

FOCI

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Introduction

"In this economy we need to pay particular attention to our cities. They are challenges and key to solutions at the same time. Challenges, because they waste a lot of energy and resources and generate up to 70% of all CO2 emissions and are often places where problems of social exclusion and poverty accumulate. Solutions, because they offer vast possibilities for innovation and integration, and their compact structure gives a huge potential to save energy. With over 70% of Europeans living in cities we need to focus on a smart and sustainable urban policy."

Johannes Hahn, Commissioner for Regional Policy
"The Future of Cohesion Policy", Speaking points - Press Conference on the
5th Cohesion Report, Brussels, 10th November 2010

Interest in cities is growing again in Europe. Theories of "growth poles" forgotten since the 1960s re-emerge, although in different form, without the idea of building new cities in the desert. Metropolitanisation, although sometimes difficult to grasp empirically, is recognized as a post-fordist phenomena, with a gain of the importance of large cities, linked to the increasing need for size-based agglomeration effect in the global, networked knowledge economy. And European policy makers are once again discussing the need of and the form for new urban policies at European (as witnessed by the above quote), but also at national scale.

From the outset, this project has had two, complementary, but not always easily reconcilable orientations: provide a broad overview of the current and future issues relevant to urban development in all of Europe, advance scientifically beyond the established and well-known data and analyses, provide innovative research. As this report was elaborated in parallel to the new State of European Cities report to be published by DG Regio, we also aimed at complementarity with that report, not wanting to repeat the same analyses based on the same data.

In this project, we, therefore, worked in three parallel strands. First, all teams went through the current literature to extract the knowledge about trends, perspectives and, most importantly, driving forces for urban development in their thematic fields. Second, each of the teams focused on one or two innovative empirical research questions, generally tapping new data sources. Finally, our scenario team has taken the work of the other teams, and substantially augmented it through additional literature review, aiming at covering an even larger horizon and to provide a complete knowledge base on urban development, necessary for integrated prospective thinking. On this basis the scenarios were developed. The structure of the report reflects these three strands, adding a fourth, new strand, which consists in an assessment of the current national policy visions on urban issues across Europe. Details of all the literature reviews and analyses are presented in the scientific report.

Cities as objects of study: a general review of the state and perspectives of cities based on the scientific literature

Introduction

Urbanisation has been a secular process shaping the European settlement structure heterogeneously in time and space, so that the present, synchronic observation reveals a patchwork of quite different situations, reflecting both the various phases of the process and the geographic and historical peculiarities of the areas concerned.

We intend here to show, based on the current literature, what have been the major trends of urban development in recent years as well as the geographical differences at macro-regional scale in these trends.

Evolving demographic and spatial structures of cities

The demography of cities – especially when not considering the biggest ones – is very much in accordance with the regional and national trends in which they are embedded.

However, cities in general – at least beyond a certain level of the urban hierarchy – have a specific position in the migratory process. They attract young populations (students, young active and foreign immigrants) and expulse older active (active adult's households with children, old active people, and young pensioners). According to the position of the cities in the urban hierarchy, this process occurs at the different scales: major cities such as London or Paris and many other capital cities play this role at the national and growingly at the international level (migration of wealthy pensioners to coastal Spain for example); at a lower hierarchical level, cities may play this role at the regional level; for the small cities, this process could be reduced to the suburbanization process which is of course also taking place in the bigger cities.

Concerning intra-urban dynamics, the huge scientific literature is structured around two major paradigms, strongly related to the social and territorial cohesion: suburbanisation and gentrification.

Considered at intra-regional scale, the long-term “urbanisation cycle” started a long time ago with a phase called “urbanisation phase”, driven by rural-urban migrations and industrialisation. It was followed by the “suburbanisation phase”, mainly after WWII, during which the suburbs of agglomerations grew faster than the core areas. During the third phase, suburbanization has intensified and has sometimes been called counter-urbanization, a process mainly observed in the most urbanized and dense parts of Europe. In this phase, the shifts take place to the urban periphery and beyond towards the small and medium-sized towns of less urbanised metropolitan surroundings, while the core areas loose more people and jobs than the suburbs gain. The last phase is generally one of re-urbanisation, driven by revitalisation policies of inner cities and socio-cultural evolutions. In the present period, suburbanisation trends are still very topical in southern and Eastern Europe, while re-urbanisation is progressing in the cities along an axis stretching from northern England to northern Italy where core cities often show higher population growth than suburban areas. However, even in this part of Europe, it does not necessarily mean the slowing down of suburbanization process, notably in terms of land use.

The demographic results of the current intra-urban migratory movements can be synthesized as follows:

1. A younger population in the city centres, especially in the most central areas where a gentrification process has taken place;
2. A higher share of active households with children in the suburban areas. These middle class populations are the most concerned by the urban sprawl process through suburbanization;
3. Poor immigrants – new comers as well as the second or third generation of ancient immigration – are concentrated in some specific areas of the cities. Two types of geographical structures can be observed regarding the location of immigrant in the cities: concentrations near to the centres (case in Belgium, Germany, UK...) or in specific parts of the suburbs (France, Mediterranean countries).

Given the current age structure, demographic evolutions are well predictable at the European, national and regional level. The number of European regions where population will stagnate and then decline will be growing. The ageing process, which will generally be slower in large cities than elsewhere, will generate growing demand for health care and other services.

Within this context migratory trends are much more unpredictable. For Western Europe as a whole, the question is whether, in the context of the crisis, the extra-European immigration will continue in the next years. However, we may suppose that the most attractive countries for immigration, except for family reunification, will not be the same as in the last decades because most of these countries have been more severely hit by the crisis (Spain, Greece, Ireland and, to a lesser extent, the UK).

Cities as focal points of economic growth

Literature on the economic development of cities is generally based on approximations by NUTS 3 or even NUTS 2 regions. Thus, most of the information available is very similar to general analyses on regional economic development. We will not, therefore, relate here the many studies on regional development across Europe (see, for example, the ESPON 2006 projects 3.3 and 3.4.2, but also the many studies elaborated for DG Regio), but we will look at the implications for cities of the general regional development literature. In a second step, we focus on some of the urban specificities in terms of economic development, notably their insertion as nodes into international economic networks, and the economic relationship to their hinterland.

Urban competitiveness

Competitiveness is one of the fundamental notions in European policy making, as witnessed by the Europe 2020 strategy. In its territorial form, as regional or urban competitiveness, it has been the main focal point of attention of territorial development policy discussions, even though the concept is contested (see chapter 4 of the scientific report for a more in-depth discussion of the issues).

Cities as regions

In first approximation, we build on existing work about regional competitiveness to see the implication for cities. ESPON 3.4.2 identified nine “key drivers of competitive performance” at regional scale. On that basis, we assess what levers exist for cities to influence them (table 1).

It is important to note, however, that all the factors discussed in the table only play on one side of the economic equation: supply-side. While even on these issues national forms of economic regulations are important, national demand-side policies such as social redistribution and more generally, the distribution of revenues between labour and capital play a major role in explaining the economic evolution of regions and of cities.

Even at the city-level, however, it is necessary to go beyond the competitive supply-side approach. Big cities are large autonomous entities in economic terms. The largest part of their economies concern untradable services. Progresses made in these sectors have the same impacts on cities' economies than those catering to external markets. The relationship between external competitiveness and global economic performances of a city is a complex question, however: in line with the economic base theory many theorists insist on the fact that the competitive specialized segments of the economies play a leading role in explaining global performances.

Driver	Levers at city level
Economic diversity / specialisation	The mix of activities in a city is difficult (and some would argue even dangerous) to steer politically. State-aid rules have reduced the ability of public authorities to lead industrial policies. The literature can show some success stories of cluster-oriented policies, but there are just as many failures, and factors of success can often only be identified a posteriori, making the formulation of clear policy recommendations difficult, as path dependency seems to play an important role here.
Human capital	The main lever concerning human capital is the general education system, and with the exception of a few city-states, this is not the competency of city level governance structures. Cities may attract better qualified people, for example through housing policies, but such approaches are generally to the detriment of other, more fragile parts of the population. Moving up a scale, attractiveness policies of one city might lead to the loss of population in another city or area, thus instigating a zero-sum game which higher governance levels have to be aware of.
Connectivity / accessibility	Connectivity at European and national scale is generally not decided at city-level, except of cities lobbying transportation and network companies. More local and regional connectivity can, however, often be influenced at the city level and can constitute an important factor of the integration of a hinterland, the capture of human resources, etc. Risks of backwashing have to be taken into account, though.
Quality of life	This is probably one of the main factors relevant at city level. Cities can influence many factors of quality of life, be it the build and natural environment, mobility within the city, urban aesthetics, accessibility to services, etc. How much this factor actually influences competitiveness remains an open question. Ideas on the attraction of a creative class have been seriously questioned by many empirical analyses.
Innovation / Creativity	Cities that have the ability to invest in higher education and research can attempt to create the necessary momentum for launching specific research clusters. However, as already mentioned in the part on specialisation, the literature cannot at this stage identify a priori the factors determining success or failure of such attempts, as path dependency seems to play an important role.
Strategy / Vision / Mobilisation / Inclusion	On these two issues, strategy and mobilisation of actors on common projects, city governments can play a role as mediator and as animator of such visions. How much of this can actually create economic dynamics, instead of being more a consequence of it, is not clear from the literature.
Synergy / Proximity / Milieu	Issues of synergy or "milieu" are also highly path dependant and the literature is not clear on how governance can influence the creation of these characteristics. No recipe exists as these factors are highly place-specific.
Implementa- tion capability	The governance capability is an important factor, and one that seems to play an important role, notably in central and eastern Europe. The capability of a city to influence any of the above factors depends on the competencies of its civil servants in the relevant fields and in their capacity for integrated and strategic planning. Here cities obviously have a role to play in the education of their employees and the maintenance of institutional knowledge.

Table 1. The relevance of the city level for different factors of competitiveness

Urban specificities

However, urban competitiveness cannot exactly be assimilated to regional competitiveness and we need to better understand cities' specificities. Cities are the result of agglomeration effects, with different types of externalities relevant to location:

- **Localisation economies**, i.e. marshallian or industrial districts or clusters.
- **Activity-complex economies**, i.e. subcontracting and supply networks.
- **Urbanisation economies**, i.e. linked to the general availability and diversity of resources in a location with high density of different activities

In this logic, the two first types of economies are not specific to cities, but can also be found in non urban districts. It is, thus, the third type of externalities which seems a particular advantage of urban agglomerations, and more so of the larger ones. However, exactly how these externalities come to play and interact and what might be critical quantitative thresholds for different elements is not known, again making the concept difficult to operationalise. This is also the conclusion of the ESPON Priority 2 project CAEE on agglomeration economies which highlights the many intangible factors and the multiscale character of economic processes.

At the same time, congestion effects may play a counter effect to agglomeration. To a large extent, these congestion effects are related to quality of life (pollution, insecurity, cost of commuting...). However, we do not really know whether or not there are certain thresholds of urban concentration which lead to a decrease in economic performance.

Future perspectives

Future perspectives for the economic development of cities depend mostly on the way crisis exit of the EU and the global economy. This will have fundamental impacts on how cities and their respective roles will evolve. However, the necessary knowledge about this crisis exit will only be available in several years.

A major element for the short-term, however, is the fiscal crisis faced by many cities. This will seriously decrease the room for manoeuvre of policies. Again, the extent and duration of this crisis will depend on the crisis exit strategies developed at European and national scales.

BOX 1: The growing importance of networks in the context of globalization (see Chapter 8.1 of the Scientific report for more details and literature references)

In the context of globalization, it is argued that the prosperity of cities and the dynamics of urban systems depend upon the level of connections of urban nodes to multiple networks as well as upon changes taking place within the networks. Networks generate cumulative effects on specific nodes and poles. In this logic, the centrality of cities in the global economic networks constitutes an important component of urban competitiveness. For example, multinational firms are supposed to confer power to cities not only through their locations but also through their connectiveness. Global centrality thus clearly denotes a positive local urban resource, and worldwide networks provide crucial resources for urban development.

Conversely, systems of cities form a set of resources for multinational firms. Cities allow multinational firms to connect and to take advantage of inter-firm and social networks, thanks to spatial proximity to other agents and to some organized sets of agents, while reducing transaction costs, fostering access to the networks, and increasing transactional mutual values. In addition, local intra-urban interactions increase the effective weight of inter-urban linkages, because they improve their efficiency. Local interactions between multinational firms consist in different levels of involvement in local networks: subcontracting, industrial or technological strategic alliances, access to markets, use of a skilled workforce and local know-how, use of services, institutions, infrastructures.

In parallel, research networks also are considered as revealing potential capacities of cities to invest in future technological and economical development. The relative position of cities in such networks can be considered a proxy of their ability to enter the next cycle of innovation through the established linkages between research centers and high tech start-ups, not only at local level (as implied in the concept of cluster) but within the whole global economic space. The position in research networks appears somehow as a pre-figuration of the position of cities in the early process of adoption of future innovation.

When looking at the functional relationships between urban entities (macro-scale), it appears that the emergence of this new paradigm materialised by the networking of metropolitan areas at wider distances and its superposition to the traditional Christallerian urban hierarchy, occurred earlier in the regions of the European pentagon (London-Paris-Milan-Munich- Hamburg) than elsewhere. This evolution reached more recently the metropolitan areas of the southern and eastern peripheries, where multifunctional networking is less intense and advanced.

Networking activities as already observed at macro-scale between metropolitan areas under the influence of multinational firms, have also emerged, from the 1980s onwards, at intra-regional scale, between metropolitan areas and the surrounding medium-sized and small towns as well as between medium-size towns themselves in a number of less urbanised regions. In numerous cases, they are publicly driven. Networking activities at intra-regional scale are more common in Western Europe than in Central and Eastern Europe, where the growth of metropolitan areas often induces of a backwash effect on the metropolitan hinterlands.

Cities as motors of growth for their hinterlands, their countries and Europe

(see section chapters 9.1 and 9.2 of the scientific report for more details and literature references)

Metropolisation processes defined as the concentration of functions related to the generation and processing of information, handling capital flows and ensuring attractive location criteria for the headquarters of huge transnational corporations in selected metropolitan centres, coupled with the emergence of global and continental systems of cities, can have serious consequences for regional and local systems. Many authors have put forward the hypothesis that the regional hinterland is no longer needed by metropolises as it does not offer the resources that are necessary for metropolitan development, and is therefore undergoing a relative marginalisation, while the differences in the development level between the metropolis and its regional surroundings are increasing.

More differentiated hypotheses about the evolution of the city-hinterland relationships exist. Certain authors see flows of services occurring in a two-level structure. The first such level is made up of global cities, for which the factor of distance does not play any considerable role, while the second relates to the national system of cities and shows the existence of a hierarchical structure in which distance adversely affects mutual interactions. Others reveal a difference between metropolises based to some extent on their position in the network of large cities. This is especially important in the case of capital cities that are far more globally connected (i.e. London, Paris, Amsterdam) than other regional cities (i.e. Stuttgart, Milan). In general, the higher the position of the city, the smaller the significance of ties with regional surroundings for development processes of the metropolis. Furthermore, the regional surroundings seem to have a greater significance in the provision of simple resources: low-processed goods, low-skilled workforce, services which do not require skilled staff or generally accessible information about information rather than processed resources.

To sum up, some differences between cases might be observed depending on city size and its function as well as the economic potential of regional hinterland. One should also have in mind that city-region relations are very complex and strongly depend on the regional and national context.

