT	1316	ROSSANO	245690	0	66	27,25	1	0,4863	34,3	546	4
IT	950	ROVERETO	1232677	9	99	333,69	7	0,7838	49,5	6752	4
IT	1000	ROVIGO	1683405	4	98	392,52	7	0,8086	50,8	11382	4
IT	978	SALERNO	4341833	13	100	515,30	10	0,8263	44,9	9203	3
IT	1371	SALO'	1673759	11	98	459,60	10	0,7545	42,8	6730	4
IT	930	SAN BENEDETTO DEL TR	1149888	7	100	215,37	5	0,7853	50,9	10494	3
IT	1375	SAN BONIFACIO	2786788	17	100	785,72	11	0,8005	52,5	12200	4
IT	1237	SAN DONA' DI PIAVE	2206316	10	100	698,39	11	0,8192	47,7	19129	4
IT	920	SAN GIUSEPPE VESUVIA	4494366	12	100	546,86	15	0,8384	35,5	8439	3
IT	1258	SAN REMO	979074	5	99	208,47	10	0,8924	43,9	7231	3
IT	1294	SAN SEVERO	597240	4	94	68,55	1	0,6405	50,6	1617	3
IT	1382	SANTA CROCE SULL'ARN	2142982	12	100	441,63	9	0,8392	38,1	6587	4
IT	966	SASSARI	295923	1	79	87,16	2	0,6168	34,0	1149	4
IT	958	SASSUOLO	1654227	7	100	373,17	9	0,8108	37,8	10391	3
IT	1260	SAVONA	1383187	6	92	207,74	4	0,8230	51,7	8167	3
IT	1235	SCHIO	1656050	13	100	471,62	10	0,8282	35,2	15552	3
IT	1322	SCIACCA	327331	1	90	83,40	3	0,6805	39,1	1291	3
IT	1270	SENIGALLIA	968074	6	99	237,24	9	0,8285	48,0	12972	3
IT	1535	SESTOCALLENDE	5778928	17	100	1289,95	17	0,8172	43,9	28850	3
IT	894	SIENA	1101149	4	91	185,32	3	0,8173	39,3	6012	3
IT	1327	SIRACUSA	783723	2	94	203,87	9	0,7433	33,7	3052	3
IT	1233	SONDRIO	191636	0	32	33,98	1	0,5644	38,0	873	4
IT	1290	SORA	557805	3	98	104,90	3	0,6945	36,3	2912	4
IT	1384	SORRENTO	3760076	10	100	427,26	22	0,8586	28,5	6171	3
IT	925	SULMONA	509413	3	88	100,74	3	0,7168	42,4	6853	3
IT	1378	SUZZARA	1715282	7	100	460,58	8	0,7455	46,2	6132	4
IT	1300	TARANTO	1003844	3	98	174,05	4	0,6176	40,2	2659	3
IT	1277	TERAMO	841050	6	98	153,41	4	0,8043	43,6	7057	4
IT	912	TERMINI IMERESE	1124793	2	97	161,71	5	0,8363	42,3	6280	3
IT	1293	TERMOLI	390642	3	98	50,29	1	0,6315	43,3	1392	4
IT	1280	TERNI	508714	3	87	123,68	3	0,7561	39,2	3784	4
IT	1306	TERRACINA	650811	4	100	113,41	4	0,7530	38,7	2080	4
IT	1369	THIENE	2289091	13	99	627,73	10	0,8228	41,2	16612	4
IT	1006	TORINO	2778541	11	100	493,92	5	0,7330	47,7	15841	3
IT	981	TORRE ANNUNZIATA	4648080	12	100	583,60	13	0,8325	37,6	9115	3
IT	1249	TORTONA	3873897	11	100	659,80	8	0,7970	56,5	20607	3
IT	969	TRAPANI	510717	3	100	140,21	5	0,7443	36,3	1495	4
IT	1012	TRENTO	579908	3	97	157,43	4	0,7417	39,4	4390	3
IT	1230	TREVIGLIO	6701077	17	100	1395,62	18	0,8076	46,1	36934	3
IT	1019	TREVISO	2758074	15	100	794,62	11	0,8181	44,3	19118	4
IT	1022	TRIESTE	816790	5	95	256,01	6	0,8195	34,4	8680	4
IT	1021	UDINE	1237811	6	82	493,69	8	0,8064	39,8	12165	4
IT	956	VALDAGNO	1419410	11	98	381,79	13	0,8613	33,4	10927	4
IT	1009	VARESE	5177677	12	100	1102,23	21	0,8415	36,0	24739	1
IT	1292	VASTO	619982	4	95	92,18	3	0,7362	40,6	6521	3
IT	1288	VELLETRI	3671066	5	100	617,07	11	0,8355	41,4	16628	3
IT	1236	VENEZIA	2419457	11	100	668,08	11	0,8240	41,7	18288	4
IT	1257	VENTIMIGLIA	1264186	6	94	321,61	12	0,8970	43,7	6548	4
IT	1580	VERBANIA	200756	2	98	57,75	3	0,6703	16,9	1313	3
IT	942	VERCELLI	4650857	16	100	916,77	10	0,7936	59,4	17408	4
IT	1005	VERONA	2678279	17	99	748,39	9	0,7743	55,0	7782	4
IT	991	VIAREGGIO	1774354	14	100	409,49	8	0,8412	44,3	8635	4
IT	916	VIBO VALENTIA	626129	4	94	100,02	3	0,6406	43,4	2267	4
IT	1018	VICENZA	3018252	15	100	830,20	11	0,8197	46,5	14796	4
IT	1007	VIGEVANO	5344437	17	100	1142,87	14	0,8099	45,1	27783	3
IT	1380	VIGNOLA	1559560	5	97	342,19	7	0,8024	34,5	10532	3
IT	1287	VITERBO	521616	2	66	118,36	3	0,6900	40,1	3863	3

