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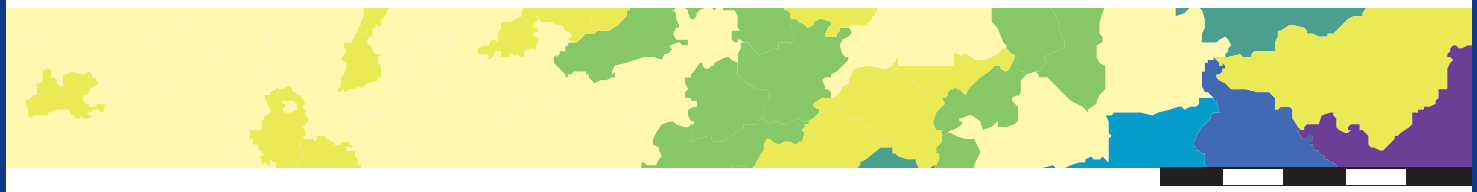

Territory matters for competitiveness and cohesion

Facets of regional diversity and potentials in Europe

ESPON Synthesis Report III, results by autumn 2006

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Colophon

The present report was drafted by an editorial team anchored in the ESPON CU involving in particular Kai Böhme, Simin Davoudi, Cliff Hague, Peter Mehlbye, Jacques Robert and Peter Schön. Furthermore, Phaedon Enotiades, Thiemo W. Eser, Patrick Salez, Flemming Thornæs and René van der Lecq of the ESPON Monitoring Committee contributed valuable comments in their role as "sparring partners" to the editors. Volker Schmidt-Seiwert and Ingo Heidbrink produced the maps.

The report is based on the ESPON project reports prepared by transnational project groups, involving more than 600 researchers. A detailed list is available in chapter 13.

Information on the ESPON programme and projects, the complete reports and the partners involved can be found on www.espon.eu

The ESPON website always presents the latest developments in the ESPON programme and findings from ESPON projects. It offers the opportunity to consult in detail the ESPON publications and tools, as well as all as the project reports and the corresponding indicators available in the ESPON database.

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Disclaimer
The content of this document is based on the results of applied research provided by transnational teams of researchers taking part in the ESPON programme. As such, the maps and texts do not necessarily reflect the opinion of the ESPON Monitoring Committee.

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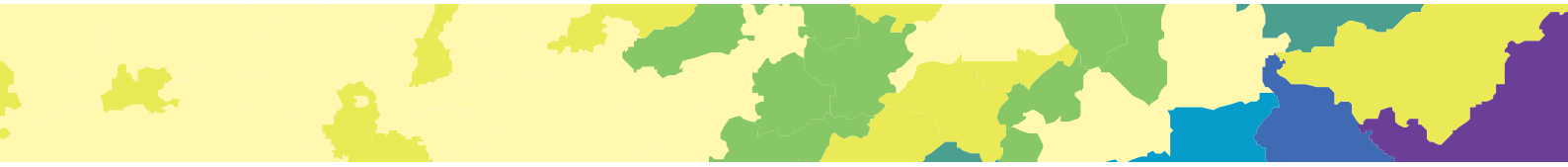
competitiveness and cohesion



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FOREWORD

ESPON, the European Spatial Planning Observation Network, has been set up to support policy development and to build a European scientific community in the field of European territorial development. The main aim is to increase the general body of knowledge about territorial structures, trends, perspectives and policy impacts in an enlarging European Union.

Between 2002 and 2006 a total of 34 applied research projects have been carried out by ESPON. They have produced a substantial new body of knowledge on the trends, policy impacts, relationships and potentials within the European territory, which can now be communicated to, and discussed by policy makers, practitioners, and scientists at all levels and all across Europe.

All of the applied research undertaken within the ESPON programme addresses the territory of 29 European countries including the 25 Member States of the EU, the two accession countries of Bulgaria and Romania, and Norway and Switzerland.

This final ESPON Synthesis Report is based on all 34 ESPON projects involving over 600 researchers in order to provide an integrated summary of the current knowledge on European territorial development issues. Indeed, the report aims to bring together the research from all projects into ten topical chapters, rather than providing separate summaries of each project.

Furthermore, the report is closely interlinked with the ESPON Atlas and the ESPON Scientific Progress Report, which are published in parallel. The ESPON Atlas presents a specially developed map collection and background information on the maps and their interpretation. The Scientific Progress Report provides a summary of the scientific, i.e. methodological and technical achievements, of ESPON up to 2006.

The results of the ESPON programme are disseminated in an open and transparent fashion in order continually to nourish the discussion of findings and methodologies related to territorial development, both in the policy sphere and in the European research community. A debate involving stakeholders on the use of ESPON results in practice as well as applied research and targeted analysis upon demand will be key elements of ESPON during the next Structural Funds period 2007-2013.

The ESPON website at www.espon.eu provides extensive information on the ESPON programme. It always presents the latest developments in the ESPON programme and findings from ESPON projects. It offers the opportunity to consult in detail the ESPON publications and tools, as well as all as the project reports and the corresponding indicators available in the ESPON database.

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Territorial potentials of European regions and their diversity are becoming increasingly important for the development of the European economy in times of globalisation. Territorial imbalances on the other hand challenge the economic, social and territorial cohesion within Europe.

Contributions from cities, regions and larger territories are important for Europe's position in the world and thus for the achievement of the aims set out in the Lisbon and Gothenburg Strategies.

European competitiveness depends on contributions from regions, cities and rural areas in all corners of the continent. An asset for Europe is its rich regional diversity which for each region and larger territory represents a unique set of potentials and challenges for development calling for a corresponding targeted policy mix to become reality.

European policy development has moved towards recognising the territorial dimension in many policies and the added value from an integrated approach when searching for development opportunities.

Modern strategic objectives for regions and territories opt both for improving the cohesion and the competitiveness of the area, and to improve both the attractiveness for investments and the liveability for people.

In doing so a number of territorial trends, perspectives, policy impacts and scenarios should be considered which influence policy aims of cohesion and balance and the competitiveness of regions and territories. Opportunities and challenges of different territorial types such as cities, rural areas and areas with specific characteristics and important themes as accessibility, innovation and hazards should be part of this.

The following summary of main findings of the ESPON 2006 Programme intends to give insight in that respect.

Territorial cohesion is an important aim of European policies and currently a number of trends point towards an increasing territorial balance in Europe. This is however being challenged by some overarching trends. The European core-periphery pattern is weakening. At the same time, there are increasing challenges in remote and peripheral areas and a number of overarching trends which point towards increasing concentration both at European and also at national levels.

Overarching trends stimulate imbalances. Market forces in general are driving geographic concentration tendencies in economic development and in the location of investments. Adding the current demographic trends and the imbalances in the education and transportation systems the trends currently pointing towards more territorial cohesion is being challenged. In many areas increasing disparities can be observed between (a) capital regions and the rest of the country (in particular in countries which joined the EU in 2004), (b) neighbouring regions within a country, (c) neighbouring regions on both sides of a national border, and (d) rural and urban areas.

The European core is spreading. The European core is traditionally defined by the cornerstones created by London, Hamburg, Munich, Milan and Paris. Although the core covers only 14% of the ESPON territory, it generates 46% of its GDP, is

home to 32% of its population and enjoys 75% of its R&D investments, in 2002. Current economic figures and urban development show that this core of Europe is extending along a number of corridors.

There are several strong urban areas outside the European core. Both larger metropolitan agglomerations and small and medium sized towns outside the European core are gaining ground as important nodes for European development. Many of them are important economic engines for their areas and some even outperform urban areas within the core in relation to economic and Lisbon indicators. Among the currently strong urban nodes outside the core are Madrid, Barcelona, Athens, Dublin, Stockholm, Helsinki, Oslo, Warsaw and Budapest.

Increasing the competitiveness of Europe and its regions is one of the main aims of the Lisbon Strategy. This involves focusing on growth and jobs, as well as growing the necessary preconditions for the future mainly in terms of a Knowledge and Information Society. Only a certain type of regions appears to be really successful with regard to the Lisbon Strategy. However there are also examples of other types of areas which are performing well with regard to economic development. The key to success seems mainly to lie in the active use of territorial potentials for the development of economic functions across a wider area, and support through national policies.

Accessible urban areas show the best Lisbon performance. Assessing the 14 official Lisbon indicators, the territorial pattern of Lisbon performance clearly corresponds to the pattern of major accessible urban regions. Furthermore, it appears that regions in the core and the north of Europe are generally in a better position than southern and eastern regions. Indeed, the Nordic countries illustrate that even less urbanised and less accessible areas can score well on the Lisbon indicators.

Innovation potential, such as R&D and creativity, has a distinct territorial pattern. Combining data on the regional importance of R&D and the number of private sector researchers in a region, the statistics demonstrate the relatively weak position of the European periphery, except for the Nordic Countries. Focusing on single regions, the metropolitan areas of Europe are mainly situated in regions of above average importance in terms of R&D. This territorial pattern is largely replicated in the regional share of cultural employment, which includes "creative" jobs that normally stimulate the processes of innovation.

The global position of Europe and its importance is clearly emphasised in the Lisbon Strategy. Successive EU enlargements have enabled the Union to maintain a constant share of the global GDP and population. The huge disparities that exist between Europe and its neighbours raise some important questions related to trade and migration. Connections into global networks vary between places, some of which act as gateways to/from other parts of the world, while the reach of a few European cities is truly world-wide.

Diversity of territorial potentials in global networks. Europe's countries, regions and cities have diverse potentials for developing successful global networks, by building on their historical ties and current connections into particular world regions. Global trade relations and destinations of international flights indicate that different European locations develop hub functions and specialised links to different parts of the world.

Urban areas are important drivers of territorial development in Europe. Their importance derives mainly from their functional specialisation, which is also the reason why not only large cities are of national or international importance. Metropolitan regions and small and medium-sized cities are significant nodes for territorial cohesion and competitiveness at European and national level. Urban areas' strengths are linked to their territorial legacy from their past (infrastructures, cultures, institutions etc), production systems and positioning in the knowledge economy.

Major metropolitan agglomerations are important nodes. Out of the 1595 functional urban areas in the ESPON territory, 76 are of European significance, with London and Paris being Europe's leading metropolitan areas. When these 76 areas are overlaid on the growth of GDP per capita over the period 1995-2003, the real potential of cities as nodes of polycentric development becomes clear. Even the smaller ones are located in regions which achieved the highest economic growth rates.

The functional specialisation of cities is decisive for their supra-regional importance. Major urban areas, but also many small and medium sized towns, host actors whose products and services are of international significance. Statistics show that cities have the most educated workforce, the greatest number of researchers and employed in creative industries. Their specialisation in certain functions makes them important drivers for territorial development. An example is that cites are the places best endowed with knowledge infrastructure and human capital which is the main thrust for the Lisbon Strategy.

Small and medium-sized cities play a vital role for territorial development. In 2003, in some countries as much as half of the population lived in small towns. Depending on their territorial context, e.g. neighbouring larger cities, being part of a network of small towns or a development pole in a rural area, these towns can play important roles in economic development and provision of services of general interest.

Rural areas can vary greatly throughout Europe and within a national context. Various territorial types of rural areas exist with differing territorial potentials. Some areas are strong on endogenous potentials and make good use of their land, natural assets, existing resources, and infrastructure. In most of them the rural economy depends also largely on factors related to the capacity to capitalise on the territory's resources. Depopulation is a real problem in some rural areas, whereas others are experiencing population growth through immigration.

Rural areas are no longer synonymous with agriculture. Today three basic territorial types of rural areas can be distinguished, each with specific potentials and challenges. These are rural areas in close proximity to urban centres, rural areas with one or several urban centres as development poles, and more remote rural areas. All types of rural territories need to build on a diversified rural economy according to their situation.

The economy in rural areas depends also on intangible factors. The way local people are able to exploit local resources is often more important for rural development than the tangible resources themselves. The process involves valorising natural and man-made assets, strengthening the economic environment and improving institutional capacity and entrepreneurship.

Depopulation is a challenge for many rural areas. Whereas rural areas in close proximity to larger cities and those in attractive locations may enjoy demographic growth, most of the other rural areas are facing a demographic decline which is a threat to the sustainability of services of general interest and the liveability of the area.

Areas with special geographical characteristics require often tailor-made policy mixes. There are territories with special geographical features (coastal areas, islands mountain areas, and outermost regions) and territories with special governance challenges (border regions, cross-border and transnational cooperation). All types of territories have specific challenges and opportunities related to their development. At the same time these overall categories cover a huge diversity of areas with very different development prospects.

Regions with specific geographical features may face specific challenges for human living and economic activity. Generally, accessibility for islands, mountain areas and outermost regions is below European average and in particular in mountain areas also the agricultural output tends to be lower than in other comparable areas. However, they show a similar spectrum of territorial and economic development as other less geographically challenged areas. The exact situation of islands, coastal and mountain areas is often difficult to detect when looking at the overall regional performance, as the conditions may vary widely within the regions.

Cross border integration can strengthen functional regions. The characteristics of a national border differ depending on the political, socio-economic and territorial context. In large parts of Europe, open borders allow for the establishment of cross-border functional regions, in many situations with a polycentric network of cities. Indeed, nearly one quarter of all larger cities have potentials for commuting areas going across national borders.

Transnational cooperation has focus on the territorial dimension. Transnational cooperation often, but not always, have thematic priorities related to specific territorial characteristics of the regions involved. They can contribute to developing tailor-made policy mixes for the larger territory and its regions and also shaping transnational identity around territorial features and common projects. Issues related to demography seem to be interesting for all types of regions, e.g. both regions facing demographic decline and also growth regions.

Accessibility and infrastructure are important for regional development. With regard to multi-modal accessibility, there is a core-periphery pattern across Europe and also within countries. These might be affected by possibly rising energy prices. ICT is often considered to be a "friction-less" substitute for physical movement. However, also the route to an Information Society shows considerable territorial variations.

Accessibility is best in the European core and national capitals. European-wide disparities in multi-modal accessibility show better overall accessibility for regions in the core of Europe and larger urban agglomerations, in particular those with international airports. The European core-periphery pattern is even more pronounced for accessibility by road or by train. This underlines the importance of airports to balanced European-wide accessibility.

Increasing energy prices will have negative impacts on accessibility, particularly in rural and more remote areas. Such regions already have to contend with relatively poor accessibility; higher transport costs will compound this problem. Thus disparities between areas with high and low accessibility might increase.

ICT accessibility and the Information Society vary territorially. Accessibility to modern information and communication technologies shows European north-south and east-west divides, as well as a rural-urban divide. This is true for the provision of infrastructure, the use of it and the economic benefits from it. However, the territorial differences in terms of Information Society performance are smaller than those of the GDP per capita.

Attractiveness and liveability of an area do not only depend on the hard and tangible factors such as infrastructure, human capital and risk of hazards. Soft location factors are of increasing importance for an area to attract both investments and also skilled labour. Natural and technological hazards and climate change might put the attractiveness and liveability of a region at risk in the longer term.

Soft location factors are of increasing importance. "Soft" factors like governance, culture and a high quality urban and natural environment are important parts of a region's or city's territorial potential, and offer synergies for the jobs and growth agenda. The potentials associated with these "soft factors" differ widely between areas.

Hazards do not undermine territorial competitiveness. The impacts of hazards can be widespread and long-lasting, taking for example the environmental and economical effects of droughts. Only a few places have a very low exposure to the main natural and technological hazards in Europe. Currently hazards do not undermine the competitiveness of a region. However, climate change is expected to increase the risk of hazards in the future.

Governments at all scales matter. European policy and legislation set the framework condition for territorial development. The nation state, its policies and historical legacy is a significant influence on the development of European regions. The importance of the nation state is imprinted in many fields, such as in the development of human capital (education) and the provision of infrastructure (not least infrastructure for the Information Society), as well as in taxation practices. Regional and local governments develop strategies and implement concrete actions for the development of their territory using their detailed knowledge of the territory.

Territorial impacts of EU sector policies show the extent to which EU policies contribute to achieving the aim of territorial cohesion. At local or regional level, EU sector policies have the potential to increase the competitiveness of an area. At European level, the support of sector policies to cohesion objectives is rather mixed. However, techniques for doing Territorial Impact Assessment might be a step towards further improving policy coherence.

EU sector policies potentially increase competitiveness of areas. Various sector policies (e.g. Structural Funds, CAP and R&D) stimulate local action and capacity-building. They can empower local and regional actors and make them better able to capitalise on territorial potentials. In addition, the provision of infrastructure can improve the preconditions for competitiveness in a region.

Evidence on the coherence of EU sector policies is mixed. EU sector policies contribute at European level – if at all – rather coincidentally to territorial cohesion. This is because of diverging policy aims and an under-used potential for synergies between different sector policies. The contribution of sector policies to territorial cohesion differs, however, from policy to policy and often depends on the detailed aspects of policy strands and measures.

Territorial impact assessments may facilitate policy coherence. Ex-ante territorial impact assessments can facilitate the development of policy mixes which better contribute to the objectives of territorial cohesion, and also facilitate the coordination of sector policies.

Scenarios looking into the future are important tools for informing policy development and assessing policy choices. The development of scenarios for the European territory is based on knowledge and understanding of important drivers. For territorial development these are among others migrations, economic integration, transport, energy, agriculture and rural development, climate change, further EU enlargements and territorial governance. Probing these suggests that the long-term future may require re-thinking and innovation in several fields of policy.

The long-term future may probably not be a continuation of current trends. The long-term evolution of the European territory (beyond a 20 year horizon) may differ significantly from the anticipated short and medium-term trends. For example, the accelerating globalisation, changes in commodity prices at the world market and climate change are among the factors that can influence territorial cohesion and competitiveness of the Europe.

The future might require new and different policy mixes and approaches. Meeting the challenges and impacts that is likely to affect the European territory in the coming decades, may require policies which are departing in many respects from those applied today. Future policies may even need new approaches to be able to contribute to a European development that promotes competitiveness and territorial cohesion.

The overall findings synthesised from results of the ESPON 2006 Programme illustrate that European territorial development matters for the competitiveness, cohesion and sustainability of Europe.

Evidence on territorial structures, trends, perspectives and impacts, will be further deepened within the ESPON 2013 Programme. As a European dimension becomes increasingly important for the development of both smaller and larger territories, the ESPON 2013 Programme envisages enlarging the European knowledge base on territorial trends, perspectives and policy impacts and making the ESPON evidence directly available to users through targeted analytical support and involvement of stakeholders, policy makers and practitioners.

Territories are living legacies from the past and contain development potentials for the future. Trends and perspectives can be identified, and the impacts of policies can be seen. The interplay of all these factors underpins a territory's demographic, economic, social, cultural and ecological development dynamics. Thus each territory, be it a continent, a region, a metropolitan area or a village, has it own unique settings and development conditions. Knowledge and understanding of the territory is an important prerequisite for ensuring a future development for competitive attractive and liveable places.

In short, territories have diverse potentials and challenges. Territories entail the long term structures that shape living and working conditions now and for future generations. Territories matter for the competitiveness and cohesion of Europe, for sustainable development and for European citizens and businesses.

1.1 European policy development for regions and larger territories

European policy development has moved towards recognising the territorial dimension of policy-making and the added value that an integrated territorial approach offers when searching for development opportunities.

In the Structural Funds 2007-2013, the Commission and EU Member States have included a territorial objective of cooperation, and also strengthened the strategic dimension of cohesion policy in order to ensure that Community priorities are better integrated into national and regional development programmes.

The key Community priorities are imbedded in the renewed Lisbon Strategy, which aims to mobilise all appropriate national and Community resources, developing a knowledge-based economy, so as to achieve maximum benefits in terms of growth and jobs, and sustainable development.

Intergovernmental cooperation in the field of territorial development aims to increase territorial awareness within various sector policies, and thereby increase their contribution to territorial cohesion and competitiveness.

ESPON results so far show that there is territorial diversity. Many regions possess good potentials for contributing to the Lisbon Strategy, but not all. There are regions where the most promising strategies might be ones that concentrate on the region's own strengths rather than following aspirations for a knowledge-based economy. ESPON has also found that there are regions which, when seen in a wider European perspective, have potentials that have been under-exploited.

The EU, its regions and larger territories are increasingly affected by developments at the global level. New emerging challenges impact on territorial development and require policy responses.

By mobilising the existing potential for growth in all regions, cohesion policy can both improve the geographical balance of economic development, and also increase growth in Europe as a whole. All regions have their part to play, especially those where the potential for higher productivity and employment is greatest.

For regions and larger territories such as cross-border areas and transnational cooperation areas, a modern paradigm for an efficient regional policy has to respond to the facts that:

- There needs to be a stronger focus on development potential, as well as investment in areas of high growth potential and drivers of growth and employment.
- Disparities between regions are changing. These shifts should inform policies. They increase the need for coherent strategies over the medium to longer term.
- Regions are enlarging their area of influence, sometimes globally. Impacts on neighbouring territories are increasing. Both urban and rural areas are changing and so are the relationships between them.
- Governance structures are needed to capitalise on development potentials and regional assets.
- An integrated approach to territorial development, cohesion, and the creation of sustainable communities has become essential. There needs to be synergy and complementarity amongst all relevant sectors.

The strategic objectives for an efficient and modern regional policy contributing to the renewed Lisbon Strategy and its overall aims can be condensed as follows:

- Competitiveness, building on the existing assets and under-utilised potentials in a region related to its existing economic base.
- Attractiveness, building new assets in a region that can stimulate new investment and skills, in particular in support of a knowledge-based economy.
- Liveability, ensuring cohesion and sustainable communities with a high level of quality of life and environment, now and in the future, for citizens and businesses.

The EU Commission and EU Member States agree that a coherent approach to the development of the European territory is necessary. Such an approach has to be strategic and build upon continuous observation of European trends and developments so that progress towards territorial cohesion can be monitored.

All in all, the territorial dimension is increasingly important for European policy making. The aim of territorial cohesion, proposed by the Commission and endorsed through European intergovernmental cooperation, supports this approach by recognising territories as significant units in policy making.

1.2 Understanding the European territory

The ESPON 2006 Programme has provided a major innovation in policy relevant territorial analysis across 29 countries and their regions. The Programme has revealed trends and unintended policy impacts which together pose challenges across the European territory.

- Market forces and social trends are increasing the geographical concentration of activities;
- The ageing European population and migration are affecting regions differently, but in general they enhance competition for skilled labour and impact upon the provision of services of general interest;
- Hazards are likely to increase due to climate change: different parts of Europe are exposed to different types of hazards;
- Energy prices are rising: such increases do not have an even territorial impact;
- The enlargement of the EU to 25 Member States, and later to 27 or more, presents an unprecedented challenge for the competitiveness and internal cohesion of the Union;

- Integration of the EU in the global economy is accelerating. This is broadening perspectives for regions and larger territories in deciding their development path, since development is no longer a zero-sum game for Europe. In addition, globalisation is impacting on territorial development and posing new challenges for policy makers.

1.2.1 The relative position of European regions

The ESPON results provide evidence that territorial capital and potentials for development are inherent in the regional diversity that is a major characteristic of Europe. Comparisons can enable regions to identify their strengths and weaknesses in a European context and to enrich their development strategies, project ideas and cooperation arrangements.

ESPON results are generated from a European perspective. They are based on analysis of compatible information for all European regions. However, combining and comparing data for 29 countries necessarily restricts the detail within individual regions and larger territories, mainly because existing European datasets are themselves limited.