We may expect different development prospects in metropolitan macroregions that follow two general models. In a polarisation and diffusion development model assuming an increase in developmental disparities between the metropolis and the surrounding region a growing depopulation of peripheral rural areas is the most likely. This trend can be reversed based on the local resources or investments to disseminate the scale of the metropolis' development. In another, complementary model associated a high degree of socio-economic similarity across the whole metropolitan macroregion, regions will function as a whole. Another

probable scenario envisages the emergence of a polycentric metropolitan area which may foster development processes across the region.

A growing social polarization

(See chapter 3.1 of the scientific report for more details and literature references)

It seems clear that in the last decades, social polarization (understood here as income disparities) has increased in nearly all rich countries, including the new member states of the EU after the collapse of communism. However, the intensity and the timing of this trend are very different from one country to another.

Because of the lack of comparable data across European cities, there is no systematic empirical assessment of these trends at the city level in Europe. However, many authors argue that this trend has been particularly dramatic in the global cities, whatever the driving forces behind this process. The box "Trends in social polarization in European cities in the introduction to chapter 3 of the scientific report presents an overview of case studies found in the literature.

The drivers of polarization

From the scientific literature, we identify several major driving forces for social polarization in the city.

The economic and labour market driving forces of social polarization in the city

- growing demand for highly skilled labour (professionalization process)
- growing demand for low qualified personal services in low unionized, female, precarious and part-time jobs
- new political form of economic regulation to restore the profit rate which has been possible because of new power relations between capital and work in a period of structural underemployment.

The socio-demographic evolutions and the impact of real estate

- three major driving forces in the socio-demographic field:
 - household composition, with a general tendency of household size to decrease and the share of single-person households to increase
 - international immigration which concentrates in the cities and particularly the biggest ones
 - intra-urban migrations which play a major role in the socio-spatial polarization process, notably through suburbanization and gentrification
- increase of socio-spatial polarization in cities

- house prices, linked to gentrification and suburbanisation

Political driving forces

- state level welfare policies and redistribution
- public policies at the city level:
 - social housing system: While Scandinavian or Dutch cities are less spatially polarized because of their high level of social housing, it is not the case for Belgian or French cities, where housing market is nearly entirely privatized.
 - economic development policies: These policies often favour the attraction of high-level services and qualified jobs, thus reinforcing the already existing polarisation tendencies on the labour market.
 - place-based policies: Some authors doubt that these policies really have an impact on the poor populations of the deprived neighbourhoods which are targeted, but rather that they are simply forced to move elsewhere, mainly through rising housing costs.

Future perspectives

What can we expect in the future according to these major trends and their driving forces?

- The crisis has changed the conditions in the past few years. It is thus very difficult to tell whether social polarization processes will continue in the near future, while it is certain that the crisis will intensify social exclusion.
- According to socio-spatial polarization, we believe that its geographic reshaping – if not its intensity – will continue in the future. This mainly concerns “urban renewal” or “gentrification”, often resulting in negative consequences for the most deprived populations.
- One of the main questions, in line with the literature, concerns the apparent decoupling between social cohesion indicators and economic evolutions. This would mean that, having reached such a high development level, social cohesion in European cities is no more related to pure economic wealth of the population.

Cities concentrating emissions and pollution

(for more details and literature references see chapters 3.1-3.3 of the scientific report)

In order to approach the state of the environment in Europe's cities the classical approach of environmental vectors seems most adequate for an ESPON project. Relevant vectors to study are air, noise, waste and land, with energy an additional or underlying factor. Many efforts exist, notably by the European Environmental Agency, to analyse the situation along these vectors in Europe, including from an urban perspective.

Air

Despite the progress made in controlling local air pollution, urban areas show increasing signs of environmental stress and air quality is one of the major concerns. PM10, ozone NO2 and SO2 all remain very significant health concerns for many urban residents in Europe. Bad air quality seriously increased respiratory and cardiovascular diseases, in particular with young children or elderly people. These health effects are also linked to high economic losses in form of higher costs for medical treatments and losses for employers for sick workers.

Any actual reductions of emissions have resulted from implementing different policies targeted at specific point sources (e.g. industries), changing fuel types, or regulations for best technologies. However, emissions from transport are still increasing.

Noise

Noise is another environmental issue indirectly related to city form. More than 47 millions people (i.e. 52% of the population living in cities with more than 250 000 inhabitants) are exposed to daily road noise levels exceeding 55 dB Lden (the lower benchmark settled by the Environmental Noise Directive). 33,7 million people are exposed to levels exceeding 50 dB Lnight which has been identified as a dangerous threshold by the World Health Organisation.

Waste

One of the targets set in the 5th Environment Action Programme (EAP) was to reduce the generation of municipal waste per capita per year to the average 1985 EU level of 300kg by the year 2000 and then stabilise it at that level. The target was far from ever being reached and was not repeated in the 6th EAP. The average amount of municipal waste generated per capita per year in many western European countries still exceeds 550kg. Municipal waste generation rates in new Member States are lower than in western European countries.

Land

The spatial dimension of city development is a key component of land sustainability and has a strong influence on other environmental aspects. As such, land consumption, and the form of land take can be seen as an important driver for at least some of the other vectors.

European cities have been growing in the last 50 years at different pace with marked regional differences. For example Eastern countries inherited a more compact structure from the central planning system and until mid 90's they did not start a process of clear expansion of lower dense urban areas. However, some general trends can be identified: increased homogenisation of the landscape, most of the new development is on previous agricultural land, and more and more urban development is decoupled from demography extending to the outskirts of the core city. Some measures have already been taken to limit urban development and sprawl in some countries (e.g. Germany) although it is expected that this trend will continue at lower pace. See the tables in chapter 3.2 of the scientific report for more details.

Future perspectives

The main drivers for the observed environmental trends in European cities are:

1. **Positive:** Good land use planning, implementation of policies related to health and air quality, environment consciousness
2. **Negative:** Land prices in a free market can't be controlled and can determine to a great extent where and how cities are developed; cheap energy; poor public transport; consumption.
3. **Possibly both:** tourism, consumption, car ownership.

BOX 3 : The impact of urban structure on economic, social, environmental performance

(see the section "Is urban form relevant for the environment" at the end of chapter 1.2 of the scientific report for literature references)

Concerns about environmental problems in cities include a more general question about the relevance of urban form and design for resource-efficiency, focussed at least in two aspects: land and energy consumption, but also social aspects.

Urban form and transport

Public transport seems to be strongly influenced, both in terms of efficiency and competitiveness, by the structural organisation of an urban area: the more dispersed and less structured the development, the lower its level of efficiency and competitiveness and, consequently, its share of the mobility market. The variables most used in the literature to describe these linkages are population density, house density, street density and mix of uses (economic-residential). Higher rates of walking and cycling are directly linked to street density, land use mix, commercial density and commercial diversity.

Use and travel time of private transport shows a greater variety of factors depending on the case analysed. However, the age of the building stock is very often identified, with the presence of recent housing development as an important factor indicating the emergence of new models of lifestyle and mobility which are very different from those of the past. Promotion of relatively compact urban structures can have positive effects on walking, cycling and the use of public transport.

Urban form and health

Housing quality and design and location of neighbourhoods have been found to have a positive impact on health, understood as a state of complete physical, mental and social well-being. In particular, the factors more relevant are as follow:

- Aesthetics, which are related to cultural factors. Very often it has been simplified considering that the dominant preference is for single detached homes. However, the aesthetical values included in the surveys provide a broader perspective like the valorisation of historical centre.
- Pedestrian friendly streets. This factor does not necessarily relate to a particular form of city, but as mentioned, compactness seems to favour walking.
- Land use mix: easy accessibility to services, shops and public amenities. The link with health has been explained by some of the following factors: engagement in local life (sense of community and well-being), higher rate of walking and cycling.

Finally, choices of people are to a great extent determined by cultural values. There are favourable conditions that will promote the more compact and efficient cities like mixed uses, quality of the space, proximity of public services and amenities. Other factors like proximity to public transport, somewhat related to density, is a precondition to reduce private transport.

Inter-urban cooperation

(see chapter 10.1-10.3 for more details and literature references)

The notion of polycentric cooperation is a prominent concept in European territorial development documents, notably since the ESDP in 1999. As many European policy concepts, however, polycentricity is such a vague and broad concept that it encompasses many different possible meanings and operationalisations, especially when approaching it at different scales. ESPON has attempted to respond to this challenge through several projects (notably ESPON 2006 1.1.1 and 1.4.3). However, many of these attempts have been limited to measuring polycentricity based on morphological or rank-size-related criteria, without being able to go into functional analyses of the actual level of linkages and cooperations between nodes of polycentric cooperation.

At the trans-European scale, such an approach might work, when polycentricity is seen as the simple balancing out of large territorial inequalities. However, when going down to the regional scale, this becomes more problematic. The policy goal of exploiting “regional polycentric potentials” aims at improving networking and complementarities between cities at the inter-regional and intra-regional levels. Generally, however, at this scale data is not available. Where an empirical (quantitative) approach exists, evidence on global cities and, even more, on lower level urban networking, remains very often based on attributes because the relevant data are abundant while data on direct links, or even flows, which could more clearly inform on the relationships among the cities as nodes of networks are poor. In this respect, recent research has attributed growing importance to the use of the internal structure of firms as a proxy to measure actual flows of information among cities. The analysis of the territorial effects of real flows through transport means (air-lines, TGV and motorways) also becomes important. However, research on all the latter has been mainly conducted on regional and national case studies, not covering the entire ESPON space.

In this context, case studies are generally the only available option. Most of the time, however, such case studies are based on interviews with stakeholders involved in the cooperation networks and very rarely provide any “objective” evidence concerning the functioning and the impact of the policy-driven cooperations. It is, thus, currently very difficult to evaluate the actual impacts of cooperation between cities in an objective and empirical manner.

Obviously, this does not mean that these cooperations are not useful or necessary, but that it is currently very difficult to find literature that evaluates them in a structured, non-anecdotic and empirically sound manner. Concerning very practical cooperation, for example for organising public transport or waste collection, the added value of cooperation is indisputable, but for the more abstract goal of increasing “critical mass” as often cited in the recent policy documents, evidence is clearly lacking. In this context, it is also difficult to elaborate policy-related conclusions when both the actual nature and the impact of inter-urban linkages are not known.

Cities as objects of policies: a review of policy visions and policies on cities in Europe

The above literature review gives an idea of some of the main issues concerning urban development in general. However, it does not include much reference to the actual policies implemented across Europe. Based on reports elaborated in 2010 by national ministries for the Council of Europe Conference of Ministers Responsible for Spatial/Regional Planning (CEMAT) we, therefore, summarise here the vision that national policy makers have of their respective urban issues and policies. Many of them reflect the issues raised in the previous chapter. For a detailed synthesis of these reports, including a more territorially differentiated analysis, see chapter 12 of the scientific report.

Changes in settlement systems at macro-territorial scale and related policies

Recent trends

Generally, all countries see a trend of growth in metropolitan areas, accompanied by an enlargement of their catchment areas. Some types of medium-sized cities, mostly in economically successful regions, or those that act as relays towards larger centres also show population growth. Smaller centres, however, suffer from population decline, especially those that are far away from larger metropolitan areas. Recent changes in the macro-territorial aspects of settlement systems in Central and Eastern Europe have not been significantly different in nature from Western Europe, but their intensity has generally been stronger.

Macro-territorial policies related to settlement systems

The main issues considered by policies and strategies related to settlement systems are territorial balance at national scale and polycentricity, while maintaining competitive and sustainable development, thus reflecting the general European *leitmotif*. The policies adopted range from very general national strategies to the designation of specific priority zones aimed at balancing the territorial development of the country. Examples of the latter include the Northern Way strategy and South-East growth areas of the former UK government (now replaced by a decentralisation strategy) or the regional growth poles in Romania. In some countries (such as France and Norway, for example) the settlement system is addressed through thematic policies.

Many of these strategies are fairly recent, so the evaluation of their success will only be possible in a mid- to long-term future. Those strategies that exist for a certain number of years, however, often do not

show the expected results (example the “Atlantic corridor” in Ireland or the “Spatial Development Strategy” of Slovenia) often due to countering effects of market forces and limitations in the implementation capacities.

Perspectives for the macro-territorial development of urban settlements

Although the identification of common perspectives for settlement systems in their micro-territorial dimension is not easy, the following can be mentioned:

- The economic/financial crisis has accentuated the divide between urban settlements with a growing knowledge economy and others facing difficulties in modernising their production systems.
- The number of European cities with shrinking population will significantly increase during the coming decades.
- Settlements located in regions with a prosperous residential/tourist economy are likely to be more and more favoured, especially if they are capable to attract retirees and a growing number of people belonging to a higher income groups.

Changes in metropolitan regions and related policies

Suburbanisation and densification

The past 10 to 15 years have been characterised by significant trends of suburbanisation around large and medium-sized cities as well as of densification in particularly attractive areas (not necessarily urban, yet). These trends have developed at Europe-wide scale. Main differences between countries and regions are related to the intensity of the process, which itself depends, among others, upon the stage of cities in the urbanisation cycle, upon the economic situation in the respective regions and upon the type of territorial governance applied, notably the level of implementation of strict land use regulations.

Containing urban sprawl and ensuring coherent and sustainable development

Policies in the field of urban sprawl include densification of already built-up areas, the focus on concentrated growth areas in the surrounding of large cities (Italy, England), explicit linkage of development to transport and other infrastructure provisions (France, Norway) and horizontal cooperation at inter-municipal level (Slovenia, Germany, France, Austria, Netherlands).

Promoting economic efficiency and competitiveness through networking of cities and stronger urban rural links within and around metropolitan regions

More and more current policies attempt to target territorial competitiveness through stronger cooperation between urban entities belonging to the same urban or metropolitan region. Underlying many of these strategies is the notion of “critical mass” and the idea that some

form of increased (network-based) agglomeration economies can be reached through such cooperation.

Perspectives for the territorial evolution of metropolitan regions and related policies

A number of factors are now converging to slow down the process of de-urbanisation/suburbanisation: progressive population ageing and decline in a growing number of countries, the impact of the economic/financial crisis on the purchase power of citizens and on real estate speculation (Spain, Portugal, Ireland, UK, various central and east European countries) and the fact that the "catching up process" in Central and Eastern Europe in terms of de-urbanisation and suburbanisation is rather advanced and might slow down in the future.

Against this background, the tasks of public policies in the coming decades will most probably concentrate, on the one hand, on the reshaping and restructuring of suburbs and suburban areas, which have developed chaotically. The aim will be to create new centrality nodes in areas of urban sprawl, to mobilise and enhance their potentials and to improve the quality of life in terms of sustainability. In urban regions with shrinking population, the restructuring of suburbs and of urban sprawl areas will be confronted with additional difficulties, with regard to the real estate market and the shaping of new centrality nodes.

Intra-urban issues and related policies

De-urbanisation and urban devitalisation processes

In the context of the de-urbanisation phase of the urbanisation cycle, numerous European cities and metropolitan areas have been and still are confronted with the devitalisation/depopulation process of their core areas, and sometimes of the entire city. This process has started earlier in north-west Europe, so that since then re-urbanisation processes have been at work there. Similar trajectories are starting in cities of other parts of Europe. Today, much of the decline of core cities in Western Europe is happening in mid-size cities. In Eastern Europe many large cities also have declining city centres linked with strong suburbanisation.

Social polarisation in cities

Social and socio-spatial polarisation of cities is seen as an increasing issue for most European cities, linked to the accelerated development of "gated communities" and socio-spatial segregation through suburbanisation of higher-income groups.