Potential Strategic Urban Horizons • Annex

IT	973	VITTORIA	468119	4	100	111,24	3	0,6442	34,4	860	4
IT	947	VITTORIO VENETO	1706274	11	99	540,36	8	0,8057	40,2	12300	4
IT	944	VOGHERA	4643852	11	98	826,18	9	0,8106	54,6	26932	3
LT	403	ALYTUS	278506	0	74	189,35	2	0,5770	49,0	2941	3
LT	404	KAUNAS	690685	0	47	358,01	5	0,6842	43,9	9296	3
LT	1344	KLAIPEDA	113418	0	9	87,99	3	0,6015	29,0	1992	3
LT	108	MARIJAMPOLE	735920	2	71	317,32	4	0,6874	51,5	8720	3
LT	405	PANEVEZYS	286676	0	17	210,97	3	0,6716	46,5	6327	3
LT	406	SIAULIAI	372130	0	29	295,51	3	0,6460	44,5	7788	3
LT	109	TELSIAI	169188	0	0	132,90	4	0,6209	33,7	1651	4
LT	407	VILNIUS	739355	0	20	229,31	4	0,7502	34,8	10991	3
LU	838	ESCH-SUR-ALZETTE	1481491	4	100	561,16	8	0,7822	44,7	8012	4
LU	631	LUXEMBOURG	1647363	4	93	635,32	8	0,7820	51,3	8546	4
LV	398	DAUGAVPILS	248365	0	28	88,04	2	0,6804	35,8	2615	3
LV	107	JEKABPILS	148744	0	13	58,12	1	0,7095	39,7	1208	4
LV	399	JELGAVA	1139922	1	69	332,03	4	0,7886	53,5	5900	4
LV	400	LIEPAJA	133461	0	7	41,64	1	0,7157	24,0	2058	3
LV	105	REZEKNE	148907	0	15	43,45	1	0,7211	41,9	1514	3
LV	401	RIGA	1137593	1	59	311,47	4	0,8159	37,0	5007	4
LV	106	VALMIERA	178109	0	4	59,59	1	0,7481	45,4	1508	4
LV	402	VENTSPILS	83889	0	0	36,26	1	0,6796	35,4	1276	4
MT	1356	VALLETTA	272324	0	0	0,00	0	0,0000	0,0	0	-99
NL	5	ALKMAAR	2466558	5	100	487,73	17	0,8441	32,9	6677	3
NL	1582	ALMERE	4372899	13	100	893,23	15	0,7994	42,1	6431	3
NL	6	ALPHEN AAN DEN RIJN	6272087	13	100	1289,53	23	0,8241	43,1	4857	4
NL	604	AMERSFOORT	4923238	15	100	1069,66	15	0,7842	50,3	7920	3
NL	605	AMSTERDAM	6790617	16	100	1389,34	18	0,8276	50,3	6007	4
NL	606	APELDOORN	2721887	9	100	667,93	10	0,7239	45,1	2252	4
NL	607	ARNHEM	3369496	10	100	817,84	11	0,7309	48,2	2757	4
NL	7	ASSEN	1070229	2	100	256,46	5	0,7123	41,2	2581	4
NL	8	BERGEN OP ZOOM	4466377	8	100	1541,92	22	0,9180	48,8	31084	1
NL	608	BREDA	6265041	12	100	1862,64	20	0,8944	56,1	22977	1
NL	13	DEN BOSCH	5357999	12	100	1374,11	13	0,7833	56,4	3405	4
NL	12	DEN HAAG	5451399	9	100	1119,98	23	0,8376	39,3	4464	4
NL	23	DEN HELDER	542077	2	90	98,45	6	0,7299	29,2	1417	4
NL	9	DEVENTER	2846919	8	100	723,25	10	0,7136	49,1	1971	4
NL	609	DORDRECHT	6198753	12	100	1530,70	19	0,8569	52,8	9619	4
NL	1594	EDE	4741420	13	100	1062,25	13	0,7601	52,5	7077	3
NL	610	EINDHOVEN	3956951	6	100	1472,45	15	0,8472	51,0	6031	4
NL	10	EMMEN	582269	1	100	169,04	4	0,6690	34,6	1961	4
NL	611	ENSCHEDÉ	2173400	6	99	563,25	7	0,7147	51,3	2725	4
NL	839	GEELEN	4255126	9	100	1848,23	20	0,8789	47,9	36797	1
NL	11	GOUDA	5380827	9	100	1116,34	23	0,8391	41,1	4973	4
NL	612	GRONINGEN	1262646	2	92	336,74	5	0,7419	48,7	3131	4
NL	613	HAARLEM	5022714	12	100	939,21	19	0,8057	39,7	5009	4
NL	614	HEERLEN	5615325	10	100	2067,35	21	0,8793	55,7	30391	1
NL	14	HILVERSUM	5180696	16	100	1096,12	15	0,7873	48,1	7318	3
NL	24	HOORN	2965584	7	98	577,24	18	0,8341	33,6	6134	3
NL	615	LEEWARDEN	831154	1	64	169,99	5	0,6871	34,0	2582	4
NL	616	LEIDEN	5924697	12	100	1191,55	24	0,8382	41,4	4612	4
NL	28	LELYSTAD	2638219	6	89	575,46	13	0,8149	42,6	5949	3
NL	617	MAASTRICHT	3649391	7	100	1790,40	21	0,8796	46,0	46558	1
NL	618	NIJMEGEN	3775899	10	100	951,85	11	0,7125	51,6	2868	4
NL	15	ROOSENDAAL	4839714	9	100	1593,85	20	0,9088	50,6	27772	1
NL	619	ROTTERDAM	6125820	11	100	1299,42	18	0,8369	50,0	6724	4
NL	620	TILBURG	5300137	9	100	1666,17	19	0,8737	53,2	17694	3
NL	621	UTRECHT	6903507	16	100	1490,91	19	0,8268	51,8	6224	4
NL	22	VEENENDAAL	5168853	14	100	1141,13	13	0,7579	52,9	7958	3
NL	16	VELSEN	4969605	12	100	929,42	19	0,8093	39,9	4936	4
NL	17	VENLO	9457447	11	100	2413,79	21	0,8467	60,6	28176	1
NL	622	ZWOLLE	1808790	5	100	474,42	7	0,7330	48,7	2599	4
NO	1361	ALESUND	58289	0	0	0,00	0	0,0000	0,0	0	-99
NO	1073	ARENDAL	90848	0	41	31,89	1	0,6447	9,5	320	2
NO	1177	ASKIM	203021	1	90	18,50	1	0,3639	29,6	287	2
NO	1340	BERGEN	286933	0	0	18,11	1	0,6332	3,6	287	2
NO	217	BODO	41541	0	0	0,00	0	0,0000	0,0	0	-99
NO	218	DRAMMEN	861073	1	95	228,01	7	0,7393	33,0	466	2
NO	1178	ELVERUM	78885	0	31	22,39	0	0,4461	26,3	189	2

