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November 2014

13

Territorial Dynamics in Europe
Evidence for a European Urban Agenda



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Preface: Understanding the European Urban Fabric

Europe is a highly urbanised continent. Over the last century, the European territory has transformed itself from a largely rural to a predominantly urban continent. Compared to the USA or China, Europe is characterised by a more polycentric and less concentrated urban fabric. It has fewer very large urban agglomerations and a higher number of cities spread across the continent. This polycentric urban structure is a unique feature of the European territory and should be considered an asset and developed as a central component of the European urban development model.

European policies highlight the importance of integrating territorial and urban policies. European Union (EU) treaties and high-level policy documents consistently express a strong consensus that the harmonious, polycentric and balanced territorial development of the EU is key element of achieving economic, social and territorial cohesion. Following the logic of an integrated approach, European urban development policies have a significant role in this regard. The key social, economic and environmental opportunities and challenges facing European cities in an era of globalisation cannot be defined solely by their administrative boundaries but sit in a wider territorial context and larger functional urban areas within which today's urban development takes place. Equally, the achievement of wider EU territorial development policies cannot be addressed without reference to the key role of cities and towns.

Towards an EU Urban Agenda. Over the last years, the movement in favour of an integrated European urban policy has gained momentum. The importance of cities has been highlighted by the European Commission, and a public consultation over a future European Urban Agenda has been organised over the past months. Improving urban quality of life, addressing social challenges in cities, facilitating mobility and communications and ensuring that all cities fully contribute to national economic growth and job creation are important and interlinked objectives. Territorial evidence can support this objective by helping to compare cities within and outside Europe, highlighting their respective strengths and weaknesses.

Four out of every five people in Europe will live in urban areas by 2050. Urban areas continue to attract population, albeit recently at a slower rate than in previous decades. Today, more than 70% of the population in Europe lives in urban areas, while by 2050 this is expected to reach 80%. Evidence is needed on the characteristics of urban growth in different parts of Europe: Which age groups migrate to cities? What are their motives for moving? Do they seek a better quality of life, more job opportunities, better amenities and a wider scope of services? What are their levels of education and occupational status? Does migratory growth mainly concern capital cities, metropolitan regions and large urban areas or are small and medium sized towns also concerned?

Such an Urban Agenda will have to consider the entire of Europe from the largest metropolitan regions to the very small towns in the context of accelerating globalisation which will continue to create dynamic new opportunities and challenges for the European economy. This conceptual framework could be the basis for a shared, integrated and cross-sectoral approach and provide a European perspective to urban development. It presupposes a common evidence-base on the current situation European cities, their opportunities, challenges and development perspectives.

The specific challenges and opportunities of towns and very small towns have received relatively less attention.

Towns are defined as urban areas with less than 50,000 inhabitants. They are an essential part of the European urban fabric. Most of the EU population still lives in 'smaller' urban settlements, and they provide access to services for the major part of the European territory. However, the formulation of general policy agenda for towns is difficult, as their situation and size varies considerably depending on their geographical context.

Categories of cities and regional urban endowment.

This Territorial Observation focuses on the economic and social functions of cities. From this perspective, a “city” is a continuous built-up area or region with at least 50,000 inhabitants and their surrounding areas with significant out-commuting to that built-up area. They can, for analytical purposes, be approximated to NUTS3 boundaries (Map 1). Depending on their size, population, economic profile and institutional status, cities play different roles in the economy and provide different functions to businesses and citizens. The present Territorial Observation applies a standard classification of cities, metropolitan regions, towns and very small towns with generally applied population thresholds (Table 1). However, it should be noted that the role played by individual urban areas in regional development also depends on their territorial context: A town of 10,000 inhabitants will provide other types of services in a sparsely populated regions than in the vicinity of a metropolitan region. Equally a very small town in proximity to a larger urban area will offer access to a wider range of services than in a similar sized but more remotely located town.

The role of towns depends on their territorial context.

There are three main types of towns, identified on the basis of their territorial context (Figure 1). The first type concerns towns located within the functional area of a major city, having a typical situation for a peri-urban town. In this case, the town mainly evolves in the shadow of the major city; its political and functional significance for regional development is more limited. In the second type, towns are part of a network including a number of small- or medium-sized towns. Promoting high levels of interaction between towns of comparable sizes and providing different specialised services increases their overall economic efficiency. Finally,

Map 1. Typology of metropolitan areas

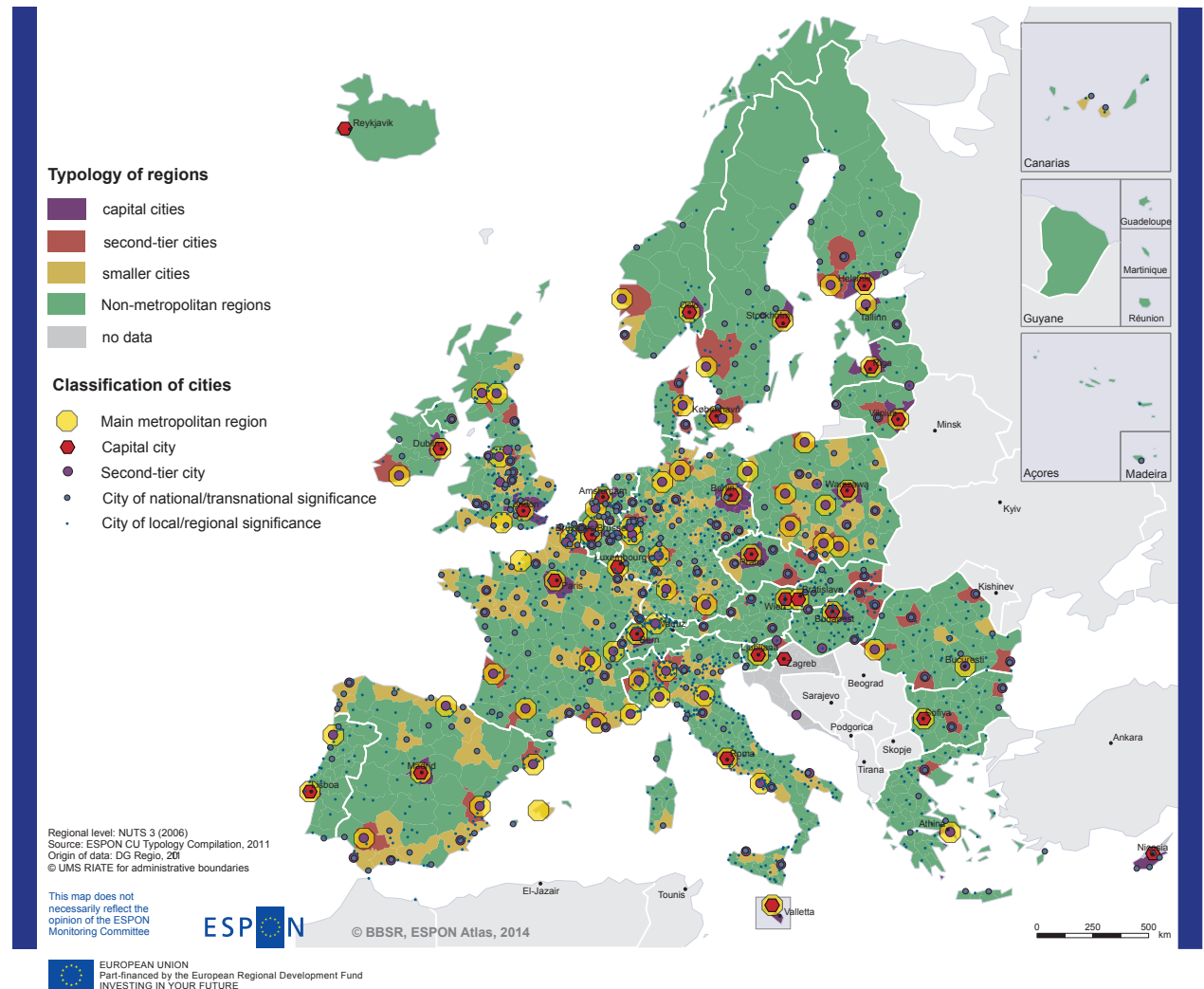


Table 1. Classification of cities / city regions

Typology	Category	Description
Function	Capital city	Capital cities are city regions enjoying primary status in a country, independent of their population size.
	Second-tier city	Second-tier cities are cities of varying population size that constitute the second level in the national urban hierarchy in each country.
Size	Metropoles/Metropolitan region	A metropolitan region is a city region with more than 250,000 inhabitants.
	City / City region	A city is a continuous built-up area with more than 50,000 inhabitants. Surrounding areas with significant out-commuting to that built-up area are considered part of its functional area.
	Town	A town is a continuous built-up area with between 5,000 and 50,000 inhabitants. Surrounding areas with significant out-commuting to that built-up area are considered part of its functional area.
	Very small towns	A very small town is a continuous built-up area with less than 5,000 inhabitants. Surrounding areas with significant out-commuting to that built-up area are considered part of its functional area.

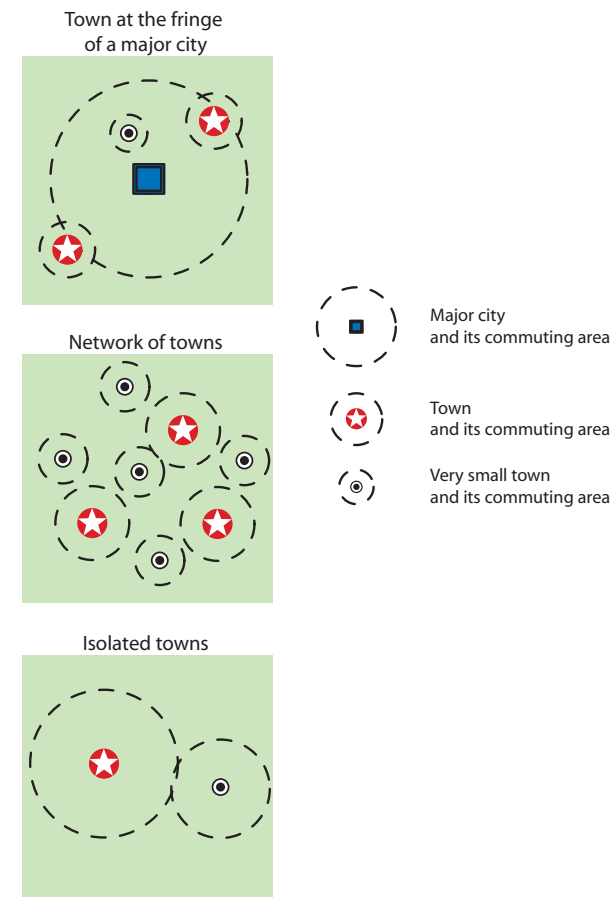
isolated towns function as growth poles in rural areas. They can be seen as sub-poles in the rural economic development or as public service provision centres for the wider area

ESPON can contribute to a European Urban Agenda.