Territorial policies addressing intra-urban regeneration and social polarisation

Public policies addressing the regeneration of inner city areas and the related problems of social polarisation are progressing in numerous European countries. Such policies involve more and more the dense urban settlements of urban peripheries built in the 1960s and 1970s, subject to severe social problems and to multiple deprivation. In most European

countries such policies are place-based and often aim at some form of “integrated” development, combining policies concerning the built environment with social and economic policies. In many cities these take the form of regeneration policies, more or less explicitly aimed at changing the social composition of the concerned areas.

Perspectives for inner-city areas and related policies

In the context of growing population ageing and social polarisation, the regeneration of inner city areas is becoming an increasing task for public policies of various levels. Although public authorities largely recognise the social issues related to urban regeneration and renewal, the risk is not small that the socially most vulnerable groups will be pushed out of inner city areas towards more peripheral areas in the vicinity of cities. Private interests, for which solving social issues is not a priority, will be more and more involved in regeneration. The economic/financial crisis will have a long-lasting negative impact on urban restructuring and renewal activities, as the financial capacity of local authorities has significantly been reduced on the background of indebtedness.

New knowledge on cities: Attempts at furthering the empirical knowledge on European cities

Introduction

As mentioned in the general introduction to this report, the empirical part of the project was guided by two main ideas: first of all we wanted to avoid redundancy with the many existing efforts, be they within ESPON, within the Commission (such as the Second Report on the State of European Cities), or elsewhere (e.g. the report on urban competitiveness by the OECD). Second, in light of the difficult situation in terms of data availability for cities across Europe, we wanted to tap new data sources and see how they can inform urban policies. This endeavour obviously implied that we went out into the unknown, and much still remains to be done. We, therefore, present here our empirical results both in order to assess what they tell us about policy questions, but even more so in terms of the methodological issues at hand when using these data, in the hope that future projects will profit of our experiences.

Urban extension and urban form

Introduction

As mentioned in the general overview, cities face many environmental issues, from air quality to waste management, without forgetting air quality and noise. In terms of territorial planning and development, however, the land take and the morphological form of cities is often cited as an important driver of urban environmental sustainability. We, therefore, present a typology of the spatial dynamics of cities based on Corine Land Cover data, which we then critically analyse based on Urban Atlas data. The final section then uses Urban Atlas data for a tentative analysis of the impact of urban form on different elements of urban "performance".

Before going into the actual analysis of urban sprawl, however, it is interesting to get a general picture of the intra-urban dynamics of population development in Europe's metropolitan areas, as represented by the Urban Audit LUZ.

A typology of population development between core cities and LUZ

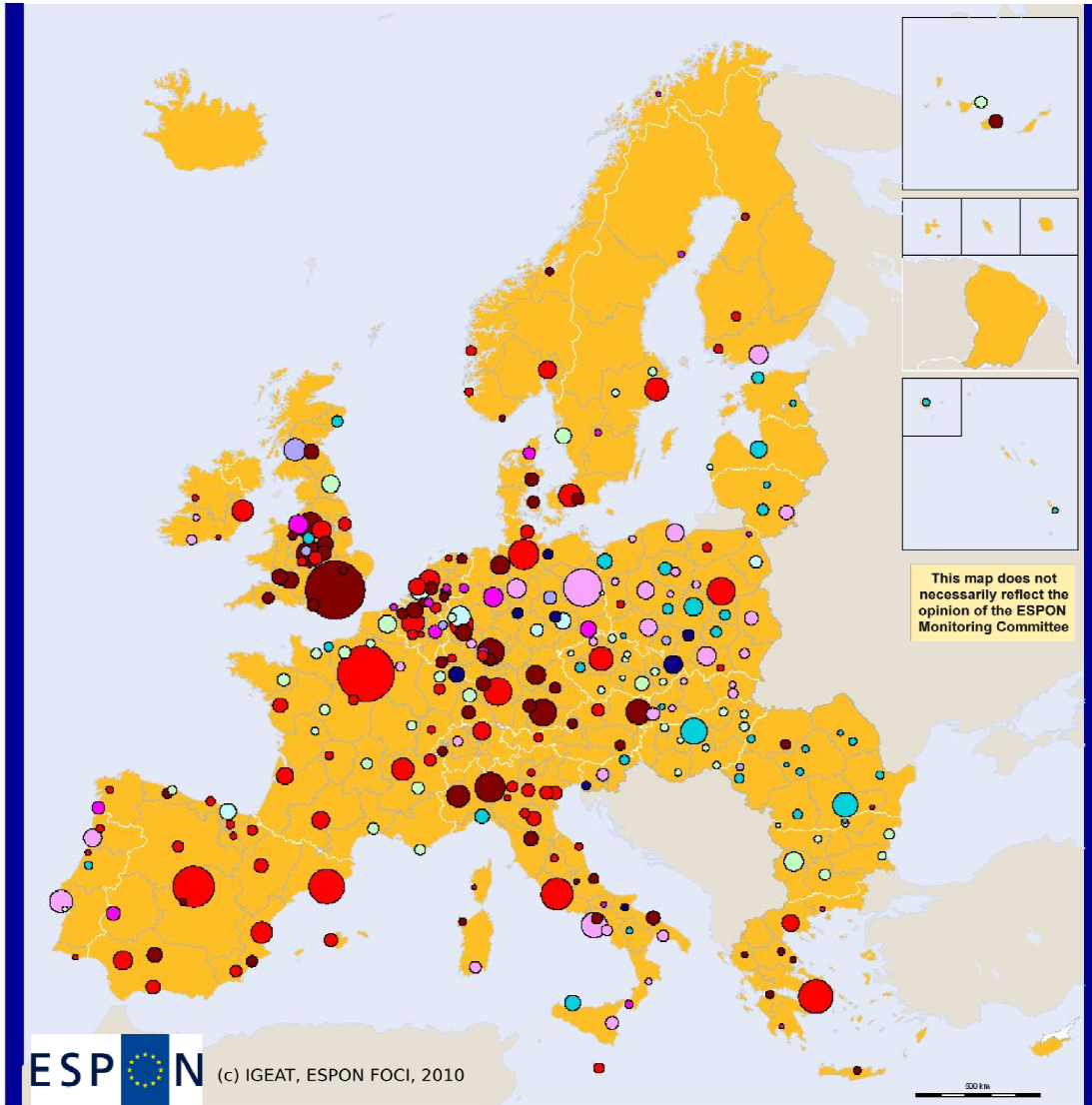
(For more details about the demographic evolution of cities see chapter 2 of the scientific report.)

We propose a typology in which we distinguish first between growing and declining LUZ, and then we take into account the dynamics in the core cities as opposed to the rest of the LUZ. On this map, we can distinguish several major types of evolution:

- in the dense urban and central parts of Europe, many cities are characterized by their population growth in both core and peripheries, with often higher growth rates in the core cities;
- in Eastern Europe, most of the cities are characterized by the decline of their population with an intense process of suburbanization, except mainly Warsaw and Praha;
- in Mediterranean LUZ, we observe population growth with an intense process of suburbanization.

This map presents a synthetic vision of the position of cities in the urbanisation cycle, an important element to consider when targeting policies to specific types of cities.

Typology of intra-urban dynamics in European LUZ, in the years 2000



TYPES

- | | |
|---------------|--|
| | ■ decline in core > decline in periphery |
| | ■ decline in periphery > decline in core |
| Declining LUZ | ■ growth in periphery; decline in core |
| | ■ growth in core; decline in periphery |
| | ■ growth in periphery; decline in the core |
| Growing LUZ | ■ decline in periphery; growth in the core |
| | ■ growth in periphery > growth in the core |
| | ■ growth in core > growth in periphery |
| | ■ no data |

Source : Urban Audit
© EuroGeographics Association for the administrative boundaries

Figure 1. Typology of intra-urban dynamics in European LUZ, in the years 2000

A typology of urban spatial development based on Corine Land Cover

In this section we present a typology of urban spatial development, or urban sprawl based on Corine Land Cover data. Three groups of descriptors have been taken into account to analyse city development: size and form, urban development and destination of new urban areas.

Relevant indicators were analysed for the period 1990-2000 for which the best geographical coverage was available at the time of the analyses and which allows for a comparison with 2000-2006 in a second step. Three main types were identified with the following distinctive features:

- **Type 1.** Slowly growing cities.
 - **a.** Slowly growing cities densifying the existing urban areas. Cities below 600 000 inhabitants and low degree of sealing. Some of these cities are loosing population both in the core city and LUZ.
 - **b.** Slowly growing cities with diffuse urban development. Those cities are also growing slowly. The rate of growth is about three times higher in the LUZ compared to the core city. The risk for those cities would be to increase the pace of urban development that would lead to more sprawled system.
- **Type 2.** Rapidly growing cities. This group represents almost half of the European cities. Because of their variety they do not have any particularity regarding size and form. This group is defined by an intermediate rate of growth and low level of recycling. New developments in the core city are mainly residential areas, whereas in the LUZ the new developments are for industrial and commercial activities. However, there is a small group of cities (**2b**) that have a relatively large LUZ.
- **Type 3.** Very rapidly growing cities with diffuse urban development. This group includes the cities with the highest degree of urban development, far beyond the average of the other types.

Considering these types as a baseline, their evolution in the period 2000-2006 tends to homogenise and reduce the distance between different development paces. Generally speaking, stable cities or the ones with slow development in the 90s have experienced a relatively rapid increase while the cities that were very rapidly growing have slowed down. Reuse of previous urban land has significantly increased in both core cities and LUZ. The development of new residential areas has been reduced, while industrial and commercial areas are still increasing and becoming the main source of urban expansion.

Typologies of urban development (1990-2000)

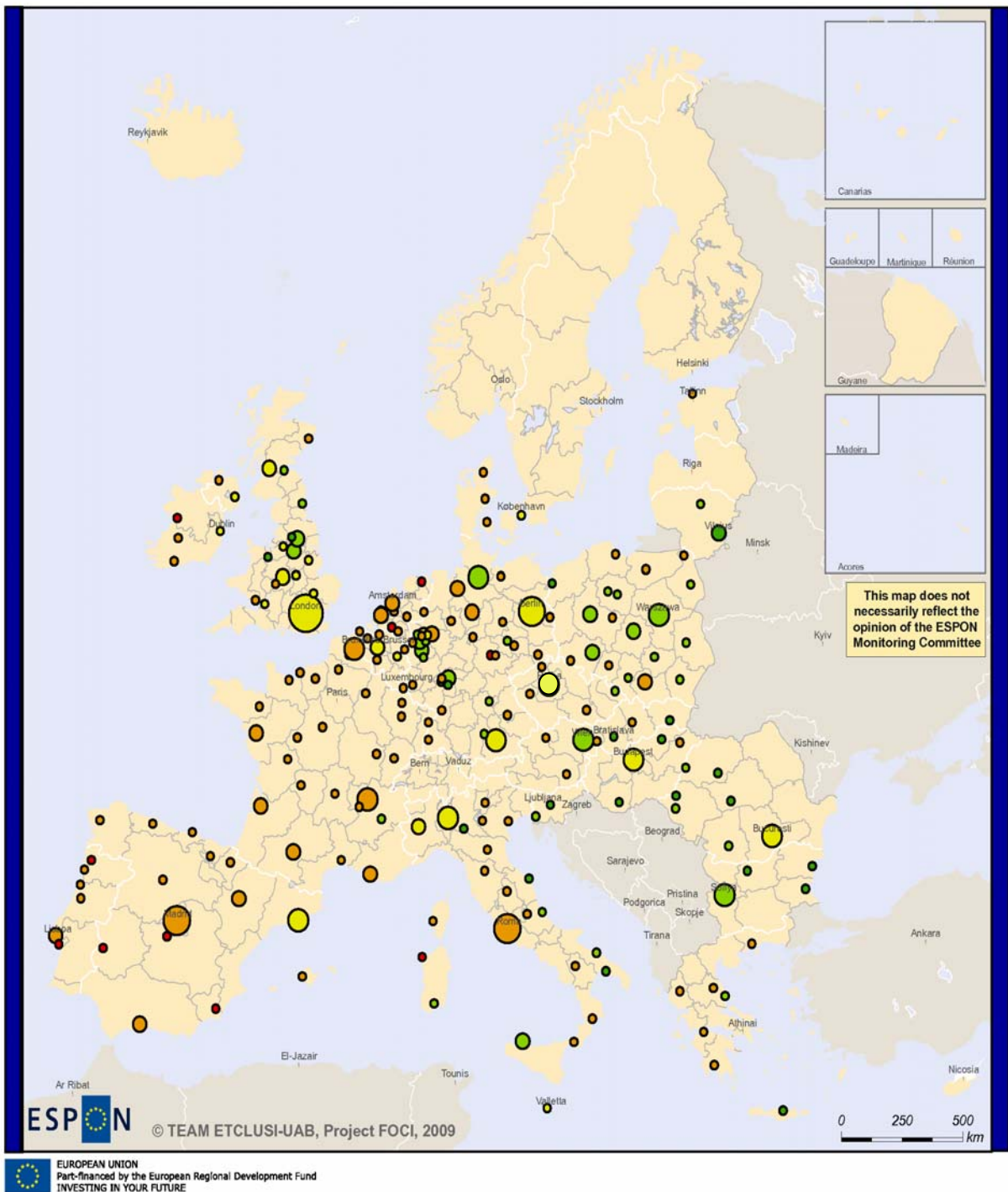


Figure 2. Typologies of urban development (1990-2000)

Typologies Sources: CORINE Land Cover 1990, 2000, 1990-2000 changes.

How reliable is Corine Land Cover for analysing urban sprawl ?

There are some important methodological constraints linked to the use of Corine Land Cover, namely the minimum mapping unit and the minimum change detection. In addition, the methodology used for CORINE is known to underestimate linear features like roads and rails. In this context, the development of the Urban Atlas is a great improvement, since the Urban Audit cities will be mapped at higher resolution. However, this is an ongoing project and for the moment data is only available for 2006, and only for 200 cities in July 2010. We, therefore, proceeded to an evaluation of the Corine Land Cover results on the basis of the available Urban Atlas data. For more details on methodologies and results see the section "What is the accuracy of CLC ?" in chapter 1.4 of the scientific report.

The main conclusions of this analysis are the following:

- CLC provides systematic underestimation of commercial and industrial areas, compared with higher resolution Urban Atlas, resulting in deviations up to 30% of the actual value.
- Deviations are less accentuated for the rest of artificial classes.
- There may be important errors on the stocks (percent of different land cover areas).
- The implications for changes are not known since Urban Atlas only has one time shot.
- The conclusion that urban sprawl is more driven by commercial and industrial areas compared to residential ones should be questioned given the discrepancies found between CLC and Urban Atlas.

These results confirm that new approaches are needed. Necessary technologies and data are now there and efforts are currently being made to increase the level of available information.

The impact of urban form on urban "performance"

To further understand what the implications of city form are, a compacity index has been analysed for the subset of cities available in the Urban Atlas (see the section "Is city form relevant for the environment" in chapter 1.4 of the scientific report for details). This index shows how far a city is from a circular form with the same area and ranges from 0 (more irregular and less compact city) to 1.

Comparison of transport patterns and air quality between the different types of city compactness reveals that differences are only relevant between the extreme groups (dispersed – compact). Most significant differences are encountered in percentage of people using public transport and in PM10 and NO2 concentrations.

Compact class	Percentage of journeys to work by car and motorcycle	Percentage of journeys to work by foot or cycling	Percentage of journeys to work by public transport	Annual average concentration of PM10	Annual average concentration of NO2
1. Large irregular cities	64	12	24	34	32
2. Large irregular cities with intensive land use	62	10	28	31	27
3. Intermediate compact cities	57	11	32	30	26
4. Compact cities	56	10	34	25	22

Table 3. Relationship between typologies of city compactness and transport mode to work, and air quality parameters. Data source: Urban Audit

Social cohesion

Chapters 3.2 and 3.3 of the scientific report provide a series of indicators of social cohesion in European cities based on the (somewhat limited) available data.