The challenge for policy makers and practitioners, in different policy sectors and at different administrative levels, when looking at ESPON maps, is to appreciate the larger territorial context and get inspiration for including a European territorial dimension in further policy development.

The ESPON results and maps for the first time provide information on trends and policy impacts based on indicators for all European regions. This has two main advantages.

Firstly, it establishes a framework for searching for territorial potentials. Currently such potentials may be hidden or only latent, but once grasped they can assist regions and larger territories to contribute to the Lisbon objectives and to enhance regional competitiveness, while also supporting cohesion and a better territorial balance.

Secondly, the results and maps make it possible to consider any city, region or area in its larger territorial context. A European and, in some cases, even a global perspective is increasingly valuable in strategies and decisions on the development of territories. Through ESPON it becomes possible to uncover comparative advantages in relation to neighbouring cities, regions and territories and to add value through territorial cooperation.

As development potentials and opportunities and the interplay of development trends and policies differ between areas, there is no one-size-fits-all solution. Each region or larger territory must make its own decisions about the right combination of policy objectives (cohesion / competitiveness / concentration / sustainability / sector policies etc.), that will guide its development.

Facts and Figures about the ESPON Space	
Coverage:	29 countries, i.e. Austria, Beglium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.
Total territory:	4.8 million km² (ranging from 315.6 km² in Malta to 633,251.6 km² in France)
Share of world GDP	32.9% in 2004*
GDP per capita:	20,860 EURO in 2003 (ranging from 2,266 € in Bulgaria to 57,075 € in Luxembourg)
Average annual development of GDP per capita	4.7% between 1998 and 2003 (ranging from 2.2% in Germany to 15.3% in Ireland)
Share of world population:	7.7% in 2004**
Total population:	499 million in 2005 (ranging from 0.4 million in Malta to 82.5 million in Germany)
Population development	+3.9% between 1990 and 2005 (ranging from -14.2% in Estonia to +20.8% in Cyprus)
Proportion of population aged 0-14 years	16.3% in 2004 (17.2% in 2000) (ranging 2004 from 14.1% in Italy to 20.9% in Ireland)***
Proportion of population aged 65 years and more	16.4% in 2004 (15.6% in 2000) (ranging 2004 from 11.1% in Ireland to 19.2% in Italy)****
Population density:	107 inhabitants per km² in 2003 (ranging from 14 inh./km² in Norway to 1263 inh./km² in Malta)
Employment rate	63.2% in 2000 (ranging from 50.6% in Bulgaria to 78.3% in Switzerland)
Employment rate of older workers (55-65 years)	37.3% in 2000 (ranging from 20.4% in Hungary to 65.2% in Norway)
Expenditures for R&D as share of GDP in PPS per capita	1.6 % in 2002 (ranging from 0.3% in Cyprus to 2.5% in Sweden)
Business investments as share of GDP	18.6% in 2000 (ranging from 12.1% Bulgaria in to 24.7% in Czech Republic)
Greenhouse Gas emissions per capita	10.4 tones CO2 equivalent in 2002 (ranging from 4.9 tones in Latvia to 17.8 tones in Ireland)
Greenhouse Gas emissions per GDP in Millions of Euro	504.1 tones CO2 equivalent in 2002 (ranging from 253.9 tones in Luxembourg to 3966.5 tones in Bulgaria)
Number of functional urban areas:	1595

* Data from United Nations Statistics Division
** Data from United Nations Statistics Division
*** Data for population of UK from 2003
**** Data for population of UK from 2003

Tabel 1 Facts and figures about the ESPON space

A European dimension is becoming essential for effective development of smaller or larger territories. Understanding of the position of each region in comparison to others can highlight new potentials for development. Key options have to be explored from a European perspective; understanding the larger territorial context makes it easier to spot new opportunities and under-used potentials. Awareness raising, dialogue and involvement are vital parts of the process of empowering policy makers and practitioners at different levels, so that they can exploit comparative advantages and add value through targeted territorial cooperation with other regions.

1.2.2 Keep the territorial scale clear

Territorial structures, development trends and policy aims can be viewed from different geographical scales, e.g. local, regional, national, transnational, European or global. The same topic or map may convey different messages depending on the geographical level at which it is viewed.

ESPON has developed its own "3 Level Approach" to ensure that there is clarity and consistency across all the different projects when discussing territorial trends, perspectives and impacts. It is used whenever ESPON results or maps are interpreted, so that findings are always related to the micro (e.g. local / regional), the meso (e.g. national / transnational) and the macro level (European). The same approach is also used in this report. Fuller discussion of the 3 Level Approach can be found in the ESPON Scientific Progress Report (2006).

In addition to these three levels, the global and the European neighbourhood perspectives need to be addressed in territorial analysis and policies.

Territorial analysis at any level depends on the availability of harmonised and comparable high quality data. Data availability and collection have been a major issue in ESPON, often constraining the applied research. As far as possible, ESPON research has been based on existing European-wide regionalised data, which have been collected for statistical regions (called "NUTS" areas) giving the best possible detail. One difficulty has been what is called the "modifiable areas unit problem". For example, differences within a region are evened out and thus obscured in data for the region as a whole. This is especially likely to be a problem when a statistical region covers a wide geographical area, or if there are big contrasts between places within the regional unit (e.g. unemployment levels between different neighbourhoods). Despite these difficulties, ESPON's information provides a good overview on how a region is doing in comparison to other European regions.

1.2.3 Need for more territorial evidence support in policy development

ESPON results have contributed to achieving evidence-based policies at European, national and regional levels, and some transnational and cross-border cooperation projects have used ESPON results to underpin their strategies.

The most prominent examples of the use of ESPON results are probably at EU level in the 3rd Cohesion Report and the Community Strategic Guidelines 2007-2013. At intergovernmental level ESPON results have made an important contribution in the development of the documents on the Territorial State and Perspectives of the Union and the Territorial Agenda for the EU, both of which will be presented at the informal ministerial meeting in May 2007 in Leipzig.

There are also numerous national policy documents that refer to ESPON and ESPON results have also started being used at regional level.

Cohesion policy and regional policy, with their objectives for cohesion and competitiveness and European territorial cooperation need solid and comparable regionalised information. Similarly, all three objectives of Structural Funds 2007-2013 will require such an evidence base.

There will be a new ESPON Programme for the period up to 2013. It will have some new features. These will include the undertaking of targeted analysis for potential users. There will also be a substantial effort towards stakeholders to raise awareness about the comparable European wide information available on the regions and to help policy makers and practitioners in making practical use of this evidence.

1.3 Introduction to the report

This present report discusses main findings from the ESPON research carried through between 2002 and 2006. There are ten different chapters, each of which synthesising important trends, perspectives and policy impacts for topics and territorial types important for territorial cohesion in Europe. Of course, it is not possible to reflect all the findings of the 34 applied research projects which between them have delivered several bookshelf-meters of project reports.

The first two chapters present selected findings about territorial cohesion (chapter 2) and increased competitiveness (chapter 3).

These are followed by a sequence of territorial chapters which summarise the latest findings with regard to different types of territories. Firstly, the global scale and Europe's role in the world is discussed (chapter 4). Then chapter 5 discusses the main European urban system and the role of cities in territorial development. Rural development in Europe and the important role of rural areas is the focus in chapter 6. Finally chapter 7 zooms into specific territories, presenting ESPON findings related e.g. to coastal or mountainous areas.

This middle section of the report is followed by three chapters looking at thematic questions of territorial development. Accessibility as regards transportation and ICT, and the relation between transport and energy is addressed in chapter 8. Extensive ESPON research on the territorial impacts of various sector policies, such as transportation, R&D, agriculture, fisheries and regional policy is summarised in chapter 9. Then the influences of territorial management and governance and of liveability factors on regional competitiveness are highlighted in chapter 10.

A chapter summarising ESPON findings about future territorial development rounds off this section. Chapter 11 draws on various territorial development scenarios developed within ESPON and provides a glimpse of what the future might bring.
This thematic look to the future is followed by a sketch of the future activities to be carried out within ESPON, which tells you why you should stay tuned for forthcoming ESPON results.

The final chapter presents for the first time a comprehensive list of the over 600 researchers from more than 130 institutes who have carried through the applied research on which the report is based.

Territorial cohesion adds to the concept of economic and social cohesion by translating the fundamental EU goal of balanced and sustainable development into a territorial setting. It is both a multi-sector and multi-level concept that can be implemented at regional, national, transnational and European level.

Territorial cohesion is concerned with development opportunities and living conditions, matters which are important for citizens and enterprises in all parts of Europe. Such opportunities and conditions vary as there are different territories with different types of potentials. This chapter highlights facets of the various territorial potentials that can contribute to territorial cohesion. Finally, some of the major challenges are addressed.

Two stylised images of Europe's development pattern have dominated thinking about territorial policy. One is the picture of a strong core and a weaker periphery. Names like the Blue Banana and the Pentagon have been used to depict this dichotomy. The alternative picture is one of a Europe of many strong regions. This idea of a more balanced, polycentric Europe has been communicated by the metaphor of a Bunch of Grapes.

ESPON's analysis reveals that neither of these models shows what is really happening. There are strong regions all over Europe and they are generally centred on urban agglomerations. However, the urban pattern is not evenly balanced, as there is a strong concentration of economic activities and population in the core of Europe. Yet it is important to realise that, this core is dispersing or enlarging along a number of corridors. Furthermore, there are prosperous locations outside this dispersing core which offer good opportunities for enterprises and citizens.

2.1 Towards more polycentric territorial patterns

The concentration of economic activities and population in the core of Europe has often been recognised. This "Pentagon" formed by London, Hamburg, Munich, Milan and Paris as its cornerstones, covers 14% of the ESPON space, 32% of its population, produces 46% of the GDP and enjoys 75% of the R&D investments and the highest levels of multimodal accessibility.

Although these figures will not change rapidly, the GDP growth rates (1995 - 2003) show that catching-up processes are taking place. In particular, regions in Ireland, Greece, Spain and Portugal and the EU Member States which joined in 2004, show high growth rates. If these are sustained Europe might move eventually towards a more balanced pattern of development. However, this catching-up process may take many years (see also chapter 3.1).

In the longer-term the enlargement or dispersion of the Pentagon, and strong urban agglomerations in more remote locations, might contribute to increased territorial cohesion.

2.1.1 The dispersing core

The Pentagon, Europe's powerhouse, is expanding, but not all areas within the Pentagon show the positive characteristics normally attributed to the European core.

The expansion or dispersal is most notable in the urban agglomerations perceived as engines for economic development. While many of the strongest urban agglomerations in Europe are located in the core or "Pentagon", others such as

Rome, Vienna, Bratislava, Prague, Berlin, Manchester and Copenhagen are in close proximity to this core.

An analysis of functional urban areas with regard to their population and significance in respect to (1) private business head quarters, (2) transport hubs, (3) universities, (4) public administration centres and (5) industry illustrates this. Based on the functions and their importance, urban areas can be divided into Metropolitan European Growth Areas (MEGAs), transnational/national urban areas and regional/local urban areas (see map 1 and chapter 5.1 for more on the urban system).

This analysis reveals that the limits of the European core need to be defined more widely today; the cornerstones of this "enlarged Pentagon" might be Manchester, Berlin, Venice, Genoa and Paris. Alternatively, one could depict the integration process as the core spreading along a number of corridors or development axes. One such "extension corridor" is in the UK and stretches through the West Midlands towards Manchester. Another reaches into Central and Eastern Europe, and a third heads into Southern Italy.

It is also important to recognise that not all areas within the Pentagon are characterised by high GDP, population density and multimodal accessibility. The low performance of a large part of northwest France and southern Belgium may have a "hollowing" effect on the core. The economic strength of some regions that are geographically peripheral within Europe also emphasises the need to move away from a simple assumption that "core" and economic well-being are one and the same thing.

2.1.2 Strong metropolitan regions in the "periphery"

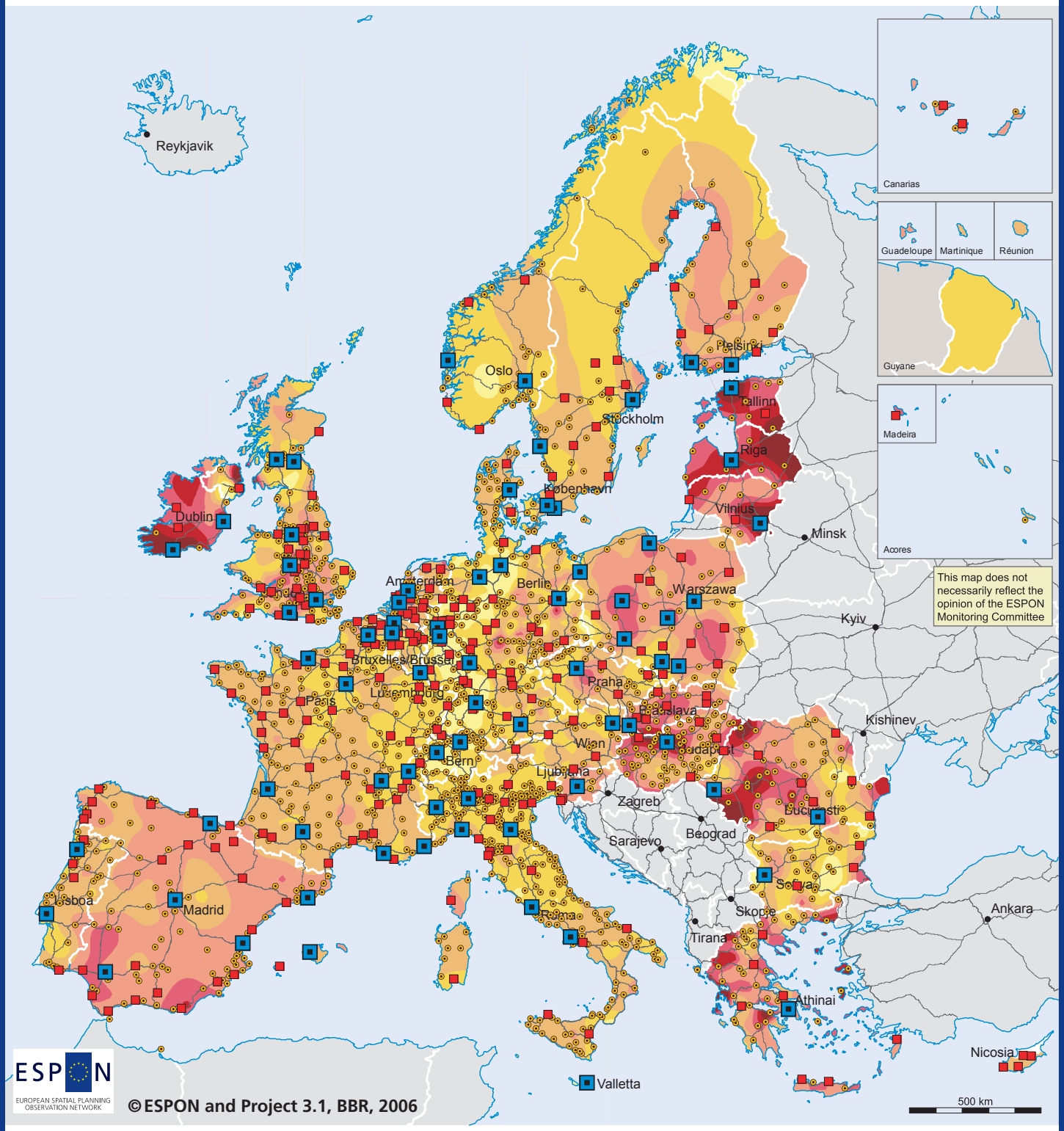
There are a number of "isolated hotspots" throughout Europe, which are economic engines outside the Pentagon. Examples are Madrid, Barcelona, and Athens in the south; Dublin in the West; Stockholm, Helsinki, Oslo and Gothenburg in the North; and Warsaw and Budapest in the East.

Each metropolitan agglomeration has functions of local, regional, national, transnational, European or global significance as discussed in chapter 5.2. However, only 14 out of the 76 main urban agglomerations in Europe are of European or transnational significance with regard to all six functions assessed (the five mentioned above, plus tourism). Most of these 14 areas are outside the Pentagon. This underlines the importance of urban areas outside the traditional core.
Urban areas outside the Pentagon also show strongly with regard to economic development, both in terms of GDP per capita in 2003 and GDP per capita growth between 1995 and 2003.

Some non-Pentagon areas are even outperforming it in a number of economically significant sectors. For example, the Nordic Countries lead in the ICT sector, while Malta, Slovenia and Estonia are among the pace-setters in broadband and e-commerce.

Demographic forecasts show that in the future urban and rural areas that can offer attractive living conditions will be the centres of population increase. Some of the unique areas outside the core of Europe come into this category. At the same time some old urban areas inside the Pentagon face challenges from out-migration and an aging population.

MAP 1: Main economic structures of the European territory



ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK

Average yearly development of GDP per capita in Purchasing Power Standards in percent 1995 to 2003 *

- to below 2
- 2 to below 4
- 4 to below 6
- 6 to below 8
- 8 to below 10
- 10 to below 12
- 12 and more
- no data

* Romania 1998 to 2003

Functional Urban Areas (FUAs)

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

The functional urban areas are an important territorial structure in Europe. An ongoing ESPON Project is doing further work on their classification. New results will be available by the end of 2006.

Regional level: NUTS 3
Origin of data: GDP: Eurostat, MEGA: ESPON 1.1.1 Nordregio

Source: ESPON database

An important conclusion from the analysis of Europe's metropolitan agglomerations is the significance of their functional specialisation. In particular, smaller as well as larger urban agglomerations all over Europe can be key players for specific functions and can increase their importance over time, eventually also through new forms of cooperation on comparative advantages. In the long run this may contribute to more polycentricity and possibly also more territorial cohesion at European level.

2.2 Medium sized cities as important development engines

Territorial balance is also an issue at transnational and national level. Here in particular, small and medium sized towns are important, for example in overcoming national imbalances or strengthening larger rural or semi-rural areas.

Functional specialisation is a key concept when analysing and developing small and medium sized towns. Whereas many larger urban areas are able to sustain a large number of functions with wider territorial significance, small and medium sized settlements are often much more focused.

Small and medium sized towns can contribute to more balanced development in three different ways, depending on the territorial context (see also chapter 5.3).

Firstly, small and medium sized towns located within or at the fringe of larger agglomerations may assist the enlargement of the main agglomeration, both by providing specific functions and adding to the critical mass needed for other services. Good integration can even contribute to strengthening the agglomeration's international position.

Secondly, there are small and medium sized towns that are in close proximity to each other, but not dominated by any major urban agglomeration. The Triangle Region in Denmark, for example, shows that small and medium-sized towns in close cooperation can contribute to balanced development at national level. Strategic use of synergies, complementarities and also competition between towns in close proximity can increase their regional significance.

Thirdly, there are small and medium sized towns in more peripheral and rural areas. These can act as economic engines for a wider territory and also as service centres for the rural hinterland. A town that is highly integrated with its surrounding territory can be a catalyst for the development of both the town itself and the surroundings by making full benefit of the resources of the whole region.

Cooperation of small and medium-sized cities in the Triangle Region

The eight Danish municipalities (Børkop, Fredericia, Kolding, Lunderskov, Middelfart, Vamdrup, Vejen and Vejle) see themselves collectively as Denmark's largest open, green "city". Each town has its own special character and functions as an urban community, large or small, as a part of the whole. They are linked by a shared interest in developing prosperity and welfare, and enhancing the environment and the quality of life in the Triangle Region. There is lively interaction between the towns - both in trade and in the use of each other's cultural and educational institutions.

Together, the eight municipalities, home to 225,000 people, can undertake tasks that would be impossible for the individual municipalities. One example is the setting up of tuition at university level. The Triangle Region thereby has a strength on a par with that of other larger Danish cities such as Odense and Århus, which has been recognised by the Danish Government appointing the Triangle Region as a polycentric city of national importance.

These two latter types of small and medium sized towns can have a good development potential if they concentrate on selected forms of territorial capital which offer them comparative advantages. Specialisation in a unique sector of activity can create a high level of competitiveness. Thus there are a number of medium sized cities which have a high R&D profile and rank as international locations in their specialised field. Oulu in Finland and Braunschweig in Germany are examples.

Successful small and medium sized settlements can be a counterbalance to concentration tendencies. They have specific development potentials and opportunities, both within their home territory and in a wider context, which can contribute to territorial cohesion. They may even become centres of expertise that are of international significance for specific functions, if they can identify niches where they can be strong, and then develop and deliver the right strategies.

2.3 Rural-urban relations as key to balanced development

The rural-urban dichotomy has long characterised approaches to territorial division, with rural areas perceived as disadvantaged and economically weak. The question of whether this is still valid is fundamental for territorial cohesion at regional level.

Firstly, the diversity of rural areas is as large as that of urban areas. In both cases there are prosperous areas and deprived areas. Glarus in Switzerland and the Åland islands in Finland, for example are rural areas with GDP per capita figures which many urban areas would envy. This underlines the need for better understanding of the territorial preconditions and processes leading to economic success.

Secondly, the "tight" connection between rural areas and agriculture should be questioned. Analysis of land use shows, that a lot of agricultural activity takes place very close to urban areas, or even within wider urban regions.

Thirdly, different types of rural areas and rural-urban relations offer different development opportunities:

(a) Some rural areas have a symbiotic relation with nearby urban areas. The physical and functional boundaries of urban and rural areas are becoming blurred, while the interdependencies are becoming more complex and dynamic. There are structural and functional urban-rural flows of people, capital, goods, information, technology and lifestyles. The population in these peri-urban rural areas is growing steadily, which also implies challenges related to urban sprawl.

(b) Towns in rural areas are important development poles providing access to a variety of essential services, particularly in sparsely populated regions. The ongoing diversification of the rural economy in many areas emphasises the importance of these towns to their rural areas.

(c) Rural areas in remote locations face diverse demographic challenges and require a more detailed assessment of development opportunities and territorial potentials.

Tangible factors, such as natural and human resources, investments, infrastructure and business premises, traditionally have been seen as the main determinants of economic performance. However, there is increasing recognition that less tangible or "soft" factors are also of some importance. These include various kinds of social,

cultural, institutional, and environmental assets and local knowledge, which contribute to the territorial capital that is the platform for regional development (see also chapter 10.2). The diversification of the economic base of rural areas beyond agriculture and tourism illustrates this. Some rural areas have potential for renewable energy production, an economic sector which is becoming more viable as technology advances and energy prices rise (see chapter 9.3).

Local entrepreneurial capacity is vital for rural areas to capitalise on their territorial potentials. By nurturing and harnessing entrepreneurship rural areas can move in the direction of more balanced development and contribute to territorial cohesion.

Despite these potentials, some rural areas face serious challenges. Demographic decline and aging that will increase in many rural areas. Transport networks are often poor, and rising energy prices will be felt more severely in rural areas than in more urbanised areas.

A better understanding of development opportunities, including the importance of entrepreneurship and rural-urban integration or partnership can help to advance territorial cohesion at the regional level, to the benefit both of urban and rural areas.

2.4 Challenges to territorial cohesion

Depending on the territorial context, larger urban agglomerations, small and medium sized towns as well as rural areas can provide good development opportunities for enterprises and attractive living conditions for citizens. Indeed, regional strategies that focus on functional specialisation and supporting entrepreneurship and SME development can reinforce trends towards increasing territorial cohesion.