The ESPON programme has developed a wealth of knowledge and evidence relating to the territorial dimension of the European urban fabric. This knowledge includes applied research and targeted analysis on urban agglomerations; territorial cooperation and governance; functional urban regions and metropolitan

networks; the role of cities in territorial development; cross-border polycentric metropolitan regions and city networks; secondary growth poles in various territorial contexts; and the functional role of small and medium sized towns. The purpose of this Territorial Observation is to gather together some of the key messages from a selection of ESPON projects that have dealt with different aspects of urban development and on the role of cities in territorial development including FOCI, TIGER, SGPTD, Third ESPON Synthesis Report, TOWN, BEST METROPOLISES, POLYCE, METROBORDER, GEOSPECTS, GREECO, ReRisk, SeGI, TIPSE and ECR2.

Figure 1. Three main types of towns



1 Executive Summary

Cities hold the key to overcoming many of Europe's challenges. Many opportunities emerge in cities, but they are also confronted with a number of challenges. Most are characterised by high economic and social diversity. They are the locus of economic activity and services, host the headquarters of most international and national enterprises, generate increased productivity and function as hubs for transport and trade. At the same time, social and environmental challenges are inevitably concentrated in cities.

New perceptions of polycentric development in Europe. The “Pentagon” identifies the main urban zone in Europe consisting of the urban areas of London, Paris, Milan, Berlin and Hamburg. This zone is characterised by a high concentration of people, wealth production and command functions. With the adoption of the European Spatial Development Perspective (ESDP), the policy orientation of developing multiple “counterweights to the Pentagon” around Europe was developed aiming at creating a polycentric urban fabric. Current patterns of polycentric development are not so much characterised by emerging “counterweights to the Pentagon” promoted at the European level but by metropolitan regions and cities across Europe concentrating innovation and economic and demographic growth. Polycentricity is therefore developed at the level of regions and countries. At these scales, small and medium sized towns can play a significant role in polycentric development.

European metropolises and cities are actors in a globalised economy. The largest cities are the locus of economic activity. London and Paris are Europe's most prominent global cities, hosting the headquarters of most international and national enterprises and high-level business services. Other capital cities,

such as Amsterdam, Zurich and Luxembourg host the headquarters of multinational financial companies, but also second-tier cities as Edinburgh and Munich are significant global players within specific sectors of activity, such as design, agro-food and oil and scientific activities, respectively. Additionally, their involvement in flows of goods and persons, positions them as major players in the international economy, especially with respect to air traffic. It is crucial to take full advantage of these cities' connections to international networks and of agglomeration economies in the largest European metropolitan regions. The key issue for a European urban policy is how to best ensure that regions, cities and towns from across the continent benefit from the assets of these global cities and large metropolitan region.

Reinforcing second-tier cities as the key to polycentric European urban fabric. Before the start of the economic crisis, capital cities in Europe concentrated the highest proportion of growth in relation to other cities. After the crisis, this pattern has been strengthened in a majority of European countries, even if there are some exceptions. However, in some countries, like in Germany, Austria, Italy, Belgium and Ireland, second tier cities outperformed their capital cities before the crisis. A more polycentric development of the European urban fabric can be achieved by strengthening second tier cities, and by promoting a more networked development of the system of European cities, at regional and continental level.

Distribution of urban functions are key to the balanced and sustainable development of European regions. Cities play an important role in regional development and as part of strategies to promote territorial cohesion. Cities are functional areas where population and

economic activities are concentrated and around which flows of goods and persons are organised. They are nodes in urban networks at different scales from the regional to the global. In both these respects, cities and towns of all sizes play important roles as drivers of territorial development.

Transport infrastructure a prerequisite for a new basis for cooperation between neighbouring cities. Large cities function as hubs for transportation. Hub-and-spoke models applied in the air transport industry have favoured a concentration of intercontinental traffic to a small number of hubs. At the same time, new low cost carriers have contributed to the development of air traffic in a number of smaller airports, especially around large urban agglomerations. High-speed rail connections have improved the interconnectedness of selected cities, especially in the most central parts of Europe, extending the range of mutually beneficial interactions. Urban development strategies should explore the combined assets of cities connected by fast and efficient transport infrastructures, rather than being designed in isolation.

Commuting patterns reveal regional economies. Job opportunities in capital and larger cities attract commuting flows from smaller cities of the wider metropolitan region. Reciprocal commuting flows from capital cities to other urban centres can also be observed. This reveals the development and existence of smaller regional job centres, in the wider metropolitan area of a core city. A polycentric development within a commuting area can therefore be supported, through the development of regional networking relations, enhancing the economic resilience of the metropolitan region as a whole.

Very small towns should not be neglected in urban policies. Very small towns with less than 5,000 inhabitants play an important role structuring the European territory, especially in rural and sparsely populated parts of Europe. The economic and social sustainability of these very small towns requires a sufficiently diversified labour market and targeted use of endogenous potentials e.g. to preserve their attractiveness for women and young people. Preserving public services at this level of the urban hierarchy is therefore an important component of policies to develop and exploit their economic potential. ICT connectivity may be able to improve service provision in some very small towns.

Cross-border metropolitan regions face specific challenges and opportunities. Cross-border metropolitan regions link national urban systems in some parts of Europe. This role of interface can generate a number of new opportunities and agglomeration economies. However, differences between wage levels and regulations on each side of national border can generate congestion and transaction costs. Coordinated actions across borders are needed to address these opportunities and challenges, and promote polycentric development in cross-border settings.

Cities contribute to smart growth. Research and innovation-related activities are concentrated in cities, as well as the creative industry. Cities and urban areas are important hubs for knowledge, research and innovation. Worldwide known universities and research institutions are concentrated in most capital cities, while second-tier cities across Europe are also well known for their research and innovation developments. Urban areas therefore attract different groups of population

and are places of global and European networks for education, research and innovation.

Green economy as a step to sustainable urban development. Environmental challenges are inevitably present in cities. Commuting, for example, raises a number of challenges regarding sustainability, as it results in congestion and air pollution. Urban areas can contribute to sustainable development. Greening economic sectors such as transport, energy and resource efficiency can be the starting point for more environmental-friendly solutions in combination to economic development. Environmentally friendly transport, energy solutions and waste management can help move towards this direction. They can become a part of international networks and national green economy commitment. These include not only commitments to reduce energy waste and emissions in the service institutions of the municipalities, but also to help the private sector to become more resource efficient.

Urban poverty and social exclusion need coherent approaches. Cities have an important role in overcoming many of Europe's social challenges. Urban poverty and social exclusion are present phenomena in all areas, irrespective of the economic development of a country. Although poverty is related to different issues, such as being deprived from covering basic needs, being unemployed or facing income poverty, social exclusion covers different aspects of the social life of people and refers rather to groups than individuals. The economic crisis of the last years has influenced to a different extent urban poverty and social exclusion in cities and regions in Europe, resulting among others in high unemployment rates. These phenomena often only concern some parts of cities. Actions and initiatives

towards social inclusion in Europe therefore need to be designed and implemented at a narrow scale, focusing on neighbourhoods within cities, to effectively promote a more inclusive future.

There are significant differences between Member States in the ways cities function and are governed. Cities are essentially concentrations of population and businesses, and provide economic, social and environmental added value insofar as they facilitate interactions. Fully exploiting this potential for interactions requires sufficient means of transportation and communication, which need to be cost-efficient and sustainable. While a number of European cities have made significant progress over recent years, many challenges still need to be addressed. European urban policies can contribute to the exchange of good practice, in terms of governance as well as of practical solutions.

A European Urban Agenda should promote territorial cooperation between metropolitan regions, cities and towns. Metropolitan regions, cities and towns, even very small towns today need to consider joining forces in order to increase their development opportunities and competitiveness. This model of cooperation is in principle relevant at all levels of the European urban fabric. The cooperation with neighbouring metropolitan regions, cities and towns is about exploring competitive advantages, enhancing agglomeration economies and together reaching a higher level of critical mass. Such cooperation needs dedication and drive in terms of governance and is particularly relevant in functional urban regions.

2 The role of European cities in economic development

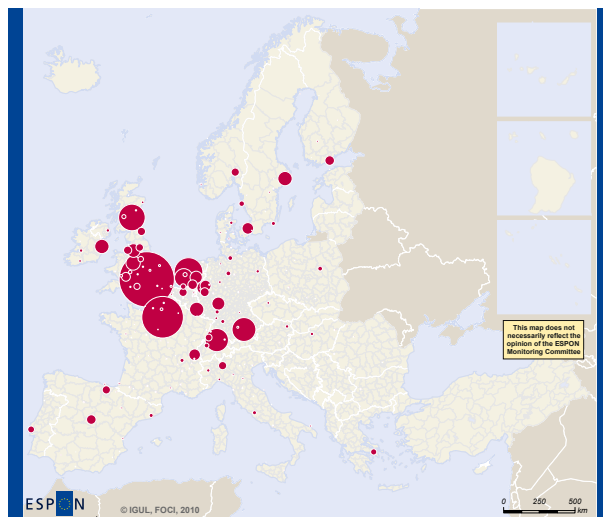
Cities contribute to the economic development of Europe in different respects and at different scales. Selected cities can host a large number of company headquarters and associated advanced business services that are well interlinked globally in terms of business networks

or ownership relations. At the national and regional levels, cities are the central places around which export-oriented production activities are organised, but also concentrate services and amenities of residential economies are organised.