Introduction

An important question for urban (and regional) policies in Europe is whether social cohesion still depends on economic wealth in European cities and thus whether we can expect competitiveness policies to improve social cohesion, notably through trickle down effects. This is what we propose to explore here. From the literature, we can raise the hypothesis that within new forms of growth in the globalized and knowledge-based economy, social cohesion is more and more decoupled from economic performances. However our data do not allow a definitive and unambiguous answer to this question. On the one hand, social cohesion data are very incomplete in Europe. On the other hand, as we will see in our analyses, the answer depends on the social indicator we look for. Despite the poverty of the data, this analysis provides a unique assessment of this question in European cities.

The relation between economic wealth and social cohesion

Economic wealth and unemployment

According to table 4, there is a significant but low correlation between GDP/head and unemployment rate in the years 2000: the higher the GDP/head, the lower the unemployment rate. Results are very similar when Eastern and Western Europe are divided, which means that these correlations are not related to the East/West gap inside Europe.

We would expect a stronger relationship in dynamic terms (growth rates), especially because, in a given territory, there are strong evidences that economic growth allows reducing unemployment rates. However, this is not the case. Several explanations can be proposed:

- Unemployment rates are much related to the national context in which the city is embedded
- Unemployment rate is not only related to economic wealth but also to socio-demographic structures.
- Based on the literature review presented in the first part of this report, our main hypothesis, however, is that economic wealth is partly decoupled from labour market participation, mainly because the new forms of economic growth are more and more intensive in knowledge, and could be more and more excluding for the low qualified population.

	All cities (LUZ) with a NUTS3 Proxy	All West European cities (LUZ) with a NUTS3 Proxy	LUZ > 1000000 inhab. (1)
GDP/head and unemployment in 2006	-0.482(**)	-0.435(**)	-,447(**)
GDP/head and unemployment according to national average in 2006	-0.440(**)	-0.383(**)	-,567(**)
Evolution of GDP/head and unemployment between 2001 and 2006	-0.008	0.033	-0.129
Evolution of GDP/head and unemployment according to national average between 2001 and 2006	-0.131(*)	-0.151(*)	-0.162
N	239	180	80

Significant ** at 0.01; * at 0.05

Table 4. Correlation (R Pearson) between economic wealth and unemployment rates, in the years 2000, in static and dynamic terms

(1) the analysis has been made on 80 cities of more than 1000000 inhab. allowing a NUTS3 proxy of the LUZ.

Economic wealth and other social cohesion indicators

In addition to the simple analysis of unemployment, we propose here to assess the relationship between economic development and diverse social cohesion indicators across European cities (table 5).

Infant mortality rate, an indicator reflecting fairly well the general level of health in a society, is correlated with GDP/head. However, beyond a certain level of GDP/head, this correlation disappears. Indeed, when Eastern countries are excluded, the observed correlation becomes statistically non significant, meaning that the correlation between GDP/head and infant mortality rate is only due to the gap between Eastern and Western Europe in both GDP/head and infant mortality rate. When we turn to education indicators, we reach similar conclusions: correlation is weak and inexistent if we focus only on West European cities.

The Urban Audit perception survey allows assessing the level of satisfaction of people for a number of big cities across Europe. Interestingly, we do find here significant correlations between GDP per head and a synthetic index of satisfaction which does not disappear when excluding East European cities. However, when looking more closely at the data, we find that this correlation is actually mainly due to the general

dissatisfaction in most of the Mediterranean cities included in the perception survey.

	LUZ according to NUTS2 or NUTS3 proxy	N	all available Urban audit cities	N	excluding Member States	N
Infant mortality rate	-,494(**)	45	-,426(**)	139	-0.041	97
Share of higher diploma	0.279	45	,399(**)	102	-0.012	68
Share of students leaving without diploma	-	-	-0.017	84	0.114	70
General level of satisfaction (1)	.431(**)	62			.387(**)	44
District gaps in unemployment (1)			-0.074	188	-0.090	146

Significant ** at 0.01; * at 0.05

Table 5. Correlation (R Pearson) between economic wealth (GDP/head) and some social indicators, in the years 2000

(1) Data come from perception survey or the district statistics of the Urban Audit and only concern core cities while GDP level is defined at the LUZ level

Source: Eurostat, urban audit; Eurostat, Perception Survey; Eurostat, Regional Statistics. While *Urban Audit* data allow considering more cities, they are biased because only some countries are available for the indicators while NUTS2 proxy data allow a complete picture for cities allowing such proxy (that is 45 LUZ).

Socio-spatial polarisation

One of the aspects of social cohesion in the city is related to the gaps between neighbourhoods. We raise the hypothesis that the concentration of social difficulties in some specific areas of the cities may reinforce the social problems of the resident population. This is why it seems necessary to assess socio-spatial inequalities in the cities. However, it is important to insist on the fact that low neighbourhood inequalities do not necessarily mean a better social cohesion. The spatial configurations of the social problems are only one aspect of social inequalities.

The availability of data obliges us to focus on unemployment rate to measure district inequalities. Figure 3 shows the weighted variance of unemployment rates by district. It shows huge differences in the socio-spatial inequalities in the cities: the highest levels are reached in UK, France, Belgium and some cities of southern Europe while we find low levels in most of Eastern countries (except Poland), in Nordic countries, in Western Germany and Northern Italy. Low socio-spatial inequalities in Eastern cities are the result of real estate mechanisms and are still to a certain extent a heritage of the communist period. In any case, it is important to notice the absence of correlation between socio-spatial inequalities and the level of GDP per head in European cities (see table 5 above).

District gaps in unemployment rates, years 2000

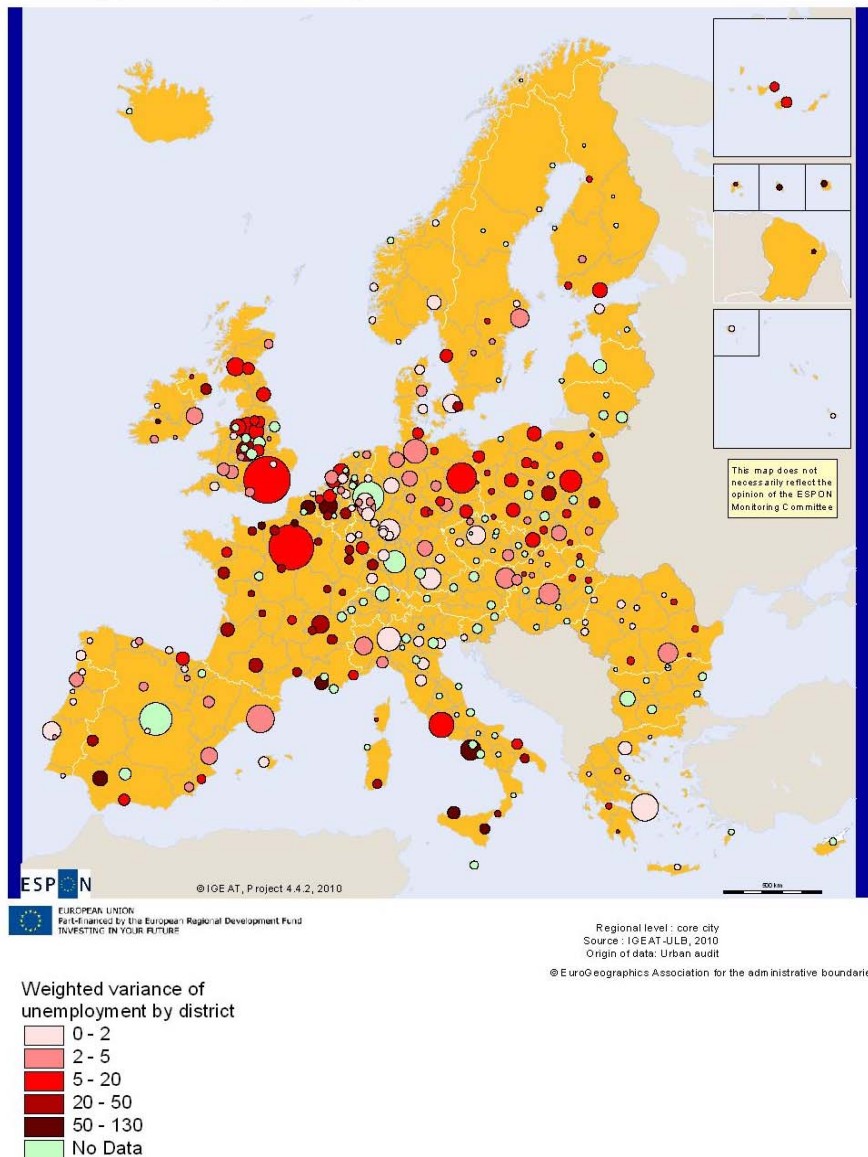


Figure 3. District inequalities in European cities

Note: For each city, unemployment rates of each district have been compared to the average. These differences are weighted by the total active population and summed. As a result, it gives a synthetic index of the intensity of the differences between districts in the core city.

Conclusions

From these analyses, it can be said that social cohesion indicators are poorly related to competitiveness indicators. This result has political consequences since it means that at the level of development reached in the EU (at least the EU-15), social cohesion indicators related to health and education poorly depend on economic development but rather on other factors, notably the quality of the health or education systems, urban housing policies or redistribution policies at national level. Only the development gap between East and West European has a strong impact on health and education differences.

Economic development

Introduction

As mentioned in the literature review, many studies about regional economic development exist in Europe, and as most data available for cities are in fact approximations at NUTS 3 or even NUTS 2 level, it does not seem particularly interesting to provide yet another study of all the factors of competitiveness at these scales. For analyses of the basic factors of competitiveness see chapters 4.3 and 4.4 of the scientific report. Here, we limit the presentation to a typology of the sectoral structure of Europe's cities as this sectoral structure can be seen both as a factor of competitiveness, but also as a proxy for the historical paths these cities have taken. In the rest of this section we show the results of some new approaches to urban economies, mostly based on innovative data. We begin by analysing their insertion into global and European networks, be it research or global firm networks, based on CORDIS and ORBIS data. We then analyse their respective contactability for one-day business trips based on a collection of time table data. Third, we attempt to understand the link between urban economic performance and the respective national context.

A typology of the sectoral structure of European cities

We propose a typology with 8 groups of European cities approximated at NUTS 3 level) according to their sectoral structure in 2006 (Figure 4). The main added value of this typology compared to existing ones covering all NUTS 3 regions is to allow an easier reading of the specific situation of cities and to focus on the differentiation between cities, by ignoring rural regions. Types 1 and 2 group together big metropolises with high share of high level functions (finance and business services). The latter has generally lower share of high functions and keeps a solid manufacturing base: it mainly concerns big German and North Italian cities. In type 1, some cities like Lisboa, Napoli, Budapest or some medium French and English cities actually have lower levels of high function but are included because of other similarities with the biggest commanding cities. Type 3 distinguishes from the previous one by lower shares of high function but even higher share of manufacturing than type 2: it includes many West German cities. Type 4 includes more peripheral capital cities with high share of basic market services (Athens, Sofia, Bucharest, Madrid, Warsaw, and Baltic capitals). In this group however, Madrid has a much higher share of high functions than the other cities. Type 5 includes cities characterized by high share of non market services, mainly peripheral cities of big rich countries (East German cities, South Italian cities, small and medium French and British cities). Type 6 groups together cities with a high share of basic market services (trade), notably from Spain. Type 7 is near the average with a manufacturing specificity: we find here cities from "Third Italy", Porto and medium Polish cities. Barcelona is also part of this group but is not far from the red type 3. Finally, type 8 includes all small Central and Eastern cities with very high share of manufacturing industry. This sectoral differentiation allows more targeted policies for

and in cities, although other studies have clearly shown that sectoral structure alone (especially when based on only 6 sectors) is not a conclusive factor of competitiveness.

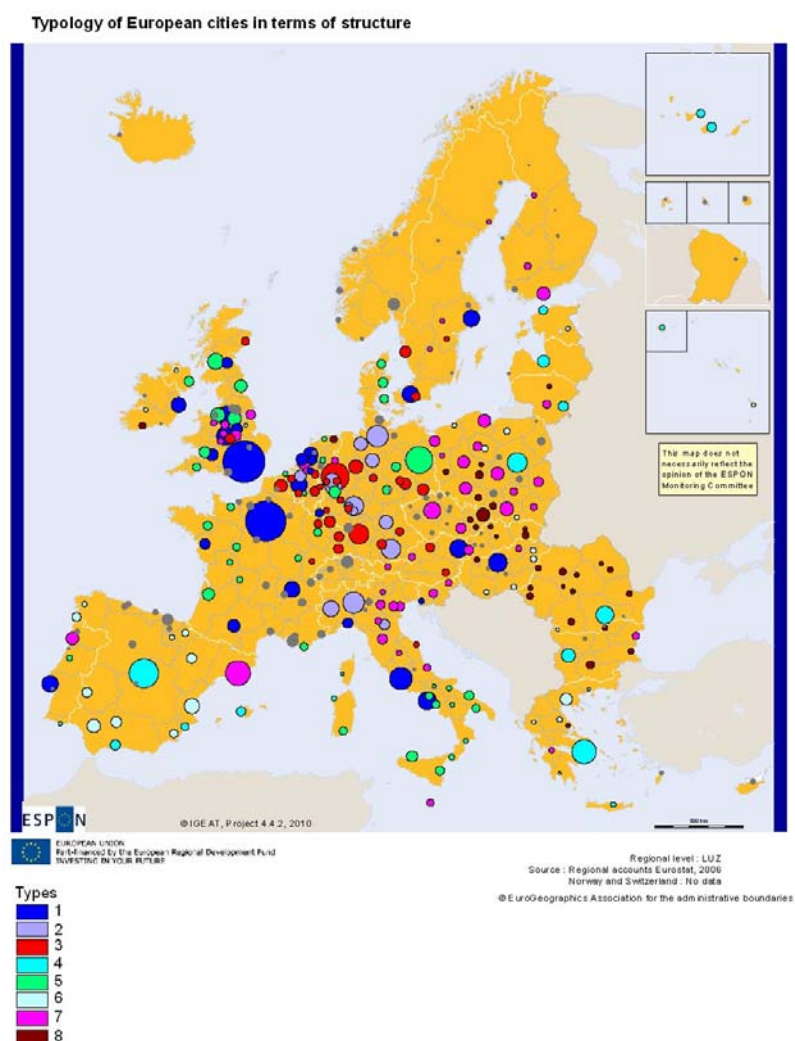


Figure 4. A typology of European cities in terms of sectoral structure 2006 (6 sectors, NUTS 3 approximations of cities)