While the imbalances in Europe's existing territorial development pattern will not be smoothed out quickly, the dispersing core, stronger international urban hubs all over Europe, liveable smaller and medium sized towns which are international centres of excellence specialised functions, along with attractive rural areas all across Europe, point the way for policy makers to achieving a more even spread of growth and opportunities.

There are further development potentials through larger clusters of cities working within close territorial proximity and/or over larger distance, based on functional complementarities. Thus territorial cooperation might have a role to play.

At the same time, a number of trends point towards increasing territorial concentration.

First of all, powerful market forces are concentrating some functions and services. The risk is that assets become devalued, areas decline and the diversity of territorial potentials in Europe is undermined. Increasing disparities at European and regional level could result. Although disparities between countries seem likely to decrease, disparities between regions within single countries will most likely increase. This trend is evident in the increasing concentration of activities and population in and around the capital cities in most of the Member States which joined the EU in 2004.

Generally, demographic trends point towards an increasing polarisation. There is a movement of younger households as well as mobile retirees towards vibrant urban agglomerations and attractive urban and rural areas with pleasant climate and a high

quality of life, while declining urban and rural areas struggle with structural change and demographic loss. These tensions will increase, and may put at risk the sustainability of general services and thus liveability within regions where the problems of an aging population are exacerbated by out-migration of young people.

The proportion of people of working age will differ markedly between regions. The same is true for migration. Some areas face the prospect of increasingly becoming out-migration areas, whereas others will be in-migration areas, perhaps depended on constant in-migration of young people in order to support the labour market and sustain a more youthful age profile.

Increasing energy prices may also increase disparities between regions. Regions that need a lot of energy to produce a Euro of income are vulnerable if and when energy prices rise. Yet there are also regions within Europe that might even profit from rising energy prices. Depending on specific territorial capitals, the production of alternative energy might become more profitable and support job creation and economic growth in regions with a favourable set of conditions.

Energy price increases also affect the transportation sector. They could reinforce centre-periphery and urban-rural dichotomies. Regardless of what happens to transport costs, the current transport networks reinforce existing concentrations of people and activities, mainly because of the quality of, and gaps in secondary networks.

A number of social factors contributing to development opportunities, such as employment and income distribution, education and training, housing, and access to social services also vary between territories. For example, there are distinctions in education between the core, the North, South and East and also between rural and urban areas. The differences are evident in the levels of early school leavers, but also in life long learning and digital literacy. These factors have direct impacts on labour market qualification and social inclusion, and so people in different regions are not equally "fit for the future".

Environmental quality is another factor in a territory's attractiveness that is strongly affected by current developments. Decreasing environmental quality often implies decreasing quality of life and increasing difficulties in attracting skilled labour to an area. Currently there are disparities across Europe in pollution, land consumption and care for natural heritage and landscapes. Such differences may well become more important in future location decisions of enterprises and people.

In summary, there are very different types of territories across Europe, each with their own potentials. In the long run this diversity could be a base on which to build territorial cohesion. However there are also trends that point in the opposite direction, to a Europe of widening disparities between and within regions.

Policy relevant key findings:

- The European core is spreading. Current economic figures and urban development show that the core region of Europe is extending along a number of corridors. There are some signs that the traditional core-periphery picture of Europe is being overtaken by a more balanced pattern of territorial development.
- There are strong metropolitan areas outside the European core. Both larger urban agglomerations and small and medium sized towns outside the European core are important nodes for European development. Many of them are important economic engines and some even outperform urban areas within the core.
- Overarching trends threaten territorial cohesion. Concentration tendencies in economic developments, demographic trends, rising energy prices and imbalances in the education and transportation systems are increasing disparities between European regions.

Further information on the issues addressed in this chapter can be found in the final reports of the ESPON projects 1.1.1/Polycentricity, 1.1.2/Urban-rural, 1.1.4/Demography, 1.2.2/Telecom, 1.4.1/SM-Towns, 1.4.2/Social, 2.1.1/Transport impact, 2.1.4/Energy, 2.4.2/Zoom and 3.3/Lisbon.

Many European regions have strong economies, are well integrated into international networks and are the locus of enterprises and labour forces that are globally competitive. However, not all regions make a strong contribution towards the Lisbon Strategy aims. How well are Europe's regions performing, and what makes a region competitive?

3.1 Places to be

The economic success of a region can be assessed in many ways, such as its GDP figures, performance in relation to the Lisbon indicators, or the number of multinational headquarters located there.

3.1.1 Global and European disparities in GDP

Over the past 50 years, GDP per capita has increased substantially on a world scale. GDP per capita has been growing all over in Europe, but many countries outside Europe experienced an even faster growth in GDP per capita during the last 50 years. Therefore, Europe's share of the world's total GDP has declined.

Within Europe there are considerable differences in the regional distribution of GDP. The overall picture for above average GDP per capita values (2003) shows regions across an area stretching from Rome via France to Ireland, from there via Scotland to the Nordic countries and finally via western Germany and Austria back to central Italy. A closer look also reveals that the highest GDP per capita values are generally concentrated in urban agglomerations; values are usually higher in the agglomerations than in the areas surrounding them, as is for example the case in Budapest, Lisbon, Prague, Madrid and Bratislava.

It is important to look at the trends behind this 2003 "snapshot" and to address the regions where the rate of increase in GDP is highest. Between 1995 and 2003, GDP growth figures of more than 65% between 1995 and 2003 were achieved in Ireland, Estonia, Latvia and Lithuania. In addition, several regions in eastern and southern Europe (Slovakia, Slovenia, Poland, Greece, Hungary, Spain, Romania and Portugal) had growth rates only rarely matched by regions in the core. These regions from the periphery appear to be catching up and developments point towards more cohesion. However, these relatively high growth rates must be read carefully: while the percentage figure is high, it is a percentage of a low starting figure and annual growth measured in Euro per capita is still relatively low in these areas as compared to the core or north of Europe.

3.1.2 North-East / South-West divide: Lisbon performance

The renewed Lisbon Strategy aims at improving the EU's competitiveness so that it becomes the world's leading knowledge-based economy. It gives a more multi-faceted view of competitiveness.

The European Council and the Commission have agreed on a strategic shortlist of 14 indicators to measure the progress with this agenda.

The regions which score highly on this combination of 14 indicators lie in an arc sweeping from the south of Finland through Sweden and Denmark to Northern Germany and the Netherlands, then on to East Anglia and back to Brussels and Luxembourg, on through Switzerland, Southern Germany, Austria and the Czech Republic to Bratislava and Budapest. There are north-east and south-west divides.

14 Official Lisbon indicators:
1) GDP/capita; 2) GDP/employed person; 3) Employment rate; 4) Employment rate of older workers; 5) Gross domestic expenditure on R&D; 6) Youth education attainment levels; 7) Comparative price levels; 8) Gross Fixed Capital Formation/GDP; 9) At-risk-of-poverty rate after social transfers; 10) Dispersion of regional (un)employment rates; 11) Long-term unemployment rate; 12) (Change in the) Energy-intensity of the economy; 13) (Change in the) Greenhouse gas emissions and; 14) (Change in the) Volume of freight transport relative to GDP.

The territorial pattern of Lisbon performance clearly corresponds to the pattern of major urban areas and accessibility. In simplified terms, regions with good Lisbon performance tend to have important urban agglomerations and good accessibility. This also underlines disparities within many countries between the capital city region and the rest of the country.

However, caution is needed when interpreting territorial patterns based on the Lisbon indicators. The indicators concentrate heavily on measuring the current level of the economy. Only two environmental indicators are included and both measure change (in the energy-intensity of the economy and in greenhouse gas emissions) rather than current absolute level. The focus on change disfavours areas which already have achieved major improvements in the field.

3.1.3 High concentration of economic command

The location of multi-national company headquarters shows a very high level of concentration of the economic power – even more so than wealth. Headquarter location is another indication of an area's attractiveness and competitiveness.

Most of the headquarters of the European companies that feature in the list of the 2000 largest companies in the world (compiled by Forbes 2005) are located between the north of England and central Italy, including the Benelux, Germany and Switzerland. Inside this large central area, London and Paris are the main nodes, but the Randstad (Amsterdam-Rotterdam) is not far behind. Outside this area, multinational headquarters are less frequent and often present in capital cities. The major nodes outside are Madrid, Stockholm and Helsinki. Munich stands out as one of the few non-capital cities with a high number of headquarters. In Central and Eastern Europe, Prague and Budapest have few multi-national headquarters.

A number of other characteristics reflect national urban economic structures. In France, almost all headquarters are located in Paris, reflecting the centralised French urban structure. This contrasts with the "German" pattern, where headquarters are distributed in several large urban areas such as Hamburg, Düsseldorf, Frankfurt, Berlin, Stuttgart and Munich, reflecting the polycentric German urban system. The location of headquarters in Great Britain echoes the "French" centralised pattern, though some multinational headquarters are found outside London, in cities such as Manchester, Birmingham and Newcastle. In Italy, apart from concentrations in Turin, Milan and Rome, there is dispersal, mainly in the field of specialised financial services.

The location behaviour of the private sector can be described concisely: Business headquarters tend to locate in places with good accessibility and close to business services.

3.2 Territorial capital supporting Lisbon

Current economic theories offer several explanations for regional competitiveness. Each recognises that policies have to be adapted to the actual situation within each region. Key arguments are:

- The drivers for economic development and success are traditionally seen as economic diversity / specialisation, accessibility / connectivity and human capital.
- Clusters are a core aspect of more recent location theories, which emphasise synergy, a creative milieu, innovation and quality of life and urban environment for attracting highly skilled labour.
- Governance-oriented theories focus on aspects such as vision, inclusion and implementation capabilities.

These factors point to conditions that influence a region's competitiveness. Each region or city will have a more or less unique combination of them, and can focus on its potential comparative advantages in relation to other regions. However, in generating innovation, tacit knowledge, mutual confidence and trust between the actors involved are important.

In the following some territorial differentiations regarding R&D, creativity, ICT and human capital will be discussed.

3.2.1 R&D in urban areas in the centre-North

Innovation is an iterative process, building on the results of R&D activities and in turn informing, and being informed by, new research and innovations in products and processes. In many countries, R&D expenditures are concentrated in the capital regions. In Austria, the Czech Republic, Finland, France, Hungary, Greece and Portugal, for example, half of the top regions account for half of all R&D expenditure in the country. In France, 45% of national R&D expenditure is concentrated in Ill-de-France, followed by Rhône-Alps with 10%.

The intensity of R&D in a regional economy can be measured by its share of the Gross Domestic Expenditure on R&D (GERD). This varies considerably between regions with single countries and is often concentrated in a few regions, often near the capital city. The regional variation on R&D is particular high in Germany and in Finland.

When bringing together the regional importance of R&D and the number of private sector researchers in a region (researchers in the Business Enterprise Sector, BES), regional figures demonstrate the weaker position of the European periphery, with the exception of the Nordic Countries. Focusing on single regions, the main metropolitan areas of Europe are mainly situated in regions with above average importance in terms of R&D.

The amount of R&D activities does however not necessarily correlate to the application of new ideas and research findings. More information is also needed on social innovations, governance processes and transaction costs, which tend to be rather high in Europe.

It is often argued that European enterprise and university cultures, and in particular the rather fragmented European economy with a limited number of really big players, impede the smooth transfer from R&D results and innovations into new products and services. This fragmentation does exist and is fundamentally territorial,

and embedded in the European fragmentation of national institutions, languages and rewards systems. EU research policy and its Framework Programmes are a first concerted attempt to overcome this by linking R&D and SMEs.

Another aspect is the extent to which changes in society affect innovations. Innovations are context-dependent: for example, many environmental innovations were made in old industrial areas. Thus, Europe's aging society might trigger innovations related to older person issues, e.g. in health and bio-medical fields, in the near future.

3.2.2 Creativity in urban areas and specific countries

Innovation depends on the creation of new ideas and concepts, and thus creativity and creative businesses. The share of local workers engaged in cultural and creative professions[1] is an indication of the extent to which culture and creativity are embedded in the local economy.

The highest share of cultural employment can be found in a number of urban regions. Once again many of these are capitals (e.g. Bratislava, Budapest, Madrid, Paris, Prague, and Vienna) or agglomerations in the Netherlands, Germany and Belgium. Some countries demonstrate a high degree of "creativity" or capacity to utilise cultural values for strong knowledge-based industries. Examples are Finland (telecom), Sweden (design and electronics), the Netherlands (media and publishing) and Switzerland (design and architecture).

The share of employment in cultural professions corresponds largely to the GDP per capita. The territorial pattern in map 2 reveals a scattered picture. Most of the areas showing both high cultural employment and high GDP are located in the core and north of Europe. The peaks are in Switzerland, Sweden, Denmark, the Netherlands, Finland, Luxembourg, Germany, the UK and some regions in Norway, Ireland and Spain. A more detailed look reveals that it is often metropolitan regions and national capitals that show both high cultural employment and high GDP.

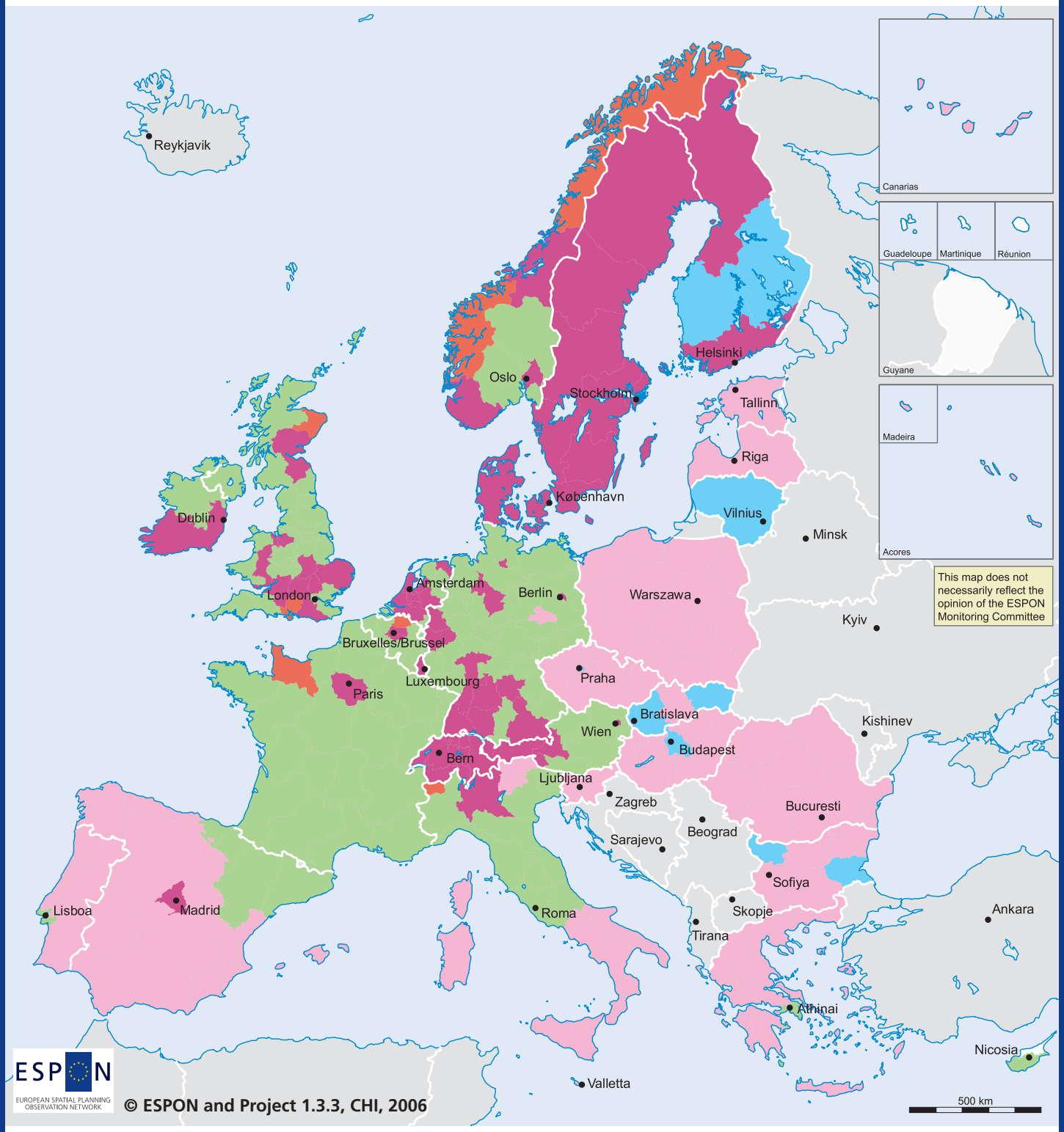
3.2.3 European and national inequalities in ICT accessibility

Access to modern ICT infrastructure and its use are a key aspect of competitiveness in the light of the Lisbon Strategy.

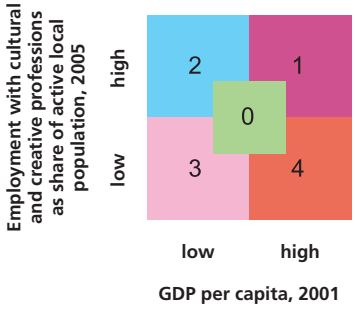
Some regions in the northern countries, along with the core of Europe, are furthest ahead in terms of ICT accessibility and the information society lifecycle. The stages of this cycle are (a) readiness to use ICT means, (b) availability and use, and (c) impact of the usage. They can be combined to give an information society performance index (see map 3). Areas with the highest values in the index are most likely to gain from the impacts and development of new innovations in the field. Regions with very high performance can be found in particular in the UK, the Nordic Countries, Germany and Switzerland. The regions of Paris and Madrid and single regions in Belgium and the Netherlands also show a very high performance. While national differences are significant, there are also considerable intra-country

[1] The definition of local workers used follows the international standard classification of occupations (ISCO) whose list of cultural professions comprises 88 categories ranging from management of cultural enterprises, architecture, writing, dancing, singing, art teaching, composing, decorating, broadcasting and fashion design, handicraft etc. to the fields of computers, libraries and sociology.

MAP 2: Cultural and creative professions and GDP per capita



Regional categories



no data

0: Normal values (x2+y2<0.752)
1: high GDP & high % of cultural employment
2: low GDP & high % of cultural employment
3: low GDP & low % of cultural employment
4: high GDP & low % of cultural employment

Regional level: NUTS 2
Origin of data: ESPON Project 1.3.3, CHI

Source: ESPON database

inequalities. In particular remote and peripheral regions generally seem to lag behind the respective national average.

3.2.4 Human capital in the north, south, east and core

Human capital is recognised as an important element of competitiveness, yet there is very little Europe-wide regionalised information about it. Education figures hint at a possible picture. Generally they show a division of Europe into four areas, north, south, east and core. Participation in life long learning is one example of a factor crucial for competitiveness. In 2001, 8.4% to the adult population in age of 25 to 64 years in the ESPON space was participating in education and training. There are however considerable territorial variations. The rate was high in all regions of Finland, Sweden, the UK and Netherlands. The lowest rates were found in regions of Bulgaria, Romania and Greece.

Major territorial differences in education

- Southern Group
  In this group the proportion of pupils leaving education early is an issue. The average period of schooling is comparatively low and lifelong training options do not have strong status. The human capital investment is below the EU average, and correlates with employment opportunities for less qualified workers and the share of highly qualified employees.
- Central Group
  This group includes central European countries with a limited number of early school leavers, guaranteed secondary level education for most of the population, and investment in human resources of around 5% of their GDP. Adult education and training are well developed, minimising integration problems for less qualified workers.
- Northern Group
  Northern European countries make the highest investment in education and training, have solid instruction levels, high life-long learning participation and a reduced early school leaver level. The educational level achieved benefits human capital and aids a competitive and innovative economy.
- Eastern Group
  In this group the performance in education levels is average or good. However, the educational level and economic needs do not correspond at present. This is poses challenges, as strategies for training and life long learning are still at an incipient stage.

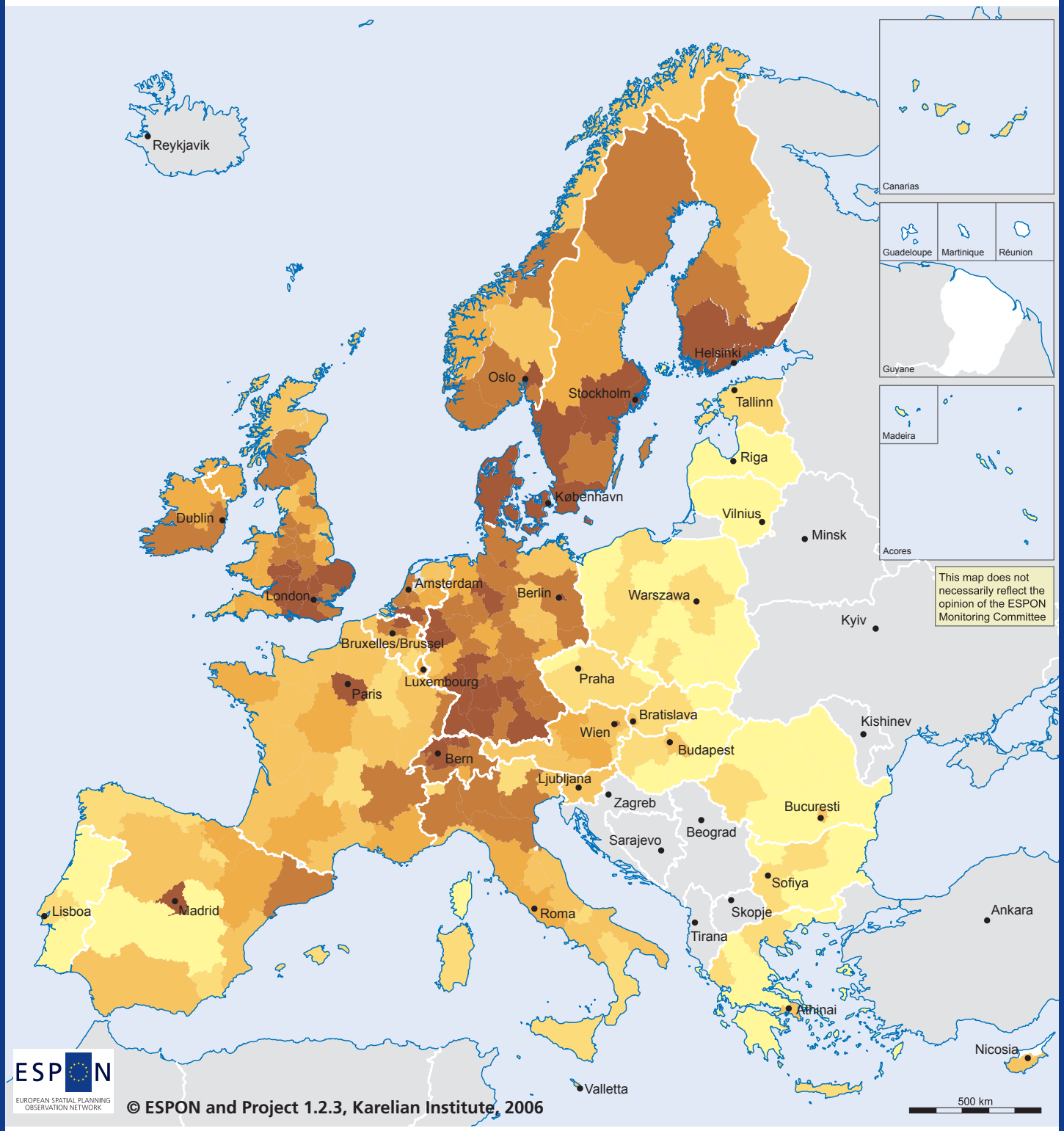
3.3 Urban areas and the core and North of Europe are ahead

Generally, the core and north of Europe, along with urban agglomerations, seem to be ahead in many aspects related to competitiveness. Among these are education, creativity, R&D and ICT. Crucially, northern areas illustrate that it is possible to have prosperous economic development and high Lisbon ratings, despite peripherality and low accessibility.