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NO	219	FREDRIKSTAD	224816	2	100	55,60	3	0,6944	27,0	542	4
NO	220	GJOVIK	117155	2	61	57,28	1	0,4543	29,5	265	2
NO	1179	HALDEN	199737	1	50	70,64	1	0,6272	42,6	581	4
NO	1071	HAMAR	135964	2	100	78,21	2	0,5188	32,1	292	2
NO	415	HARSTAD	32910	0	31	0,00	0	0,0000	0,0	0	-99
NO	221	HAUGESUND	90271	0	15	0,00	0	0,0000	0,0	0	-99
NO	1524	HONEFOSS	239420	1	31	108,83	3	0,6064	29,0	357	2
NO	222	KONGSBERG	178718	2	79	77,03	2	0,6956	31,6	428	2
NO	1180	KONGSVINGER	58786	0	0	2,41	0	0,0000	1,0	100	2
NO	1342	KRISTIANSAND	144546	0	48	37,42	2	0,4315	17,9	258	2
NO	1181	KRISTIANSUND	32669	0	0	0,00	0	0,0000	0,0	0	-99
NO	223	LARVIK	261610	2	94	70,87	2	0,6433	28,5	398	2
NO	1526	LEIRVIK	26826	0	32	0,00	0	0,0000	0,0	0	-99
NO	1554	LEVANGER	36891	0	34	3,11	0	0,0000	1,0	100	2
NO	224	LILLEHAMMER	101724	2	47	57,02	1	0,4602	29,5	267	2
NO	1182	MO I RANA	29941	0	0	6,73	0	0,4843	2,7	197	2
NO	416	MOLDE	36037	0	0	9,66	1	0,0000	1,0	100	2
NO	225	MOSS	286357	2	100	60,37	3	0,6527	33,0	635	4
NO	1338	NARVIK	22615	0	0	0,00	0	0,0000	0,0	0	-99
NO	1547	NOTODDEN	51614	1	73	15,13	1	0,2411	32,5	156	2
NO	226	OSLO	1030600	1	64	244,17	6	0,8135	27,1	712	3
NO	1525	SKIEN	193723	1	65	62,93	2	0,6400	22,3	345	2
NO	1534	SORTLAND	36726	0	19	0,00	0	0,0000	0,0	0	-99
NO	414	STAVANGER	240890	0	0	24,72	2	0,3410	16,6	168	2
NO	227	STEINKJER	45634	1	25	0,00	0	0,0000	0,0	0	-99
NO	228	TONSBERG	196913	1	97	38,85	2	0,5085	25,5	391	2
NO	820	TROMSO	60086	0	0	0,37	0	0,0000	1,0	100	2
NO	824	TRONDHEIM	180636	0	0	22,92	2	0,4527	6,9	204	2
NO	1529	ULSTEIN	22775	0	0	0,00	0	0,0000	0,0	0	-99
PL	229	BIALA PODLASKA	315825	0	33	109,33	2	0,6451	35,8	3025	4
PL	230	BIALYSTOK	538530	0	13	150,90	3	0,6760	33,7	9345	3
PL	231	BIELSKO-BIALA	1546642	2	59	372,00	10	0,7942	35,0	4659	4
PL	232	BYDGOSZCZ	1089721	1	51	221,24	4	0,8342	40,4	6826	4
PL	233	CHELM	336639	0	53	87,74	2	0,6793	35,8	4279	3
PL	234	CZESTOCHOWA	967610	0	33	308,27	5	0,7267	39,9	9300	3
PL	235	ELBLAG	474438	0	36	89,37	2	0,6885	38,4	2519	3
PL	236	GDANSK	1347609	0	24	242,63	5	0,8144	33,9	8303	3
PL	237	GORZOWWIELKOPOLSKI	414265	0	28	116,26	2	0,6678	38,9	4409	3
PL	238	GRUDZIADZ	531629	0	35	77,53	1	0,6788	37,2	2446	3
PL	239	JELENA GORA	453458	0	71	78,00	2	0,7512	36,3	2863	3
PL	240	KALISZ	701377	0	20	158,63	3	0,7518	41,9	5112	4
PL	241	KATOWICE	3422807	1	83	898,12	16	0,8337	36,5	26858	3
PL	242	KIELCE	836017	0	8	190,28	3	0,7462	38,7	8851	3
PL	243	KONIN	645264	1	38	142,77	3	0,7340	40,9	4641	4
PL	244	KOSZALIN	349954	0	31	74,18	2	0,7777	32,9	3119	3
PL	245	KRAKOW	2163457	0	32	419,70	7	0,7999	38,4	11209	4
PL	246	KROSNO	599279	1	71	124,77	3	0,6363	31,5	2606	4
PL	247	LEGNICA	791000	1	49	165,96	3	0,7034	39,8	3675	4
PL	248	LESZNO	537880	0	15	150,66	3	0,6827	39,2	2865	4
PL	249	LODZ	1623230	1	65	368,17	6	0,8674	38,1	28629	3
PL	250	LOMZA	369241	1	40	93,96	2	0,6691	40,1	3569	4
PL	251	LUBLIN	983609	0	25	198,92	3	0,7542	42,6	15136	3
PL	252	NOWY SACZ	680751	0	42	76,20	2	0,6750	36,6	2400	3
PL	253	OLSZTYN	506953	0	8	104,63	2	0,7094	40,4	3938	3
PL	254	OPOLE	761357	0	21	284,86	4	0,6248	41,7	5706	3
PL	255	OSTROLEKA	330327	1	35	67,02	2	0,7491	40,2	2834	4
PL	256	PIOTRKOWTRYBUNALSKI	1532683	1	59	347,22	6	0,8500	41,2	22361	3
PL	257	PLOCK	723679	1	55	138,87	2	0,8130	41,0	3641	4
PL	258	POZNAN	1337080	0	18	346,92	5	0,7980	39,2	15741	3
PL	259	PRZEMYSL	358995	0	37	102,11	4	0,6751	24,5	3800	3
PL	260	RADOM	782350	0	12	194,79	3	0,7537	37,5	10716	3
PL	261	RYBNIK	2202197	1	99	610,05	18	0,8249	36,4	12844	3
PL	262	RZESZOW	1010795	0	40	237,43	4	0,6899	38,5	5574	3
PL	263	SIEDLCE	463958	0	29	124,31	2	0,6326	42,3	3746	4
PL	264	SKIERNIEWICE	589435	0	49	163,18	3	0,7933	37,5	6083	4
PL	265	SLUPSK	350099	0	26	80,55	2	0,7241	34,8	4270	3
PL	266	SUWALKI	227460	0	8	38,22	1	0,7438	28,2	2402	4
PL	267	SWINOUJSCIE	168368	0	61	72,97	4	0,6582	37,8	1452	4
PL	268	SZCZECIN	776177	0	39	240,46	4	0,6934	40,9	6311	3
PL	269	TARNOW	957873	0	43	165,14	3	0,7008	39,8	4038	3
PL	270	TORUN	1139829	1	88	219,23	4	0,8271	38,4	6154	4

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PL	271	WALBRZYCH	878787	2	57	193,27	6	0,7736	34,5	3316	4
PL	272	WARSZAWA	2795429	0	21	661,99	10	0,8752	35,6	21966	4
PL	273	WLOCLAWEK	625575	1	76	119,95	2	0,8088	38,7	3662	4
PL	274	WROCLAW	1219564	0	38	290,52	5	0,7307	37,5	12990	3
PL	275	ZAMOSC	444115	0	40	138,34	3	0,6747	38,7	5512	3
PL	276	ZIELONA GORA	527816	0	16	152,73	3	0,6906	37,4	2958	4
PT	1583	AGUEDA	742762	7	100	81,31	3	0,6327	34,5	1642	4
PT	1592	ALBUFEIRA	324976	5	88	56,42	2	0,6369	32,3	1112	4
PT	842	AVEIRO	1682396	8	100	186,15	6	0,7624	49,6	8639	3
PT	1587	BARCELOS	1793429	6	100	234,46	8	0,6939	32,6	8944	3
PT	32	BEJA	96585	0	4	34,61	1	0,5684	34,9	1248	4
PT	723	BRAGA	2664249	10	89	310,09	6	0,6722	37,6	9333	3
PT	33	BRAGANCA	64284	0	19	6,85	0	0,6948	34,7	1386	3
PT	34	CALDAS DA RAINHA	410303	4	98	54,86	2	0,5596	37,6	819	4
PT	725	CASTELO BRANCO	192062	1	27	19,33	0	0,4471	43,3	815	4
PT	35	CHAVES	142063	1	45	14,40	1	0,7258	34,5	953	3
PT	841	COIMBRA	716048	6	84	73,10	2	0,6029	41,9	2012	4
PT	21	COVILHA	166683	3	86	18,67	1	0,5969	41,7	713	4
PT	840	EVORA	115250	0	19	12,54	0	0,6183	32,7	927	3
PT	36	FAFE	873454	4	97	98,70	8	0,6664	23,7	2145	4
PT	1565	FAMALICAO	113487	2	88	12,59	1	0,5812	28,3	602	4
PT	722	FARO	297287	3	95	47,24	2	0,6761	37,6	1124	4
PT	1584	FEIRA	2009901	10	99	217,55	9	0,7437	39,6	8971	3
PT	1563	FELGUEIRAS	41871	0	8	3,84	0	0,4152	29,2	354	2
PT	37	FIGUEIRA DA FOZ	552572	3	93	53,90	2	0,6025	37,2	1791	4
PT	727	FUNCHAL	240537	0	0	0,00	0	0,0000	0,0	0	-99
PT	38	GUARDA	168415	2	49	18,65	1	0,5749	38,4	880	4
PT	724	GUIMARAES	2227366	7	100	242,86	8	0,7091	30,4	8775	3
PT	39	ILHAVO	1224223	8	100	133,23	5	0,7278	46,8	5113	3
PT	1153	LEIRIA	821845	6	100	86,13	2	0,6067	49,7	1286	4
PT	771	LISBOA	2837095	3	81	381,86	8	0,8086	37,9	7017	3
PT	1593	LOULE	328540	4	100	55,66	2	0,6331	36,1	1047	4
PT	40	MARINHA GRANDE	592338	4	100	59,15	1	0,6003	41,7	966	4
PT	25	OLHAO	279862	3	100	45,26	2	0,6637	36,0	991	4
PT	1585	OLIVEIRA DE AZEM?IS	1758030	9	100	192,94	6	0,7667	49,0	9102	3
PT	1589	OVAR	2045531	11	100	227,34	8	0,7366	44,3	9528	3
PT	1586	PACOS DE FERREIRA	2583035	10	100	287,45	8	0,6879	34,3	8957	3
PT	1154	PAREDES	2540299	2	100	329,88	12	0,8411	29,4	5663	3
PT	1543	PENAFIEL	2361899	9	94	241,77	8	0,7298	30,9	8262	3
PT	41	PENICHE	107415	1	87	13,26	2	0,4945	16,6	496	2
PT	1351	PONTA DELGADA	131112	0	0	0,00	0	0,0000	0,0	0	-99
PT	42	PORTIMAO	214955	3	79	48,51	3	0,6424	30,4	1215	4
PT	726	PORTO	2597465	11	100	277,22	9	0,6989	36,5	8894	3
PT	43	SANTAREM	1316132	3	89	172,82	3	0,7403	53,9	6768	3
PT	1155	SANTO TIROSO	2461826	10	100	266,36	9	0,6989	32,8	8739	3
PT	44	SAO JOAO DA MADEIRA	1957544	10	100	212,85	8	0,7495	42,1	9143	3
PT	1591	SILVES	206895	3	100	43,82	3	0,6402	25,9	1175	4
PT	1590	TORRES NOVAS	636351	3	94	87,35	2	0,5680	40,7	851	4
PT	45	TORRES VEDRAS	2437535	3	95	307,94	8	0,8212	36,2	8088	3
PT	1588	VIANA DO CASTELO	700446	2	90	109,35	5	0,6240	28,9	2263	4
PT	46	VILA REAL	427750	2	67	31,45	1	0,6128	48,1	695	4
PT	20	WISEU	366004	1	68	25,55	1	0,5166	40,2	952	4
RO	277	ALBA IULIA	269952	1	47	133,59	5	0,6338	28,7	1177	4
RO	964	ALEXANDRIA	232483	0	9	117,58	6	0,5862	32,5	1263	4
RO	278	ARAD	322677	0	45	174,89	7	0,6926	31,9	2329	4
RO	279	BACAU	512559	2	50	210,26	12	0,7053	29,2	3624	4
RO	280	BAIA MARE	259266	0	12	109,38	6	0,5641	23,1	2153	3
RO	281	BALS	566431	2	94	208,67	10	0,7490	28,6	5264	3
RO	282	BIRLAD	232396	1	33	191,99	8	0,5612	32,4	1579	4
RO	283	BISTRITA	180544	0	5	79,84	5	0,4917	24,7	1178	4
RO	284	BLAJ	252827	2	85	106,35	6	0,5932	28,0	921	4
RO	285	BOTOSANI	412367	1	22	170,82	9	0,6952	29,0	2636	3
RO	286	BRAILA	684348	1	43	184,96	6	0,6485	30,0	1544	4
RO	287	BRASOV	654781	3	99	199,75	5	0,7344	31,3	4440	3
RO	288	BUCURESTI	2369184	1	94	405,22	12	0,7604	30,4	12785	3
RO	289	BUZAU	369822	0	14	194,19	8	0,6294	29,1	1921	3
RO	290	CALARASI	351767	2	84	228,55	5	0,5726	36,9	1299	4
RO	291	CIMPINA	500714	1	82	163,20	10	0,8213	27,3	3055	4
RO	292	CIMPULUNG	198888	0	34	137,62	7	0,6902	24,4	2341	3
RO	293	CLUJ-NAPOCA	556621	1	38	194,10	8	0,5897	31,0	3738	3
RO	294	CODLEA	636669	3	94	164,52	5	0,7596	27,9	4295	3