2.1 Cities in a globalised economy

A limited number of European cities occupy prominent positions in global networks. They can play different roles in these networks (Map 2):

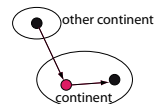
Map 2. Position of cities as intercontinental gatekeepers, representatives and platforms



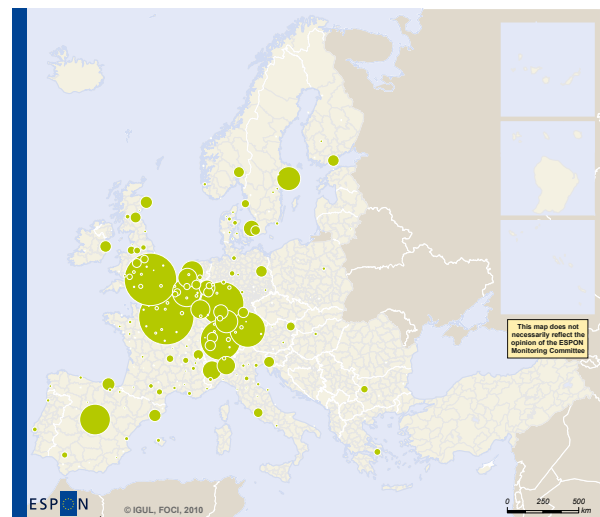
Total number of Intercontinental subsidiary links passing by the city to another European city:



* in the sample of the 600.000 direct or indirect subsidiaries in the world of the first 3.000 first worldwide multinational firms



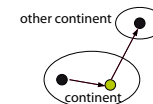
A. Gatekeeper



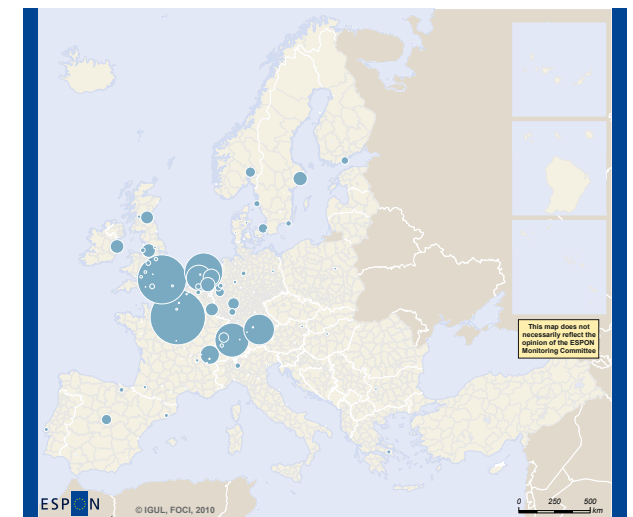
Total number of continental subsidiary links passing by the city to another city outside Europe:



* in the sample of the 600.000 direct or indirect subsidiaries in the world of the first 3.000 first worldwide multinational firms



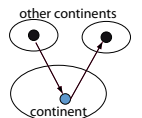
B. Representative



Total number of extracontinental subsidiary links passing by the city to another city outside Europe:



* in the sample of the 600.000 direct or indirect subsidiaries in the world of the first 3.000 first worldwide multinational firms



C. Platform

- Continental gatekeepers function as bridgeheads for extra-European multinational corporations. These companies' investments in Europe are channelled through "continental gatekeeper cities".

- Continental representatives are cities through which European companies invest in other parts of the world.

- International platforms have positioned themselves as intermediaries for extra-European multinational corporations investments outside of Europe.

2 The role of European cities in economic development

London and Paris are the two major European global cities. London is the most important “continental gatekeeper”. The city hosts the European headquarters of large North American and Asian companies. Paris occupies a less prominent role as “gatekeeper”, but is better integrated in intra-European company networks. Both London and Paris function as stepping stones for a number of banks, by hosting their main “continental representatives”. European banks’ overseas investment activities are largely concentrated in London.

Amsterdam, Edinburgh, Zurich, Luxembourg and Munich play a significant global role within specific sectors of activity. Amsterdam, Zurich and Luxembourg host the headquarters of a number of multinational financial companies. Edinburgh is the relay for investments in design, agro-food or oil all over Europe, while Munich is an important centre for scientific and technical activities in a number of sectors of activity as well as a within manufacturing.

“Continental gatekeepers” and “international platforms” are primarily capital cities. The most prominent European cities are concentrated in a core area stretching from the UK to Northern Italy. The participation of EU13 cities in these global networks remains very limited. “Continental representatives” are less concentrated in this core area, as capitals and second-tier cities in the North and South of

Europe, such as Stockholm, Oslo, Helsinki, Copenhagen, Lisbon, Madrid, Barcelona, Bilbao, Rome and Athens, have managed to position themselves as significant actors in this respect, i.e. as channels for inter-continental investments of national companies.

Trade flows increase the global importance of cities. Not only do cities participate in global networks, but also their involvement in flows of goods and persons positions them as players in the international economy. Goods and services need to be exchanged and cities are important hubs for this, as well as the access to these places. Airports are crucial linkages for global flows of goods of high value or goods that need to move quickly between different parts of the world, but also for the flows of people.

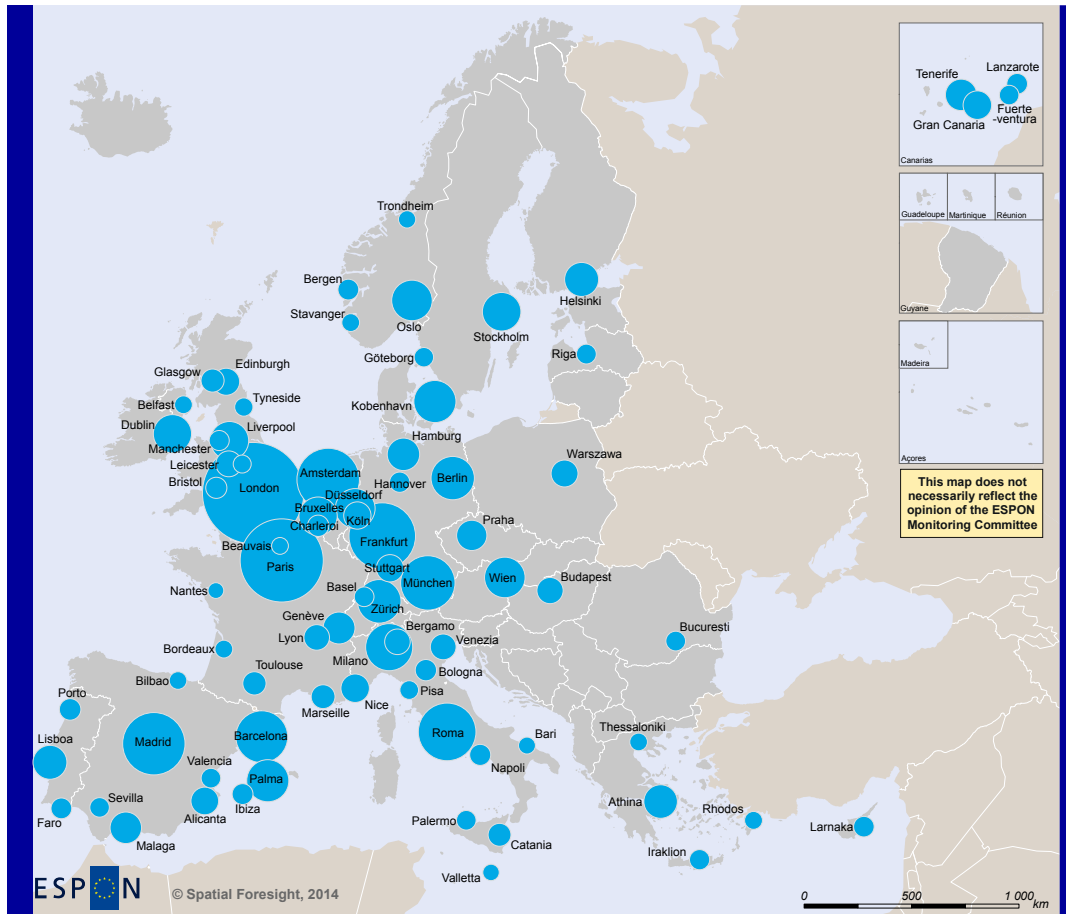
London, Paris, Frankfurt, Amsterdam, Madrid, Rome, Munich, Barcelona and Milan are the main air traffic hubs in Europe. These cities have the highest total air traffic (Map 3). London dominates the European air traffic, and is also the number one city for air traffic worldwide. London, Paris, Frankfurt and Amsterdam also dominate as far as intercontinental connections are concerned. Trends over the last decades indicate that they maintain their position, and that the highest growth in extra-European connections in terms of percentage share is observed in Munich, Vienna and Milan. Eastern European cities still have very few intercontinental air connections.

The highest relative growth in air traffic is observed in Eastern and Southern Europe. Between 1991 and 2008, air traffic has multiplied by three or more in most major cities of EU 13. A majority of cities in Italy, Spain, Greece and Cyprus have experienced the same intense growth in traffic.

The role of towns in global economic dynamics has received relatively less attention compared to metropolitan regions. Towns with an industrial profile are noted to be associated with lower growth rates through the 2000s. However, there is a wide variety of regional situations and types of towns, and some have managed to attract knowledge and creative activities, demonstrating a strong propensity to mobilise their local milieu and to innovate. These success stories should not be taken as a general model for the development of towns in a context of globalisation. Towns need models of growth and development that are different from those of larger cities, especially in relation to global economic dynamics. Policies to encourage enhanced cooperation across the urban hierarchy, with neighbouring towns and within the functional surroundings of each town are identified as key policy levers to enable a wider range of towns to be actors of their own development in a context of economic globalisation. Very small towns need to be considered as a component of such policies.