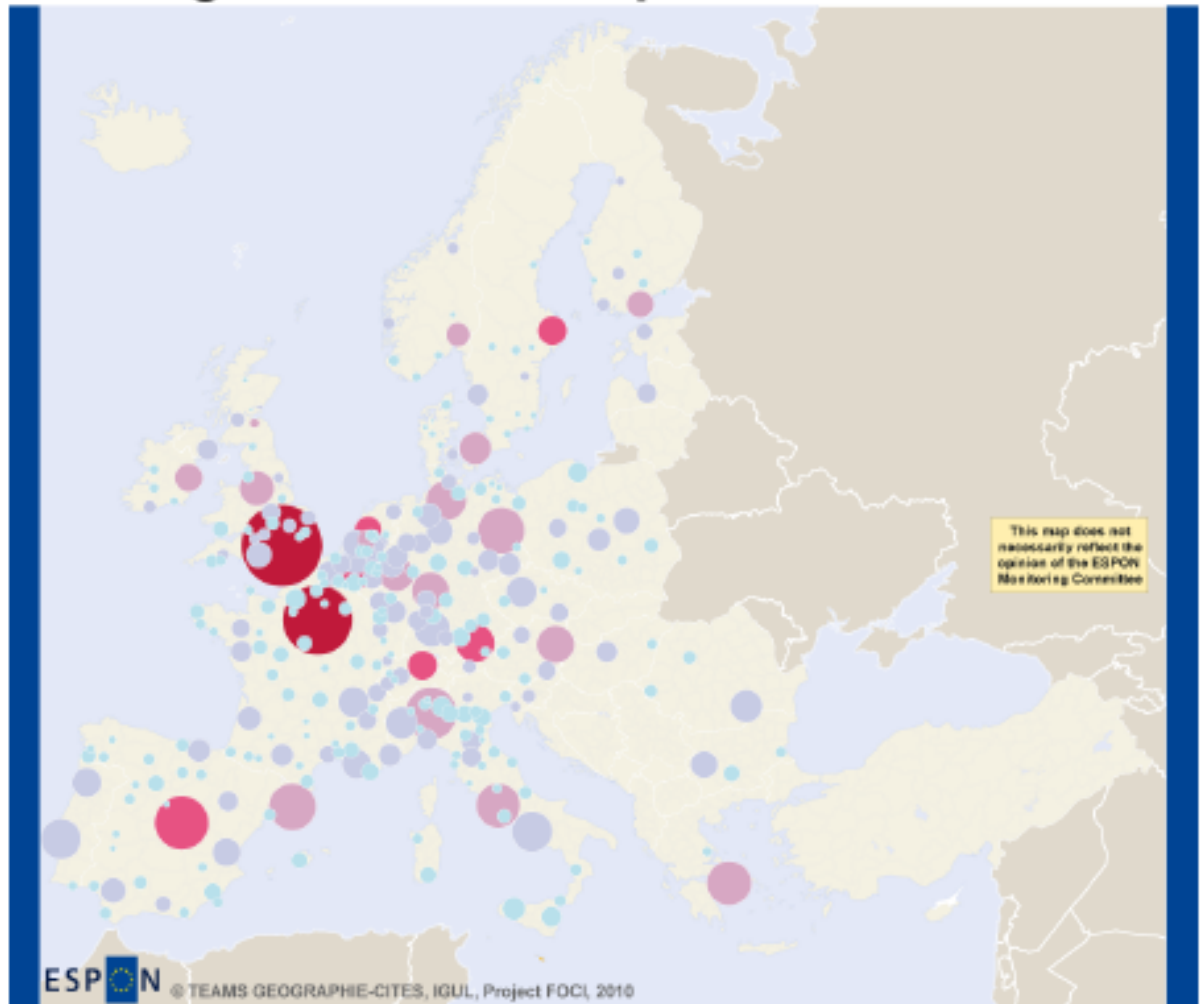
	Share (%) of each type in total European added value	Economic structure: share of (%)					
		agriculture	manufacturing industry and energy	construction	Trade and transport	Finance and business services	Other services
Type 1	36.2	0.4	11.4	5.0	22.1	37.7	23.3
Type 2	13.5	0.4	20.9	3.2	21.8	35.8	17.9
Type 3	12.3	0.8	25.5	4.7	18.3	27.4	23.4
Type 4	7.2	0.9	11.9	9.1	32.3	24.6	21.1
Type 5	12.3	2.0	14.7	6.3	19.8	27.2	30.0
Type 6	4.4	4.5	19.2	11.6	22.7	19.1	22.9
Type 7	11.9	1.4	23.3	6.8	25.0	23.6	19.9
Type 8	2.3	4.0	37.1	7.0	20.8	14.9	16.1
Total		1.1	17.2	5.7	22.4	30.9	22.7

The hierarchy of cities according to their participation in global and European networks

(For more details about the methodology, the ranking of individual cities and a first typology of specialisation, see chapter 8 of the scientific report.)

One possible way to assess the “competitiveness” of cities is to analyse their relative position in the global networks that convey the exchanges of information and investment in leading economic activities as revealing their potential for a future development. In a quantitative way, the total number of connections in a variety of networks is a first indicator of a city’s general integration in global and European networks. We constructed a ranking of European cities based on their indices of centrality in several networks both within European research networks (CORDIS) and in global firm ownership hierarchies (ORBIS). Figure 5 presents this ranking in five classes that exhibit a visible hierarchical pattern. The global cities Paris and London have the highest ranks, far ahead from six other European cities well integrated in global networks of leading activities: Madrid, Stockholm, Amsterdam, Zurich, Helsinki, Dublin; 16 other cities ranking from 9th to 24th rank still have noticeable international participation. Most of cities, 200 out of 271, have only a modest participation in these research and economic networks.

Hierarchy of FUAs according to their participation in global and European networks



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Level: FUA
Sources: IGUL-LAUSANNE, Rozenblat, 2010; Géographie-Cités, Paris, 2010
Origin of data: ORBIS, BVD, 2007, CORDIS, UE, 2008
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Ranks based on the score on the first axis of a principal component analysis:



Population of FUA:



Figure 5. Hierarchy of cities according to their participation in global and European networks

It is clear that the accessibility of cities within the networks of economic activities as well as research networks is on the whole highly correlated with the local accumulation of population, wealth and skill. It is thus not surprising that the observed ranking closely reflects the order expressing the strength of cities on a majority of economic indicators. This correlation actually is an expression of the path dependence in the dynamics of the system of cities. Figure 6 plots the position of cities in the network hierarchies against this population. The graph exhibits a clearly positive trend showing the dependence between the total participation of cities to the recent and future cycles of economic development and their total size. But a few cities are clearly above the line, illustrating their higher participation in leading economic sectors. At first Paris and London that are both hierarchically dominant and specialized in leading activities. But also state capitals or major cities as Madrid, Stockholm, Amsterdam, Oslo and Frankfurt are clearly ahead of the other European cities in this diffusion process, as well as technopoles and university cities like Utrecht, Heidelberg or Cambridge. Below the line the position of capitals of the periphery like Sofia or cities heavily engaged in former cycles of urban development as Marseille, Lille or Genova is not surprising.

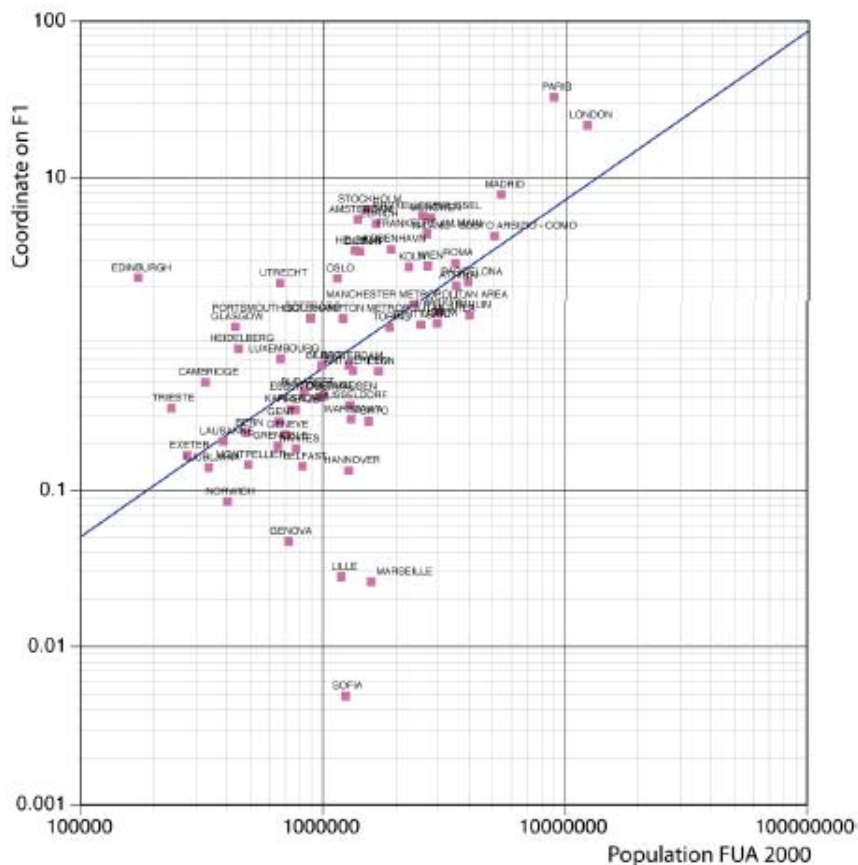


Figure 6. FUAs according to their participation in global and European networks and their population

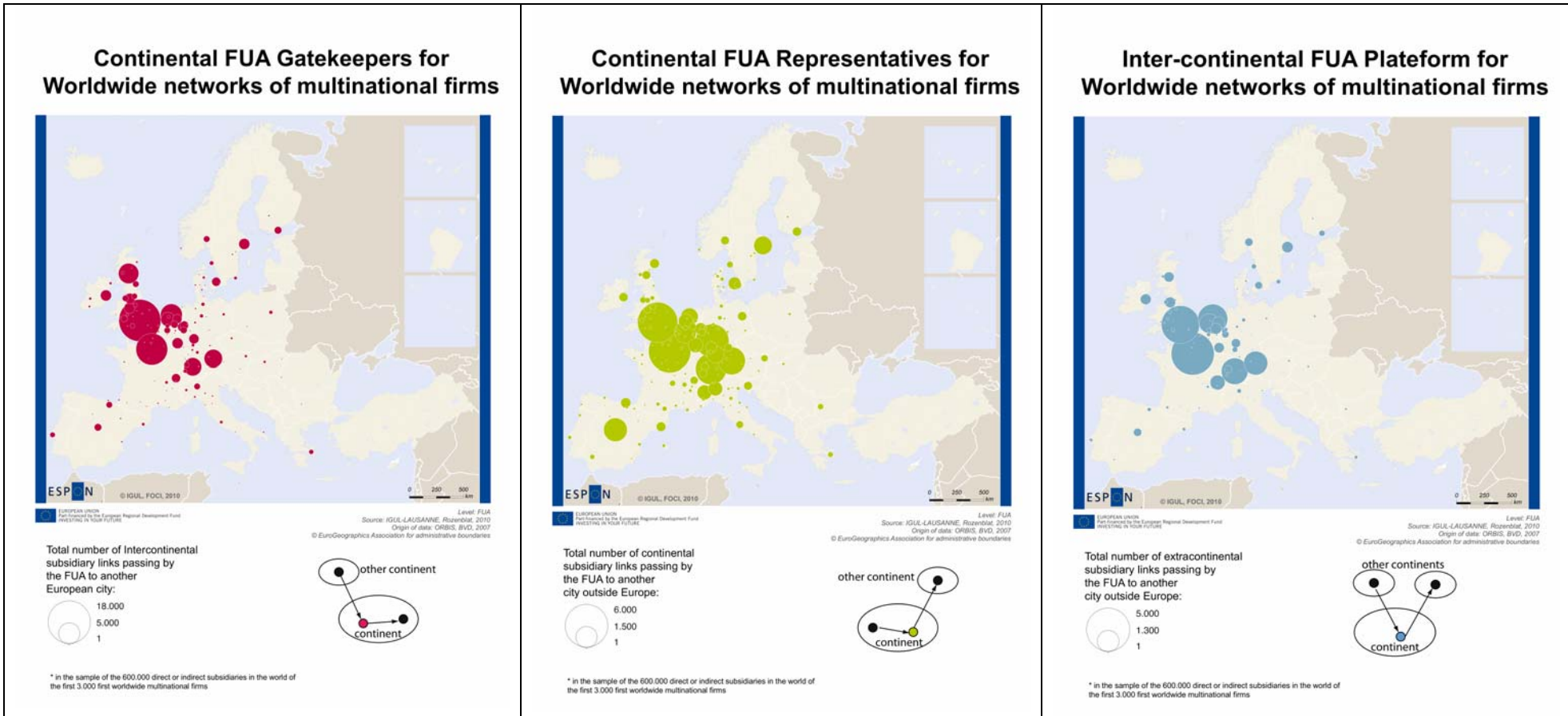
Intermediate cities at the inter-continental level

(See chapter 7 of the scientific report for more details on methodologies and results.)

Multinational firm networks use gateways for internationalization. In particular for overseas investments arriving in Europe, "*continental gatekeepers*" are privileged in receiving the investment, spreading it in a second step to the continent: they represent. In the other direction, "*continental representatives*" offer to multinational firms the means to reach places outside Europe. Finally, "*international platforms*" play the role of intermediaries between other continents, in general for financial or organizational function. Figures 7 (a, b, c) presents these three cases based on the sample of 3000 networks of multinational firms.

In Europe, London largely dominates the "gatekeepers" especially as the host of North American and Asian headquarters in Europe. Amsterdam, Edinburgh, Munich and Zurich appear much better than one may expect from their size. In the opposite role of "representative city" for ownership of companies outside the continent Paris and London are at the same level. London offers an ideal stepping stone for European banks to overseas, while Paris, also a gateway for banks, seems to diversify a bit more. In terms of "platforms", London and Paris again dominate the game with Amsterdam, Zurich and Munich and Rotterdam following.

Understanding the roles of cities in the global firm networks should allow to better target policies to their specific needs. For example, the types of capital needed by representatives will be different from the types of capital needed by gatekeepers. The connectivity needs of these cities to other cities in Europe and to the rest of the world are also different. Platform cities have to take special care to strongly embed those platform structures into the local *milieu* in order to avoid an over-dependence on external factors. They also have to be ready for external competition since their role is more easily delocalised than that of the other two types. The maps also highlight the relative weakness of the Eastern European cities, including the capitals, which continue to be satellite cities within the global networks. Reinforcing their endogenous investment capacities seems necessary if they are to move up the global (and European) urban hierarchy.



Figures 7. Position of European cities as intercontinental (a) gatekeepers, (b) representatives and (c) platforms

Cities in networks of contactability

(For more details on methodologies and results see chapter 5 of the scientific report.)