RO	1349	CONSTANTA	582971	1	25	194,96	8	0,6972	28,5	2881	3
RO	295	CRAIOVA	501781	1	43	214,81	8	0,6670	32,3	4838	3
RO	296	DEVA	301108	1	43	163,75	7	0,6348	27,8	3740	3
RO	1072	DROBETA-TURNU SEVERI	257089	0	3	138,23	5	0,5392	26,6	2221	3
RO	297	FOCSANI	332634	0	11	162,77	9	0,6643	26,2	1308	4
RO	298	GALATI	634319	1	64	145,63	7	0,6733	27,5	1569	4
RO	1081	GIURGIU	418695	1	96	272,63	6	0,5680	34,4	2050	3
RO	300	HUNEDOARA	243204	1	92	89,98	9	0,6778	18,7	3103	3
RO	301	IASI	479517	0	10	131,78	8	0,7162	26,1	4671	3
RO	302	LUGOJ	158603	0	34	130,59	6	0,5166	29,9	1132	4
RO	1350	MANGALIA	433919	1	63	128,85	9	0,6682	39,8	2848	3
RO	303	MEDIAS	201232	1	54	83,59	4	0,5183	30,2	955	4
RO	304	MERCUREA-CIUC	139072	0	32	75,26	3	0,6482	26,4	882	4
RO	1084	MIOVENI	432768	2	98	206,45	10	0,7893	28,5	2871	4
RO	305	ODORHEIU SECUIESC	133290	1	34	52,52	4	0,5835	22,1	1195	4
RO	299	ONESTI	426954	0	19	166,55	10	0,7764	26,6	2088	4
RO	306	ORADEA	391032	1	27	204,57	7	0,5911	31,5	3137	3
RO	307	PETROSENI	156623	0	32	50,26	2	0,7642	32,7	3198	3
RO	1082	PIATRA NEAMT	246075	0	30	139,65	9	0,8072	20,6	2016	4
RO	308	PITESTI	470292	1	93	244,77	10	0,7670	31,5	2779	4
RO	309	PLOIESTI	695037	2	62	267,30	11	0,7304	31,1	4605	3
RO	310	RESITA	196267	0	20	79,78	4	0,6817	28,3	1594	4
RO	311	RIMNICU VILCEA	300232	0	15	174,01	7	0,7241	28,0	1972	4
RO	312	ROMAN	491595	0	43	230,74	10	0,6531	31,9	2925	3
RO	313	SACELE	600605	3	100	166,12	6	0,7650	27,9	4082	3
RO	314	SATU MARE	326396	2	32	181,07	7	0,5912	31,2	1035	4
RO	1083	SFINTU GHEORGHE	542003	3	100	142,68	6	0,7337	27,7	4318	3
RO	315	SIBIU	274086	0	22	92,90	4	0,6603	23,6	3190	3
RO	316	SLATINA	294102	1	77	184,19	9	0,7364	27,7	1743	4
RO	317	SLOBOZIA	281969	1	28	179,36	5	0,5749	35,2	1375	3
RO	318	SUCEAVA	321331	0	27	168,99	11	0,6282	25,3	704	4
RO	319	TIMISOARA	462525	0	37	197,48	7	0,6175	31,4	3337	3
RO	320	TIRGOVISTE	630020	1	45	228,65	9	0,7385	30,5	3809	4
RO	321	TIRGU JIU	232151	0	31	142,86	6	0,6780	28,1	3297	3
RO	322	TIRGU MURES	364939	0	20	144,97	7	0,5719	27,4	2697	3
RO	323	TULCEA	135797	0	0	54,65	5	0,5266	19,6	772	3
RO	324	TURDA	554752	1	59	160,41	8	0,6758	28,3	3374	3
RO	325	VASLUI	327222	1	48	234,89	10	0,5888	30,7	1468	4
RO	1085	VOLUNTARI	2375997	1	93	399,99	12	0,7732	30,3	12250	3
RO	326	ZALAU	165832	0	8	156,15	7	0,5155	27,7	1320	3
SE	49	BORAAS	848644	2	37	351,82	4	0,7129	60,8	2696	3
SE	50	ESKILSTUNA	140702	0	69	73,36	3	0,6386	30,3	966	3
SE	1190	FAGERSTA	66968	0	30	84,53	2	0,4789	35,2	308	2
SE	88	FALKENBERG	177534	2	100	69,27	2	0,5580	30,9	647	4
SE	51	FALUN	112720	0	0	100,57	3	0,6072	22,9	863	4
SE	76	GAEVLE	147494	0	0	112,97	3	0,5904	27,6	855	3
SE	52	GOETEBORG	833326	0	54	284,63	7	0,7287	27,8	2434	3
SE	1358	HAERNOESAND	43017	0	43	27,52	1	0,3815	24,1	259	2
SE	53	HALMSTAD	147211	1	71	65,81	2	0,5434	26,9	649	4
SE	1191	HELSINGBORG	553742	0	43	190,28	6	0,5866	37,2	672	4
SE	89	HUDIKSVALL	37288	0	0	26,43	1	0,4258	15,9	357	2
SE	54	JOENKOEPING	147140	0	82	80,98	3	0,6085	24,4	907	3
SE	55	KALMAR	117447	0	15	53,00	1	0,4806	33,5	553	4
SE	87	KARLSHAMN	84472	0	38	62,47	2	0,4807	31,4	600	3
SE	56	KARLSKOEGA	72267	0	45	63,27	3	0,5949	23,2	463	2
SE	1343	KARLSKRONA	89170	0	45	41,34	2	0,4791	19,6	373	2
SE	57	KARLSTAD	127696	0	0	84,11	3	0,6758	19,2	851	3
SE	58	KIRUNA	23849	0	0	25,35	0	0,5794	61,3	429	2
SE	81	KOEPING	283374	2	100	150,96	4	0,6899	29,1	823	4
SE	59	KRISTIANSTAD	162911	0	5	101,58	3	0,4496	27,4	555	4
SE	60	LIDKOEPING	74002	0	64	34,58	2	0,4843	22,1	582	3
SE	61	LINKOEPING	341535	1	70	176,39	3	0,6373	38,1	847	4
SE	84	LJUNGBY	69046	1	86	43,11	1	0,4533	40,1	378	2
SE	62	LULEAA	71952	0	0	31,60	1	0,3739	21,3	293	2
SE	63	MALMOE	2046904	2	57	571,01	15	0,8890	36,7	5666	3
SE	77	MARIESTAD	101134	1	64	72,03	3	0,5922	31,6	964	3
SE	64	NORRKOEPING	300370	1	54	157,14	3	0,6182	36,4	1046	4
SE	65	NYKOEPING	148172	0	24	70,69	2	0,4612	34,5	579	4
SE	66	OEREBRO	247617	1	25	197,40	3	0,5955	37,9	1260	4
SE	1339	OERNSKOELDSVIK	55364	0	0	46,55	1	0,5184	25,9	725	3
SE	78	OESTERSUND	58361	0	0	25,36	1	0,5523	8,1	357	2