The nation-state remains important, even in a globalised world. It still has a decisive influence on the economic fortune of its regions, because regulations, taxes, research support and education schemes are still largely nationally determined.

Last but not least, the factors discussed here are not the only ones that are significant for competitiveness, as the territorial evidence shows. There are regions whose current situation and prospective cannot be explained by these factors. Rome and Barcelona, for instance, feature rather lowly in terms of R&D, ICT and are only average in terms of accessibility, yet there is no doubt that they are leading urban agglomerations. Similarly, there are small urban or rural areas, which manage

MAP 3: Information society readiness, growth and impact, 2003



Information society index, 2003

- very low
- low
- moderate low
- moderate high
- high
- very high
- no data

IS Readiness Resources and skills for ICT use	Wealth	Households disposable income
	Skills/Education	Human resources in science and technology
	Adoption of basic technologies	Households with a fixed phone line
IS Growth Availability and use of ICT technologies	Households	Households with a PC
		Households with at least one mobile
		Households with internet access
		Households with broadband internet access
	Businesses	Access to fibre backbones
		Firms with internet access
		Firms with websites
IS Impact Economic implications of IS	Impact on labour market	Hightech employment
	Innovative activity	ICT patents

Regional level: NUTS 2
Origin of data: ESPON Project 1.2.3, Karelian Institute

Source: ESPON database

substantially to exceed expectations that could be inferred from the factors discussed here. Thus, there are various examples of areas which have different territorial potentials than those addressed in the Lisbon Agenda and know how to use them successfully.

Regardless of which aspect of competitiveness one focuses on, it has a territorial dimension. The territorial framework conditions in different regions strongly influence their – and Europe's - competitiveness.

Policy relevant key findings:

- Accessible metropolitan areas show the best Lisbon performance. Assessing the 14 official Lisbon indicators, the territorial pattern of Lisbon performance clearly corresponds to the pattern of major accessible urban areas.
- Less urbanised and accessible areas are also in the top league. Although in general the accessible urban areas are the economic leaders, the Nordic countries show that even less urbanised and less accessibly areas can be prosperous.
- The nation state does matter. The nation state, its policies and historical legacy is a significant influence on the development of European regions.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.1.1/Polycentricity, 1.2.1/Transport trends, 1.2.3/Info-society, 1.3.3/Cultural heritage, 1.4.2/Social, 2.1.2/R&D impact, 2.4.2/Zoom, 3.3/Lisbon, 3.4.1/World and 3.4.2/Economy.

In today's global world, the development of Europe, its cities and regions cannot be fully understood without analysing the linkages of Europe with the rest of the world. This chapter adds a fourth level, the "world" level, to ESPON's three-level approach (see chapter 1.2). This involves looking "outside", to see how different world regions, countries and cities are affiliated with Europe; and also looking "inside", analysing how European cities and regions are connected to different parts of the world.

Following this logic, this chapter addresses: (1) the world – and Europe's weight in it, (2) the world regions – and how they are related to Europe, (3) Europe and its neighbourhood, and (4) how European cities and regions are related to the world; finally (5) "challenges of a global world" addresses aspects of an emerging world society, economy, and ecology.

ESPON 2006 has only explored a few aspects of this "big issue" of world relations. Many questions still wait for analysis and answers in ESPON II.

4.1 The world – and Europe's weight in it

50 years ago, the six founding members of the European Community had a share of about 21 per cent in the world economy. Today's 25 EU members together have a share of about 20 per cent. It is a similar picture with population. Before birth rates started to fall in Europe, the "EU-9" at the beginning of the 1960s accounted for about 6 per cent of the world's population. Today, the European Union still has about the same share but: today the share is made up from 25 Member States. In GDP and population the rest of the world is growing more quickly than Europe.

Only ongoing political integration enabled the European Union of today, with its 25 members, to sustain the same relative weight in the world that its predecessors (EU-6,…, EU-15) had during the previous 50 years (see figure 1).

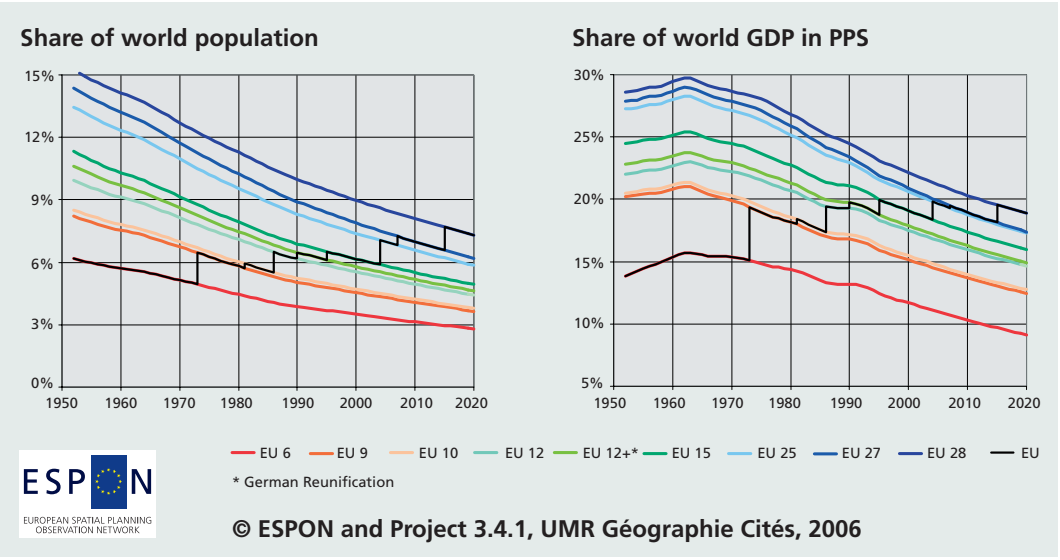


Figure 1 Evolution of the share of world population and world GDP of the EU (1950-2020)

In order to compare Europe to other world regions the "world regions" (including Europe) have to be defined. This is not easy, and there are no simple and undisputable definitions.

Seen from a geo-economic point of view, the world can be seen as a triad of three major economic poles: North America, Europe, and East-Asia. North America can be seen as monocentric (USA), Europe as polycentric (Germany-UK-Italy-France-…), and East-Asia basically bipolar (Japan-China). Symmetrically to these three poles in the northern hemisphere, there exist three minor economic poles in the southern one: South America (Brazil), South Africa, Oceania (Australia). In addition, there are more emerging poles such as South Asia (India), or South East Asia (ASEAN).

In terms of territorial cooperation at global level the neighbourhood of the main geo-economic points and in particular of the major economic poles (North America, Europe and East-Asia) are of interest.

Europe has more or less defined neighbours in three geographical directions, East, South-East, and South, each of which represents different types of neighbourhoods.

Of these, the disparities between Europe and Africa are largest. The actual economic links between them are rather weak in European perspective (though not necessarily in an African perspective). To give an example, Japanese firms invest four times more in the developing countries in their global neighbourhood than European firms do in their's, while US firms invest six times more in their neighbouring countries.

So the USA and Japan seem to be doing better than Europe in gaining the benefits of North-South regional integration, with the North providing technology and capital and the South providing emerging markets and labour forces.

The political fragmentation of Europe-Africa stands out, and could be an obstacle to its development on the world stage. It is divided into 113 single states. Compare this with the 29 countries in the Americas or the 26 in Asia-Pacific. Integration and transnational cooperation is a bigger challenge in Europe-Africa. Of course, political fragmentation into small nation states has been a main driving force for building the European Union. However, the current EU still only accounts for 25 out of the 113 states in Europe-Africa.

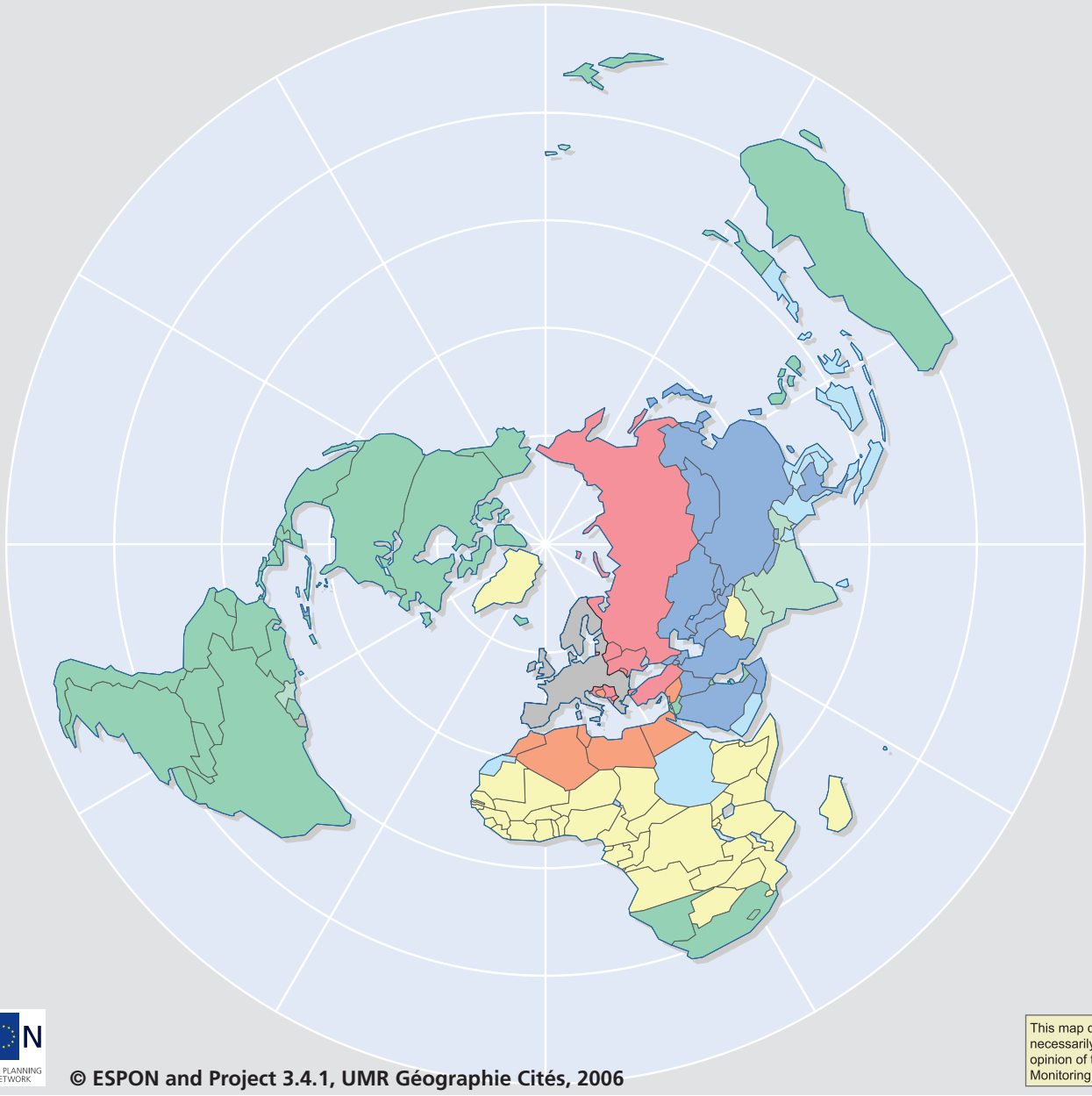
No other world region is socio-economically as divided as Europe-Africa and nowhere is the socio-economic gap between the sub-regions as large as in Europe-Africa. Europe (including Russia) has 27.3 per cent of world GDP, Northern Africa (with Western Asia) only 4.2, and Sub-Saharan Africa a mere than 2.7. Other socio-economic indicators, like age structure, life expectancy etc. show even wider disparities.

4.2 The world regions and how they are related to Europe

ESPON has also classified the nations of the world according to their relations with European countries. Instead of geographical proximity and continuity, this typology is based on relational proximity in networks and the analysis of patterns of exchange.

By using statistical techniques to combine information on 18 different topics, Europe's "area of influence" in the world can be described in terms of four criteria. These are: accessibility, networks (common language and/or history), interactions (trade flows and air flows) and complementarities (different types of development). Map 4 then classifies the world's countries into four main types of strategic situations for Europe's external relations.

MAP 4: European influence on the world



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

Type A : Neighbourhood and Integration

- A.1 : Prototype: Ukrainia
- A.2 : Prototype: Tunisia

Type B : Complementarity and Responsibility

- B : Prototype: Cameroon

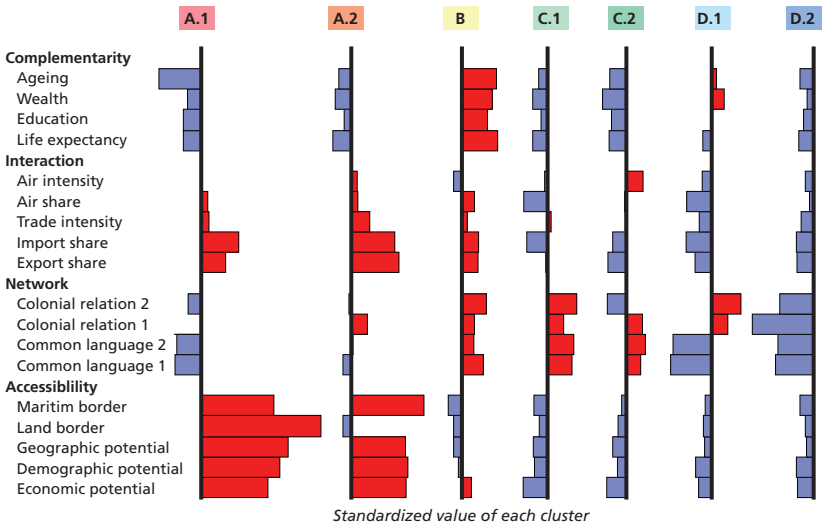
Type C : Old Ties and Opportunity

- C.1 : Prototype: India
- C.2 : Prototype: Brazil

Type D : New Partners and Challenge

- D.1 : Prototype: Vietnam
- D.2 : Prototype: China

ESPON 29



Standardized value of each cluster

Origin of data: ESPON 3.4.1

Source: ESPON database

Type A combines countries which are located in the immediate neighbourhood of the territory covered by ESPON. These countries are accessible and score high on interactions, though there is no common language and historical links are more heterogeneous. From a strategic point of view, these countries form an area subject to the EU neighbourhood policy and provide opportunities for building or intensifying an area of cooperation based on proximity and complementarities.

Type B combines aspects of geographical nearness (but not the immediate neighbourhood) and socio-economic complementarities. These are mainly African countries.

Type C and D both identify world regions that are more remote from Europe and with fewer interactions. The main difference between type C and type D lies in the networks forged by historical links and language affinities. Type C, with historical links, gathers countries which, though far from Europe, share a common language or history. Type D comprises countries without the European colonial past or common language.

These are first analytical results. However further applied territorial research is needed before even tentative conclusions can be drawn regarding Europe as a world region.

4.3 Europe and its neighbourhood

Europe's relation to its neighbours is an important topic that needs further investigation. Different situations have to be taken into account: EU candidates (Bulgaria, Romania, Turkey …) and possible future new Member States (Balkans, Ukraine …); Russia, the Mediterranean countries, Maghreb, Africa, and Asia, the Middle East (Israel, Egypt …).

Europe has become a strong point of orientation for its larger neighbourhood. Analysis reveals that for many East European and African neighbouring countries Europe is a strong partner in their trade relations. Historical ties bind some neighbourhood countries closely to some European countries. For instance, France is of special importance for West-Africa and North-Africa.

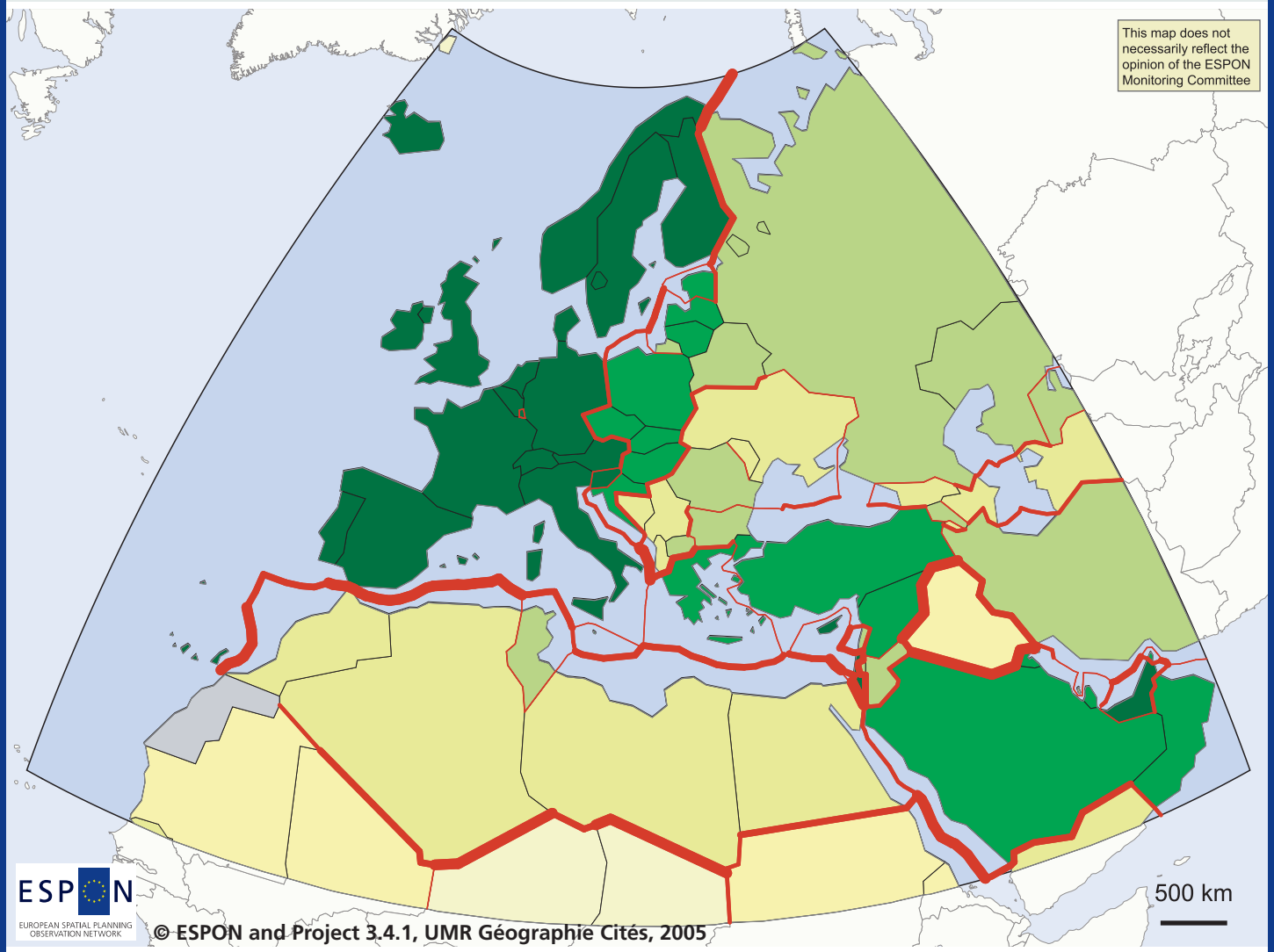
As map 5 shows, the economic disparities between Europe and its neighbours are immense. Naturally, this inspires many young and mobile people who try to move in search of a better life in Europe. No one knows for sure how many Africans have tried to immigrate into Europe in recent years, nor how many have perished trying to do so. Estimates say that at least 4000 people from outside Europe have died in the last 10 years trying to get into the Schengen territory.

4.4 European cities' and regions' relations to the world

Cities are today's international gateways, the new global "frontiers". Patterns of air travel have been analysed to identify Europe's gateway cities and to explore the pattern of their connections world-wide.

Air traffic also tells us something about other important activities and trends, such as tourism or business trips. It shows something about how and where Europe operates in wider world networks. Air traffic is also a major indicator of European territorial dynamics. Many regional differences within Europe are related to the air journeys either inside Europe or between Europe and the rest of the world.

MAP 5: Differences in GDP per capita in Europe and its neighbourhood, 2002



Index 100 = World

max
200
100
50
20
10
min

high

low

Discontinuities (relative)

Higher than 1.33	Very high
1.00 to 1.33	High
0.67 to 1.00	Medium
0.33 to 0.67	Low

Origin of data: Maddison Historical Database

Source: ESPON database

Map 6 is about airports with global connections. It is based on the volume of interactions between each airport in ESPON 29 and the rest of the World. The interaction is measured by the number of passengers and the number of kilometres their trips entail. There are huge differences between airports on this criterion. Therefore the size of the circles has been scaled so that the really big airports do not obliterate everything else on the map. However, this done means that the map does not really convey just how great the differences are between the larger and smaller airports.

However, the map does not only show the relative international importance of the various airports. It also shows which parts of the world they are (or are not) strongly connected to, and where people are using these international gateways going to or coming from.

Statistical analysis of the air traffic data was able to reveal that Europe's gateway airports have three main patterns of routes, which can be further sub-divided to give ten categories in all.

Global gateways (type A) are characterised by long distance links to remote parts of the world. Thus London, Paris, Amsterdam, Frankfurt, Zurich show no particularly geographical orientation: they connect with just about everywhere. Even some smaller airports (Shannon, Krakow) show a similar characteristic. However, others are more specialised and serve as gateways to/from specific world regions. The best example is Madrid with its strong orientation towards South America.

Types B and C are characterised by intra-European connections rather than world-wide routes. Type B are mainly northern European airports that have strong links to Southern Europe, Northern Africa and the Middle East. Type C airports are the reverse: mainly southern European airports with strong links to Northern Europe, but partly also to Northern Africa and the Middle East.