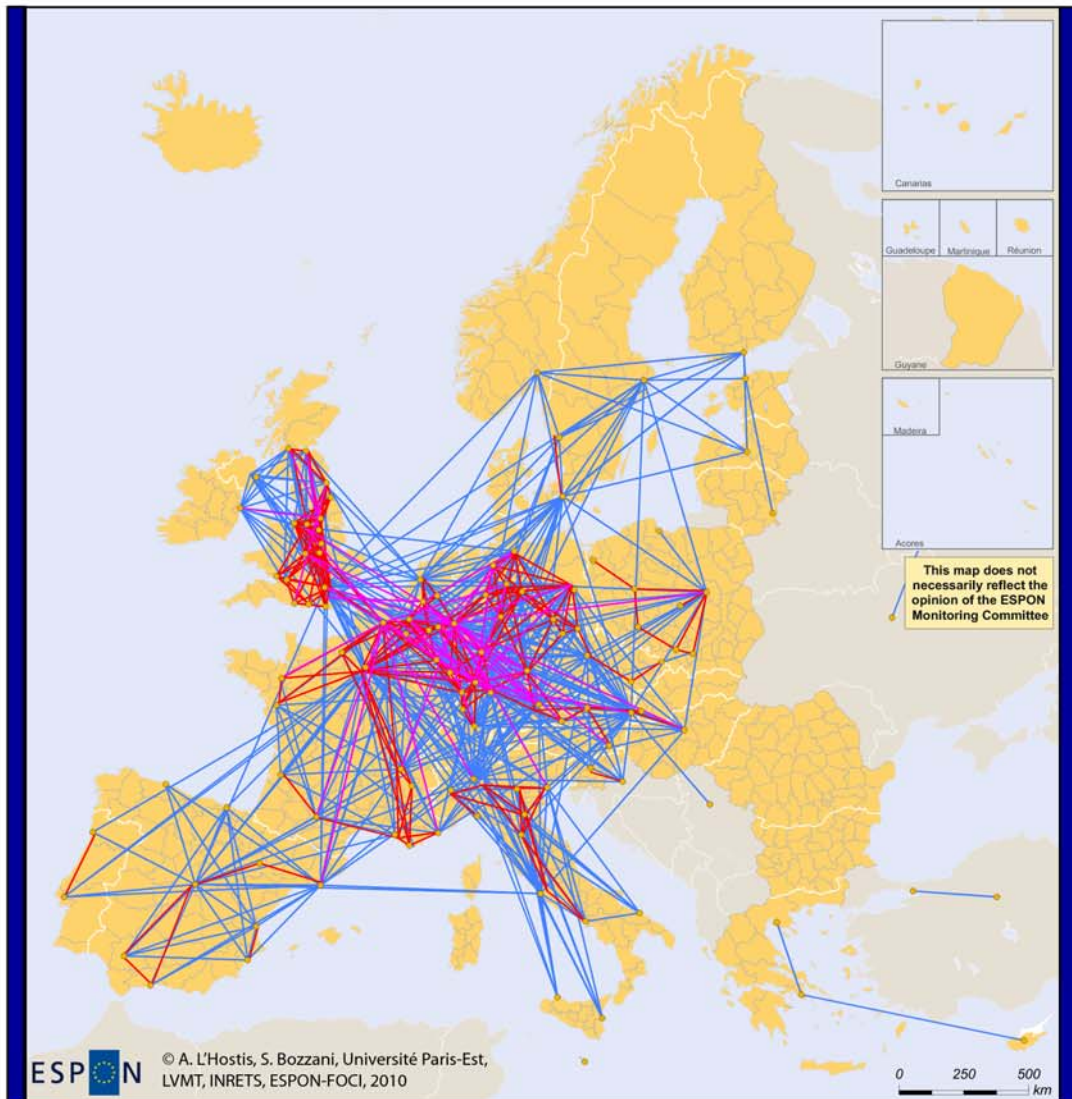
As an indispensable support for economic and social interaction, transport has a major role to play in the structuring of urban regions all over Europe. Accessibility is one of the basic factors of competitiveness, but also of access to services, while at the same time it is one of the major sources of pollution and of energy consumption. Accessibility is also one of the key sectors where public action plays a major role in infrastructure investments as well as in service provision in interaction with the transport operators. Developing tools that are able to assess the quality of accessibility is, therefore, a major issue for decision-support dedicated to urban stakeholders.

Generally, however, accessibility indicators are limited to theoretical, network based accessibility, not taking into account the actual supply. We thus developed indicators which allow considering the real supply of transport between pairs of cities in Europe by air, by rail and combining air and rail, based on actual time-tables.

On the one hand, the indicator expresses the attractiveness of a city to organize an event with several persons. A high level on this indicator will be necessary to develop a congress activity of a city and is also useful for universities, research centres, firms headquarters that need to gather persons from several remote cities, for seminars, colloquium and board of administration. On the other hand, the indicator expresses the possibility from a city to reach other locations. An economic activity can thus be fostered in this place, by allowing for remote interaction. This type of interaction is used by headquarters and firms in general. Consequently, and following the approach adopted in earlier ESPON projects (1.2.1), we propose to evaluate the possibility of single day business trip with 6 hours available at destination and within the time window 5h-23h, in a door to door approach.

Several key elements can be seen on the map of contactability. First, the very high importance given to rail. This means that rail is able to compete with air for a large set of proximity relations. One must note though, that national logics are very present, except in the central part of the Pentagon. The second element is the high level of integration of most of the European space. The Iberic peninsula is strongly linked to the Pentagon, and the relations towards eastern countries like Poland or Hungary are clearly shown. The integration of the Eastern Balkans proves more difficult. Thirdly, several intermediate cities like Lille, Den Haag, German Ruhr and Rhein cities show high levels of accessibility through the combination of high-speed and classical rail and efficient connection to airports. High levels of inter-metropolitan accessibility can, therefore, be attained without relying only on airport equipment.

**Map A1: City network contactability by rail, air or a combination of rail and air
Return trips between 5h and 23h**



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Regional level: Urban Audit cities
Origin of data: OAG, diebahn.de
Computation: Musliw model
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- Cities
- Reciprocal return trip by rail
- Reciprocal return trip by air
- Reciprocal return trip by combination of air and rail

Structure of the return trips:

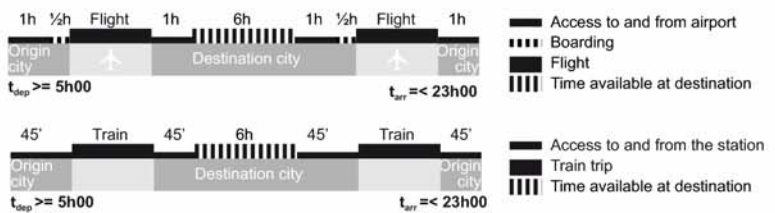


Figure 8. City network daily accessibility by rail, air or a combination of air and rail between large European cities between 5h and 23h

On the other side, some cities are absolutely dependent on the air mode for their connectivity to the rest of the continent (notably those not directly connected to the European mainland such as Ireland and the Northern periphery). This obviously raises questions concerning the long-term sustainability of their linkages, in light of oil peak, climate change policies or more short-term phenomena such as the recent volcanic ash crisis and the economic crisis.

Economic differentiation of cities in national and European contexts

In order to shed light upon the role of individual cities' levels of competitiveness, it is important to understand which part of the differences in their performance actually comes from differences between the cities and which part is due to their embeddedness in national contexts of economic regulation. This part thus proposes a simple analysis in order to shed some light on these questions.

The following table confirms the very important differences between cities, in terms of GDP/inhabitant, even within the same country which is the result of a long history of agglomeration and concentration of resources.

	EU27+2	EU15
Share of inter-national variance (i.e. of variance of per country means)	48%	22%
Share of sum of intra-national variances	52%	78%

Table 7. Share (%) of the variance in GDP/inhabitant (pps) between cities in 2005

Source: Eurostat

However, in terms of dynamics, i.e. growth of GDP between 1995 and 2006, the picture largely reflects macro-regional and national dynamics. This is confirmed by the same decomposition of variance as above, this time for GDP growth (table 8). The national context seems to have contributed between 60 and 80 percent of the differences in GDP growth between European cities. This shows the continued importance of national regulation systems which influence many of the factors determining the growth rates of European cities.

	1995-2006	1995-2001	2001-2006
Share of inter-national variance (i.e. of variance of per country means of urban growth rates)	74%	59%	82%
Share of sum of intra-national variances	26%	41%	18%

Table 8. Share (%) of the total variance in total GDP (pps) growth between cities

Source: Eurostat

Nevertheless, table 9 clearly shows that bigger cities have performed better than average since 1995, and thus play a role of motor of their respective national economies. This also highlights a process of concentration of wealth in the biggest cities. However metropolitanization thus defined is mainly to be observed during the nineties and is slowing

down in the years 2000, at least in Western Europe. This result is also coherent with table 8 since, during the second half of the nineties, the strong process of metropolitanization went together with a more limited impact of national context on urban performances.

		1995-2006	1995-2001	2001-2006
Difference with international average	EU27+2	0.7	1.0	0.4
	NMS	2.1	2.4	1.8
	EU15+2	0.6	0.9	0.3
Difference with national averages*	EU27+2	0.9	1.2	0.6
	NMS	1.9	2.0	1.8
	EU15+2	0.5	0.8	0.1

Table 9. Differences between economic growth of the main European national cities and European or national average, 1995-2006

Source: personal calculations on the base of Eurostat regional accounts and Espo DB data

Conclusions

We can draw the following preliminary conclusions out of this entire chapter on economic development:

- The use of new data sources is promising, but more analyses are needed to understand all aspects behind these data. However, it seems desirable that these sources (firm data, actual transport time tables) should become a regular source in European analyses.
- Rail links and thus more sustainable connectivity are still very national and more trans-border connections of high-speed rail would increase the connectivity of European cities with less impact on CO₂ emissions than current air connections.
- Eastern Europe, even though its capitals seem fairly well connected to the pentagon, lacks internal connectivity between its cities. This would seem one of the prerequisites for any possible rebalancing of the European territory.
- The position of cities in hierarchical firm networks, but also their sectoral structures, seem highly path-dependent, and thus anchored in long historical agglomeration processes that are not easy to modify. Understanding the different types of insertions into the economy should, however, allow more targeted policies.

City-hinterland relationships

Introduction

An important issue in the current policy debates is the question to what extent cities play a role of motor of economic development for their wider hinterland. The German notion of “large communities of shared responsibilities” is a perfect example of such an approach. At the same time, as the literature review has shown, theorists predict an increased decoupling of metropolises from their hinterland. However, very little empirical information exists about these phenomena. In this section we, therefore, present a first attempt at analysing the issue across Europe, both statistically and through a limited number of case studies. See chapter 9.3 and following of the scientific report for a very detailed description, both of methodologies (notably the caveats linked to the method of defining the metropolises and their hinterland) and of results.

Is there a relation between cities and their hinterland in terms of economic and demographic evolutions ?

Convergence processes in metropolitan macroregions

In the analysed sample of European metropolitan macroregions, trends for the increase of development disparities between the metropolis and the surrounding region could be observed in the period 1995-2004 (figure 9). This can be viewed as a consequence of metropolisation processes, which lead to a faster development of large urban centres which pool the resources indispensable for the development of information economy than that of their regional hinterlands, which in many cases function in the previous, industrial and agricultural development paradigm. Similarly, middle-sized cities “eclipsed” by the large metropolis are developing more slowly. However, such growing disparities do not preclude that in a number of macroregions a fast development of the metropolitan area was accompanied by a speedy development of its surroundings, even if the former was greater than the latter, thus indicating that metropolisation can also bring benefits to the surroundings if these are sufficiently linked to the metropolitan area's growth processes.

In some macroregions, opposite processes took place, but this was usually either a consequence of enormous intraregional disparities or of a lower rate of economic growth in the countries in which they were located. The national context plays an important role in analysing the development dynamics of metropolises as the nationwide rate of growth is as a rule strongly correlated with the rate of development of metropolitan areas.

Change in disparities in the development level between the metropolis and its region