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SE	86	OSKARSHAMN	45802	0	24	36,11	1	0,3871	25,8	565	3
SE	67	SKELLEFTEAA	72035	0	0	55,43	1	0,5302	32,6	566	3
SE	68	SKOEVEDE	152338	1	43	88,95	2	0,5802	35,8	732	3
SE	1341	STOCKHOLM	1606234	0	50	408,92	13	0,7955	25,4	1700	4
SE	69	SUNDSVALL	110915	0	19	64,70	2	0,5686	16,4	638	3
SE	83	TRANAAS	54868	0	54	32,59	2	0,4233	28,1	233	2
SE	70	TROLLHAETTAN	192942	1	100	73,33	3	0,5734	28,2	449	2
SE	71	UDDEVALLA	196320	1	67	75,60	2	0,5334	29,3	539	4
SE	72	UMEEA	113455	0	0	54,46	2	0,6477	18,9	771	3
SE	73	UPPSALA	489243	0	45	161,72	4	0,6861	33,7	1070	3
SE	82	VAERNAMO	123370	1	64	77,26	1	0,4294	38,8	379	2
SE	79	VAESTERAAS	244748	1	74	128,33	3	0,6554	30,8	968	3
SE	85	VAESTERVIK	36956	0	0	16,96	1	0,4197	24,5	288	2
SE	80	VAEXJOE	101425	0	0	52,34	2	0,5706	25,6	788	3
SE	74	VARBERG	91792	1	100	30,75	1	0,4928	25,0	377	2
SE	75	VISBY	57412	0	0	22,09	1	0,3070	36,6	262	2
SI	29	CELJE	557916	2	85	131,13	3	0,7560	37,6	3444	4
SI	1088	KOPER	529778	3	100	149,29	6	0,8312	27,7	8328	3
SI	1086	LJUBLJANA	712011	0	46	199,16	4	0,7674	32,4	8995	3
SI	1087	MARIBOR	967480	2	81	193,88	4	0,7885	44,4	7837	3
SI	31	NOVA GORICA	801405	4	100	277,18	8	0,8185	31,5	11091	4
SI	30	NOVO MESTO	146418	1	75	30,56	2	0,7589	23,8	2383	3
SK	160	BANOVCE NAD BEBRAVOU	460515	3	97	190,07	7	0,6541	32,2	2294	4
SK	161	BANSKA BYSTRICA	377799	1	70	144,28	4	0,7374	33,5	3749	4
SK	162	BARDEJOV	158131	1	84	67,42	4	0,5611	28,7	1418	4
SK	1077	BRATISLAVA	2662099	3	94	742,11	11	0,7818	49,8	11104	3
SK	171	KOSICE	583912	1	69	241,56	9	0,6597	34,3	4504	4
SK	172	LEVICE	357548	1	85	212,98	7	0,6079	33,0	4206	3
SK	173	LIPTOVSKY MIKULAS	236676	1	54	107,92	5	0,6528	33,3	1500	4
SK	174	LUCENEC	363168	1	70	172,20	5	0,6633	37,7	2319	4
SK	175	MARTIN	401298	1	81	152,00	6	0,7325	30,5	3689	4
SK	176	MICHALOVCE	413123	3	72	234,85	9	0,6324	33,1	3957	3
SK	179	NITRA	757772	4	99	399,81	9	0,6070	37,4	3077	4
SK	180	NOVE ZAMKY	542123	2	97	324,47	8	0,5830	37,4	2864	3
SK	1089	POPRAD	223853	0	18	80,96	4	0,6353	31,4	1889	3
SK	186	POVAZSKA BYSTRICA	478728	2	94	170,29	7	0,7331	31,6	4138	4
SK	1090	PRESOV	601561	2	79	249,94	9	0,6364	34,0	4883	4
SK	189	PRIEVIDZA	317536	3	96	133,78	6	0,6533	30,8	1690	4
SK	191	SENICA	546302	2	89	259,82	7	0,6312	37,7	2048	4
SK	1092	SKALICA	626059	2	95	297,98	7	0,5753	39,1	1922	4
SK	1334	STUROVO	334324	2	91	189,16	7	0,6462	30,6	1133	4
SK	1093	SVIDNIK	371211	3	85	137,77	5	0,6129	38,7	3338	4
SK	193	TOPOLCANY	550640	2	95	275,59	9	0,6495	35,5	3686	3
SK	194	TREBISOV	398137	4	98	211,10	10	0,6519	31,8	3707	3
SK	195	TRENCIN	473066	2	94	212,13	7	0,6400	36,6	2734	4
SK	196	TRNAVA	1016100	3	99	475,64	11	0,7110	40,7	6131	3
SK	1595	TVRDOSIN	254028	0	21	72,62	4	0,7232	32,8	2375	4
SK	198	ZIAR NAD HRONOM	460988	2	97	188,63	6	0,7293	35,8	3551	4
SK	1091	ZILINA	571915	2	93	212,74	6	0,7452	33,5	3817	4
UK	1516	ABERDEEN	384170	0	9	106,85	3	0,7462	40,5	2412	3
UK	1475	ABERGELE/RHYL/PRESTA	109006	0	57	35,91	9	0,7068	20,2	861	4
UK	1407	ANDOVER	1109942	3	100	291,30	7	0,7719	40,8	4350	3
UK	1414	ASHFORD	1785353	5	100	400,07	11	0,8198	42,1	5795	3
UK	1438	AYLESBURY	4994334	6	98	1134,25	21	0,8759	44,0	25618	1
UK	1503	AYR	1329204	3	86	439,53	9	0,8888	31,0	7083	3
UK	1449	BANBURY	2861189	7	100	811,48	14	0,8597	47,4	17347	3
UK	1518	BANGOR	199162	1	66	57,57	2	0,6068	28,6	861	4
UK	1485	BARNSLEY	6269848	12	99	1737,57	22	0,8904	49,0	17616	4
UK	1397	BARNSTAPLE	244737	1	50	58,47	2	0,7140	33,6	1371	4
UK	1406	BASINGSTOKE	3222756	7	99	818,70	14	0,8284	46,0	10378	3
UK	1427	BATH	1684023	6	100	456,87	8	0,7559	39,5	10361	3
UK	1453	BEDFORD/KEMPSTON	2134889	6	100	598,10	11	0,8021	46,3	4438	4
UK	1494	BELFAST	1120661	2	88	349,74	8	0,9206	33,3	16348	3
UK	1517	BERWICK UPON TWEED	67639	0	38	28,86	2	0,5000	38,9	412	2
UK	1576	BIRMINGHAM	5168308	15	100	1469,57	16	0,8907	46,7	35550	3
UK	1480	BLACKBURN/DARWEN	6043797	11	97	1469,50	21	0,9036	40,3	14829	3
UK	1490	BLACKPOOL	2836507	6	100	680,24	20	0,8871	32,6	5699	3
UK	1575	BLOKTON	6841279	14	100	1769,38	23	0,9009	44,5	14674	3
UK	1521	BOSTON	900837	5	96	350,84	6	0,7796	45,0	6130	4
UK	1403	BOURNEMOUTH	1059014	3	100	283,96	8	0,8130	33,1	4508	4