2 The role of European cities in economic development

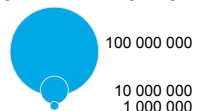
Map 3. Number of air passengers by city (2012), taking into account top 100 airports only



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Source: Wikipedia
© University of Geneva for administrative boundaries,
based on material from Eurostat GISCO, the GADM database and the EEA

Number of passenger in Europe's 100 first airports synthesised by city



2.2 The role of cities in national growth and resilience to crises

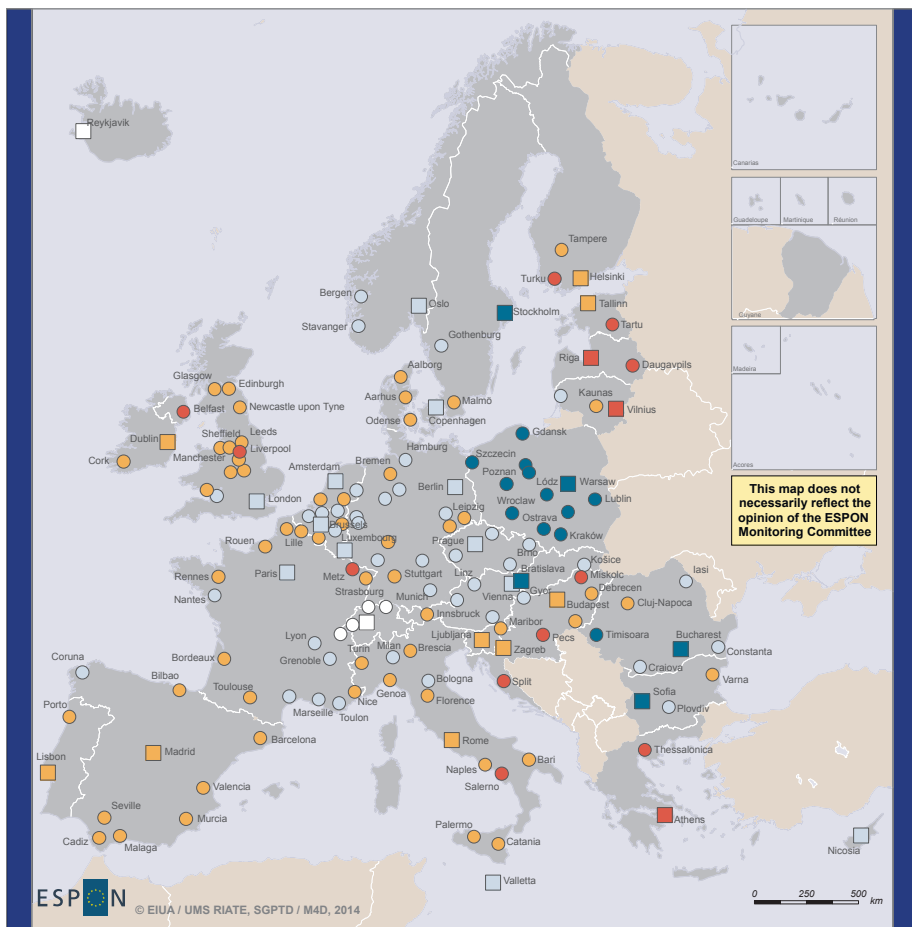
Cities structure national economies. They are decision-making centres, but also areas that attract productive activities seeking to benefit from high agglomeration economies and easy access to markets. Identifying the relative contribution of cities of different sizes to national economic growth helps to inform European urban policies.

Capital cities concentrated a higher proportion of growth than other cities before the financial crisis. If one compares the relative proportions of economic growth between 2001 and 2011 in capital city regions, second tier city region, other metropolitan regions and remaining regions, one notes that more than one third of growth as concentrated in the capital region in 19 countries. Capital city contributions to growth are particularly important in Estonia, Ireland, Latvia, Hungary and Bulgaria. Among the remaining 10 countries (excluding Croatia and countries with only one region, such as Luxembourg and Cyprus) one finds countries that have strong secondary cities (Spain and Italy, but also France, the Netherlands and Poland), relatively weak capital cities (Germany and, to a lesser extent Switzerland) or a strong contribution of non-urban regions to growth (Slovakia, Norway and Romania).

After the financial crisis, contrasted patterns can be observed across Europe. In a number of countries, capital city regions have maintained a relatively higher contribution to growth than most second-tier cities between

2 The role of European cities in economic development

Map 4. Growth rates in capitals and second-tier cities in 2007-2011

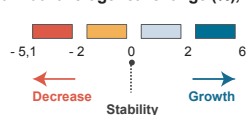


2007 and 2011 (Map 4). This primarily concerns Romania and Bulgaria and Slovakia, but also Sweden, Denmark, and the United Kingdom. At the other end of the scale, in Lithuania, the Vilnius region has performed markedly worse than the two second-tier cities of Kaunas and Klaipeda. It can also be noted that growth levels for second-tier cities are homogenous in some countries, e.g. Poland and Spain, thereby reflecting national economic processes rather than local or regional individual growth dynamics. The more contrasted patterns of other countries (e.g. Lithuania, Hungary) reflect more specifically urban dynamics.

Lyon – French second tier city growing faster than Paris

Lyon, France's second city with about two million people has been innovative in sectors like planning and governance and urban services. It has implemented large scale urban projects and been successful in research and development policies as well as international promotion. Its GDP per capita is second only to Paris and it is better connected than other second tier cities in France, in part because of the high-speed railway connection. It has a good reputation for its professional training schools, engineering schools and universities and is well positioned at the national level for innovation. Its economy is relatively strong with strengths in sectors such as bio-tech, medical sciences, logistics, textiles and chemicals. This diversity has contributed to its resilience to the current crisis.

Total GDP in Euros
annual average real change (%), 2007-2011



Type of city

- Capital City
- Second Tier City

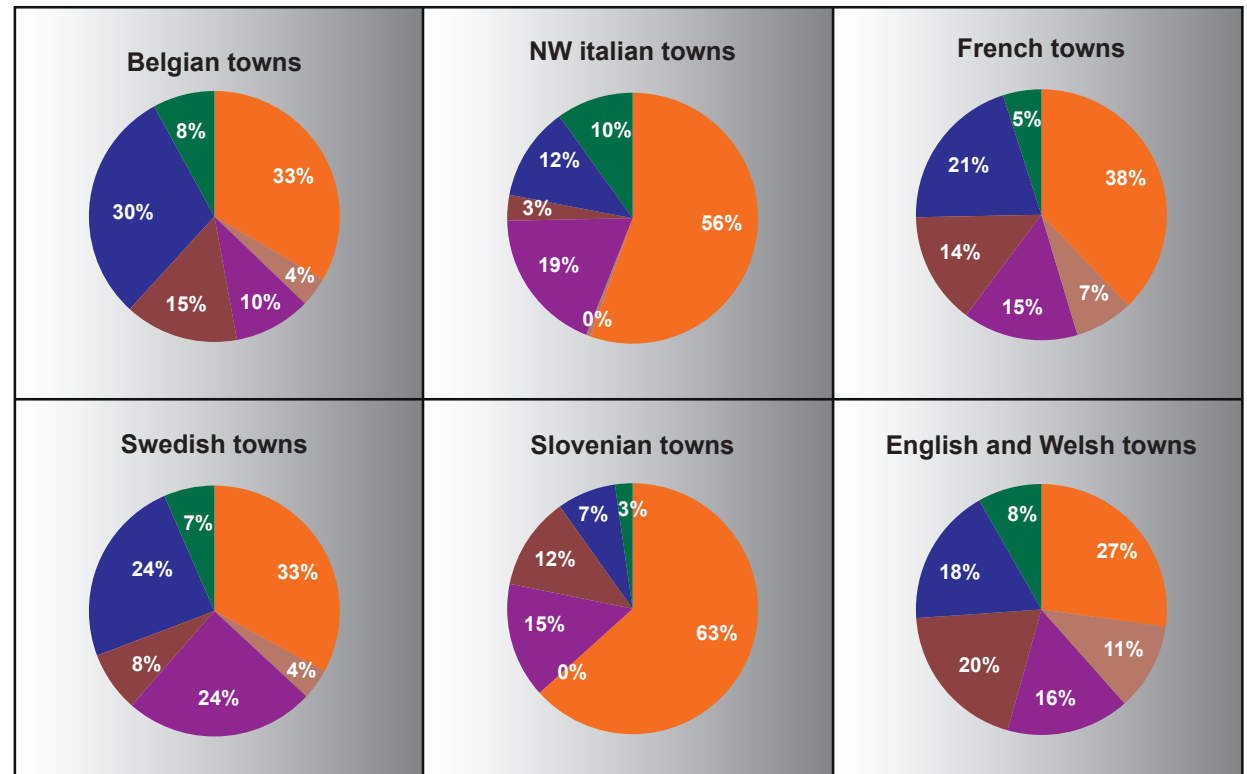
□ No data

Tampere – The fastest growing region in Finland.

Tampere is Finland's second biggest city. During the last century it was characterized by high unemployment, reaching up to 24%, however, since the beginning of its process of improving its economic prospects, the city has been gradually transforming. The service sector has become more important but manufacturing also remains strong partly due to the emergence of knowledge-intensive industries like ICT and partly due to the renewal of more traditional industries like engineering. The public sector remains the largest sector but many of the jobs are knowledge-intensive because of the two universities, the University Hospital and other educational and research institutes. In recent years Tampere city-region has been among the fastest growing sub-regions in Finland. And it has a very favourable image based on increase of jobs, central location and good connections, and the cultural amenities of the city. The economic recessions of early and late 2000s have challenged Tampere's industries again. But so far it has been able to cope with continuous change.

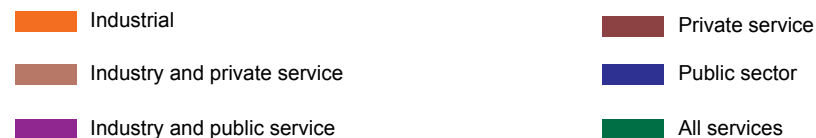
Towns have very diverse economic functions. The contribution of towns to national economic growth is partly determined by their economic profiles. These can be very different depending on the country or region considered, as illustrated by the economic profiles of towns in Belgium, North West Italy, France, Sweden, Slovenia, England and Wales (Figure 2). In North-West Italy, Slovenia and, to a lesser extent Sweden, towns are typically industrial towns. Such towns generally produce goods for export, which implies that they need to maintain their competitiveness in the face of global competition and are exposed to market fluctuations and

Figure 2. Economic profiles of towns



Source : TOWN settlement-based dataset

Type of economic profile



2 The role of European cities in economic development

economic crises. Public services occupy a prominent position in the economic profiles of 50% of towns in Sweden and Belgium, 40% in France, England/Wales in Italy and 25% in Slovenia. This reflects the extent to which they function as nodes for the delivery of these services, often as a result of public strategies to ensure proximity to public service provision facilities. Except in England/Wales, the shares of towns where private services occupy a prominent position are markedly lower. The majority of towns are therefore not considered as attractive locations for the supply of private services; they tend to concentrate in larger cities.