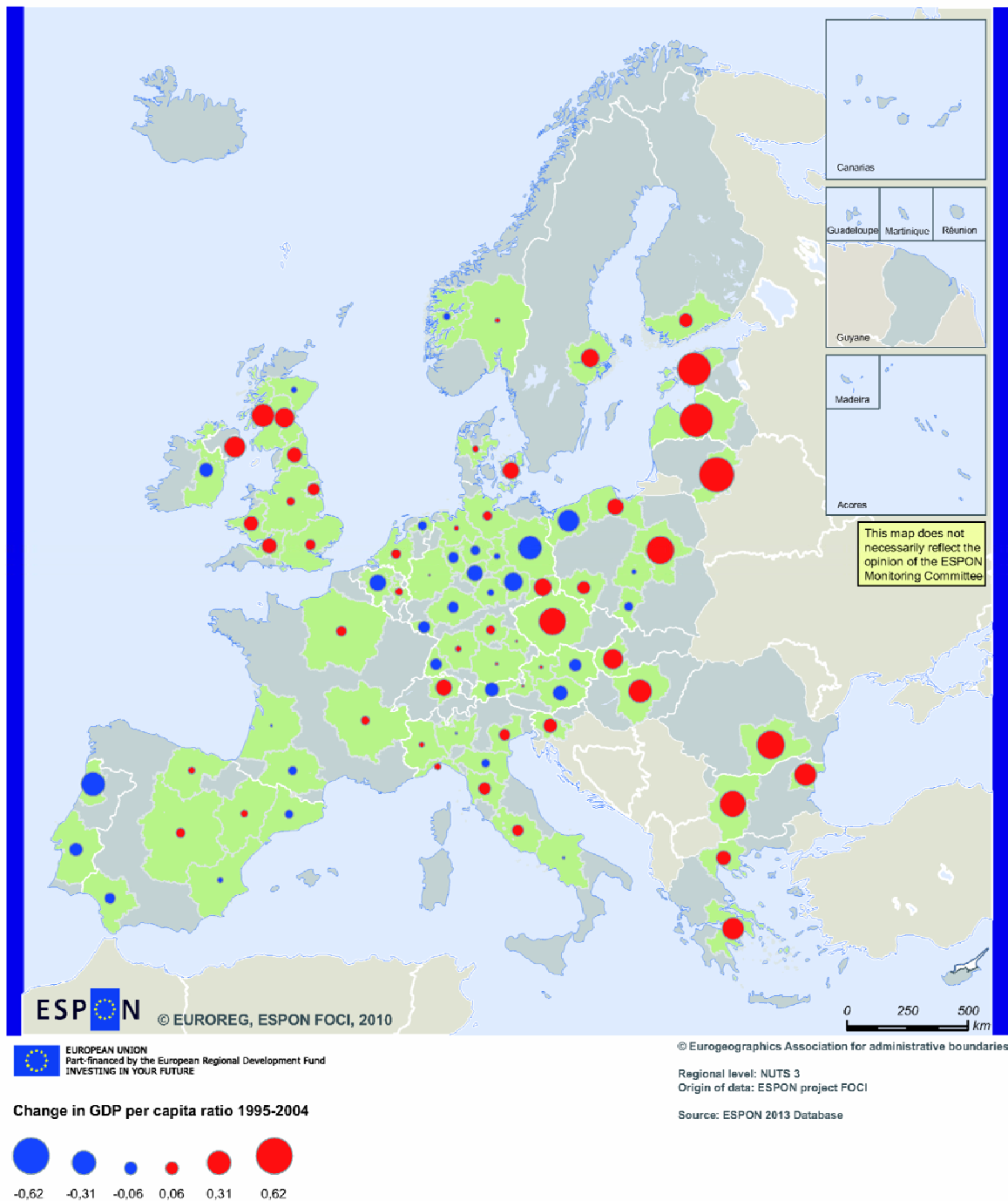


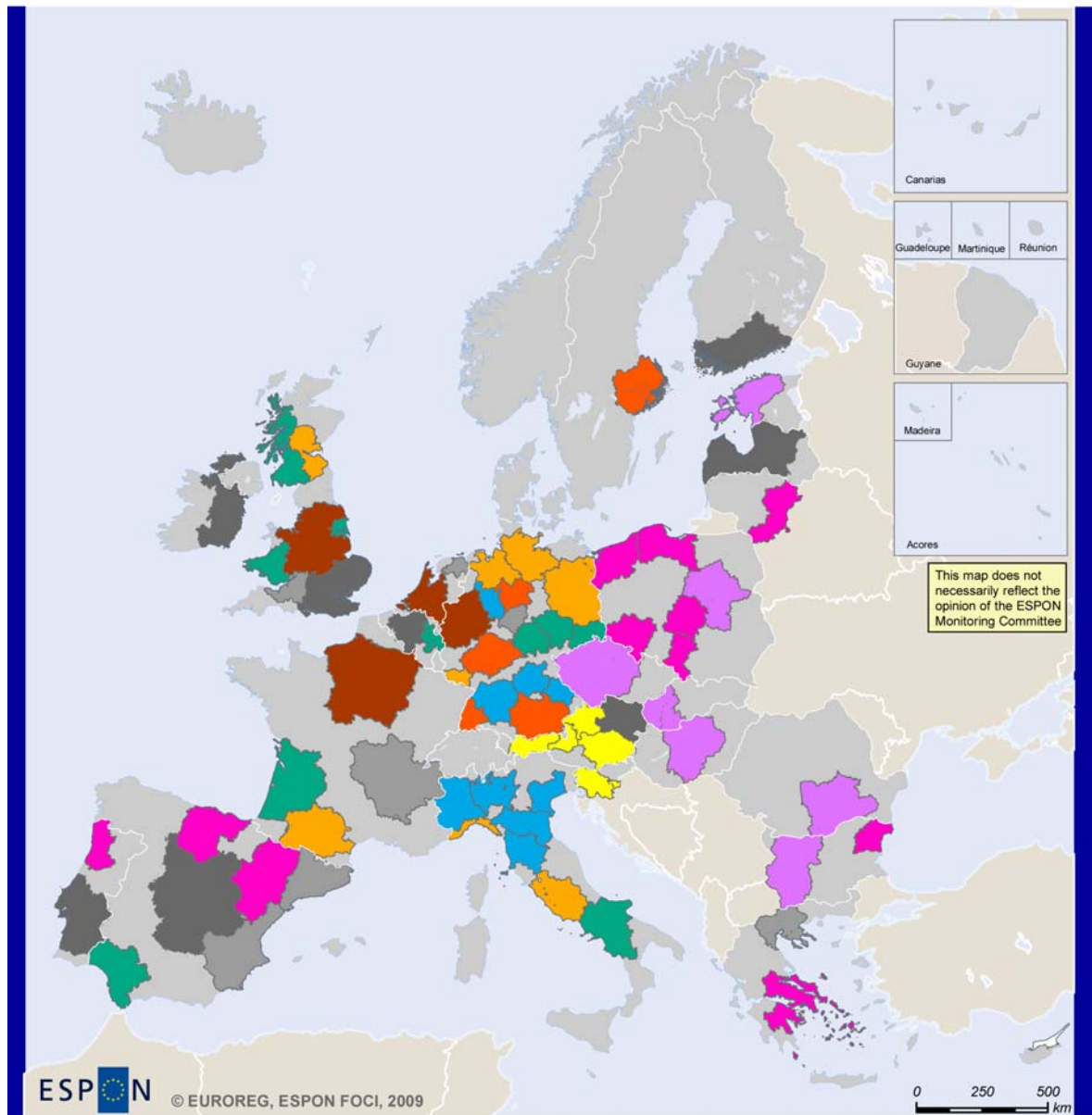
Figure 9. Change of disparities in the development level between the metropolis and its regional hinterland in 1995-2004

Typology of metropolitan macroregions

In order to understand the diverging evolutions, we analysed the disparities within metropolitan macroregions in terms of the correspondence of demographic processes, structural changes and labour market fluctuations. Results of our analyses point to a significant role of

the national and regional contexts, which prove a clear *differentia specifica* of each of the surveyed macroregions. Nevertheless, taking into account the above dimensions of disparities, we identified several main types of conditions determining the economic relationships between the metropolis and the region observable in Europe (figure 10). The capital city macroregions of Central and Eastern European countries were the most conspicuous of metropolitan macroregions. In this group, it could be clearly observed how metropolises break the ties with their regional hinterlands. This was probably caused by the rapid pace at which the capital city metropolises joined the mainstream of an open networked economy, with a dominance of traditional functions such as low-productivity agriculture and declining traditional industries in the economies of their regional hinterlands. To some extent, this type was imitated by other, usually smaller cities with peripheral locations, where similar processes took place but with a lower degree of macroregional divergence. At the same time, highly industrialised regions (“industrial” or “problem” regions) were relatively the most internally coherent. However, during the process of adapting their economic structures to the conditions of global information economy, their intraregional convergence would as a rule decrease. The remaining types of regions were quite varied despite a similar scale of intraregional disparities in the economic development level. Divergence could be observed both in highly developed monocentric and in polycentric regions. Capital city macroregions yielded the least to attempts at generalization – particularly those in smaller countries, where the relationships between the metropolis and the region were uniquely distinctive.

The most common types of metropolitan macroregions



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Regional level: NUTS 3
Origin of data: ESPON project FOCI

Source: ESPON 2013 Database

The most common types of metropolitan macroregions

- 1. Monocentric service centers surrounded by regional hinterland with labour market problem (8)
- 2. Central service centers surrounded by industrialized regional hinterland (5)
- 3. Small service centre surrounded by mountain areas (5)
- 4. Polycentric metropolis in polycentric regions (4)
- 5. National growth poles surrounded by industrialised areas (9)
- 6. Restructuring cities in problem areas (10)
- 7. National growth poles surrounded by traditional rural areas (CEECs capitals) (7)
- 8. Smaller cities in peripheral areas (11)
- 9. Other macroregions – capital cities (8)
- 10. Other macroregion – non capital cities (7)

Figure 10. Typology of metropolitan macroregions (selected types)

Mechanisms underlying metropolis-region relations

In order to identify which factors are the most important in explaining the co-evolution of a city and its hinterland, we used both quantitative methods (regression analysis) and qualitative case studies.

Regression analysis

The following key factors affecting the disparities in the economic development level and their change were identified based on regression models using data on demography, economic structure and labour market (see chapter 9.6 of the scientific report for more details):

- **economic structures:** A similar economic structure could point to the existence of direct or indirect linkages between metropolitan areas and their regional hinterlands which lessened the disparities in the development level.
- **labour market:** An improved situation in the metropolitan labour market with its simultaneous deterioration in the regional hinterland was the main reason (or consequence) for the macroregional divergence in the development level. Seen together with the migratory outflow from the regional hinterland to the metropolis, this could testify to the backwashing of development resources (mostly human capital), from the periphery to the core.
- **labour productivity:** This was manifested inter alia by the differences in labour productivity in industry reflected by varied degree of capital intensity of the sector, and thereby probably to the level of its technological advancement.

It should also be pointed out that both the scale of intraregional disparities and their changes were quite strongly dependent on the national and regional contexts.

Case studies

Case studies showed those factors for which no comparable statistical data at the European level could be compiled, and which were pertinent for the relations between the metropolis and the region, while simultaneously taking into account the opinions of both regional and local authorities. See chapters 9.7-9.13 of the scientific report for detailed analyses of these case studies.

Level of linkages

In the analysed cases (except Catalonia), the regional hinterland did not play a significant role in metropolitan development. Economic processes were as a rule enclosed within the metropolitan areas, and the regional linkages of enterprises were poorly developed when compared to their linkages with the rest of the country or with the rest of the world. At the same time, the regional hinterlands in many cases were not able to take advantage of the opportunities created by the metropolitan centre.

Factors favouring linkages

The key factors which fostered strong linkages included intraregional similarities between the socio-economic structures (notably the quality of the human capital and innovativeness). Another major factor of intraregional integration was transport accessibility, with a special significance of the isochrone of 90 minutes' travelling time for the intensity of linkages with the metropolitan centre. In addition to that, the polycentric structure of the metropolitan area played a part as it facilitated access to the metropolitan labour market of the residents of the regional hinterland; it also fostered the development of linkages between enterprises regionally.

Public action for enhancing linkages

Activities which were most frequently undertaken by public authorities in the analysed regions included the development of transport infrastructure, particularly with regard to creating supra-regional connections between the central city and other metropolitan centres. In consequence, this led to the emergence of transport corridors (roads and railways) which acted as development networks, as well as growth poles or sectors located in the vicinity of regional airports. Another important type of activities was human capital investments, which frequently were manifested by the development of academic centres in the regional hinterlands of the metropolises.

Forms of governance

The situation regarding metropolitan governance is varied in analysed case studies and does not allow us to provide simple generalization. However, based also on results of the ESPON CAEE project, focused on the role of metropolitan/city-regional governance in agglomeration economies, we may expect that the impacts of public interventions are quite limited as public authorities can not directly affect location behaviour of firms and individuals. Furthermore, activities very often are targeted at improving quality of life or adapt to existing demand and do not implement strategic vision of development.

Cooperation

Introduction

The specifications for this project called for an evaluation of the “possibilities for increasing development opportunities through territorial cooperation, establishing polycentric urban clusters at different scales and in different parts of the European territory that can support a better territorial balance and cohesion”.

As mentioned in the general overview, the current knowledge about polycentric development is very limited, and generally based on a morphological approach. This limits the available objective evaluations of actual cooperations, and thus makes policy conclusions often very limited. In the first part of this section we will, therefore, relate our attempts to move on to a more functional approach in order to enhance the empirical base of the polycentricity debate. Our success in this endeavour has been fairly limited, but we hope that some of the conclusions will help in the future efforts around this topic.

In addition to this quantitative approach, we have also launched a series of case studies in order to explore how actual cases of cooperation function. Many of these cases were based on the list of case studies elaborated by the ESPON 1.1.1 project in the hope to be able to build on the existing work and take it further. Our main aim in these case studies is a critical evaluation of the actual realities of cooperation, but also of the governance structures put into place to support them. Such critical evaluations are not easy to come by though, as those who are the most knowledgeable about the cooperation schemes are those who also have vested interests in them.

Measuring functional polycentricity: an impossible quest ?

In order to test different methods for evaluating actual and functional polycentricity, we worked at different scales. Fairly detailed analyses were done at regional and national level for the Athens region and for Greece, and a second “case study” on a transnational scale covers the Eastern Balkans. But an attempt was also made to extend the methodologies to the entire ESPON space and to provide quantitative measures that would allow to assess both the actual functional linkages between cities, but also the potential for cooperation. For more details on all these analyses, see chapter 10 of the scientific report.

As an example, figure 11 shows an attempt at evaluating levels of functional differentiation within potential polycentric areas (similar to the PIA in ESPON 1.1.1) based on (coarsely defined) economic structure. At the same time, measures of the relationships of firms in certain branches, notably the most dynamic ones inform about the actual degree of clustering of firms which can be as an important driver of development (through agglomeration economies) in the specified system. Both aspects should be considered together as sources of potential for cooperation. As clustering (through networking) refers not only to each specific regional or

local urban system but also to higher spatial levels, the respective polycentric cooperation policies should be deployed in a frame of multi-level territorial governance.

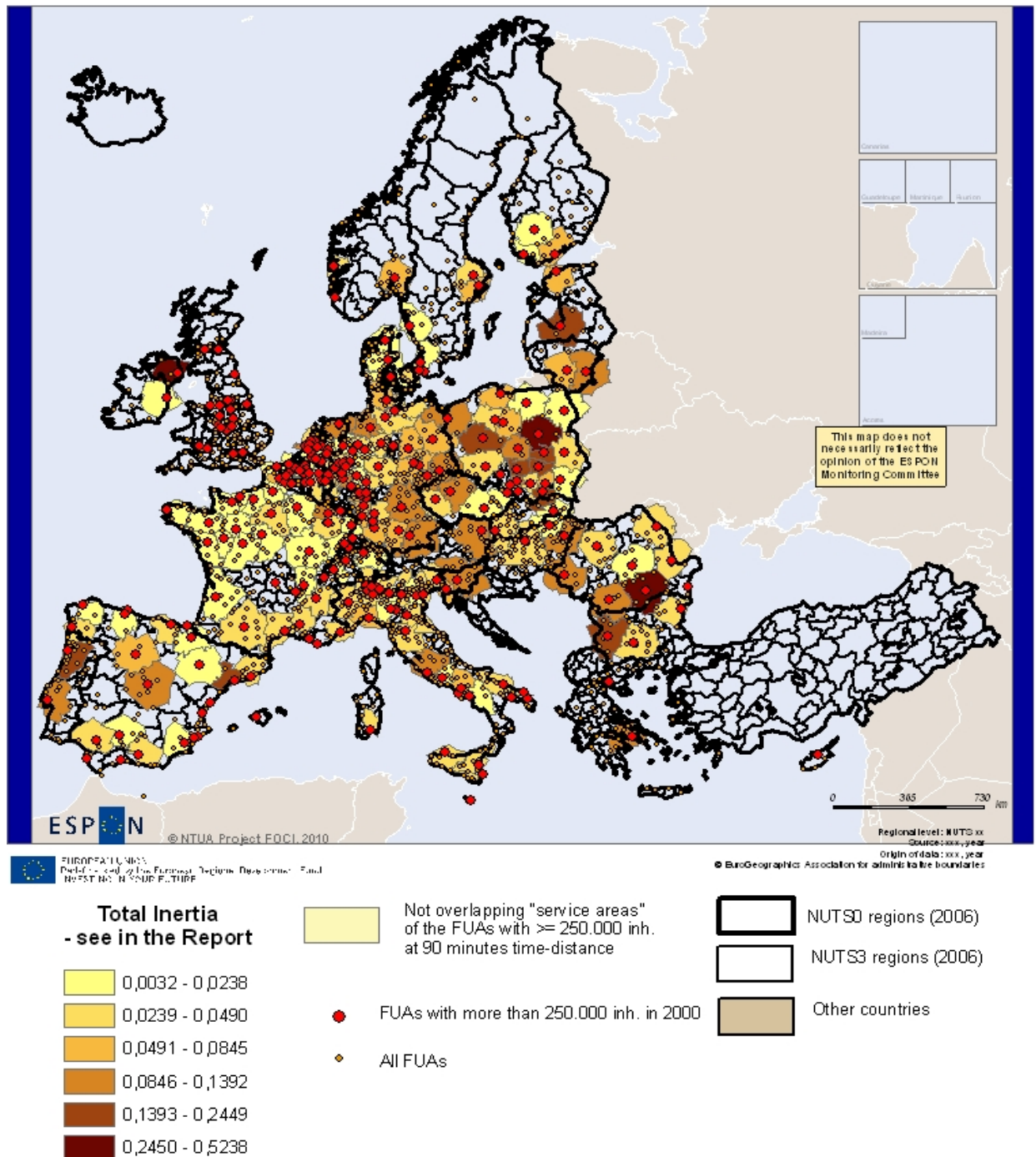


Figure 11. The degree of divergence (correspondence analysis: total inertia) based on NUTS3 sectoral structure in PP urban networks in the ESPON territory

Figure 12 shows attempts at defining actual functional relations at more local levels. The left map (a) shows the local centralities of cities in networks of multinational firms within a distance of 100km (see chapter

7.3 of the scientific report for details). Some interesting links or lacks thereof do appear: For example Toulouse is linked to Barcelona, while there's not a so much dense urban network there. The same phenomenon can be underlined at the Eastern border of Germany, for Madrid with Castille region, for Bretagne region in France, or for Denmark. At the opposite, some "potential" regional urban frameworks do not support enough networks like Poland, Hungary, Romania and Bulgaria. On the right map (b) we see Framework Programme research cooperations in the Eastern Balkans case study area showing the strong role of the capital cities, but the weak participation of other cities, leading to possible conclusions on cooperation built at different scales. See part B of chapter 10 for more details.