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UK	1437	BRACKNELL	8170822	5	100	1626,99	27	0,9075	40,4	33549	1
UK	1574	BRADFORD	6242040	13	100	1631,08	21	0,8962	46,5	17693	3
UK	1400	BRIDGWATER	794813	3	100	198,71	8	0,8196	29,4	6462	3
UK	1493	BRIDLINGTON	658435	1	79	183,97	6	0,7802	34,4	4944	3
UK	1410	BRIGHTON/WORTHING/LI	1869533	3	99	470,84	14	0,8162	37,7	5315	4
UK	1426	BRISTOL	2132089	8	100	562,26	9	0,7951	41,7	8826	3
UK	1484	BURNLEY/NELSON	6114389	12	100	1543,62	22	0,9035	43,1	15266	3
UK	1469	BURTON UPON TRENT	6395811	15	100	1726,35	19	0,8981	46,7	31712	3
UK	1455	BURY ST, EDMUNDS	1057097	4	96	299,43	5	0,7284	46,7	3038	4
UK	48	CAMBRIDGE	1062291	4	97	324,91	6	0,7627	43,6	2788	4
UK	1468	CANNOCK/GREAT WYRLEY	5426521	14	100	1509,37	17	0,8934	45,5	32835	3
UK	1413	CANTERBURY/BLEAN	1062122	4	98	239,61	9	0,7728	35,6	2202	4
UK	1421	CARDIFF	1352714	2	67	383,47	14	0,8422	36,6	4569	4
UK	1497	CARLISLE	362023	3	58	108,19	2	0,7599	45,9	2340	4
UK	1425	CHELTENHAM/CHARLTON	2124524	6	99	642,15	9	0,8079	51,3	10560	3
UK	1479	CHESTER	5134920	8	97	1411,69	20	0,8952	43,6	14136	4
UK	1442	CLACTON-ON-SEA/LITTL	646978	3	100	151,89	8	0,7867	28,9	2267	4
UK	1441	COLCHESTER	1196209	5	99	283,87	8	0,8147	42,3	3612	4
UK	1474	COLWYN BAY	164519	1	99	56,57	3	0,6794	32,5	1041	4
UK	1448	COVENTRY/BEDWORTH	5526044	15	100	1546,77	17	0,8800	49,4	36745	3
UK	1409	CRAWLEY	5344797	3	100	1062,12	24	0,9004	42,0	24065	1
UK	1460	CREWE	4477826	9	100	1237,96	19	0,8886	45,2	15033	3
UK	1498	DARLINGTON	1978591	4	90	623,85	16	0,8779	35,0	6283	4
UK	1467	DERBY	4124284	11	100	1192,40	16	0,8609	45,5	10376	4
UK	1487	DONCASTER	4463772	12	100	1350,00	16	0,8595	47,2	11424	4
UK	1416	DOVER	856888	5	100	205,90	10	0,7930	43,3	2822	4
UK	1566	DUDLEY	4873836	13	100	1374,24	17	0,9038	44,5	34326	3
UK	1514	DUNDEE	544324	2	83	167,88	5	0,7722	39,2	2421	3
UK	1512	DUNFERMLINE	1744968	5	100	522,35	9	0,8361	37,5	5399	3
UK	1395	EASTBOURNE	1042102	2	99	255,58	11	0,8307	32,3	5009	4
UK	1511	EDINBURGH	1989664	6	77	586,75	9	0,8384	39,0	4539	4
UK	1399	EXETER	641165	4	89	146,28	4	0,7392	38,5	3010	4
UK	1510	FALKIRK	2440221	5	100	740,37	16	0,9129	35,8	12086	3
UK	1393	FALMOUTH/PENRYN	339907	1	90	113,02	6	0,7597	27,2	2100	4
UK	1522	FELIXSTOWE	496889	3	98	138,77	8	0,7585	28,4	3451	4
UK	1507	GLASGOW	2729065	7	98	879,58	12	0,8933	40,0	14530	3
UK	1424	GLOUCESTER	1192965	4	99	353,46	7	0,7869	41,4	6463	4
UK	1473	GRANTHAM/GREAT GONER	2143200	9	100	667,23	10	0,8380	48,0	11076	4
UK	1458	GREAT YARMOUTH	573278	2	99	182,44	8	0,7750	27,2	5464	3
UK	1483	GREATER MANCHESTER	8107195	18	100	2131,12	23	0,9084	51,9	16436	3
UK	1506	GREENOCK	1874422	3	98	624,05	19	0,9176	27,2	10235	3
UK	1408	GUILDFORD	8053033	6	98	1616,73	25	0,9027	42,1	32444	1
UK	1435	HARLOW	8225467	4	99	1538,91	32	0,9383	36,6	33015	1
UK	1491	HARROGATE	3338990	9	99	927,55	14	0,8621	37,8	11707	4
UK	1501	HARTLEPOOL	1924109	4	100	587,90	20	0,8989	29,8	6276	4
UK	1412	HASTINGS/BEXHILL	1133910	4	97	258,29	9	0,7979	37,6	2977	4
UK	1561	HUDDERSFIELD	7272265	15	100	1936,74	24	0,8974	50,3	18771	3
UK	1560	HULL	814014	2	98	284,26	8	0,8148	32,3	6246	3
UK	1515	INVERNESS	172571	0	0	54,11	1	0,6850	34,1	1374	3
UK	1443	IPSWICH	682920	4	99	184,15	7	0,7688	32,2	3695	4
UK	1505	IRVINE	1818839	4	100	601,56	13	0,9130	31,6	11188	3
UK	1489	KENDAL	670827	2	79	162,50	3	0,7612	48,7	3040	3
UK	1445	KIDDERMINSTER	4327523	12	100	1224,72	16	0,9112	44,1	31247	3
UK	1504	KILMARNOCK	1867889	4	100	612,52	12	0,9140	31,5	11950	3
UK	1454	KING'S LYNN	758150	5	94	307,66	6	0,7856	44,4	6476	3
UK	1509	KIRCALDY	1427477	6	98	423,59	13	0,8418	35,8	5170	3
UK	1556	LEEDS	5738575	11	100	1520,76	19	0,8876	45,9	14741	4
UK	1466	LEICESTER	3202426	9	100	867,82	14	0,8441	43,6	9748	4
UK	1472	LINCOLN	1848886	7	100	625,66	9	0,8097	51,4	5798	4
UK	1553	LISBURN	1074044	2	100	341,05	9	0,9249	31,6	15499	3
UK	1478	LIVERPOOL	5400389	9	99	1421,61	24	0,9064	38,0	14569	3
UK	1418	LLANELLI	359402	1	63	111,97	8	0,8160	19,7	2738	4
UK	1436	LONDON	11202043	9	100	2285,18	31	0,9159	43,2	47113	1
UK	1502	LONDONDERRY	324158	0	7	81,43	2	0,7548	37,4	1258	4
UK	1465	LOUGHBOROUGH	3623046	8	100	991,36	13	0,8336	43,7	12070	4
UK	1457	LOWESTOFT	552336	2	98	168,17	7	0,7889	29,6	5333	3
UK	1520	LURGAN	1160297	3	84	347,86	7	0,9206	35,3	16252	3
UK	1434	LUTON/DUNSTABLE	8078121	8	100	1605,03	26	0,9106	42,1	33082	1
UK	1411	MAIDSTONE	6097985	5	96	1135,59	21	0,8990	43,4	17666	4
UK	1464	MANSFIELD	3782862	10	100	1112,86	15	0,8471	45,2	10588	4
UK	1471	MELTON MOWBRAY	3150862	11	100	892,49	12	0,8293	46,7	10609	4
UK	1549	MIDDLESBROUGH	966677	3	81	319,38	13	0,8974	28,5	7154	3