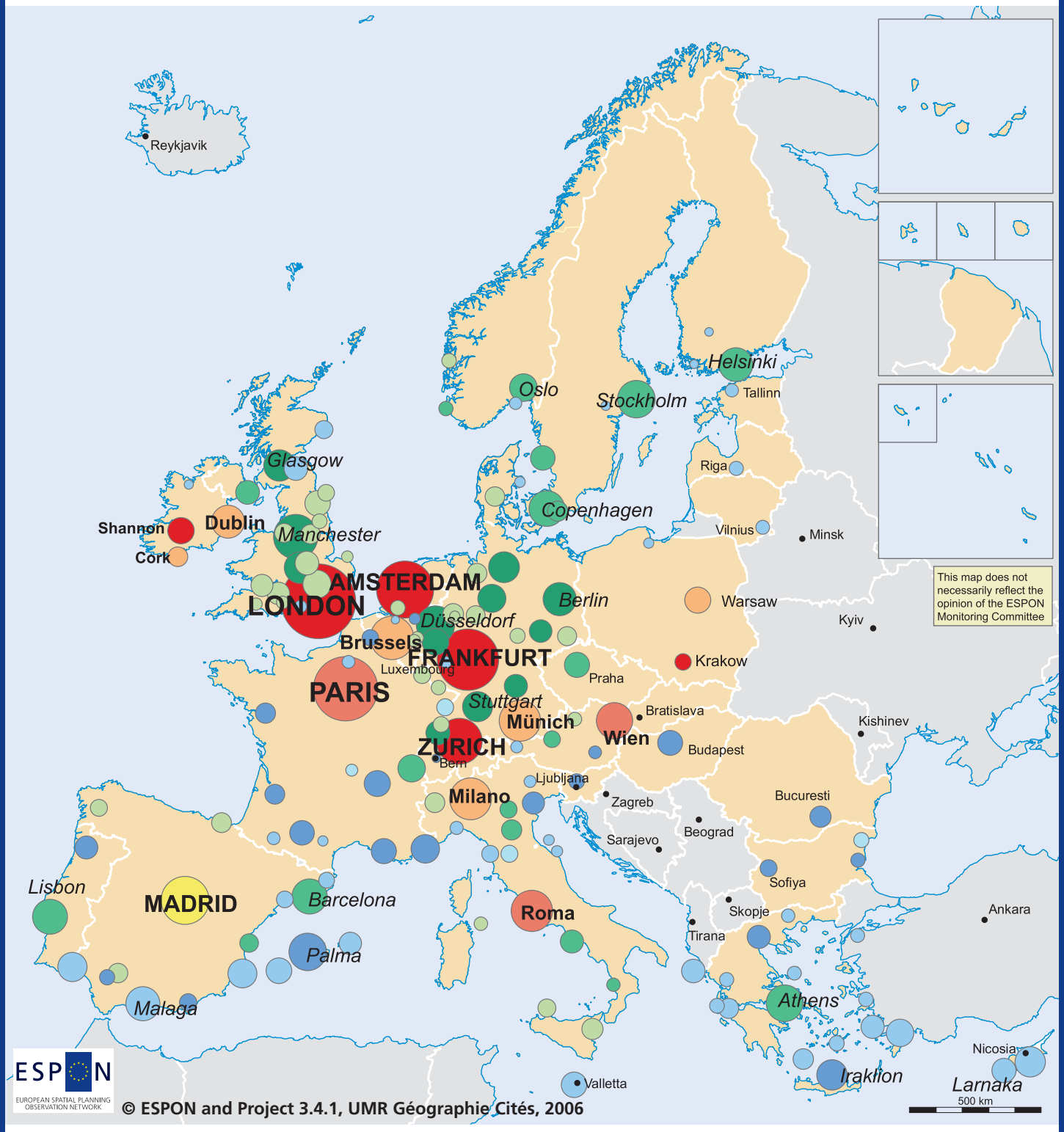
4.5 Challenges of a global world: hazards, energy, and social aspects

Europe is part of one world in so many ways and the integration is accelerating. It shares a global environment where the climate is changing and natural hazards can lead to disasters. Increasingly Europe needs to apply global environmental reasoning to global environmental data.

Europe is also affected by the world's increasing hunger for oil, gas, coal, steel, and other basic products. Rising energy prices have impacts on the European economy and they point to a need for innovative strategies for alternative energy production.

The Lisbon Strategy seeks to enhance Europe's international competitiveness through fostering innovation and building the "knowledge society". This is a response to the new world-wide division of labour in a globalising economy. Globalisation is driving economic and territorial restructuring in multiple ways. For example, activities which are based on low-skilled, low-wage labour now experience fierce world-wide price competition and are being relocated from "advanced economies" to "emerging economies". In contrast, regions and branches of the economy that provide world markets with innovative, highly specialised, high-quality (and often high-priced) products have been profiting from rising world demand. This is the model at the heart of the "Lisbon Strategy".

MAP 6: Global airports, 2000



Global interactions (in billions of passengers.km, 2000)

200 50 12 4 1

Origin of data: ITA database

Source: ESPON database

Specialisation

Global gateways - Type A

- A1 Predominately oriented to Northern and Southern Middle East, Sub-saharian Africa, Southern and Eastern Asia and Western Pacific
- A2 Predominately oriented to Caucase and Dniepr and Maghreb
- A3 Predominately oriented to Balkan and Turkey and Maghreb
- A4 Predominately oriented to Latin America

Central nodes - Type B

- B1 Predominately oriented to Southern Europe, Balkans and Turkey, Maghreb and Northern Middle East
- B2 Predominately oriented to Northern, Southern and East Central Europe and Russia
- B3 Predominately oriented to Southern Europe

Central nodes - Type C

- C1 Predominately oriented to Northern and West Central Europe and Maghreb
- C2 Predominately oriented to Northern and West Central Europe
- C3 Predominately oriented to West Central Europe

Last but not least, Europeans share this rapidly urbanising planet with many different peoples. It is a planet where more people than ever before are on the move, and more than ever before are trapped in poverty.

Policy relevant key findings:

- The EU has maintained its share of global GDP and population – but only by successive enlargements. Growth rates in Europe as a whole and in the single European countries are below the global averages, but then enlargements have boosted the EU's numbers.
- Metropolitan areas in particular have diverse territorial potentials for global networks. Europe's metropolitan areas are the main nodes for global networks. They have diverse potentials for developing successful global networks, by building on their historical ties and current connections into particular world regions.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.3.1/Hazards, 3.2/Scenarios, and 3.4.1/World.

CHAPTER 5
CITIES AS DRIVERS FOR DEVELOPMENT

Cities are incubators of culture and innovation, repositories of scientific and artistic knowledge, centres of strategic decision-making, and engines of economic growth. Europe's urban system has global cities, such as London and Paris; large metropolitan areas, such as Madrid and Munich; and numerous small and medium sized towns. Urban Europe is an asset of incalculable value.

The European Commission and all Member States are committed to enhancing cities' economic performance and improving the quality of life in urban areas. Cities are vital to regional, national and European economies.

However, cities also face environmental and social problems. Balancing cities' economic competitiveness with social cohesion and environmental sustainability will, therefore, remain a key challenge for policy-makers at all levels. This chapter looks at cities as drivers of development across the European territory.

5.1 Europe's urban areas

There are different ways of defining cities. They can be administrative units, or defined by some population threshold, or functionally (e.g. by their travel-to-work areas). An approach based on their functions is the best way to understand how cities work as drivers of development.

Using such an approach, 1595 functional urban areas (FUA) have been identified within the 29 countries (see map 1 in chapter 2.1). There is a dense urban structure in the central parts of Europe, stretching from the UK via the Netherlands, Belgium, western Germany and northern France, and continuing into Italy, Czech Republic, South Poland, Slovakia and Hungary.

5.2 Europe's diverse metropolitan growth areas

Which of these urban areas have the economic potential to act as a counterbalance to the Pentagon and so make the European territory more polycentric? Such potential is most likely to be found in those FUAs that have a large population, competitiveness (GVA in industry), a strong knowledge base (the number of university students can be a measure for this), good accessibility (measured by their number of airport passengers and volume of freight at a port), access to decision making (their number of headquarters of the top 1500 European firms), and access to public administration (measured by the highest level of public administration located there).

Using these criteria, 76 Metropolitan European Growth Areas (MEGAs) have been identified across the ESPON space. They include all 29 capital cities. London and Paris are Europe's largest and most competitive cities. They act as global nodes. However, only 18 of the 76 MEGAs are located in the Pentagon. Madrid, Barcelona, Rome, Vienna, Copenhagen and Stockholm perform strongly.

Not all MEGAs score high on all functions. As map 7 shows, only 14 of the MEGAs which perform high on all six selected indicators (the five above plus tourism, measured by the number of beds) are considered to be of European or transnational significance. These are: Madrid, Rome, Vienna, Copenhagen, Stockholm, Athens, Budapest, Lisbon, Amsterdam, Warsaw, Helsinki, Oslo, Dublin and Brussels. Thus there are urban centres beyond the Pentagon which have the potential to act as counterweights.

When MEGAs are overlaid on the growth of GDP per capita over the period 1995-2003, the real potential of cities as nodes of polycentric development becomes clear. Even the smaller MEGAs that are not performing at the highest level (such as Cork, Tallinn, Riga, Vilnius and Seville) are located in regions which achieved the highest economic growth rates.

Cities differ, but almost always they are very important regionally and / or nationally. For example, even smaller MEGAs in Poland and France are functionally important as providers of higher education, an important platform for building a knowledge economy.

Some of the densely populated parts of Europe, such as eastern and central Germany and central England, do not have a MEGA. This may be due to the polycentric nature of these areas, where urban functions are spread over a number of cities and towns which are close to each other.

Analysis also shows that there are great potentials for cities to functionally complement each other and boost their competitiveness by engaging in productive territorial cooperation.

5.3 Europe as a galaxy of small and medium-sized towns

Europe is a continent of small and medium-sized towns (SMESTOs). 72% of Europe's population live in cities (defined administratively) with populations of less than 100,000. Thus SMESTOs are important for Europe's competitiveness and cohesion.

Each town is unique, but for SMESTOs this can mean that too little attention is paid to their regional context. To achieve their potential they need to address their 'territorial localisation'. This means understanding their role for and links with the surrounding areas, especially the largest nearby city. Development strategies for SMESTOs in economically strong regions may not work for similar towns in weaker regions, and visa versa.

Figure 2 shows three types of relationships: agglomerated (SMESTOS that are on the fringe of a large agglomeration, perhaps acting as dormitories): networked SMESTOs (nodes in a polycentric settlement system) and isolated (SMESTOs in sparsely populated regions, acting as an 'anchor city'), which are also discussed in chapter 2.2.

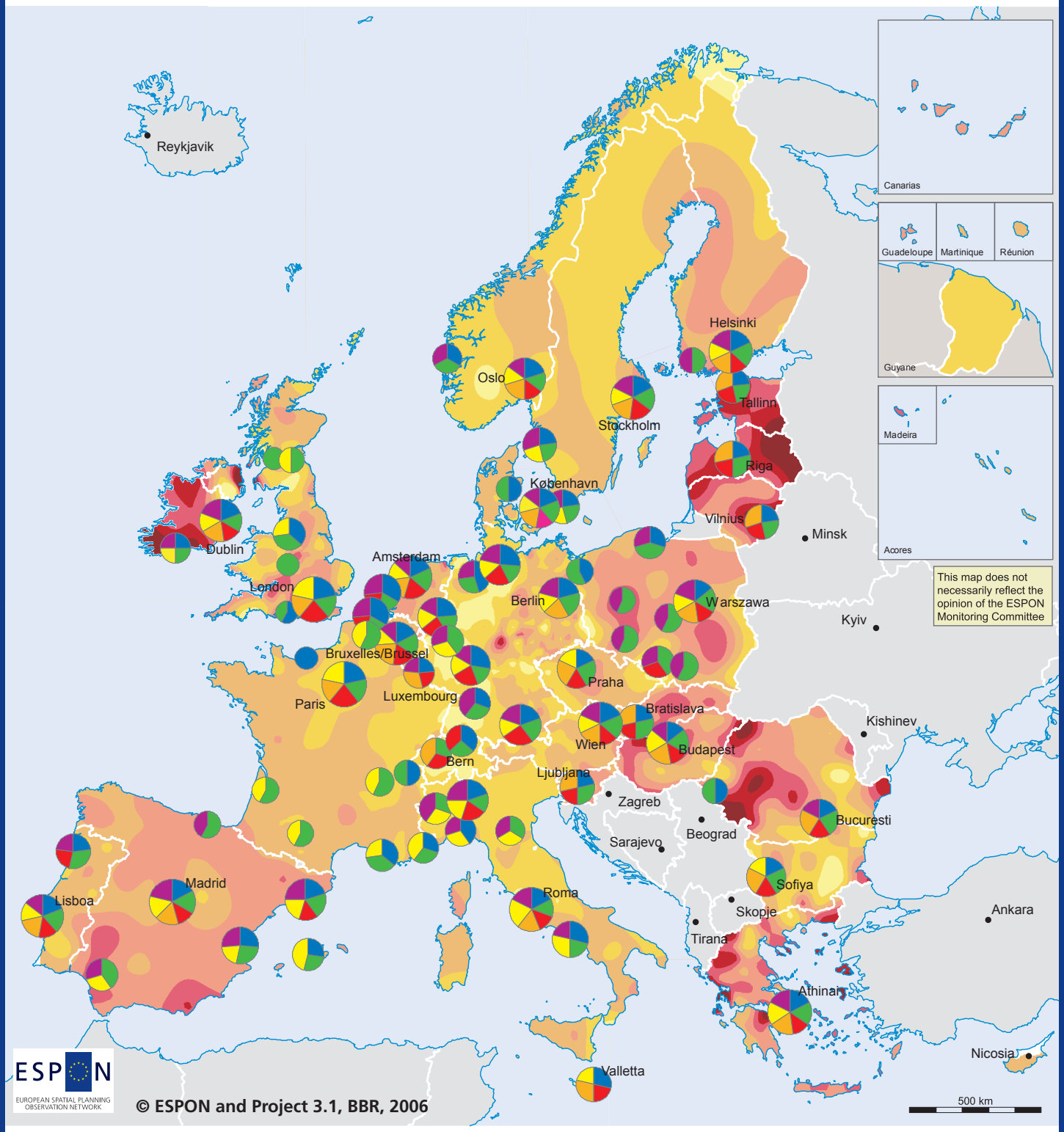
5.3.1 Role of small and medium-sized towns in territorial cohesion

Despite their vital contribution to competitiveness and cohesion at every level, SMESTOs are often neglected in national policy that targets big cities or rural affairs.

The new objective of territorial co-operation has added to the importance of SMESTOs within Cohesion Policy particularly as regards cross-border co-operation. SMESTOs play a prominent role in the development of rural areas (see chapter 6), as well as in contributing to environmental and cultural policies.

SMESTOs can offer a high quality of life by combining urban facilities with access to the countryside or the coast and a setting in an attractive landscape. The galaxy of SMESTOs in Europe is therefore a valuable territorial asset. However, to maximise their opportunities SMESTOs need to overcome a number of obstacles.

MAP 7: Major urban and economic development

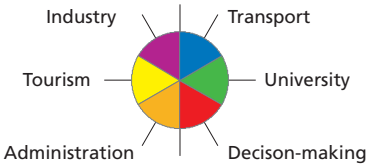


Average yearly development of GDP per capita in Purchasing Power Standards in percent 1995 to 2003 *

- to below 2
- 2 to below 4
- 4 to below 6
- 6 to below 8
- 8 to below 10
- 10 to below 12
- 12 and more
- no data

* Romania 1998 to 2003

Metropolitan European Growth Areas (MEGA) by functional importance of global, European, national and trans-national significance



Size according to average value of related significance of functions

Regional level: NUTS 3
Origin of data: GDP: Eurostat, MEGA: ESPON 1.1.1 Nordregio

Source: ESPON database

First is the issue of accessibility to transport networks. Travel time to the nearest large city is probably what matters most, rather than overall European accessibility. Second is the loss of service functions. Where car ownership is high, SMESTOs are at risk of losing trade and retail services to larger centres. Conversely, these pressures may be less acute in countries (such as Poland) where there is still comparably low access to cars and a dense network of SMESTOs. One important policy question is whether this situation is sustainable if there is a declining and aging population. Thirdly, restructuring presents many challenges to SMESTOs, for example if the main employer in a small town closes. Traditional manufacturing industries still provide a key part of some of SMESTO's economic base. Finally, SMESTOs may also be affected by rural restructuring and the emergence of what is called the 'post-productivist countryside', (see chapter 6).

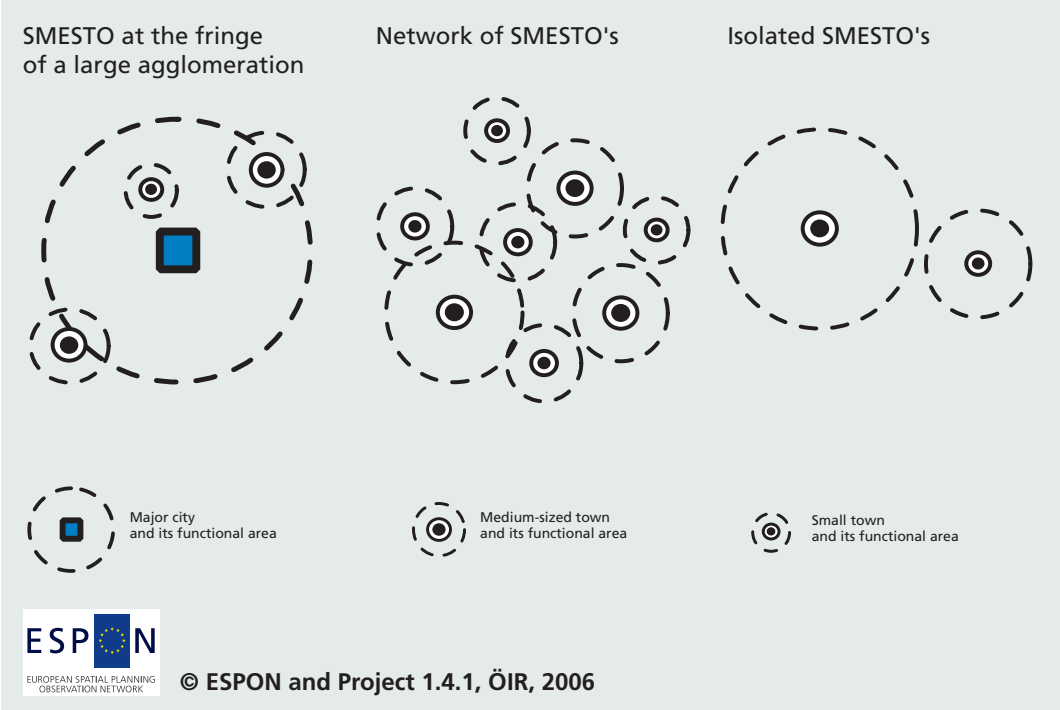


Figure 2 Typology of small and medium-sized towns

5.3.2 Most European citizens can reach a FUA in 45 minutes

Europe's urban centres are relatively close to each other. As map 8 shows, a high proportion of people (average 65% in ESPON space rising to 93% in Germany) can reach the centres of a functional urban area within 45 minutes driving time. This means that many cities can significantly increase their population mass through polycentric integration with their neighbouring cities and towns. Cities such as Belfast, Glasgow, Porto, Valencia, Alicante, Bari could gain significantly in this way.

23% of these areas cut across a national border and can thus be considered as potential cross-border functional urban areas. Such overlapping hinterlands can increase the population potential of these networked cities substantially and hence contribute to their competitiveness.

5.4 Where do cities make their mark in competitiveness and cohesion of Europe?

In what ways does the performance of urban areas stand out, negatively or positively, from other parts of the European territory?

5.4.1 Economic performance: Cities as the engines of the knowledge economy

Urban areas are nodes of the knowledge economy. In cities knowledge is produced, processed, exchanged and marketed. Cities are best endowed with knowledge infrastructure (research and educational institutes); they tend to have higher than average shares of highly educated people; provide better connectivity to ICT and are better connected to global economy. Cities are places where knowledge is exchanged; innovation happens. They attract talented people.

Revival of many larger cities during the 1990s has been one of Europe's most important territorial trends. Urban areas generally have outperformed their surrounding regions and / or the rest of their country, confirming the significant role of cities as drivers of development. This is particularly true for the capital cities of Prague, Bratislava and Budapest as well as the Metropolitan areas in Belgium, Germany and Spain.

However, there are large variations between different types of cities in their knowledge base and activities, and their economic potentials. Internationally connected metropolitan areas that have a diversified economy, a strong knowledge base, and a high quality of life are strong performers in knowledge economy. Other cities, particularly those where there is good cooperation between universities and businesses, are also making major contributions to the Lisbon Agenda.

Cities are cultural centres. The highest share of employment in cultural industries is found in urban areas and particularly capital cities (such as, Paris, Madrid, Budapest, Bratislava, Vienna and Prague) and larger urban agglomerations such as those in the Netherlands, Germany, Belgium, Sweden and Finland.

Cities' performance also stands out in other high value-added sections of the economy. In telecommunication for example, cities, and particularly larger metropolitan areas, have high levels of installed telephone lines, host the nodes of internet backbone networks, and are first in line for technology updates.

5.4.2 Social performance: Disparities within cities

Measuring the social performance of European cities has been a challenging task, partly because of a lack of appropriate comparable indicators and data across all the countries. What is clear though is that on three Lisbon/Gothenburg indicators (at-risk-of-poverty, dispersion of regional unemployment, and long-term unemployment), there is an east-west divide. Countries such as Czech Republic, Slovenia and Hungary perform better than countries such as the UK and Italy; parts of the European core perform poorly.

Economic growth of the larger cities has contributed to the polycentric development of Europe. However, the effect has been to widen regional disparities within countries. For example, in Ireland population and economic growth are largely focused on the Greater Dublin Area. Similar trends can be observed in some of the countries that joined the EU in 2004.

Such a two-speed economy is also evident within cities where the benefits of economic growth have not reached all sections of society. Many capital cities, such as London, Paris. Lisbon, Helsinki, Warsaw, Bratislava and Bucharest, are engines of economic growth, but perform poorly on social indicators.

Cities with a legacy of declining industries often face severe problems: spatial segregation, poor social housing and social exclusion. The overall result is a reduction in social cohesion and equity, which in turn will lead to lower economic performance and hamper competitiveness.

5.4.3 Environmental performance: Cities' challenge of sustainability

Large metropolitan areas are often less attractive environmentally. Concentration of population and economic activities in larger cities puts pressure on natural heritage and the environment. For example, the Pentagon displays the highest urban pressures on semi-natural areas. Metropolitan areas in the Pentagon are also home to the highest combination of high risk natural and technological hazards.

Many European cities have improved their environmental conditions, but they are still confronted with problems of congestion, pollution, sprawl, loss of natural assets and often physical dilapidations in parts of their territory. Sustainable urban management is central to retaining the highly skilled and talented human resources needed for European competitiveness.

5.4.4 Cities' pull factors

Cities, and particularly large metropolitan areas, provide many of the 'pull factors' which attract young immigrants both from other parts of the country and from abroad. In an aging Europe this benefits urban areas. However, in some countries, notably the UK, this trend is coupled with counter-urbanisation; where families and older people move to smaller towns or rural areas. Immigration also poses challenges for urban areas to work for social and cultural integration and to prepare their residents for participation in the knowledge economy.