Very small towns that constitute an independent labour market tend to have even more specialised economic profile. This can be a challenge for their long-term viability, as the lack of diversity makes them less resilient to external shocks and may create an environment that is considered less attractive e.g. by women and younger people. Pro-active policies are therefore needed to maintain a diversified labour market, e.g. by ensuring that public service provision is maintained at this level at the urban hierarchy.

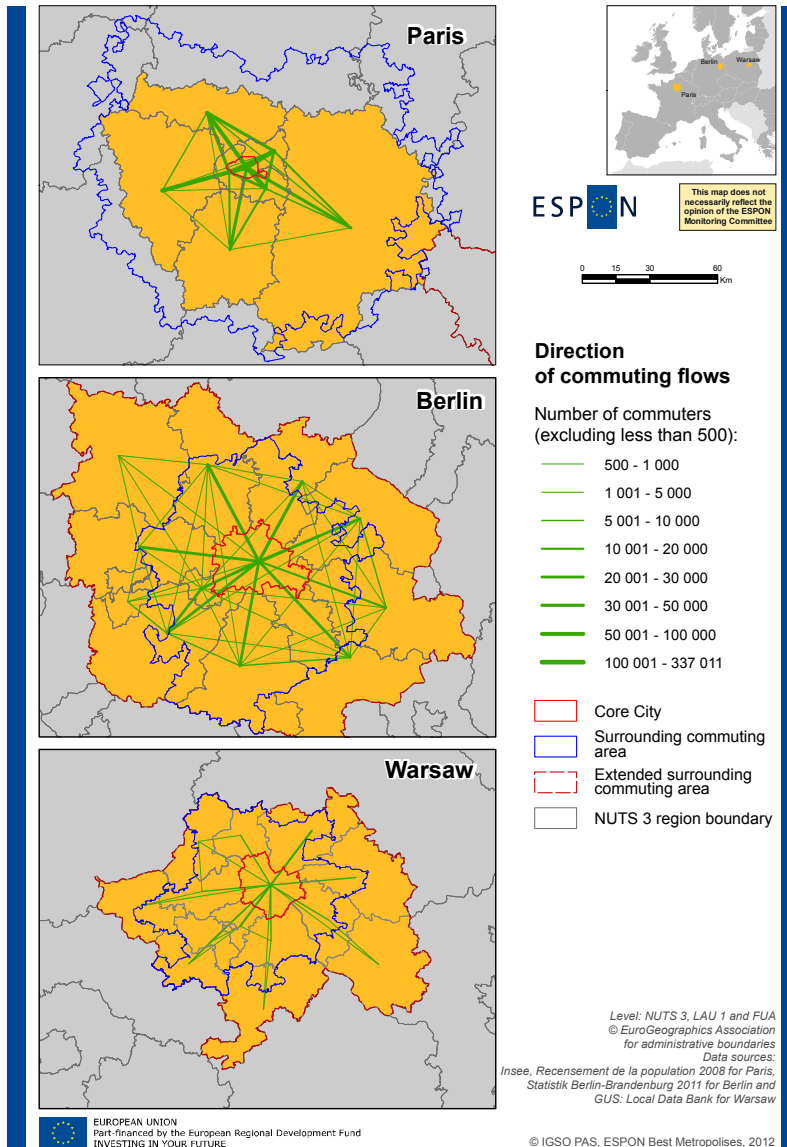
2.3 Urban commuting patterns structuring regional economies

Cities structure regional economies in a variety of ways. Cities in most countries in Europe are characterised by more and better employment opportunities. As a result of continued demographic concentrations in the largest cities, volumes of daily commuters either to the capital city or to a bigger neighbouring urban areas increase. Such commuting flows can be observed in different directions and are attributes of different types of cities.

Commuting patterns in metropolitan regions are influenced by the quality of transport infrastructure.

The comparison of Paris, Berlin and Warsaw illustrates different patterns of commuting in metropolitan areas (Map 5). In these capital cities, the majority of jobs are concentrated in the metropolitan city centres. However, the commuting patterns differ as regards their size, their direction and variety. The commuting flows in Berlin reveal a polycentric pattern. More than 100,000 people from smaller urban centres located in different parts around the Berlin functional area commute daily either to the core city of Berlin or to neighbouring regional urban centres. These flows between regional centres are not as intense as those in direction of the core city, but are nonetheless quite significant. By comparison, commuting patterns in Warsaw following a core-periphery pattern with more limited flows. Less than 20,000 commuters travel to the core city of Warsaw from surrounding areas. Flows between the smaller neighbouring urban centres concern less than 5,000 commuters. This is mainly due to the lack of good and effective individual and public multimodal transport connections between the various parts of the metropolitan area, in comparison to Berlin.

Map 5. Commuting patterns around Berlin and Warsaw



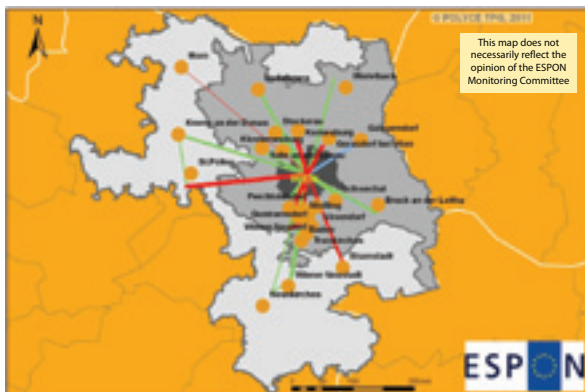
Commuting patterns can also reveal the extent of polycentric development in metropolitan regions.

Four main types of situations can be observed in this respect. A first type is characterised by high reciprocal commuting flows between the core city and neighbouring urban centres. This shows that many regional economic centres generate attractive jobs also for workers living in the core city and reflects a highly polycentric dynamic, e.g. in Vienna (Map 6). The second type concerns the combination of few reciprocal commuting flows from the core city to regional economic centres of the functional metropolitan area, with the presence of commuting flows between regional urban centres. Prague represents this second type. Although the majority of the flows are oriented to / from Prague, a few secondary regional centres manage to attract external works, showing a limited degree of polycentricity (Map 7). The third type of commuting patterns combines highly reciprocal flows between a few regional centres, combined with monocentric flows in direction to the core city. Budapest is an example of this polycentric pattern, restricted to some centres in the surrounding region (Map 8). Cities belonging to the last type are characterised by strong monocentric commuting flows in direction of the core city. This is typically the case in Bratislava, where reciprocity levels are low for all flows in direction of the core city, and for almost all flows between regional centres (Map 9). Higher levels of polycentricity can contribute to reduce congestion. It can also enhance economic resilience, as different nodes implement autonomous develop strategies and generate economic activities with different profiles.

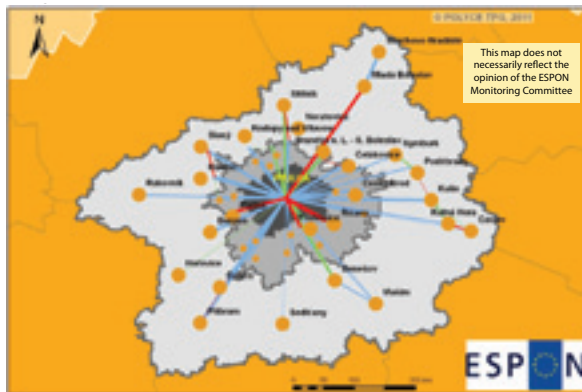
2 The role of European cities in economic development

Maps 6-9. Hierarchical and reciprocal commuting

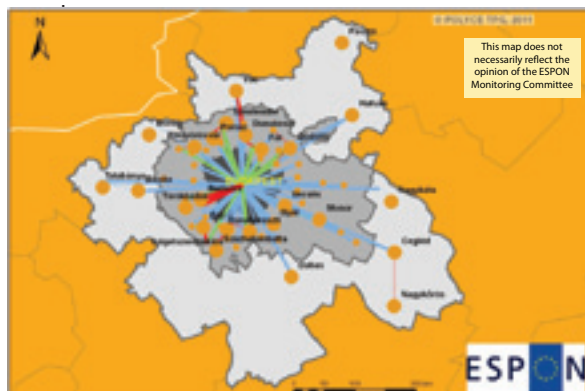
6. Vienna



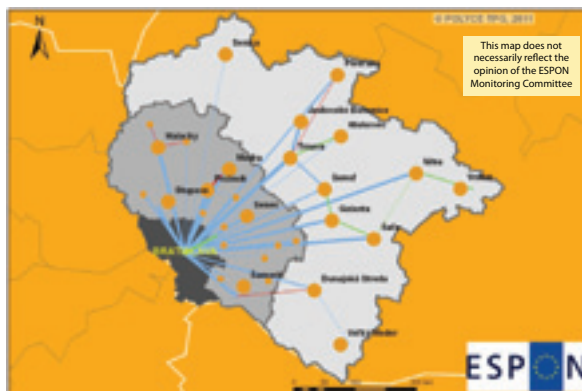
7. Prague



8. Budapest



9. Bratislava



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Regional centres (number of jobs)
● 1000 - 3000
● > 3000