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UK	1433	MILTON KEYNES	1535013	4	99	433,81	11	0,7899	40,5	4188	4
UK	1519	NEWPORT	4089040	11	100	1140,24	15	0,8995	41,6	28520	3
UK	1396	NEWTON ABBOT	582017	3	100	135,33	7	0,8087	28,8	2055	4
UK	1452	NORTHAMPTON	2847494	9	100	848,27	11	0,8129	52,1	7815	4
UK	1456	NORWICH	766028	3	92	260,66	6	0,7455	36,5	6843	3
UK	1463	NOTTINGHAM	3570191	8	100	1032,35	14	0,8373	44,7	11503	4
UK	1430	OXFORD	1111899	2	94	349,55	7	0,7143	41,9	3511	4
UK	1513	PERTH	987586	5	71	288,59	5	0,7979	40,1	3299	4
UK	1451	PETERBOROUGH	1142472	6	95	397,56	6	0,7687	44,8	5851	3
UK	1394	PLYMOUTH	634106	2	84	164,93	6	0,8304	36,6	4318	4
UK	1420	PONTYPRIDD	714500	1	86	169,49	19	0,8460	22,0	4039	3
UK	1541	POOLE	1054643	3	99	292,07	8	0,8190	37,4	4829	4
UK	1405	PORTSMOUTH	1478375	3	94	362,36	11	0,7823	37,5	3425	4
UK	1488	PRESTON	5772576	10	100	1444,99	22	0,9097	40,4	14427	3
UK	1429	READING/WOKINGHAM	5194756	6	99	1104,70	25	0,8866	36,5	21319	1
UK	1537	ROCHDALE	7521189	14	100	1914,53	24	0,9019	48,8	16638	3
UK	1447	RUGBY	2660711	6	100	728,12	16	0,8939	38,6	15989	3
UK	1402	SALISBURY	1633494	8	100	450,01	8	0,7925	48,5	4266	4
UK	1486	SCUNTHORPE	2194544	5	98	699,10	12	0,8469	43,7	6589	4
UK	1482	SHEFFIELD	5890832	11	99	1663,42	22	0,8931	49,5	10973	4
UK	1459	SHREWSBURY	2512556	9	89	721,26	11	0,8799	42,0	15576	3
UK	1432	SLOUGH	7670184	5	100	1475,65	39	0,9261	33,3	29200	1
UK	1404	SOUTHAMPTON/EASTLEIG	1787490	6	99	448,79	10	0,8139	42,6	3099	4
UK	1440	SOUTHEND	4132363	3	89	771,17	29	0,9271	29,1	10658	4
UK	1470	SPALDING/PINCHBECK	860446	5	100	341,81	6	0,7773	44,3	6559	3
UK	1392	ST, AUSTELL	609680	2	94	179,93	6	0,7943	41,2	4955	3
UK	1462	STAFFORD	5165597	13	100	1439,86	16	0,8924	46,7	33040	3
UK	1431	STEVENAGE	7282287	6	97	1409,70	25	0,9092	40,2	31783	1
UK	1508	STIRLING	2752373	6	87	846,49	11	0,9069	39,6	13966	3
UK	1533	STOKE	5779270	14	100	1633,35	18	0,9022	55,7	20878	4
UK	1423	STROUD	1833111	6	100	523,60	8	0,7969	47,5	12462	3
UK	1500	SUNDERLAND/WHITBURN	2224116	4	99	662,16	17	0,8773	32,2	5604	4
UK	1417	SWANSEA	759839	1	86	227,89	13	0,8363	29,5	2982	4
UK	1428	SWINDON	1127594	4	95	321,86	9	0,8012	39,8	8240	3
UK	1398	TAUNTON	838190	5	95	190,27	5	0,6928	41,6	2003	4
UK	1461	TELFORD	3918839	9	100	1087,21	15	0,9074	41,9	27536	3
UK	1415	THANET	487275	3	100	106,98	10	0,7594	23,8	1068	4
UK	1439	THETFORD	1042196	4	100	352,22	5	0,7585	47,6	7792	3
UK	1531	TORQUAY	623489	3	100	160,67	10	0,8036	31,4	2464	4
UK	1422	TROWBRIDGE	1442648	5	95	393,17	7	0,7581	40,3	10322	3
UK	1499	TYNESIDE	1931639	3	84	530,90	12	0,8508	29,3	6491	4
UK	1481	WAKEFIELD	5899016	11	100	1591,88	21	0,8864	47,5	14707	4
UK	1477	WARRINGTON	6619163	13	100	1734,81	21	0,8942	45,4	16049	3
UK	1446	WARWICK/LEAMINGTON	5020750	12	100	1431,25	17	0,8855	51,1	36232	3
UK	1450	WELLINGBOROUGH	2300644	9	100	665,67	11	0,8198	48,7	5920	4
UK	1419	WESTON-SUPER-MARE	1367485	4	100	355,99	10	0,8170	33,4	9144	3
UK	1496	WHITEHAVEN	207095	2	100	59,67	2	0,8083	27,9	1772	4
UK	1476	WIGAN	6266133	11	100	1600,38	23	0,8997	41,4	14806	3
UK	1528	WOLVERHAMPTON	5120003	13	100	1429,72	16	0,8990	45,3	34088	3
UK	1444	WORCESTER	4175041	10	96	1177,67	14	0,8985	49,3	35039	3
UK	1495	WORKINGTON	225314	2	100	65,19	3	0,7936	29,5	1921	4
UK	1401	YEOVIL	1043257	5	92	262,74	5	0,7057	43,6	3778	3
UK	1492	YORK	3176675	8	97	932,85	13	0,8623	43,0	11642	4

Annex 5. List of Trans-national PUSHs

Austria	No of countries		No of countries
BADEN-TRAIKIRCHEN	2	LINZ	3
BREGENZ	3	MOEDLING	3
DORNBIRN	3	SALZBURG	2
FELDKIRCH-RANKWEIL	3	TRAUN	2
GRAZ	2	VILLACH	3
INNSBRUCK	3	WELS	3
KLAGENFURT	3	WIEN	4
KLOSTERNEUBURG	2	WIENER NEUSTADT	2
KREMS AN DER DONAU	2	WOLFSBERG	2
LEONDING	3		
<i>Belgium</i>			
AALST	3	MOUSCRON	2
ANTWERPEN	2	NAMUR	3
BRUGGE	3	OOSTENDE	3
BRUXELLES/BRUSSEL	2	ROESLARE	3
CHARLEROI	2	SINT NIKLAAS	2
GENT	3	TOURNAI	2
HASSELT	3	VERVIERS	4
IEPER	2	DOBRICH	2
KORTRIJK	3	MONTANA	2
LA LOUVIERE	2	PETRICH	2
LIEGE	3	RUSE	2
MECHELEN	2	SILISTRA	2
MONS	2	VIDIN	2
<i>Switzerland</i>			
AARAU	3	LOCARNO	2
ARBON RORSCHACH	3	LUGANO	2
BADEN	3	MONTHEY	2
BASEL	3	NEUCHATEL	2
BELLINZONA	2	OLTEN	3
BRIG	2	RAPPERSWIL-JONA	2
BRUGG	3	ROMANSHORN-AMRISWIL	3
BUCHS	3	SCHAFFHAUSEN	2
BURGDORF	2	SION	2
CHIASSO-MENDRISIO	2	SOLOTHURN	3
CHUR	3	ST. GALLEN	3
FRAUENFELD	2	VEVEY	2
GENEVE	2	WETZIKON-PFAFFIKON (	2
HEERBRUGG-ALTSTATTEN	3	WIL	3
KREUZLINGEN	3	WINTERTHUR	3
LA CHAUX-DE-FONDS	2	YVERDON	2
LAUSANNE	2	ZOFINGEN	3
LENZBURG	3	ZUERICH	2
LIESTAL	3	ZUG	2
<i>Czech Republic</i>			
BRNO	2	LIBEREC	3
CESKE BUDEJOVICE	2	MOST	2
CHOMUTOV	2	OPAVA	2
DECIN	2	OSTRAVA	2
FRYDEK-MISTEK	3	TEPLICE	2
HAVIROV	2	USTI NAD LABEM	2
HRADEC KRALOVE	2	ZLIN	2
KARLOVY VARY	2		
KARVINA	3		
<i>Germany</i>			
AACHEN	3	KLEVE	2
AUE	2	KOELN	3
BADEN BADEN	2	KONSTANZ	3
BAUTZEN	3	KREFELD	2
BAYREUTH	2	LANDAU IN DER PFALZ	2
BOCHOLT	2	LINGEN	2