Transnational cooperation - The case of Joint Regional Development Strategies for Vienna/ Bratislava/ Gyor Region (JORDES)

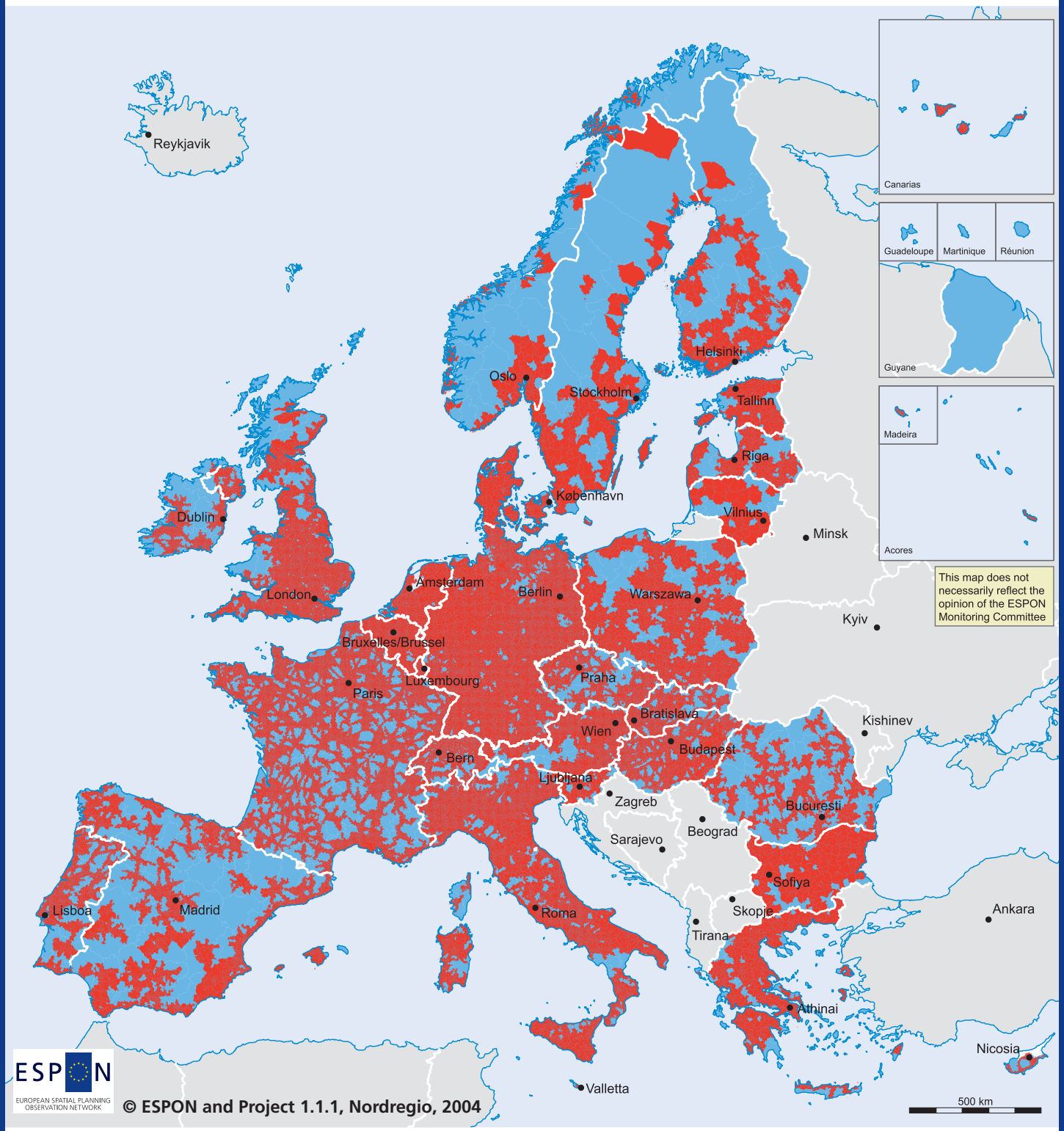
JORDES was established in April 2002 by the municipalities of Vienna, Lower Austria, Burgenland, Bratislava and Gyor. It has 7 municipal partners and a further 4 from other public agencies. The partnership is partially funded by the Interreg IIIA programme. JORDES' objective is to create a common cross-border regional growth strategy that will develop a 'prime region' in a 'polycentric system of regions'.

Inter-municipal cooperation - The case of Snieznik Municipalities Association (SMA)

SMA was established in 1998 in a peripheral border region of Poland. It is a long term partnership by four urban-rural municipalities - Bystrzyca Klodzka, Ladek Zdroj, Miedzylesie and Stronie Slaskie. Its membership is exclusive to municipalities in the Snieznik Massif mountain range. The partnership was formed mainly to strengthen cooperation between partners and to bid for EU funding. Creating critical mass of resources and efforts and addressing common threats and opportunities were major triggers.

SMA's objective is to develop an integrated development strategy for the area with a particular focus on tourism. It collects and analyses data, and commissions studies for the benefit of all member municipalities. SMA secured funding from PHARE to produce the Masyw Snieznika / Kralicky Sneznik Spatial Development Concept in 2000. It has established Tourist Information Centres and created a positive image of the SMA.

MAP 8: Areas within 45 minutes reach from urban centres



Area in 45 minutes reach from an urban centre (FUA): Potential Urban Strategic Horizons (PUSH)

Areas more than 45 minutes from the nearest urban centre (FUA)

no data

Origin of data: ESPON Project 1.1.1, Nordregio

Source: ESPON database

5.5 Territorial cooperation of cities

Collaborative arrangements between cities can enhance their capacity to address territorial issues at a strategic level. The textboxes show just two of many examples.

Policy relevant key findings:

- The functional specialisation of cities is decisive for their supra-regional importance. Major urban areas, but also a large number of small and medium sized towns, host actors whose products and services are of international significance. This specialisation in certain functions makes them important, rather than their number of inhabitants.
- Small and medium-sized cities play a vital role for territorial cohesion. In some countries as much as half of the population lives in small towns. Depending on their territorial context, e.g. neighbouring larger cities, being in a web of small towns or a development pole in a rural area, these towns can play important roles in economic development and provision of services of general interest.
- Urban areas are key drivers for the knowledge economy. Cites are the places best endowed with knowledge infrastructure, which is the main thrust for the Lisbon Strategy.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.1.1/Polycentricity, 1.1.4/Demography, 1.2.1/Transport trends, 1.2.2/Telecom, 1.3.2/Natural heritage, 1.4.1/SM-Towns, 1.4.3/Urban Functions, 2.3.2/Governance, and 2.4.2/Zoom.

While Europe is a highly urbanised continent, 20% of its population live in rural areas. Furthermore, while agriculture accounts for only 2% of its GDP and 5.7% of its employment, it covers half of its territory and plays a significant role in shaping the European landscape and its cultural heritage.

To empower rural regions, policy makers must understand their diversity. This means moving on from traditional "rural-urban dichotomy", the view that saw the countryside as the opposite to the city. Policy still treats urban and rural areas as separate entities. In contrast, the concept of urban-rural relationships has emerged as a way of challenging this traditional dualism and promoting an integrated conception of cities and countryside, based on their territorial and functional interdependencies.

Such interdependencies are not new, but today their dynamics are more complex than the simple reciprocal exchanges between towns and villages. The urban-rural continuum is now reflected in a number of visible and invisible flows of people, capital, goods, services, information, technology, lifestyle, waste and pollution between them. The major challenge is to develop and deliver policies that manage these flows in a way that maximises the development potential of rural areas without putting undue pressures on their environmental assets.

6.1 What is 'rural', what is 'urban'?

Defining what is 'urban' and what is 'rural' is not easy. The most common approaches are based on population density and size, employment density, land cover, or a combination of these. Such criteria seem to produce broadly similar spatial patterns for predominantly urban and predominantly rural areas. However, problems arise when it comes to defining the intermediate areas where urban and rural meet. It is even suggested that, the urban and rural must increasingly be seen as mindsets and not as something that can be fully captured by indicators defined outside of the localities.

Furthermore, while research on urban or rural areas is abundant, little attention has been paid to the relationships between the two. Indeed, there is limited comparable data available across all 29 countries on the flows and exchanges between the two.

6.1.1 Towards a new urban-rural typology

Rural and urban regions can be grouped into categories following a typology of different types of territory in which each area in any one category has broadly similar characteristics and potentials. Such groupings can be developed through statistical analysis that combines the structural properties of regions (such as land use patterns, settlement structure and population distribution) and their functional relations (such as forms of production and consumption).

A first step towards such an analysis are the six rural-urban area types, based on two dimensions. The first dimension is the degree of urban influence, which is defined on the basis population density and the functional ranking of urban centres. The second is the degree of the human footprint, which is defined on the basis of land cover, which means the share of artificial surfaces and of agricultural land in a region. While in many cases, urban influence and human footprint correlate, there are also some remarkable inconsistencies.

Thus the typology shows a range of different areas types from highly urbanised areas to very rural areas. The most urbanised areas (dark red in map 9) are here

characterised by high population density and the presence of a significant urban centre as well as a high degree of human footprint on the land use side. The most rural areas (light blue in map 9) on the other hand are characterised by low population density, the absence of significant urban centres and a low degree of human footprint.

Map 9 shows that areas with high urban influence and high human footprint form a clear line stretching from the west of Germany through the east to southern Poland, northern Czech Republic down to the west of Slovakia and Hungary; with other scattered areas around capital cities and along Mediterranean and Atlantic coasts.

At the other extreme are the most deeply rural areas - those with low urban influence and low human footprint. These can be found mainly in the peripheral parts of Finland and Sweden in the north, Ireland in the west, and Greece in the southeast.

Whereas the definitions used for this analysis are agreeable in general terms, it has clearly to be said, that the size of the regions considered (most of them having a bit of everything) may alter the picture, as well as the chosen averages, which are European ones for the map 9.

Similar exercises have been carried out at national level using the same approach to rural and urban but looking at smaller regions and considering national averages. The pictures deriving from these exercises clearly show more nuanced pictures which correspond better to the local perception. In these cases is for example Belgium not so strongly dominated by highly urbanised areas, and also in Austria the analysis shows a more nuanced picture of the settlement pattern. For a European wide analysis at such a detailed level, the necessary data is unfortunately not available.

6.1.2 More use of land resources does not lead to more prosperity

When this typology is overlaid on the level of GDP per capita it is possible to examine the extent to which land (which is a finite resource) has been used efficiently to achieve economic growth. These analyses show that regions which are under 'high urban influence' cover only 27% of the territory but, accommodate 69% of the population and produce 78% of the GDP. Hence, they can be seen as examples of the efficient use of land, where a high level of GDP per capita has been achieved from a relatively low proportion of artificial land.

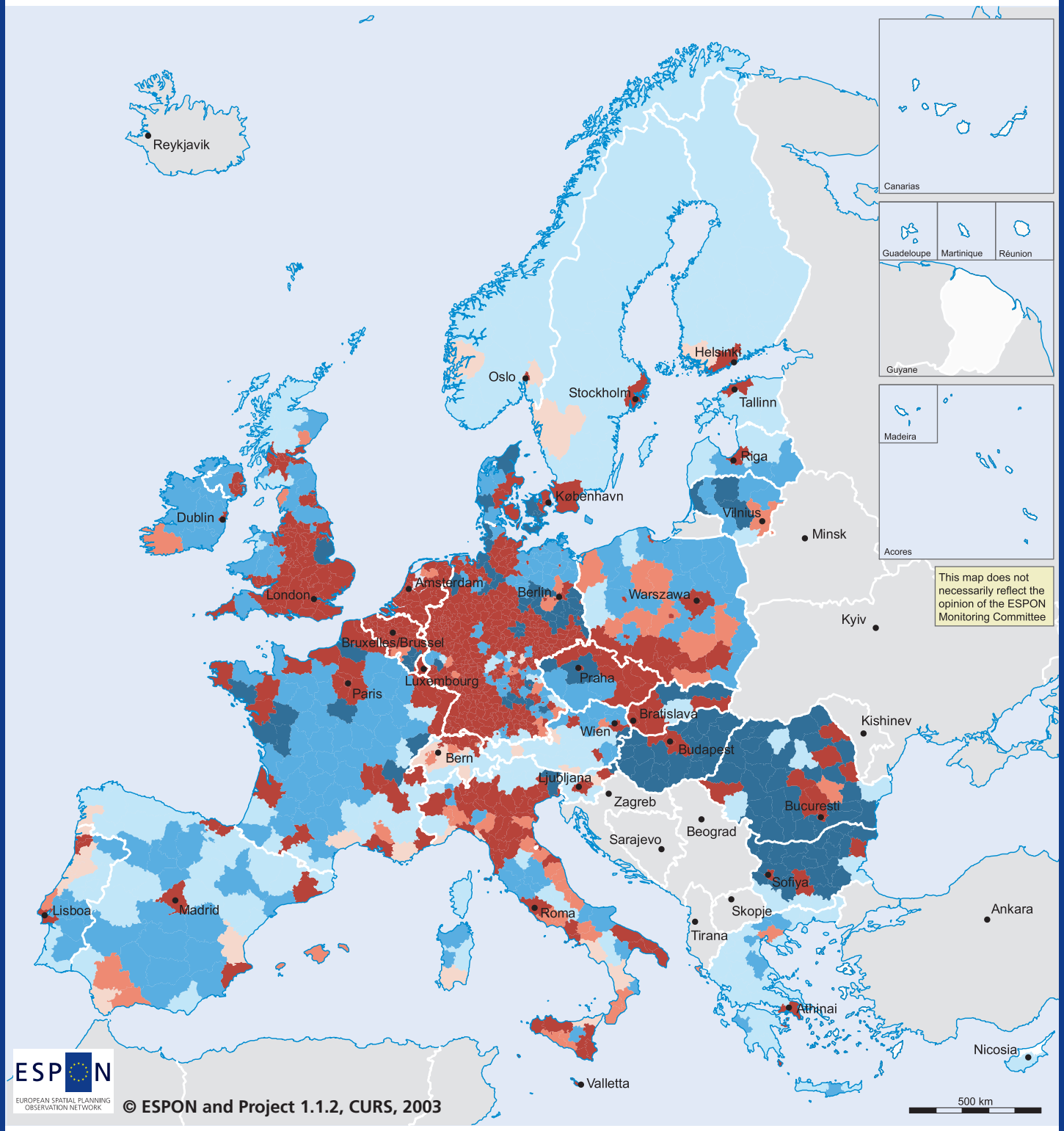
In contrast, areas with 'high level of human footprint' and a proportionately low level of GDP per capita (such as Lithuania, eastern Germany, Hungary, Romania, Bulgaria, and parts of Sweden, Denmark, Belgium, France and Portugal), can be seen as examples of over exploitation of land (see also map 10).

The key message is that increased use of land for development does not necessarily correspond affluence. This can also be related to the issue of structural change. However, adhering to the sustainable development objectives from the Gothenburg Agenda implies attempting to decouple economic growth from the use of non-renewable resources, such as green field sites.

6.2 The changing role of rural areas

Rurality is no longer synonymous with agriculture, nor with peripherality and decline. The level of performance against Lisbon economic indicators is not necessarily linked to the level of urbanisation.

MAP 9: Urban-rural typology



Urban-rural typology, based on population density,
ranking of Functional Urban Areas and land cover.

- High urban influence, high human footprint
- High urban influence, medium human footprint
- High urban influence, low human footprint
- Low urban influence, high human footprint
- Low urban influence, medium human footprint
- Low urban influence, low human footprint
- No data

Origin of data: ESPON Project 1.1.2, CURS;
CH and NO: classification on basis of calculations of ESPON Project 3.3
Ranking of Functional Urban Areas (FUAs): ESPON Project 1.1.1, Nordregio

Source: ESPON database

Agriculture is still an important economic sector in eastern European countries, but elsewhere in Europe its significance is declining. Rural areas are diversifying their economic base from being the locations for the production of (agricultural) products to locations for the production of services including tourism and recreation.

Some of the main changes associated with this shift include: declining employment in agriculture; the growing importance of farms' multiple activities and quality food products; the increasing significance of employment in service industries, manufacturing and high-technology; the emergence of new uses of rural space such as retailing, tourism, recreation and environmental conservation; the changes in demographic structure of rural areas; and, increasing income disparities.

6.3 Europe of diverse 'ruralities'

The restructuring of both urban and rural areas results from complex interplays of global/European, national and regional/local factors. Global socio-economic and environmental trends do not affect rural areas in a homogenous way; neither do they trigger a homogenous response.

There are different types of interdependencies between urban and rural areas. These range from traditional roles where rural areas provide food and labour for the urban centres, to new relationships organised around new consumption patterns.

One of the most profound variations relates to trends in flows of people between urban and rural areas. While parts of rural Europe are experiencing an influx of in-migration from urban areas, others are confronted with the threat of an imminent de-population.

A further distinction should be made between long term and largely irreversible migration into rural areas (counter-urbanisation) and daily, weekly or more regular movements between urban and rural areas. Counter-urbanisation involves out-migration from the cities to the countryside, and relocation of productive activities cascading down from large urban centres to smaller towns or suburban areas, and also to more distant rural areas that offer the prospects of a higher quality of life. The second category involves journeys to work, or to access services and recreational facilities. The following sections elaborate on these partly contradicting trends.

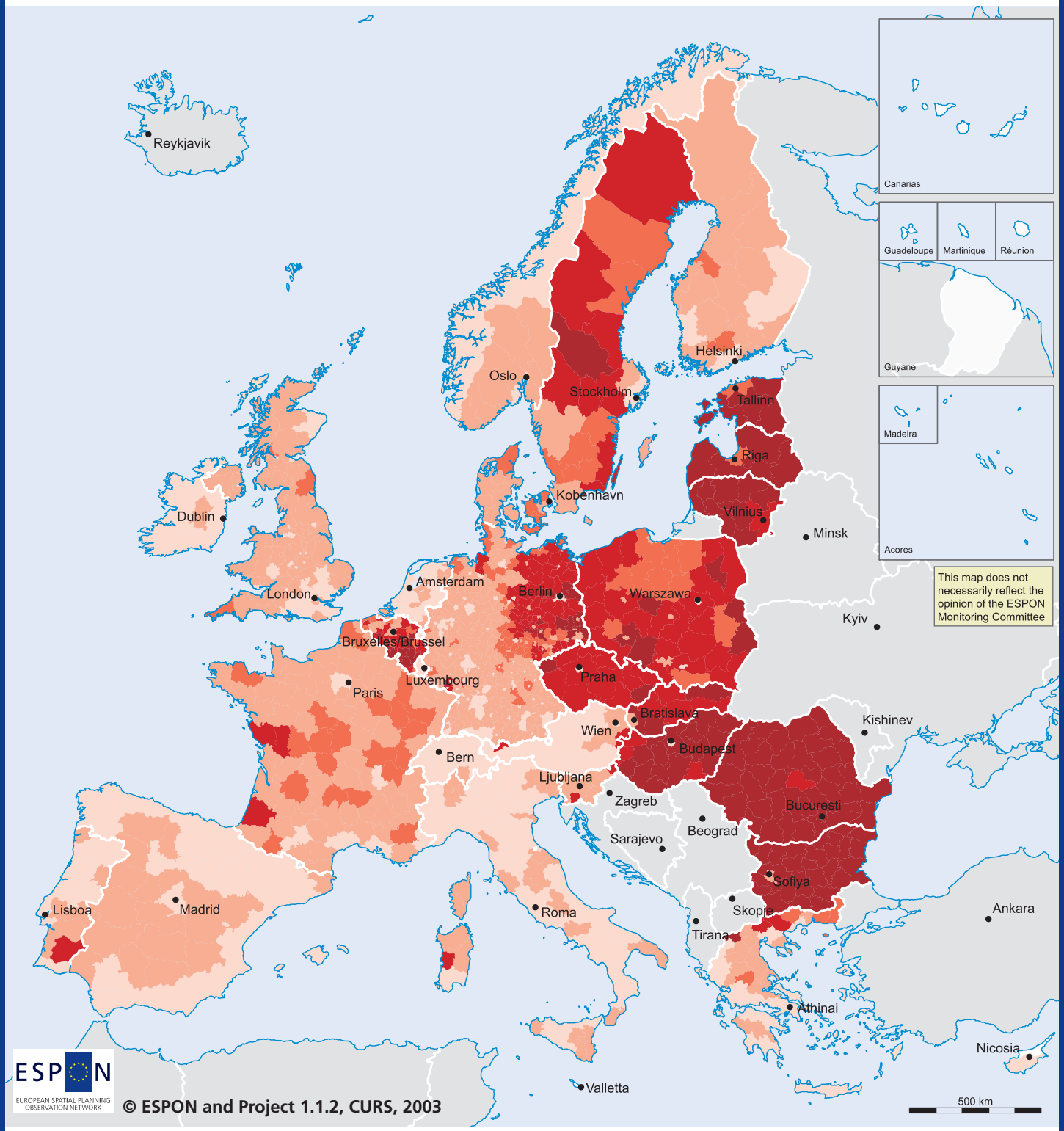
6.3.1 Rural revival

A century ago large parts of Europe experienced a 'rural exodus' to the towns. Today there is evidence of counter-urbanisation and 'rural revival'. In parts of Europe, people are moving out of the larger cities to live in the countryside. In Britain, this amounts to 1700 persons per week. In France, some rural areas, even some of the isolated ones, are witnessing a growth in population.

This process of counter-urbanisation is leading to a rural revival, particularly in areas in the dense urban networks of central and north-western Europe, but also in southern and Nordic countries. In the latter countries, however, more balanced flows can be observed. However, young people continue to leave isolated rural areas to live in cities. This migration is particularly evident in central Spain, Portugal, Finland, Norway and Sweden.

Another important trend is the commuting flows between urban and rural areas, particularly in affluent regions of Europe and around large metropolitan areas.

MAP 10: Share of land used for settlements and infrastructure per GDP (in PPS)



Artificial surfaces (land used for settlement and infrastructure) per 100 million Euros of GDP in PPS, in NUTS 3 regions in 1999

- 0 - 1,2
- 1,3 - 2,4
- 2,5 - 3,1
- 3,2 - 5,3
- 5,4 - 28,7
- no data

The average amount of artificial surfaces per 100 million PPS is 2,8 km² / 100 million Euros.

Regional level: NUTS 3
Origin of data: ESPON Project 1.1.2, CURS;
Artificial surfaces:
EEA, Corine Land Cover 90;
NO and CY: Pelkom
GDP: Eurostat, CH and NO:
National Statistical Offices

Source: ESPON database

Such flows can result in suburbanisation and urban sprawl, but they lead to an increase in population of rural areas; a process of "ruralisation". Families with children and retired people are the ones most likely to be moving.

The peri-urban zones of major cities such as Dublin, Manchester, Vienna, Rome and Budapest are all illustrative of this phenomenon. This enlargement of the commuter catchments, or the functional urban areas, is evident in most parts of Europe. In parts it is a response to a reduction in journey time, because of improvement in infrastructure and technology. New telecommunication technologies also make it easier to live out of town.

This "ruralisation" trend is likely to be assisting the Lisbon Strategy, because it has increased territorial flexibility of labour markets, bringing people and jobs together over a wider area than before. However, it works less well for the Gothenburg Agenda since a rise in car-borne work-related travel uses non-renewable resources and creates environmental pollution. Furthermore, it has implications on issues such as land consumption and social patterns. Thus this aspect of rural revival raises very difficult questions about appropriate territorial development strategies.

Although proximity and accessibility to urban centres are significant factors in the attractiveness of rural areas, the rural revival is not exclusive to accessible villages. Even in some remote areas with natural beauty or in coastal regions, such as those in France and Ireland, both long and short-term flows are evident. Peripherality, distance from centres of population, and geographical constraints can become an asset rather than a liability; attracting tourism and other economic activities to the area. One form of short-term flow that should be noted is migrant labour engaged in seasonal employment in rural areas, for example in tourism or agriculture.