■ City centre
■ Commuting area
■ Metropolitan region

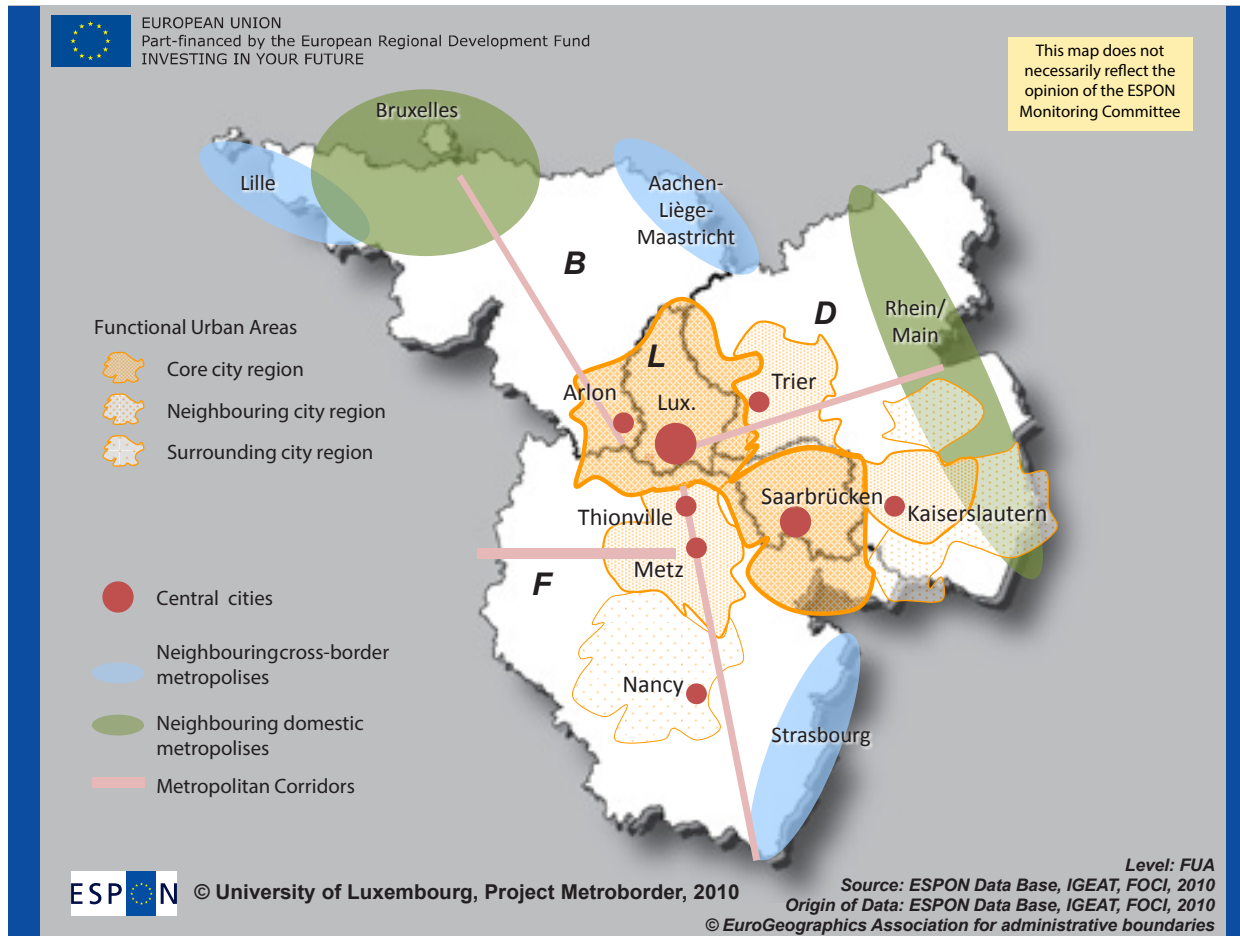
<p>Number of commuters (reciprocity > 65%)</p> <p>— 200-500 — 501-1000 — 1001-3000 — > 3000</p>	<p>Number of commuters (reciprocity 35-65%)</p> <p>— 200-500 — 501-1000 — 1001-3000 — > 3000</p>	<p>Number of commuters (reciprocity < 35%)</p> <p>— 200-500 — 501-1000 — 1001-3000 — > 3000</p>
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Cities providing services to businesses and citizens.

Cities on the one hand concentrate business services companies. On the other hand, services of general interest and other services targeting the population also tend to locate in cities. This is especially the case for specialised services. These specialised services will then cater for the needs of the inhabitants of the city as well as of those of surrounding regions.

Networks of towns and isolated towns are also providers of services to the population. Maintaining a diversified and high quality service provision at this level of the urban hierarchy helps preserving the quality of life in these towns and their rural surroundings, and contributes to improve the resilience of their labour markets. Improved transport infrastructure and increased mobility exposes many service providers in towns from competition from larger cities. Maintaining balanced service provision can therefore also be a challenge in towns.

Map 10. Greater Region cross-border polycentric metropolitan region project



The challenge of polycentric urban development in a cross-border metropolitan context

The greater region is presented as a functional polycentric system, which can be used as a basis for the overall functioning of the region. This cross-border institutional cooperation is located between Luxembourg, Lorraine (France), Wallonia (Belgium), Saarland and Rhineland-Palatinate (Germany) (Map 10). A number of factors have created high labour mobility flows, directed from smaller neighbouring urban centres, such as Thionville, Arlon, Trier and Longwy to the core and metropolitan region of Luxembourg (ca. 126.500 workers in 2006). To a lesser extent (ca. 20.000 workers in 2006) commute towards Saarbrücken. Reasons for commuting are larger differentials in terms of attractive job opportunities in Luxembourg when compared to neighbouring regions, the linguistic and cultural similarities between the regions, the proximity of the national borders and the good transport connections, which link secondary neighbouring urban centres with Luxembourg. Another motivation for commuting is the significantly cheaper housing market in the neighbouring cities than in Luxembourg. The border plays then a twofold role: the role of attractor and the role of barrier. On the one hand it attracts commuters, who try to reduce their commuting time and cost to their place of work and tend to locate their place of residence near the border. On the other hand, it is a barrier, as settling in Luxembourg generally presupposes that one is employed there. The promotion of polycentric development in a cross-border metropolitan context therefore requires pro-active public policies coordinated across national borders to succeed.

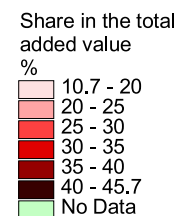
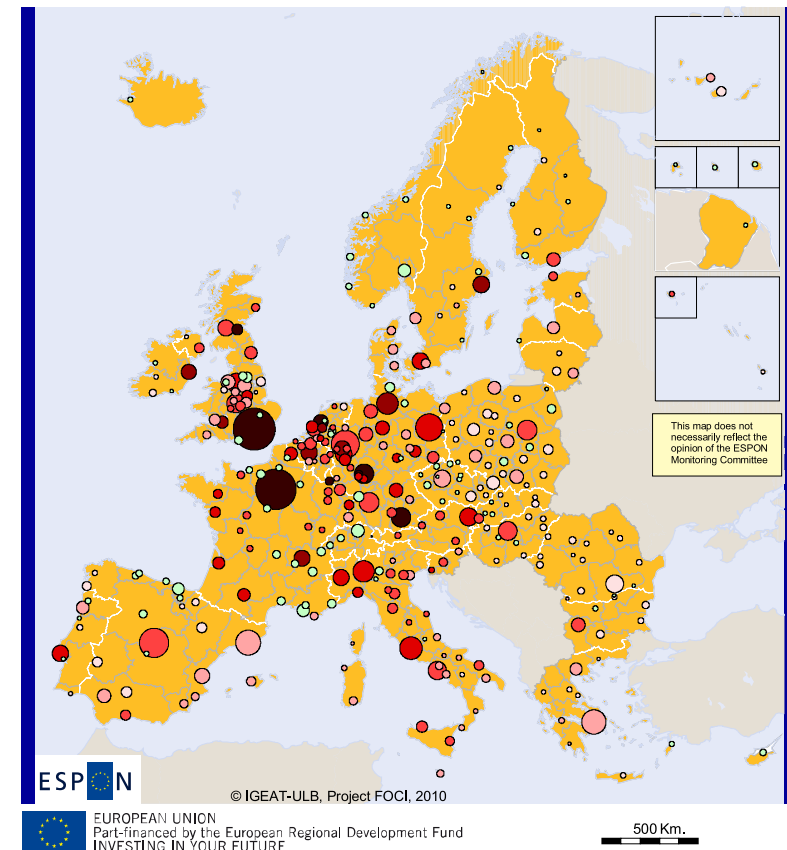
3 Cities as providers of services

3.1 High-level business services

High-level business services (including finance and real estate) require the labour markets and networks of large cities to thrive. Furthermore they seek proximity to company headquarters, which are among their main clients and tend to be concentrated in metropolitan regions. Proportion of high-level business services, finance and real estate are more present in largest metropolitan regions of Western Europe. More than 40% of added-value is generated in these services in Paris, London, Amsterdam, Frankfurt and Munich (Map 11). Luxembourg and Edinburgh can boast equivalent figures. This reflects the capacity of some cities to position themselves in these activities in spite of their more limited size. Similarly, Lyon, Hamburg, Stockholm and Bristol also have employment rates in advanced services in GDP exceeding 35%. By contrast, rates of employment in these sectors are significantly lower in southern and eastern parts of Europe, even in the capital cities and largest metropolitan regions.

These differences in terms of high-level business services reflect a distinct hierarchy between European cities. The major financial centres (London, Paris, Amsterdam and Frankfurt) constitute a category of their own. It is strategically important for other cities and regions to be well connected to these cities, so as to benefit from the expertise, services and networks of the service providers they host.

Map 11. Shares of GDP in advanced services, estimated from NUTS 3 values



Source : EU 27 : Eurostat regional accounts, 2009
Norway and Switzerland : no data

© EuroGeographics Association for the administrative boundaries

Within many cities, the challenge is to arrive at an appropriate balance between advanced business services and other specialised services, on the one hand, and the more common services that provide for the needs to citizens, on the other. In major metropolitan regions, a concentration of high added value, specialised services may for example increase real estate prices and the cost of living, and therefore reduce their attractiveness for employees working in other sectors.

3.2 The role of cities in research and innovation

Cities contributing to smart growth. Knowledge and innovation are key development factors in today's world, and this is reflected in the "smart growth" objective of the Europe 2020 strategy. "Smart growth" requires "smart places", i.e. territories that are able highly qualified researchers and entrepreneurs capable of creating competitive economic activities on the basis of new ideas and technologies. Many of these "smart places" are, and will be, in cities, because opportunities for interaction grow exponentially with concentrations of people, economic activities and research organisations and higher education institutions. ESPON has also identified a number of successful attempts of small towns and cities to transform their traditional local economic structures and develop as 'smart' small places by attracting knowledge and creative activities. These examples demonstrate that such strategies can be pursued by all urban areas, irrespective of their size.