<i>Germany (cont.)</i>	<i>No of countries</i>		<i>No of countries</i>
BOCHUM	2	LOERRACH	3
BUEHL	2	LUDWIGSHAFEN AM RHEI	2
CHEMNITZ	2	MANNHEIM	2
COTTBUS	2	MEMMINGEN	2
DEGGENDORF	3	MONCHEN-GLADBACH	3
DRESDEN	2	MUENCHEN	2
DUEREN	3	MUENSTER	2
DUESSELDORF	3	NEUSTADT AN DER WEIN	2
DUISBURG	2	NORDHORN	2
EBERSWALDE-FINOW	2	OFFENBURG	2
EMDEN	2	OSNABRUECK	2
ESSEN	2	PASSAU	3
EUSKIRCHEN	3	PFORZHEIM	2
FLENSBURG	2	PIRMASENS	2
FRANKFURT AN DER ODE	2	PLAUEN	2
FREIBERG	2	RAVENSBURG	3
FREIBURG IM BREISGAU	3	RENSBURG	2
GARMISCH-PARTENKIRCH	2	RHEINE	2
GOERLITZ	3	ROSENHEIM	2
GREIZ	2	SAARBRUECKEN	3
HOF	2	SINGEN	2
HOYERSWERDA	2	SPEYER	2
IBBENBUEREN	2	TRIER	4
KAISERSLAUTERN	2	VILLINGEN-SCHWENNING	2
KARLSRUHE	2	WEIDEN IN DER OBERPF	2
KAUFBEUREN	2	WEIL	3
KEMPTEN (ALLGAEU)	2	WEINGARTEN	2
<i>Denmark</i>			
AABENRAA	2	RIBE	2
HADERSLEV	2	SOENDERBORG	2
KOEBENHAVN	2	TONDER	2
<i>Estonia</i>			
VILJANDI	2	VORU	2
<i>Spain</i>			
BADAJOS	2	MERIDA	2
FIGUERES	2	PONTEVEDRA	2
GERONA	2	SAN SEBASTIAN	2
HUELVA	2	VIGO	2
<i>Finland</i>			
TORNIO	2		
<i>France</i>			
ANNECY	2	MENTON	2
ANNEMASSE	2	METZ	3
ARMENTIERES	2	MONTBELIARD	3
ARRAS	2	MULHOUSE	3
BAYONNE	2	NICE	2
BELFORT	3	PERPIGNAN	2
CALAIS	3	PONTARLIER	2
CAMBRAI	2	SAINT-AVOLD	2
CHAMBERY	2	SAINT-OMER	2
CHARLEVILLE-MEZIERES	2	SAINT LOUIS	3
CLUSES	3	SARREBOURG	2
COLMAR	3	SARREGUEMINES	2
DOUAI	2	SEDAN	2
DUNKERQUE	2	STRASBOURG	2
FORBACH	2	THANN	3
GUEBWILLER	3	THIONVILLE	4
HAGUENAU	2	THONON-LES-BAINS	2
LILLE	2	VALENCIENNES	2
MAUBEUGE	2		
<i>Greece</i>			
ORESTIAS	2		

Hungary

BEKESCSABA	2	PILISVOROSVAR	2
BERETTYOUJFALU	2	RETSAG	2
BUDAPEST	2	SALGOTARIJAN	2
ESZTERGOM	2	SARKAD	2
FEHERGYARMAT	2	SAROSPATAK	2
GYOR	3	SARVAR	2
KAZINCBARCIKA	2	SATORALJAUJHELY	2
KISVARDA	2	SOPRON	2
MAKO	2	SZEGED	2
MATESZALKA	2	SZENTENDRE	2
MISKOLC	2	SZERENC	2
MOR	2	SZOMBATHELY	2
MOSONMAGYAROVAR	3	TATABANYA	2
OROSZLANY	2	VAC	2
OZD	2	ZALAEGERSZEG	2

Ireland

DUNDALK	2		
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Italy

ALASSIO	2	LUINO	2
AOSTA	3	MILANO	2
APRILIA	2	MONFALCONE	2
AVIGLIANA	2	NOVARA	2
BERGAMO	2	PAVIA	2
BORGOMANERO	2	PORDENONE	2
BRESSANONE	2	PORTOGRUARO	2
BRUNICO	2	ROMA	2
BUSTO ARSIZIO	2	SAN REMO	2
CIVITAVECCHIA	2	SESTOCALENDE	2
COMO	2	SONDRIO	2
CUNEO	2	TORINO	2
DESIO	2	TRIESTE	2
DOMODOSSOLA	2	UDINE	2
FROSINONE	2	VARESE	2
GALLARATE	2	VELLETRI	2
GORIZIA	2	VENTIMIGLIA	2
IMPERIA	2	VERBANIA	2
LATINA	2	VIGEVANO	2
LECCO	2		

Lithuania

KLAIPEDA	2	SIAULIAI	2
MARIJAMPOLE	2		

Luxembourg

ESCH-SUR-ALZETTE	4	LUXEMBOURG	4
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Latvia

DAUGAVPILS	2	VALMIERA	2
JELGAVA	2		

Netherlands, The

APELDOORN	2	ENSCHDEDE	2
ARNHEM	2	GELEEN	3
ASSEN	2	GRONINGEN	2
BERGEN OP ZOOM	2	HEERLEN	3
BREDA	2	MAASTRICHT	3
DEN BOSCH	3	NIJMEGEN	2
DEVENTER	2	ROOSENDAAL	2
DORDRECHT	2	ROTTERDAM	2
EDE	2	TILBURG	2
EINDHOVEN	3	VEENENDAAL	2
EMMEN	2	VENLO	3

Norway

HALDEN	2		
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Poland

BIELSKO-BIALA	3	RYBNIK	2
GORZOWWIELKOPOLSKI	2	SWINOUJSCIE	2
JELENIA GORA	2	SZCZECIN	2
KROSNO	2	WALBRZYCH	2
NOWY SACZ	2		

Portugal

BRAGA	2	FARO	2
BRAGANCA	2	GUARDA	2
CASTELO BRANCO	2	OLHAO	2
CHAVES	2	VIANA DO CASTELO	2

Romania

CALARASI	2	ORADEA	2
GIURGIU	2	SATU MARE	2
MANGALIA	2		

Sweden

HELSINGBORG	2	MALMOE	2
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Slovenia

CELJE	2	MARIBOR	2
KOPER	2	NOVA GORICA	2
LJUBLJANA	2		

Slovakia

BANOVCENAD BEBRAVOU	2	PRESOV	2
BARDEJOV	2	SENICA	2
BRATISLAVA	3	SKALICA	2
KOSICE	2	STUROVO	2
LEVICE	2	SVIDNIK	2
LUCENEC	2	TREBISOV	2
MICHALOVCE	2	TRENCIN	2
NOVE ZAMKY	2	TRNAVA	2
POPRAD	2	TVRDOSIN	2
POVAZSKA BYSTRICA	2	ZILINA	3

United Kingdom

DOVER	2	LURGAN	2
LONDONDERRY	2		