The downsides of rural revival: the case of Ryedale in North Yorkshire, UK

Ryedale is nationally defined as a 'remote rural' district with a low population density. Almost half of its 49,000 population live in isolated rural dwellings and small villages. However, while the regional population barely increased between 1982 and 2002 (<2%), Ryedale experienced an 18% growth in population, mainly due to in-migration of particularly retired people. During this period, there was substantial out-migration of young adults as a result of factors such as the lack of education, employment and training opportunities and the scarcity of affordable housing. There is an ongoing transition from agriculture and manufacturing towards services, and the majority of the service jobs are low-paid and part-time.

There is rising demand for houses in Ryedale, from people wanting to move from the larger urban centres in the region, such as Leeds. Demand is also increasing for second and holiday homes, which can now account for up to 40% of homes in some villages. This increasing demand, coupled with a strict land use regulation, mean rising house prices, making home ownership unaffordable for local people.

Shops and other services are declining, as holiday and second home owners, who are not permanent residents, tend to make less use of local providers. Thus, rural service providers are not benefiting as much from these in-migration trends as it might have been expected.

Special measures have been introduced to selectively permit housing development on protected greenfield sites subject to a number of conditions. This is an attempt to encourage younger and lower income local people to remain in the area, and to counteract the social and demographic effects of urban-rural migration.

However, there are often social and environmental downsides to this rural revival, as exemplified by the case study of Ryedale.

6.3.2 Rural depopulation

While the population across the ESPON space as a whole shows a small annual increase of 0.35%, there are major regional variations ranging from -13% to +31% change in the second half of the 1990s. Regions experiencing the most serious decline are located in Germany (particularly eastern parts), France, Spain, Portugal, the northern and southern parts of Eastern Europe and the peripheral regions of Sweden and Finland. (For a map on demographic developments see map 16 in chapter 11.2.)

Although old industrial towns and some central urban areas are within these declining regions, rural regions figure prominently, especially those that are sparsely populated and geographically remote. This highlights an alarming trend towards depopulation of small towns and rural areas. The prime cause is a triple one: too few children, too many old people, and too many of the young people leaving the rural areas. This rural depopulation also has environmental consequences, such as an increased risk of forest fire and a reduction in biodiversity.

Population decline leads to loss of viability and closure of services and facilities. This is a major concern in areas with extremely low density such as the peripheral areas of Finland, Sweden and Norway which cover an area of 424,000 km^2 but have an average population density of 5 inh/km^2. In these areas sustaining a basic level of access to services of general economic interest is central to territorial cohesion objectives. However, also many more densely populated areas, such as regions in Easter Germany, Estonia and Latvia, are experiencing population ageing and demographic decline to a degree which puts the provision of general services at risk in many areas.

6.4 Contribution of rural development poles

Small and medium-sized towns in rural territories can play a crucial role by acting as a development pole for their surrounding area. They can provide the catalyst for regional growth in service-related activities, tourism and recreation. Renewable energy development and energy crops also offer economic opportunities for rural regeneration.

Access to broadband technology is very important. Yet the current roll-out of this technology follows a hierarchical pattern favouring metropolitan and urban areas with a critical mass of demand.

Overall, understanding the reasons for differential economic performance and relative competitiveness in rural areas is a key element in devising practical strategies and programmes for empowering and regenerating rural areas. While tangible factors such as natural and human resources, investment, infrastructure and towns with additional functions to agglomerations have often been considered as decisive factors for a vibrant rural economy, current research highlights the significance of 'less tangible' or 'soft' factors.

The territorial capital of a rural region includes various kinds of social, cultural, institutional, environmental and local knowledge. Five factors are particularly important. These are: market performance (how markets work in practice); institutions (how local people perceive and use the institutions intended to serve them); networks

(the personal networks which link public and private sector organisations); community (the sense of community as a basis for co-operation); and, quality of life.

It is the relationship between tangible and less tangible resources, and how they interact in the local context, which shapes opportunities and constraints for local development. Rural economic development requires the ability to transform stocks into flows: valorise natural and man-made assets, strengthen economic environment, and improve institution capacity.

Policy relevant key findings:

- Different types of rural areas. Rural areas are no longer synonymous with agriculture. Today three basic territorial types of rural areas can be distinguished, each with specific potentials and challenges. These are rural areas in close proximity to urban centres, rural areas with a single urban centre as its development pole and remote rural areas.
- The economy in rural areas depends also on intangible factors. The way local people are able to exploit local resources is often more important for rural development than the tangible resources themselves. The process involves valorising natural and man-made assets, strengthening the economic environment and improving institution capacity and entrepreneurship,
- Depopulation is a challenge for many rural areas. Whereas rural areas in close proximity to larger cities and those in attractive locations may enjoy demographic growth, most of the other rural areas are facing a demographic decline which challenges the sustainability of services of general interest and the liveability of the area.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.1.2/Urban-rural, 1.1.4/Demography, 1.2.2/Telecom, 1.3.1/Hazards, 1.4.1/SM-Towns, 2.1.3/CAP impact, and 2.4.2/Zoom.

CHAPTER 7
AREAS WITH SPECIAL GEOGRAPHICAL FEATURES

The diversity of Europe implies diverse regional and local actors dealing with diverse situations and specific regional and local constraints and opportunities.

This chapter tells some selected stories to exemplify results that zoom into specific regional or geographical situations. These examples refer to:

- Territories with special geographical features (coastal areas, islands, mountain areas)
- Territories with special governance challenges (border regions, cross-border and transnational cooperation)

7.1 Territories with special geographical features

Europe has many areas with special geographical features. European policies take notice of these special situations; the 3rd Cohesion Report devoted a special section to "Regions with specific handicaps".

Some regions attract attention because of their geographical situation (peripherality, poor accessibility), climatic conditions (arctic winters, droughts), sensitive environments and delicate ecosystems (mountain areas, islands, coastal areas). Often these special geographic conditions are accompanied by comparably difficult conditions for human living and economic activities. However, in some cases, and sometimes only recently, these very places have been able to unlock their hidden potential and become attractive places for tourism, retirement, and knowledge workers, for example. This is especially true for mountain areas, islands, and coastal areas; but it generates new problems of how to manage human pressure in sensitive areas.

7.1.1 Coastal areas

As a peninsula attached to the EurAsian continent, one of Europe's features is its multitude of coastal areas and islands. Almost half of the NUTS-2 regions include a coastline, and 29% of all NUTS-3 regions in the ESPON territory are coastal regions.

Traditionally, coastal areas specialised in fishing and trade. From their harbours and ports they provided regions with sea food and connected them to other parts of Europe and sometimes to the wide world. The harbour functions have developed into a dense network of maritime transport. Large harbours (like Rotterdam and Hamburg) are in the first league of the world harbour network. Smaller ones are gaining from the growing importance of short sea shipping, which currently accounts for 41% of the European goods transport market (compared with 44% for road transport). Some larger metropolitan regions have grown around a waterfront. Today 35.6 % of the European population lives near the sea side, half of the MEGAs are located there.

Fisheries remain important in up to half of Europe's coastal regions. Some of these remain first and foremost as fishing territories within the European territorial system. However, many territories where fishing has been a strong part of the economy, and especially those in remote areas, are now experiencing declines in population, employment and income exceeding the average rates elsewhere. These trends pose evident challenges for territorial development and cohesion.

Before the 1970s many coastal regions were poor and suffering out-migration. But in the second half of the seventies and during the eighties, some such areas in the periphery began to attract a wealthy aged population from Europe's centre. The Mediterranean coast of Spain is a classic example. As leisure increased, so coastal regions have become increasingly attractive, though some traditional holiday destinations declined in the face of competition from regions such as those on the Mediterranean coast.

Some tourist areas, such as southern France, the Algarve and the Mediterranean coast of Spain increasingly have become destinations for migrants from abroad. Most of this immigration is from northern Europe, and particularly features retired people with a high standard of living. However, the employment created by the growth of international tourism in these areas also attracts immigrants from poor countries. These international level tourist places now are significantly different from tourist areas in northern Europe, whose influence is mostly national. The south coast of England is one example.

Renewable energy production (e.g. large wind farms) has introduced new development pressures into some coastal regions in recent years. Although the regions for energy production are not necessarily the same as those targeted by tourism, they add to the overall picture of coastal regions facing new territorial development dilemmas. One indication of the pressure on coastal land is the fact that the share of artificial surfaces is approximately 25% higher in coastal areas than in the inland. Growth rates of urban areas on the coast, during 1990-2000, were also about one third faster than inland.

Integrated territorial development strategies are needed in coastal zones to manage these multiple demands. Maritime risks need to be assessed, and action is needed to sustain environmental quality and ecological systems, but also to secure the economic potential of these coastal areas. For these reasons management of coastal areas is becoming an increasingly important aspect of territorial governance.

7.1.2 Islands

The constellation of trends and challenges that characterise some coastal areas, especially in the Mediterranean, are also evident in some islands. However, the diversity of islands in Europe is huge. There are island states (Malta, Cyprus), larger islands (Great Britain, Ireland/Northern Ireland, Sicily, Corsica, Sardinia) and island groups such as the Canaries, or the Balearics as well as archipelagos of smaller islands such as those in the Aegean. There are peripheral and ultra-peripheral Nordic islands and tropical islands such as those in the French overseas departments. Inevitably there are different development trends and challenges in these very different types of islands.

Nevertheless, there are basic common features for all islands, notably the restriction of accessibility to ship and air transport. Thus islands typically face serious disadvantages in accessibility, a problem that is especially acute in small islands at the European periphery. Even in the European core region, small islands are more isolated and less economically strong than neighbouring cities and regions on the mainland.

The existence of very small islands, without a bridge or dam to the mainland, is a special feature in the Danish spatial structure. It presents a challenge for equal economic development in these peripheral areas. Only 5,365 people lived on the

27 smallest Danish inhabited islands in 2001. Like other extremely sparsely populated and environmentally sensitive areas these situations call for imaginative territorial management.

Territorial trends in the management of the natural heritage
– The case of Lanzarote, Canary islands

The Canary Islands are singular worlds unto themselves, environmental very valuable, extremely vulnerable and complex. Twenty years ago, the sudden growth of tourism modified the traditional insular structure based on agriculture and fishing. In the 1970s tourism began to grow, slowly at first, in the almost virgin territory. The scale and rhythm of growth today is such that the island faces great pressures.

Controlling these intense development pressures is extremely difficult. The indicators of increasing human pressure on the territory in the period 1996-2001 show a situation that is overwhelming Lanzarote was in over these years. Frantic growth in the building sector significantly affects the fragile insular surroundings.

7.1.3 Mountain areas

Mountain areas also are very varied in character. Like (some) coastal areas, (some) mountain areas show a significant combination of sensitive ecosystems and settlement pressure; and like islands they show some basic disadvantage in terms of accessibility, at least when compared to their non-mountainous geographical neighbours.

The economic situation for farming is difficult in mountain areas. In Switzerland, the average farm income in lowland areas was 11% higher than the average of all farms, while that of mountain farms was 21% lower. In general, these findings apply to the less-favoured areas (LFA) of the European Union as well.

Over 30 years ago, the European Commission passed Directive 75/268 on mountain and hill farming and farming in certain less-favoured areas. This introduced regional categories into the Common Agricultural Policy (CAP) for the first time. It also represented the start of direct annual payments to farmers. Over the years, the area designated as LFA as well as the amount of money spent for LFA has grown.

LFA support is especially significant in the states that joined the EU in 2004. Currently on average about 19% of EU support through the rural development programmes is spent on the LFA instruments. The new Member States plan to allocate more than 25% of rural development support for LFAs support.

While many traditional activities such as agriculture have undergone substantial decline in most mountain territories, tourism has been boosted as one of the key sectors for economic restructuring. It has become the major engine of economic growth in alpine and other mountainous settlements.

This positive economic development has been accompanied by an increase in the numbers of inhabitants. For instance, in the three Austrian Alpine federal counties, Salzburg, Tyrol and Vorarlberg, the growth rate of population between 1991 and 2001 was twice as high as the Austrian average. This increase is partly due to a significant immigration from other parts of Austria and from foreign countries. The decisive factor, however, has been economic development and jobs growth. These have also enabled the younger population to stay in the mountain settlements

where they were born. The Alpine countries have turned around their demography from depopulation to growth.

For some mountainous regions in Greece, however, the picture is much less favourable. Both productivity and employment are at low levels and there is little evidence of catching up with the EU average on either of them. The level of productivity in the rural and mountainous interior typically is around just 60% of the EU average - the lowest in the EU along with some regions in Portugal. The gap is currently further widening, rather than closing – a worrying trend.

EU enlargement has created new opportunities for mountain areas, like the Carpathian and Balkan mountains, to boost mass-tourism. Their success will depend on good sustainable development strategies to reconcile tourism-led economic growth with ecological conservation.

The largest natural areas are mostly in Europe's mountain areas, and the mountains also have potential for development of renewable energy resources. Large hydroelectric power plants are concentrated in regions around the Alps, where countries like Austria and Switzerland produce most of their electricity from hydro (70% for Austria, 60% for Switzerland). Norway even produces 99% of its electricity needs from hydro. However, the maximum potential for large hydro-electric power stations has nearly been reached in some regions, especially in western Europe. Similarly, potential in the Carpathian Mountains in Romania is largely exploited, though there could possibly be more power stations in the Tatras Mountains between Slovakia and Poland.

In contrast to their wealth in natural resources, mountain areas are problematic in respect of modern telecommunications infrastructure. The case of Italy shows that the scattered settlement network and low population density, particularly in mountainous areas, held back the development of this infrastructure.

Access to broadband networks does not reflect differences between the various regions in per capita income, but rather differences in their geographical structures. The percentage of the population without broadband access is higher in mountain areas and small municipalities (for example in the regions of Piemonte, Val d'Aosta, Molise, Basilicata) but much lower in flat territories or easily accessible municipalities, such as in Lombardy, Liguria, Emilia Romagna and Lazio. However, wireless and satellite technologies can partly compensate. There are examples in France and in Ireland of satellite access being used to provide broadband connections for rural and mountainous zones.

Another crucial concern for sensitive environments like mountain areas is the management of international transport and mobility corridors. More and more, combined transport - a combination of rail and road modes - is used for long distance national and international traffic. Most of the international combined transport in Europe involves traffic across the Alps. Combined transport is a favoured technique for crossing "sensitive" areas and in particular mountain chains when long road tunnels might be difficult to build and operate, or might create unacceptable environmental impacts.

Finally, a look into the future of mountain areas immediately draws the attention to how climate might affect Europe's mountains. The retreat of glaciers, snow and

arctic ice has been observed. In the Alpine regions it amounts to 20% since 1980. In contrast glaciers in Norway are increasing in volume, due to increased snowfall. In general, however, the extent and duration of snow cover across Europe has decreased since 1960. Sea ice in the Arctic has also been in decline.

Mountainous areas are particularly vulnerable to climate change and global warming in two ways. Winter tourism might be threatened by less and more irregular snowfalls. One hypothesis is that seasons for skiing might start later and end sooner in the future and that, "by 2030", no ski resorts would exist below 1500 meters in the Alps.

A second issue is the vulnerability of ecosystems to global warming. This could lead to a high loss of biodiversity in these regions, making natural management by corridor development extremely difficult. Also water retention in mountainous areas could become more difficult, which could lead to the loss of hydropower as an important production basis for these areas.

7.2 Territories with special governance challenges

Territories with special governance challenges also deserve particular attention. Examples are border regions, regions of cross-border and transnational cooperation.

7.2.1 Border regions and cross-border cooperation

Because they are located at national peripheries, border regions have often been disadvantaged both in accessibility and economic development. However, there are also situations where border regions have managed to profit from price differences and different tax regimes either side of the border. Sometimes this can lead to cross-border shopping tourism.

However, in an integrating Europe, these spin-off effects from internal borders are increasingly a thing of the past. Border regions are trying to make full use of integration potentials. The INTERREG programme supports this process. However, huge potentials for cross-border urban agglomerations still remain unexploited. An astonishing 23% of European cities have potential commuting areas that cross a national border (see map 8 in chapter 5).

There is a huge variety of border regions across Europe. With the enlargement in 2004 the structure of European Union borders changed substantially. In the EU with 15 member states 81.5 % of all borders were coastlines and only 18.5 % land borders. This looks quite different in an EU with 25 member states where only 41 % are now coastlines and 59 % are land borders.

Enlargement not only made borders more important, it also altered their distribution across the territory of the EU. More than 50 % of European land borders are now in the states that joined the Union in 2004.

To deepen understanding of the different borders and their different territorial implications, a typology of border regions in the new Member States has been developed. Six different components of border characteristics were identified and analysed. These were: geographical type of borders; ethnic-historical types of borders; the density of border crossing points; the degree of economic disparity across the border; integration into the EU funding system and participation in transnational activities.

These six characteristics were combined into two policy-related typologies. The first typology combined geographical type and density of border crossing points. In other words it addresses physical characteristics that may be related to infrastructure policy interventions. The second typology combined socio-economic disparities and transnational activities and so addresses structural policies and transnational programmes.

This statistical research into border regions has been complemented by two case studies. One of these was the Hungarian-Slovakian border regions, and the other was the Greek-Bulgarian border regions. The case studies were done in order to test and validate the data and typologies.

Results show that borders still have a significant impact, especially in the new member states and candidate countries of central and eastern Europe. Although general integration progresses are reducing the barrier-effect of these borders, there are still many difficulties to be overcome. For instance, there are still nine NUTS 3 border regions in the enlargement area where there are no international road border crossings. Three are in Bulgaria and Romania, 2 in Poland and 1 in Lithuania. The highest density of border crossings can be found – despite the unfavourable geographical conditions – in Slovenia, and the lowest in Romania and Bulgaria.

Regions bordering third countries are often the most underdeveloped within the countries that joined the EU most recently and in the Candidate Countries. In conclusion the level of spatial integration already existing in the border region makes a huge difference for the strategies to be chosen.

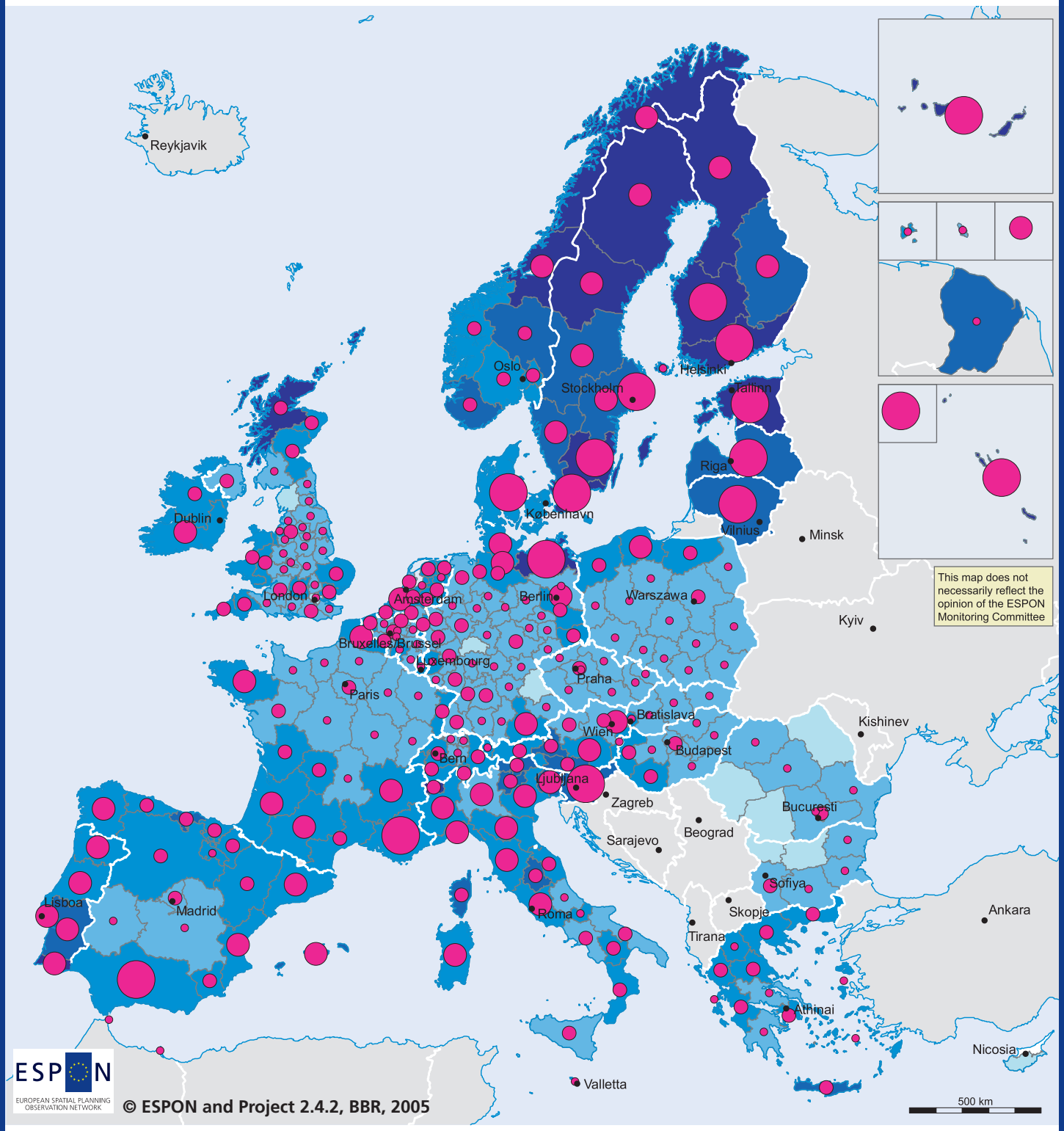
7.2.2 Transnational cooperation

In parallel to the European Spatial Development Perspective, ESDP, (which was presented as a draft version in 1997 and was adopted in 1999) the European Commission, in 1997, launched a Community Initiative programme (INTERREG IIC 1997-1999; IIIB 2000-2006; Objective 3 2007-2013) on transnational cooperation as a new instrument aiming at the application of the ESDP policy options. This initiative explicitly focuses on territorial development and joint transnational action in this field. In INTERREG IIIB, large contiguous transnational cooperation areas have been defined. INTERREG tackles common, transnational challenges in these areas through international projects in all fields of territorial development.

A detailed analysis both on the territorial characteristics of the cooperation areas and of the cooperation themes and priorities (see map 11) provides a basic overview on the intensity of cooperation. This is expressed by the number of projects, regions and cities are actively involved, the spatial visions and strategies developed in transnational cooperation. The map shows that, though INTERREG IIIB is a programme for large cooperation areas rather than a cross-border activity, regions near to national borders (as well as coastal areas) are particularly attracted into this cooperation programme. They take part in more projects than inland regions.

A general impression is that transnational cooperation areas do not necessarily need to be homogenous in relation to thematic challenges. Exchange of experience between diverse partners can be attractive, especially if different phenomena (like expansion or contraction) are happening in the same neighbourhood of regions.