However, the complex nature and variety of this sector and the rarity of these success stories suggests that the "creative economy" should not be considered as a "development mantra" for cities and towns at all levels of the urban hierarchy. Evidence suggests that, while research and innovation based development should be envisaged as a possibility in all territories, transforming this into a general model would create a focus on the limitations of small towns and cities rather than on their opportunities.

Innovation and research centres concentrate in limited number of cities, but access to knowledge can be promoted at all levels of the urban fabric. The higher ratios of R&D expenditure compared to GDP reflect urban areas' superior endowment with research facilities and their attractiveness to students and highly qualified researchers. The main nodes of global and European networks of knowledge and innovation are also in cities. Within the group of cities with advanced R&D activities, capital cities and second-tier cities have the highest scores. However, this group also includes a number of smaller cities (e.g. Grenoble in France, Luleå in Sweden and Cambridge in the United Kingdom). Analyses of research networks confirm that there is a continued strong hierarchical differentiation of cities, with only a few specialised smaller cities that manage to position themselves with selected R&D niches. However, case studies also show that innovativeness depends on the capacity to connect with appropriate research and development milieus and to adopt new solutions. It

generally does not presuppose an extensive local research institutions and facilities. These observations can guide a strategy to promote knowledge-based development in Europe's cities, small towns and cities and very small towns.

Munich – a model city for knowledge-based economic development. Munich is one of the most illustrative cases of a second-tier city generating strong growth and economic development based on close co-operation and networking between universities and research institutes, the public and the private sectors. Evidence shows that, even in a city of this size, pro-active knowledge-based economic development requires that public actors follow processes and intervene when necessary. For example, in the biomedical sector, public support is crucial since venture capitalists are reluctant to invest in small enterprises which take time to prove the marketability of a particular product. The advantage of a big city such as Munich is that it has a diverse economy and many economically competitive sectors. This makes it possible to spread the risks. Munich has also benefited from a decentralised system of governance has provided state and city governments with the financial means to intervene when needed, and from support from federal German technology policies.

Higher education institutions are a component of urban development strategies. Higher education institutions have traditionally been located in capital cities and second tier cities, as well as in selected other cities such as Cambridge and Oxford in the United Kingdom or Heidelberg and Tübingen in Germany. Increasingly, higher education institutions have been established in a wider range of cities, reflecting large growth in proportions of youth attending graduate and post-graduate education over the last 50 years and as part of urban and regional development strategies. These higher education institutions can enhance the local economy, by providing workplaces, young graduates to local companies and research activities. However, ensuring that higher education institutions work together with local economic interests proves challenging, as these actors have different time horizons and priorities. Public policies to facilitate their dialogue and identify shared strategic objectives are needed.

Timisoara: One of Romania's educational centres.

Timisoara is one of Romania's second tier cities. It is also one of the most successful growth poles and important educational and cultural centre. Because of its complex history it has a cosmopolitan population. Despite suffering from extensive economic restructuring following the introduction of a market economy after 1989 turmoil, Timisoara has since attracted a substantial amount of foreign investment. Today, it is an engine of growth for the Romanian West Region and effectively its regional capital. Government investments in higher education facilities have helped boosting Timisoara's competitive advantage. The government funds its eight universities, 32 research institutes and a forthcoming skills centre. Many students stay after graduating because the cost of living and a comparably high quality of life. This adds to the human capital and provides local firms with highly skilled labour, while also adding to the vibrancy of city life.

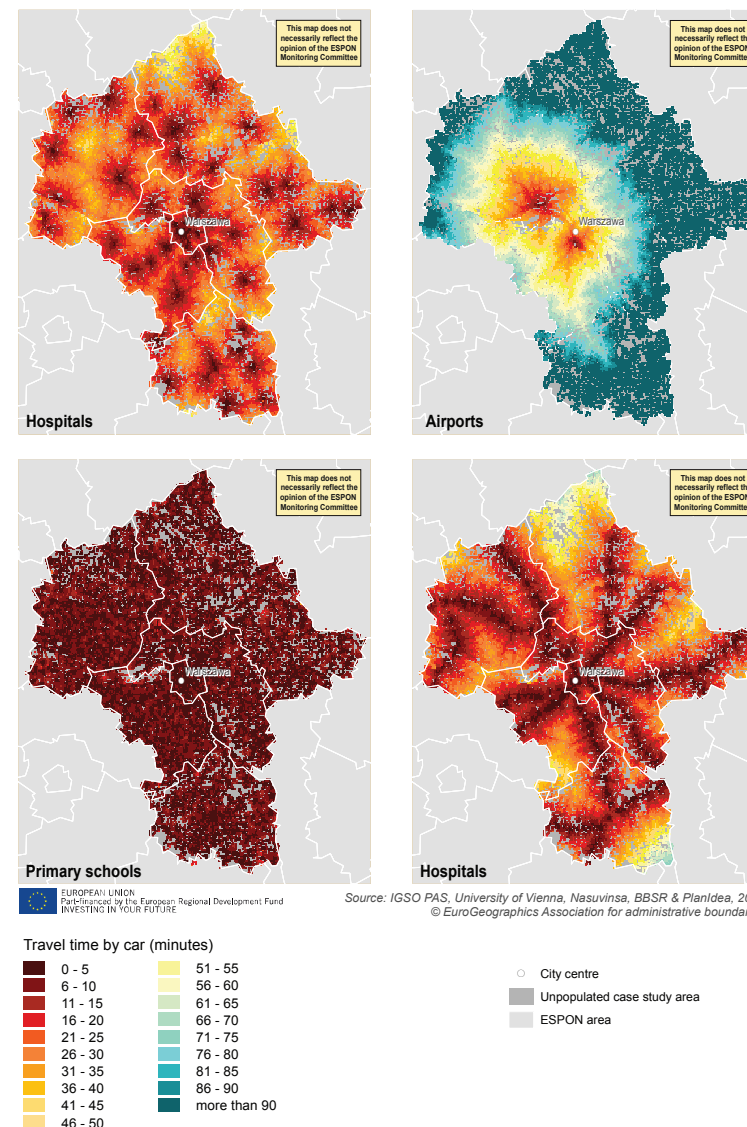
3.3 The organisation of service provision in cities

Urban areas concentrate services. Generic services, which are used very frequently by a large group of people, e.g. services related to childcare or basic health services, need to be provided locally, as close to the users as possible. Highly specialised services, which are used less frequently and by fewer people, e.g. international airports, hospitals and universities show more centralised territorial patterns. The challenge for cities is to provide adequate access to all types of services of general interest.

Provision of services in the region of Mazowieckie.

The access to selected services in the region of Warsaw (Mazowieckie) illustrates how access to more or less common services can be mapped (Map 12). More generic services such as primary schools are evenly spread all over the region. Almost no part of it is located more than 15 minutes travel time from a primary school. Hospitals can be found in a number of medium-sized towns. In the case of Mazowieckie, these towns with hospitals are quite evenly spread out. Therefore, even if there are significant differences in accessibility between these towns and surrounding rural areas, few areas have very long travel times to the nearest hospital. Railways structure the region in corridors of high accessibility converging towards the capital city of Warsaw. Access to airports clearly creates a strong contrast between centre and periphery, as it is mainly concentrated around the two airports of the capital city of Warsaw.

Map 12. Accessibility to primary schools, hospital beds, railway stations, airports Mazowieckie region, Poland



4 Challenges in European urban areas

Cities are not only places of opportunities, but also places where challenges occur and solutions for them can be found. High greenhouse gas concentrations, climate change effects, soil sealing and natural hazards challenge the sustainability of urban areas. Commuting for example, raises a number of challenges in terms of long-term sustainability, while urban poverty and social exclusion are present phenomena in urban areas, irrespective of the economic development of a country.

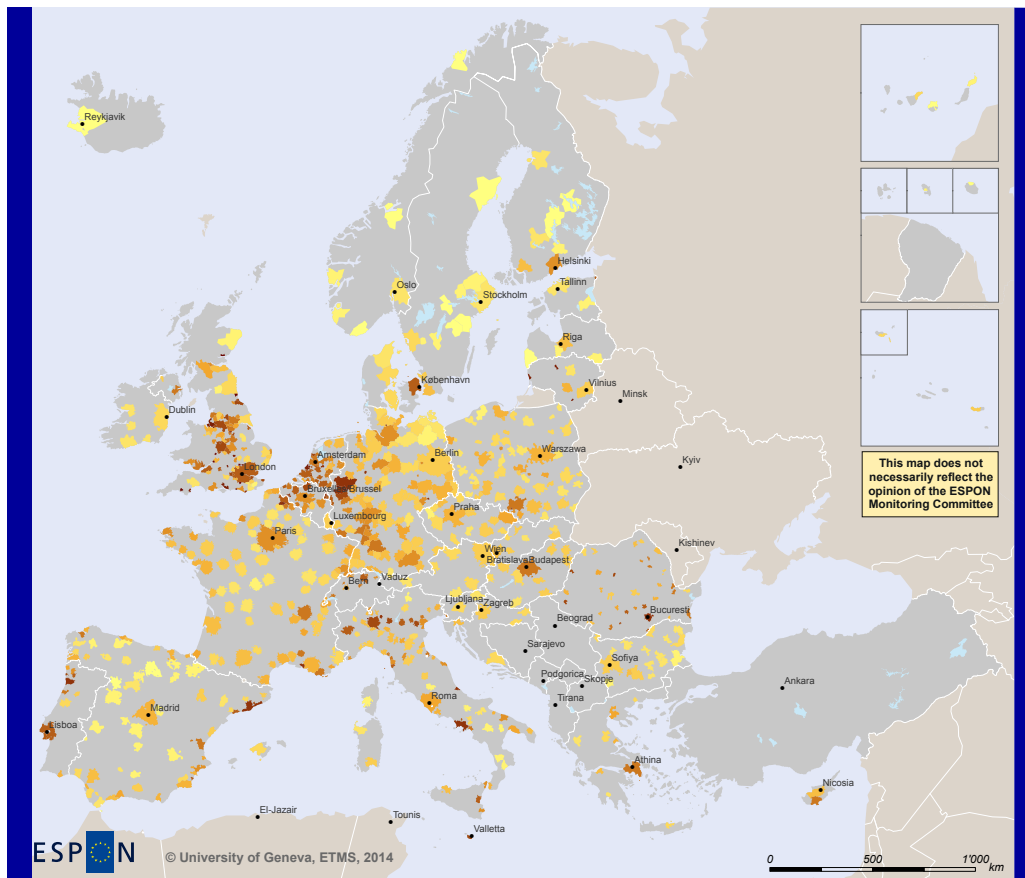
4.1 Addressing urban challenges of sustainable development