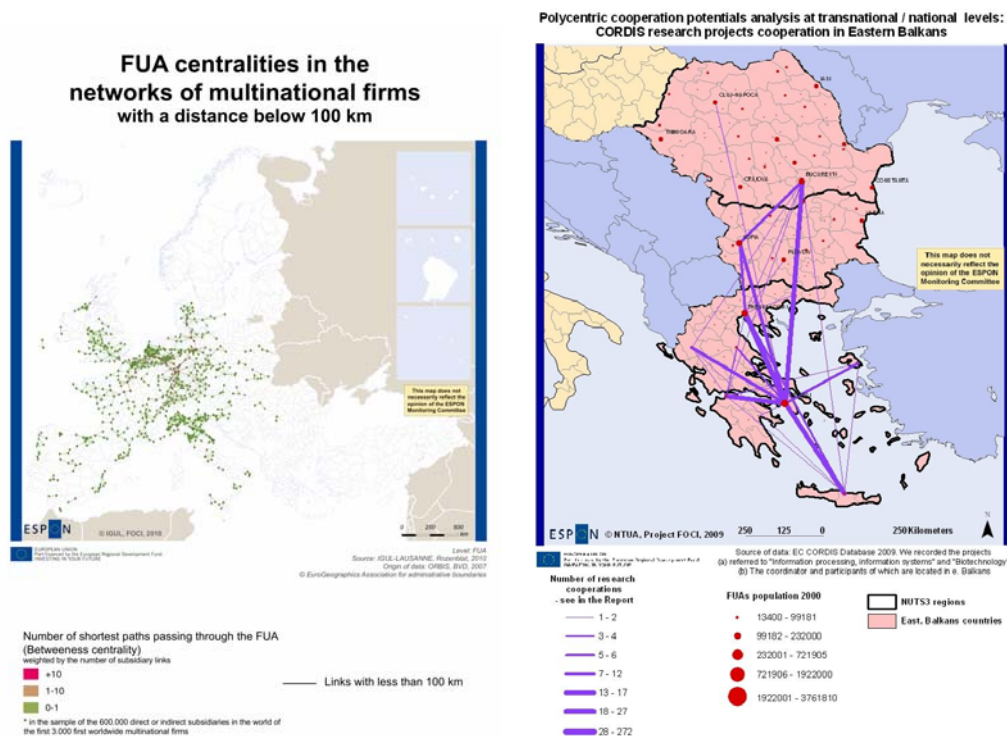


Figure 12. a) FUA centralities in the network of multinational firms with a distance below 100km; b) Selected CORDIS research projects cooperation in Eastern Balkans

At this stage it is still difficult to draw policy conclusions out of such maps, but they show the potential for more extensive research on functional relations between cities at different scales, in order to objectify some of the discourse about cooperation and polycentric relationships and to measure actual linkages between cities.

Cases of cooperation: some conclusions from case studies

A series of seven case studies tried to go deeper into understanding the functioning, but also the actual added value of inter-urban cooperation. See part C of chapter 10 and chapter 11 of the scientific report for more details on the case studies.

A first distinction has to be made concerning the types of cooperation. Cooperation around basic infrastructures or services such as transport, road construction, green spaces, waste collection, etc constitutes a first level of cooperation. The added value at this level is not to be disputed and many such cooperations seem to function, although many hindering factors do exist (see below). A second type cooperation is cooperation around spatial planning issues encompassing a wider territory than single administrative units. When these issues are of the concrete level as in the previous type, they seem to allow some success, but as soon as the issues are more general and more multifaceted, cooperation seems to become much more difficult. A final type of cooperation is a more integrated form of cooperation, attempting to build a new level of government / governance in order to regroup the different territories into a larger unit with bigger clout in (inter)national comparisons. This type of cooperation seems to be the least successful, apparently due to some of the following reasons:

- 1) Such cooperation touches upon many different issues and thus many different prerogatives and competences, making consensus and motivation much harder than for cooperations based on very focused and concrete issues.
- 2) The complexity of the issues treated in such cooperations implies the participation of very many different levels of government, thus also complexifying the institutional settings.

The issues raised in such cooperations also seem to go quite far in terms of the necessity for common policy, thus actually raising the question of fundamental territorial reform which then hits important inertia. In this context, cooperation is thus only a weak substitute (the case of the Randstad regio in the Netherlands seems to be an example of this) and thus not entirely satisfactory.

More in detail, the following factors supporting or hindering cooperation could be identified (some reflecting the issues raised above) :

- Hindering factors linked to the institutional framework
 - heterogeneity of competences
 - limits of competencies
 - inadequacy of administrative boundaries in relation to the issues on the ground
 - limitations in financial resources of the respective administrative levels of the partnership
- Hindering factors linked to the relationship between partners
 - competition between partners of similar weight
 - imbalance between and mistrust of small vs. bigger partners
 - inadequacy between city links and firm links
 - absence of good trade-off mechanisms and instruments, making it difficult to set aside local interests for the greater regional good
 - absence of any clear added value of the cooperation

coherence

- lack of coherence between multiple partnerships of a given city
- lack of coherence between interests of partnership and interests at higher hierarchical levels, or between interests of one partnership that creates negative impacts for others cities or partnerships
- Favourable factors (besides the negation of above hindering factors)
 - Identification of concrete and reasonable objectives that are attractive for all partners
 - Identification of objectives requiring the joint intervention of all partners, one example is the acquisition of higher-level (including EU) funding
 - Cross-border networks because of the particularly strong incoherences across borders, in fields such as transport, infrastructure provision, etc
 - Others: small distance, a common history or tradition, levels of education, etc.

The future of cities: Scenarios to assess the upcoming challenges for cities

The destiny of European cities is much too dependent upon the global context and upon macro-policies to envisage credible alternative scenarios of urban development derived only from different urban development policies. This is why the two scenarios proposed hereafter have each its own logic in terms of global background and of macro-policy mix. In each scenario the territorial development policies defined at each level pursue specific objectives, but have to cope with the respective impacts of global factors and more general policies.

The scenarios take account of the Europe 2020 Strategy, but consider that it may be accentuated or even revised, according to changes in the international environment. The hypotheses chosen for the two scenarios differ mainly through the characteristics of the global context and the nature of policy responses to the most significant challenges. There are however common elements of reference in the two scenarios (demographic evolution, regionalization of the globalization process, growing disparities in the productivity of main economic sectors, emergence of a number of new technologies etc.). Both scenarios have a time horizon of 15 to 20 years, divided into two periods, the first being of 7 to 10 years. See chapter 13 of the scientific report for details.

Scenario hypotheses

The first scenario ("Green economy") aims at sustained recovery from the economic crisis, while addressing in priority the challenge of climate change. It requires a high level of stability in the global context and is based on the assumption that the massive adoption of new technologies aiming at drastically curbing down greenhouse gas emissions may generate significant growth and open new markets at world scale;

The second scenario ("Enhancing the European potential") is generated primarily by the emergence of new serious economic/financial troubles in the global context, with various large, but strongly indebted countries (USA, Japan etc) having lost their capacity of debt reimbursement. In this highly unstable and threatening environment, Europe adopts a more protective strategy and puts the priority on the enhancement of its own potential (500 million consumers; skilled manpower and technological excellence in various fields).

See the detailed storylines and a summary table in the scientific report for more details.

The impacts of the scenarios and possible conclusions

Each of the scenarios has a distinct impact on different territories and territorial structures. See the summary table and detailed description in chapter 13 of the scientific report for details. The following key policy conclusions can be drawn from the scenarios.

The first policy message from the scenarios is that the future of European cities is closely linked to changes in the global context, including global policies.

The second policy message is that coherence is necessary between policies at various scales. For example, the introduction of carbon taxes may have strong impacts at local scale and may strengthen the profitability of public transport systems implemented by local authorities, but it is not realistic at the scale of a single country. Coordination of policies in this respect is required at least at European scale. Place-based policies and thematic/sectoral policies should not be in contradiction with each other. Incoherent policies at the various levels generate tradeoffs and additional economic, social and environmental costs.

The third policy message from the scenarios is that regional/local policies related to cities and metropolitan areas have to be tailor-made with respect to the specific characteristics of each regional or local settlement system. The evolution of cities is subject to a variety of drivers, the combination of which results in unique situations and perspectives. While general policy orientations related to new and emerging issues (like climate change, population ageing, social polarisation etc.) are meaningful, the way they have to be concretely implemented very much depends upon the local context and may vary significantly from city to city.

If one compares the two scenarios with the present situation and evolution two years after the most severe economic crisis of the post-war period, the present European context (with the exception of a few countries) is closer to the second scenario, which displays a slow recovery. This does not mean that the pro-active policy approach described in scenario 2 (efficient promotion of the respective territorial potentials) is presently being efficiently implemented everywhere throughout Europe. The agreements reached at the Cancun Climate summit still have to be fleshed out, but it does not yet seem that the conditions for a "Green New Deal" at world scale are met. This issue may however become topical again in the medium-term in relation with the possible depletion of fossil energy sources, making the development of a "Green New Deal" unavoidable. The Europe 2020 Strategy contains elements of both scenarios. The promotion of the environment and of renewable energy sources is part of scenario 1, while a number of other measures pertaining to "smart growth" are closer to scenario 2. The Europe 2020 strategy is however not a scenario in the strict sense of the word. It determines long-term targets without making explicit the characteristics of the global context likely to make the achievement of such targets feasible.

Policy conclusions

This report has highlighted some of the key trends and developments in European cities today. It has also shown some possible new paths for gathering knowledge on European cities. Finally, it has provided alternative scenarios for the future evolution of Europe's cities according to different perspectives on the interplay of the various drivers of change.

So what can we take from all this in terms of policy messages? The following presents a selection of some of the policy conclusions that we draw out of our work. For more information, see chapter 14 of the scientific report.

General policy messages

- Cities are strongly embedded into other scales of territorial and general development. Policies for cities should take account of the macro context and may vary according to new context situations. Monitoring these situations to be able to identify in which direction they seem to be moving is an important task for policy making.
- Different global situations necessarily require alternative policy responses, in which some lose and others gain. The scenarios assist in identifying the appropriate urban and territorial policy responses to alternatives in the global context and in making more transparent the losers and winners in each situation.
- A coherent combination of macro policies and territorial policies is necessary to promote a sustainable, socially cohesive and competitive development of cities. Complex interrelated challenges at the city level demand integrated and coherent policy formulation and implementation at all levels of multi-scale governance. Both vertical coherence between the levels of governance, and horizontal coherence between organisations at the local level is essential in order to avoid risks resulting from uncoordinated policies.
- Cities (as regions) show a high degree of path dependency, reinforcing agglomeration effects. The same cities are found systematically in the top ranks of several different indicators, and this has been true for a long time. Those examples of new path *creation* that might exist in specific examples are difficult to generalise, and thus to extract *a priori* criteria of success. This does not mean that policies shouldn't try to attain such new path creations, but that at this point science cannot inform it very well about the best means to go about these policies.
- European cities differ as to their place in the urbanisation cycle, demanding differentiated approaches.
- Higher levels of governance have to ensure the coherence of their policy objectives with the implementation of policies at city level. Several risks exist through horizontally non-coordinated policies:
 - Zero-sum competition based on policies to attract

employment, firms, etc, especially if based on factors such as price (e.g. taxes) or infrastructure provision may be successful for one city to the detriment of others, thus actually hindering the development of neighbouring cities. In order to avoid such zero-sum outcomes, policies should focus on each city's territorial specifics and potentials.

- Furthermore, if every city develops, for example, research parks to support its competitiveness, then all cities remain at the same relative level (so-called levelling effect).
- It is evident that there is a real policy conflict identified in the relationship between the contradictory impacts of policies to promote engagement in the knowledge society for the benefit of the local economy and society, and the impact that this policy has in enhancing socio-economic polarisation at the local level. In this relationship a clear decoupling of the relationship between social cohesion benefits and economic advancement is evident.
- Socio-spatial polarisation has increased in line with socio-economic polarisation, although socio-spatial polarisation appears to be specifically exacerbated by the impacts of both the gentrification and suburbanisation processes, that lie within the control of city-region governance, in contrast to the national and global drivers of general socio-economic polarisation.
- Institutional capacity is typically a limitation on the development of effective policy development and implementation at the local level, as highlighted by the case studies. This is particularly the case for the Eastern European member states that remain in the process of modernisation of their municipal management systems. Institution building and institutional capacity improvement therefore remains a critically important issue, notably for Eastern European cities, although the economic crisis threatens all member states with new capacity constraints due to job loss and funding cut-backs. Effective measures to improve institutional capacity for all cities are therefore increasingly required.

Territorial messages

- Cross-border inter-city linkages (firm ownerships, contactability, etc) seem particularly weak in Eastern Europe. Increasing these links might allow the development of new integrated growth areas outside the pentagon.
- There are a series of inter-urban links which could be ensured by more sustainable transport if efficient cross-border rail links are established. Many of them are already part of the TEN-T projects.
- Based on the preliminary results of the case studies, several factors can be highlighted that constitute potential difficulties for cooperation between cities: differences in levels of competencies, competition, lack of necessary resources, inadequacy between administrative and territorial structures, etc. Factors that seem to favour cooperation include a concrete common project that requires

- the joint action of all partners and cross-border situations.
- Territorial governance and the role of local policy frameworks to counter urban sprawl are critically important. These are articulated primarily in the framework of compact city planning, including the promotion of smart growth principles, development of the role of transit-oriented development, making the infrastructure plan a central element of the territorial plan, together with coordination of growth across municipal boundaries, supported by regional structures that manage growth, and assisted by appropriate planning strategies.
- European towns and cities were planned on the assumption of high levels of individual car ownership, and the reshaping and restructuring of the suburbs requires the definition of new centrality nodes based on public transportation systems. Reconfiguring cities from car dependent to public transport-based and non-motorized movement systems, supported by bicycle and pedestrian movement networks, implies significant spatial and territorial change.

Future perspectives

- Demographic change and ageing populations, the move to alternative energy sources and climate change are all providing new challenges for urban management that will require the development of new forms of policy intervention.
- The economic development path that guides the cities of Europe out of recession towards a more stable economic prospect will fundamentally influence not only the economic performance of cities, but also their social well-being, and environmental outlook.
- Regions of urban growth as well as decline show at least one common requirement in terms of territorial management. For both the restructuring of the urban fabric is essential. Compact city alternatives to sprawling cities require both central and suburban regeneration. Declining cities likewise require central area regeneration and suburban restructuring.
- In those areas of Europe which have already gone through the complete urbanisation cycle, there will probably be less need in future to counteract suburbanisation and more need to regenerate cities, especially the core areas and the high-density suburbs while ensuring that these processes do not lead to the exclusion of the socio-economically more fragile population.
- Social polarisation is likely to increase (also depending on crisis exit strategy), as well as socio-spatial polarisation, through the effects of suburbanisation and gentrification but also the creation of gated communities at different scales.
- New technological applications will have the potential to create major impacts on cities development. These may include non-polluting vehicle types, increased usage of telecommunications. Monitoring of technological innovations with potential territorial impacts is highly desirable.

- The same can be said for new values and behaviours (increasing cultural needs, more emphasis on quality urban environments, etc).

Research recommendations

- There is a gap in knowledge concerning the interactions between macro and local policies. Questions are raised regarding the extent to which they converge or diverge, or even contradict each other? Specific research in this area will be beneficial.
- The existing databases for urban research on cities across Europe are inadequate. Eurostat and DG Regio are advocating the need for more territorially detailed data, but much depends on the support from Member states. The Urban Audit has proved very useful in this respect, and other initiatives supporting the provision of local data are emerging. However, the scientific community cannot understand why basic data at LAU2 level (e.g. total surface area and total population) is still considered confidential data by some member states! If the desire to improve knowledge on European cities is genuine, then it is clear that data dissemination policies must adapt.
- New data sources that have been explored in this project have shown interesting potential, but have also proven difficult for individual teams to access and manipulate e.g. ORBIS firm database, transport time tables, CORDIS database. A concerted effort at the ESPON-level may be necessary to permit more structured access and (pre-) treatment of data for research teams.
- Because of the difficulties identified above, much of the potential knowledge embedded in this data has not been exposed, but it is clear that these opportunities are worth pursuing.
- Knowledge on the actual content and the added value of city cooperations is still very limited. Specific focus on these elements would be necessary, but for the former data is very difficult to get at European scale, and for the latter the impact of policies is always difficult to disentangle from the influences of all other factors.

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