Achieving sustainable growth, which aims at a resource efficient, greener and more competitive economy is one of the objectives of the Europe 2020 Strategy. Urban areas can be part of the solution in this respect, as more energy-efficient forms of housing and transport are easier to implement in high-density areas. However, because of these concentrations of economic activities and population, cities also face a series of environmental challenges

Limiting soil sealing is a major challenge for a number of European cities. Ecological soil functions are severely impaired in sealed areas, e.g. soil working as a buffer and filter system or as a carbon sink. In addition, extensive soil sealing changes water flow patterns and contributes to the fragmentation of habitats. Urban sprawl is one of the main factors of soil sealing in Europe, as built-up areas and transport infrastructure are allowed to expand

without giving proper consideration to the efficiency of land-use. The highest levels of soil sealing tend to be found in Europe's most populated and dense cities. The concept of "compact cities" has been promoted for decades to try to preserve open spaces also in urban areas. Currently, in a belt stretching from the West Midlands to the German Ruhr area, and including parts of Belgium and the Netherlands, a large proportion of the territory is covered by urban areas with high degrees of soil sealing. This densely populated part of Europe is therefore particularly exposed to soil sealing associated vulnerabilities and risks (Map 13). In southern Europe, cities such as Lisbon, Barcelona, Milan and Naples display a striking combination of a large geographic extent and a high degree of soil sealing. By comparison, Madrid, Marseilles, Rome and Sofia provide examples of alternative forms of urban development are possible. Addressing soil sealing does not necessarily presuppose setting limits development, but rather implies a promotion of smart planning. For example, brownfields and other types of abandoned areas can be reused.

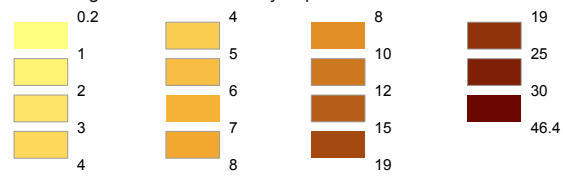
Map 13. Levels of soil sealing in European cities



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Regional level: LUZ
Source: EEA
© University of Geneva for administrative boundaries,
based on material from Eurostat GISCO, the GADM database and the EEA

Percentage of area covered by impervious materials in cities



Cities are major actors in the transition to green economy.

Actions towards a greener economy can be taken at different levels. Cities can become part of national green economy commitment arrangements and international networks, and through voluntary commitments to increase energy efficiency and use of renewable energy sources on their territories. Such commitments include measures to encourage the private sector in implementing greener solutions. Last but not least, cities have a crucial role in greening the transport sector. Reducing the energy-intensiveness and oil dependency of this sector is possible through increased efforts to develop public modes of transport. Such efforts are easier to implement in cities than in other parts of Europe.

Greening the waste and energy sectors through the Industrial Symbiosis.

The municipality of Kalundborg in Denmark supports the ‘industrial symbiosis’, according to which waste products from the production plants serve as inputs in other plants. The industrial symbiosis is built as a network cooperation between seven companies and the municipality of Kalundborg’s technical department. The projects concern recycling of water, transfer of energy and recycling of waste products between the independent symbiosis partners. It developed as a “bottom-up” initiative in an attempt to exert good management practice and to improve environmental performance. Kalundborg is characterised by large processing industries situated within relatively short distances. The industries are diverse, not competing and in a situation where they have been able to utilise each other’s by-products and waste materials. The location of the power plant in Kalundborg has further strengthened the opportunities for exchanges, notably in terms of the energy savings in the network, and the connection to the district heating system of the town. Consequently, the power plant is a key to a number of energy, water and by-product exchanges.

4.2 Urban poverty

Poverty and social exclusion are not recent phenomena in urban areas all over Europe. Some cities have been affected to a different extent than others, depending on the type of city, the region and member state. Remote areas, for example, tend to exhibit relatively high at risk of poverty rates, while island regions tend to have higher at risk of poverty rates. Looking at different indicators, poverty and social exclusion can be defined in different ways: Being severely materially deprived, living in a jobless household or household with very low work intensity and facing income poverty, i.e. living in a household with an “equivalised disposable income” (i.e. adjusted for the size and composition of households) below the at risk of poverty threshold set at 60% of the national median equivalised disposable income are some of the definitions.

Capital cities have lower average ‘at risk of poverty’ rates than second-tier and smaller cities.

Considering countries for which ‘at risk of poverty’ rates are available at the regional level, the ‘at risk of poverty’ rates in capital cities are higher than in secondary-cities only in Slovakia, Germany and Hungary (Figure 3). In countries affected mostly by the economic crisis, such as Greece, Spain, Portugal and Ireland, the situation in the capital cities is better than in second-tier and smaller cities. In Austria, Belgium and Hungary the highest rates are in the smaller cities, while in Romania, Portugal and Greece, they are the highest in predominantly rural areas.

4.3 Social exclusion and unemployment in cities

Although poverty or relative poverty is usually specified in terms of income (or access to / consumption of material resources below a minimum acceptable level) social exclusion is a more complex and multi-faceted concept. It usually tends to characterise groups instead of individuals and it is not only related to income, but also to inclusion within various aspects of society.

Social exclusion in urban areas is approached different across Europe.

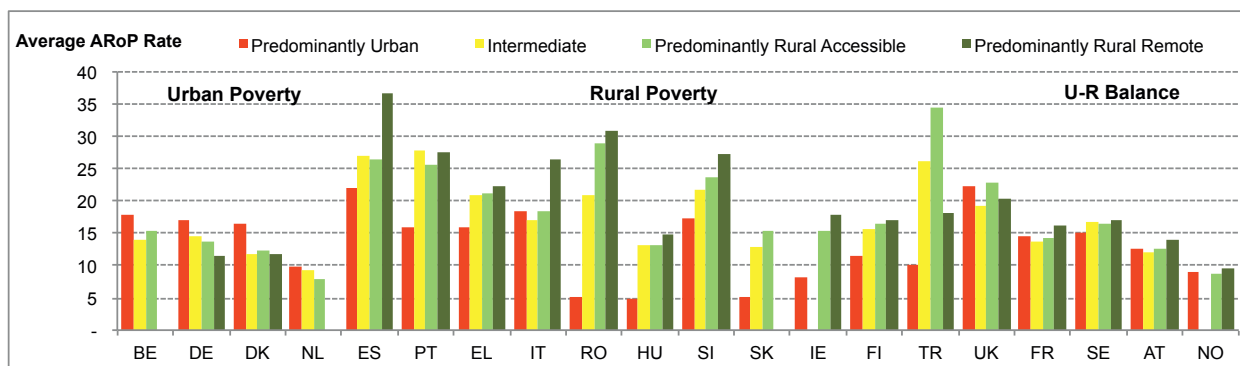
Poverty can be a cause of social exclusion, but the latter may affect groups which are not necessarily in poverty. Social exclusion is more related to social, economic and political aspects, seen differently across countries in Europe. Denmark, for instance, pays particular attention to housing and household structures, the Baltic States focus rather on labour market inclusion, while in the

Mediterranean countries several indicators relate social exclusion to “earning a living”, access to services and the social environment. Different population groups feel excluded due to their religion, political beliefs, heritage, or due to social consequences, such as long-term unemployment.

Unemployment is a significant risk factor that may lead to poverty and social exclusion.

The lack of paid work can push a household into poverty and exclude people from social benefits. The levels of unemployment in Europe have severely increased since the crisis and a big amount of working-age population groups are unemployed, especially in the crisis countries, as Greece, Spain and Portugal. Unemployment can therefore constitute a threat to social cohesion in all types of cities in Europe. In 2012, around 17% of the people in Europe were officially recognised to be at risk of poverty or social exclusion.

Figure 3. ‘At risk of poverty’ rate by type of city



Source: ESPON TIPSE Project

Spatially differentiated rise of unemployment leads to social exclusion in Porto. The socio-economic polarisation of the city of Porto becomes evident. The historic centre, the eastern district of Campanhã and the social housing neighbourhoods are significantly more affected by unemployment than the western districts. In this context, the correlation between unemployment rates, educational attainment and housing conditions need to be taken into account as factors of social exclusion. However, since the economic crisis, it has become evident that higher educational levels do not guarantee protection against precarious employment. This is particularly obvious for younger population groups. Especially within social housing neighbourhoods, an accumulation of different forms of poverty and social exclusion can be observed, which makes their requalification and opening to one of the most important factors for combating poverty and social exclusion.

Europe 2020 Strategy as a response to at risk of poverty and social exclusion in the European Union. Poverty and social exclusion are social phenomena that affect urban areas all over Europe and not only cities and regions in countries hit by the economic crisis of the last years. There are population groups in urban regions of prosperous countries, which face social exclusion phenomena, similar to those of less prosperous countries. Poverty can also be visible in urban areas which are not necessarily affected by the crisis. The Europe 2020 strategy underlines the need to foster inclusive growth in the European Union. Actions and initiatives towards social inclusion in Europe therefore need to be designed and implemented at a narrow scale, focusing on neighbourhoods and areas within cities, to effectively promote a more inclusive future.



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ESPON shall support Cohesion Policy development with European-wide comparable information, evidence, analyses and scenarios on framework conditions for the development of regions, cities and larger territories. In doing so, it shall facilitate the mobilisation of territorial capital and development opportunities, contributing to improving European

competitiveness, to the widening and deepening of European territorial cooperation and to a sustainable and balanced development.

The Managing Authority responsible for the ESPON 2013 Programme is the Ministry of Sustainable Development and Infrastructures of Luxembourg.

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