MAP 11: Intensity of INTERREG IIIB cooperation



Number of project co-operations according to operational programmes*

Weighted in population (in 100.000)

- 0
- 0,01 up to 1,0
- 1,01 up to 4,0
- 4,01 up to 8,0
- 8,01 and more
- no data

Absolut number

- 1 up to 10
- 11 up to 40
- 41 up to 80
- 81 and more

* based on the INTERREG co-operation areas: Alpine Space, Atlantic Area, Baltic Sea Region, CADSES, Caribbean Area, Madeira - Azores - Canary Islands, North Sea, North West Europe, Nothern Periphery, South West Europe, Western Mediterranean, Indian Ocean Area

Regional level: NUTS 2
Origin of data: ESPON 2.4.2, INTERREG project survey

Source: ESPON database

Often, but not always, thematic priorities are related to the "objective" situation as described through statistical analysis. Indeed, regions with common problems often cooperate in INTERREG IIIB. Examples are mountain and Alpine regions working together to find solutions to transportation issues. In contrast, projects looking at demography tend to be more loosely coupled to any specific actual population trends. Both growing and shrinking regions seem both to be attracted into INTERREG projects dealing with demographic themes.

Policy relevant key findings:

- Geographical features do not greatly influence economic development. Regions that are similar as geographical features, such as islands, coastal and mountain areas, may faces specific challenges for human living and economic activity, but show the same spectra of territorial and economic development as other less challenged areas.
- Cross border integration can strengthen functional regions. The characteristics of a national border differ depending on the political, socio-economic and territorial context. In large parts of Europe open borders allow for the establishment of cross-border functional regions. Nearly a quarter of cities have potentials for commuting areas going across national borders.
- Territorial characteristics are important for transnational cooperation. Transnational cooperation under INTERREG IIIB, often, but not always, has thematic priorities related to the territorial characteristics of regions featuring in European statistical analysis. Issues related to demography, however, seem to be interesting for all kind of regions, e.g. those with demographic decline and growth alike.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.1.1/Polycentricity, 1.1.3/Enlargement, 1.1.4/Demography, 1.2.1/Transport trends, 1.2.2/Telecom, 1.2.3/Info-society, 1.3.2/Natural heritage, 1.4.5/Tourism, 2.1.1/Transport impact, 2.1.3/CAP impact, 2.1.4/Energy, 2.1.5/Fishery, 2.2.2/Pre-aid impact, 2.3.2/Governance, 2.4.2/Zoom, and 3.2/Spatial scenarios.

CHAPTER 8
ACCESSIBILITY OF EUROPEAN REGIONS

Accessibility and the quality of transport and communication infrastructure are traditional issues in territorial development and cohesion. Good general accessibility is often considered to be a prerequisite for attracting investors, maintaining employment, facilitating the building of networks of cities and clusters, and for developing tourism.

In addition to the physical mobility of people and goods, flows of information supported by telecommunication facilities are rapidly growing in importance. Steeply rising energy prices make access to energy a new element in regional accessibility, with important consequences for physical mobility and economic development.

Where is there good accessibility to these vital infrastructures? Which territories are connected, and which are less well placed?

8.1 Accessibility and transport infrastructure endowment

Measurement of Europe-wide accessibility provides important evidence for European cohesion and transport policies. Accessibility can be measured in very different ways, according to the type of flows concerned: people, goods and information. It has to be measured at different territorial scales, just as decisions on improvements to accessibility are also taken by governments at different territorial scales.

8.1.1 Good transport accessibility is mainly a privilege of Europe's central regions

There is a clear distinction between the centre and the peripheries of Europe in terms of accessibility by road for movement by people. The potential accessibility by rail adds some other characteristics to this pattern. The highest rail accessibility is primarily in the cities serving as main nodes in the high speed rail networks and along major corridors. Potential accessibility by air shows highest values around major airports, which are dispersed across Europe. The picture is of a patchwork of regions with high accessibility by air surrounded by regions with low accessibility.

Low accessibility, however, is no longer a concern solely for regions of the traditional periphery. Various regions located in the European core have problems too. The recent development of regional airports generated by low-cost companies upgraded the accessibility of a number of less central and less developed regions.

Combining the various transport modes, the measurement of multimodal accessibility shows an arc where accessibility is highest. It stretches from Liverpool and London to northern Italy, via Paris, Lyon, Benelux and the Rhine regions. High values are also found in a number of less central agglomerations such as Madrid, Barcelona, Dublin, Glasgow, Copenhagen, Malmö, Gothenburg, Oslo, Rome, Thessalonica and Athens.

In contrast numerous regions in Portugal, Spain, Ireland, Scotland, Wales, Norway, Sweden, Finland, southern Italy and Greece have very low values of multimodal accessibility. Several regions of Germany, Austria and France also have below average accessibility values, and nearly all regions of the Member States joining the EU in 2004 are in the same situation with the exceptions of their capital city regions.

Measurement of accessibility related to the transportation of goods would certainly show a more accentuated centre-periphery pattern. However, seaports do play a significant role for the transport of goods to and from peripheral regions, though they are less significant and less systematic than airports for transporting people.

Connections to the main communication networks are an important influence on global accessibility within and between regions. This connectivity can be measured by evaluating the accessibility of any place based on its minimum access time by road to the closest transportation node (motorway entrance, railway station, commercial port etc.). Most regions enjoy good connectivity to transport terminals, although western regions perform generally better than those in member countries which joined the EU in 2004 (see map 13). Some peripheral eastern regions have high connectivity levels due to port and airport infrastructure (for instance coastal Bulgarian regions).

There is a clear difference between western and eastern regions in connections to motorways, because of differences in the density of motorway networks. The connectivity to the high-speed rail stations by car shows an even more selective pattern, resulting from unequal regional endowment with high-speed rail stations throughout Europe. The connectivity to commercial airports is also regionally unequal, but is improving as more regional airports operate.

For businesses, the accessibility of cities where their real and potential clients and suppliers are concentrated is a major factor. The calculation of the number of cities of more than 100,000 inhabitants accessible by car in a certain amount of time underlines the fact that specific geographical conditions seem to play a major role.

For example, mountainous areas like the Massif Central in France, the Alps in Austria or the Carpathian mountains, have poor accessibility to cities. This contrasts with accessibility within river basins, such as in the Po valley of northern Italy. Coastal areas' accessibility depends on local circumstances. Despite its insularity, accessibility to cities is high in most regions of Great Britain, because of the density of cities throughout the country.

Some European regions have very poor accessibility to the very large metropolitan areas (MEGAs). Examples are the north of Scandinavia and Finland, the West of France, the regions along the border between Spain and Portugal, the Mediterranean islands, north-western Greece and the north of Romania.

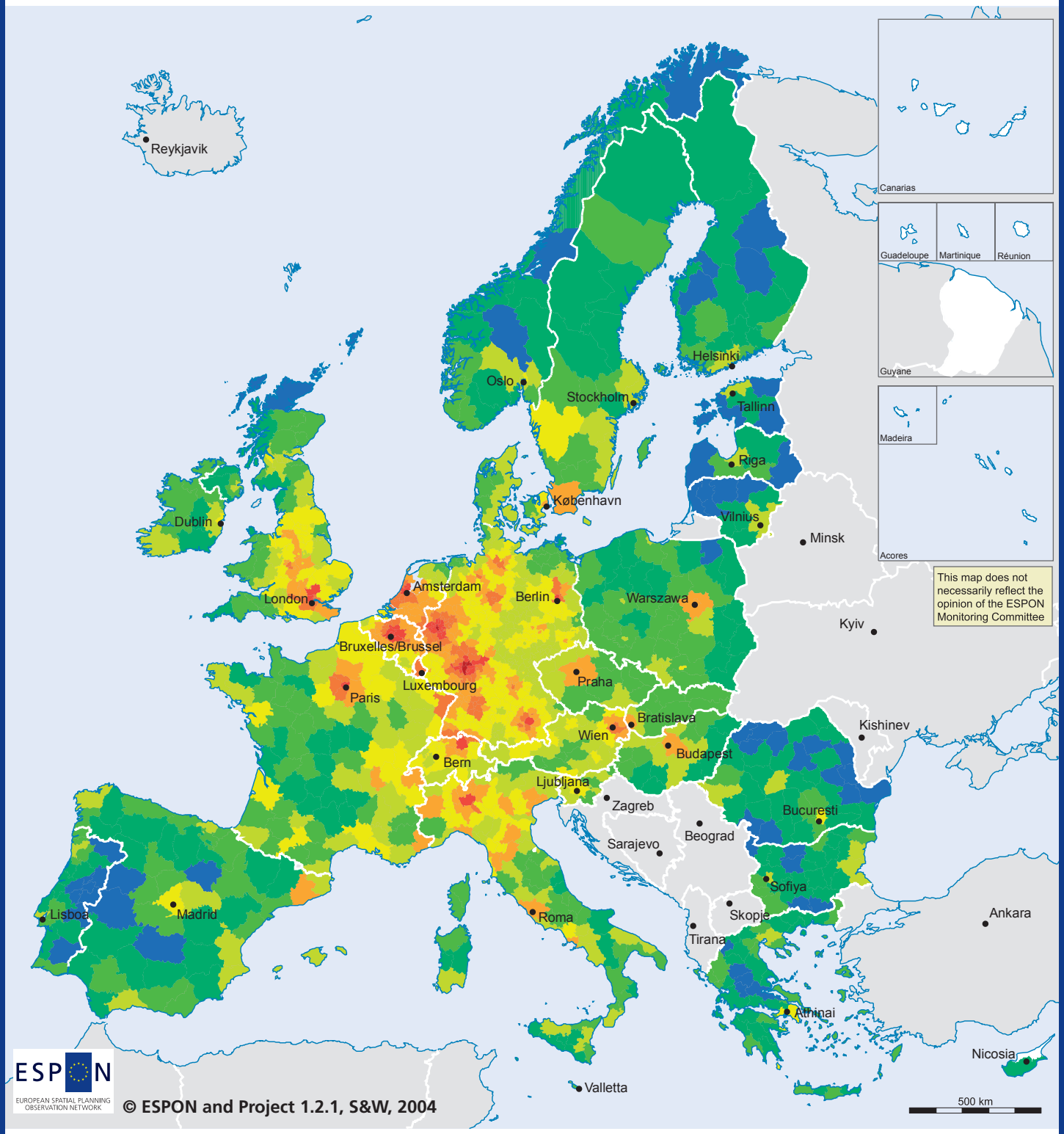
The opposite situation exists along the arch going from London to Milan, through Brussels, Stuttgart and Zurich, and with an extension to the south-east of France (Marseille and Nice). While there are differences in accessibility to MEGAs between the east and the west of Germany, most Polish regions have good accessibility to large cities.

8.1.2 Congested corridors, transport externalities and networks vulnerability reduce the benefits of accessibility

In addition to distance, which is a major element of accessibility as it increases transport costs, transport time is an equally important factor. In dense, congested areas, accessibility is reduced by increasing transport time, even though distances are modest. Urban regions are more burdened by heavy traffic, but rural areas are taking an increasing load.

Future transport scenarios expect substantial increases in road transport in particular. The countries from eastern Europe are likely to experience the highest relative increase in road transport flows. More traffic generally means reduced accessibility, as the development of transport infrastructure usually fails to keep

MAP 12: Potential accessibility multimodal, 2001



Accessibility index (EU25+2 = 100)

- less than 20
- 20 to below 40
- 40 to below 60
- 60 to below 80
- 80 to below 100
- 100 to below 120
- 120 to below 140
- 140 to below 160
- 160 to below 180
- 180 and more
- no data

Regional level: NUTS 3
Origin of data:
Spiekermann & Wegener (S&W)

Source: ESPON database

pace. However, this picture might be changed by the steep increases in oil prices which started in 2003.

The congestion of land-based corridors could be significantly alleviated through more use of maritime transport, taking advantage of the numerous commercial seaports around the various seaboards of Europe. In addition to greater transport fluidity, maritime transport also has the advantage of reducing the environmental footprint of freight movements, and so contributing to the Gothenburg Agenda.

Congestion is not the only factor limiting the efficiency and increasing the vulnerability of transport networks. Natural hazards (such as flooding) or technical hazards (such as accidents in tunnels) may interrupt traffic on important corridors. Such situations are more frequent in mountain areas where natural hazards are not exceptions and the number of corridors is limited. In such cases, traffic is diverted towards other corridors. Simulation models make it possible to anticipate the impacts of such events, and to plan mitigation measures and traffic diversions.

Transport boosts social and economic relations, but generates environmental externalities that reduce and constrain the capability of territories to attract new activities and to maintain an acceptable level of appeal and quality of life. Accidents, emissions, land consumption and fragmentation are the most important negative impacts of transport. They are a counterpart to the benefits of accessibility.

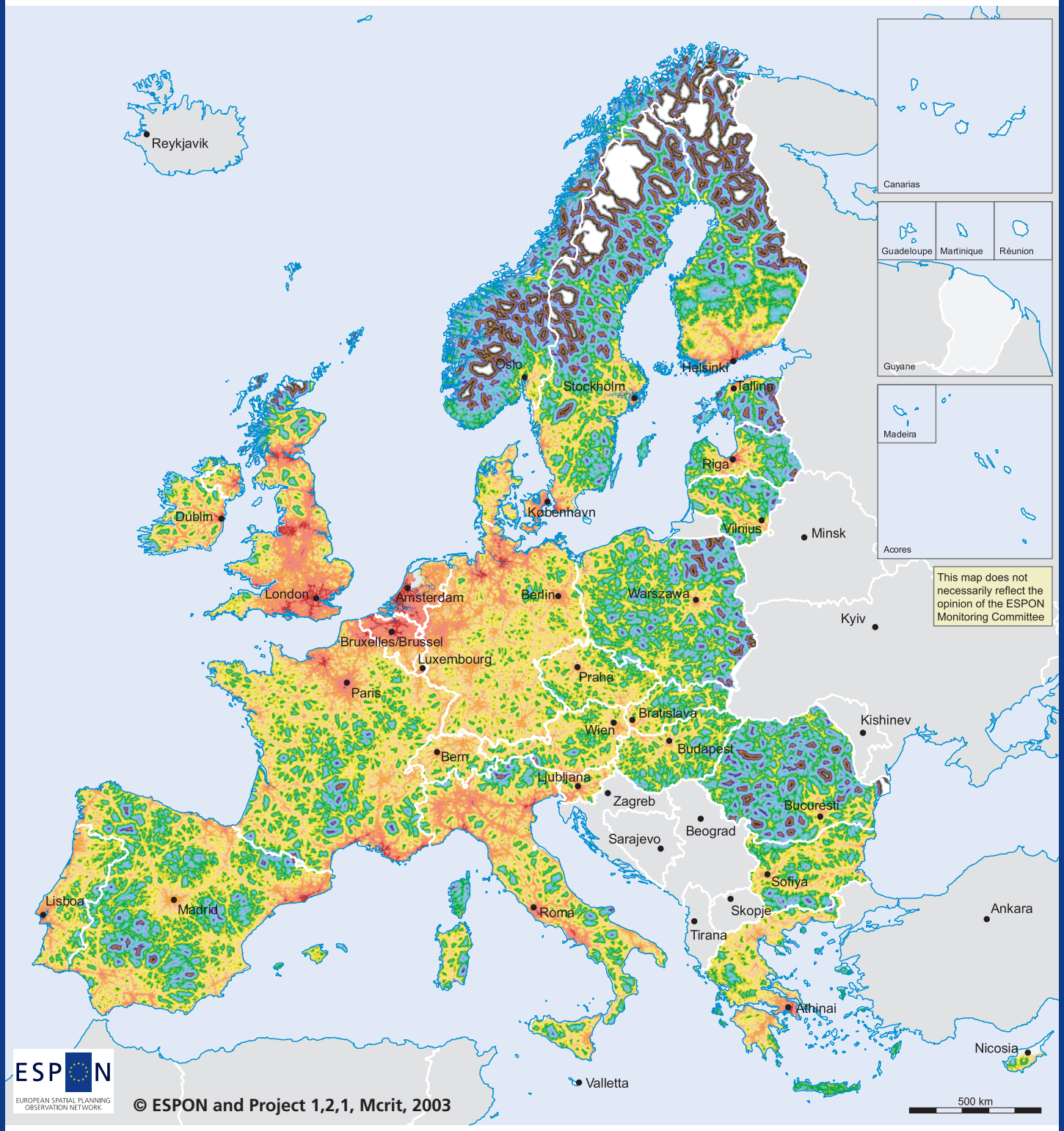
Road traffic deaths show wide differences between European regions. The highest figures are found in regions of Greece, Spain, Portugal, France and eastern Germany. Figures are also very high in regions of Latvia, Lithuania, Poland and the western parts of the Czech Republic. Most regions of the UK, the Netherlands, western Germany and the Nordic countries have relatively low figures.

The central part of Europe is suffering the most from the concentration of emissions of pollutants, because of the large number of cities and inhabitants and the importance of transit flows. The volume of goods crossing nodes indicates the main corridors of Europe that are suffering from negative externalities. These are the Rhone and Po valleys, the Cologne-Nuremberg axis, and the British corridor. Cities at the crossroad of major axes, such as Nuremberg, Bologna or Frankfurt are particularly affected, as are very large cities (Paris, Milan, London). Transit flows are particularly important in the Benelux countries, Germany, France, Switzerland and Austria.

Summing up, potential transport externalities are not homogenous across the European territory. Areas with a good accessibility seem to be those suffering most from transport externalities.

The territorial impacts and the relation between increased accessibility and economic performance are discussed in chapter 9.2. The discussion shows that not all regions benefit from European transport policies, and that even large increases in regional accessibility translate into only very small increases in regional economic activity.

MAP 13: Connectivity to transport terminals, 2001



Access time

- 0' - 10'
- 10' - 20'
- 20' - 30'
- 30' - 40'
- 40' - 50'
- 50' - 1h'
- 1h' - 1h 10'
- 1h 10' - 1h 20'
- 1h 20' - 1h 30'
- 1h 30' - 1h 40'
- 1h 40' - 1h 50'
- 1h 50' - 2h'
- 2h' - 2h 10'
- 2h 10' - 2h 20'
- 2h 20' - 2h 30'
- 2h 30' - 2h 30'
- 2h 40' - 2h 20'
- 2h 50' - 3h'
- no data

Origin of data: ASSEMBLING graph, European Commission

Source: ESPON database

8.2 The challenges of intangible connectivity through ICT

As the economy moves towards more and more intangible activities supported by the information society and the rapid development of telecommunication facilities, accessibility is no longer limited to physical mobility of goods and people. In the new context, even remote territories are connected in real time to a variety of information sources and flows, making innovative activities possible.

Not all regions are gaining and using telecommunication infrastructure and services at the same rate. However the territorial roll-out of telecom' infrastructures and services is progressing much faster than the development of transport infrastructure.

Territorial disparities are now insignificant for fixed line telephony. The territoriality of mobile telephony is highly distinctive, with the Nordic periphery and the southern periphery displaying higher levels of household uptake than the European core. The new member countries are catching up, but still have lower levels of uptake than western Europe.

The territorial pattern is rather different for household PC penetration. Levels are above average in northern and north-western Europe, but lowest in Greece, Bulgaria and Romania. Generally, household PC penetration is significantly higher in metropolitan and urban areas than in rural localities, with a few exceptions such as Sweden.

The pattern of Internet uptake is very similar to that of PC penetration with a significant north-south divide at Europe-wide scale. Highest levels are in the Nordic countries followed by the Netherlands and the UK, and the lowest levels in Greece, Portugal, Bulgaria, Hungary and Romania. Internet penetration is also generally stronger in metropolitan and urban areas.

The level of economic development is a significant discriminant of PC and Internet adoption, and for broadband uptake. Although the deployment of broadband usually begins in the largest urban areas, penetration of rural areas has progressed rapidly in numerous countries.

The north-south divide is also very pronounced in e-commerce activities. Internet backbone networks are still strongly concentrated in the core of Europe, but a number of "gateway cities" are emerging in more peripheral areas thanks to various pan-European providers.

The territoriality of network roll-out is strongly influenced by market forces. Telecommunications investments more or less follow the population distribution, modified by variations in wealth and by concentrations of corporate business users. The DSL coverage of the UK, France, Italy, and Hungary provide a good illustration of a rather polycentric pattern. In regions with lower population and GDP, such as south-west Italy, the Highlands of Scotland, central rural France and northern Finland, DSL coverage is much lower, suggesting that there are limits to polycentricity.

The polycentric development implications of national effects in telecommunications depend inevitably upon the relative advance of each country. However, broadband penetration shows strong regional variations within most countries, reflecting differences between cities and the rest of the country.

The clearest trend in telecommunications developments in Europe currently, with substantial implications for polycentric development more generally, is the continuing influence of relative national policy contexts and telecommunication cultures. The Nordic countries have rapidly and enthusiastically embraced the telecommunications technologies. In contrast, if certain regions of southern and eastern Europe lag significantly behind, and cannot be viewed as polycentric poles of telecommunications development, it is primarily because their national policies and cultures are not stimulating or encouraging sufficiently telecommunications uptake.

At the level of applications and use of telecom facilities, significant differences in terms of Information Society performance are observed in Europe (see map 3 in chapter 3.2). Not surprisingly, north-south and east-west divides are evident. The Information Society is most developed in northern countries, and particularly Nordic countries. With a few exceptions, such as Estonia, the Member States joining the EU in 2004 and candidate countries seem to lag behind the general European pattern.

However, territorial differences in Information Society performance are smaller than those in the GDP per capita. Within countries, the less GDP variation, the less the variation of Information Society. Mental barriers exist, particularly in the less developed agricultural regions, which hinder the application of ICT technologies. Another factor impeding their development in such areas, is the smaller scope of potential applications. The main obstacles to Information Society development so far have been supply-sided (infrastructures, prices), but demand-side factors, such as motivation and skills, are gaining in importance. Disparities between cities and rural areas will probably increase even further.

8.3 Territorial impacts of a new energy paradigm on accessibility

The energy paradigm is changing as crude oil and natural gas get more expensive. New forms of energy supply are being developed, and energy saving is rising up on the agenda.

Currently territorial disparities exist both in energy supply conditions and in energy consumption. For end-users, energy prices vary from country to country and more significantly from region to region. Territorial disparities in energy consumption are related to both the energy intensity of national economies and to the welfare level of countries. More developed countries generally have lower energy intensity per unit of GDP produced, but higher energy consumption per capita.

Higher energy prices increasing transport costs have most severe impacts on the accessibility of more remote and peripheral regions. Road and air transport modes are most affected. Nevertheless, according to model simulations, impacts on the level of regional economies should remain limited.

Policy relevant key findings:

- Accessibility is best in the European core and national capitals. The picture of European-wide disparities in multimodal accessibility shows better overall accessibility for regions in the core of Europe and larger urban agglomerations, in particular those with international airports.
- Rising energy prices increase disparities in accessibility. Increasing energy prices will have particular negative impacts on accessibility in rural and more remote areas. Thus disparities between areas with high and low accessibility will increase.
- ICT accessibility and the Information Society vary territorially. Accessibility to modern information and communication technologies shows European north-south and east-west divides as well as a rural-urban divide. The territorial differences in terms of Information Society performance are however smaller than those of the GDP per capita.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.1.1/Polycentricity, 1.2.1/Transport trends, 1.2.2/Telecom, 1.2.3/Info-society, 12.1.1/ Transport impact, 2.1.4/Energy, and 2.4.2/Zoom.

CHAPTER 9
TERRITORIAL IMPACTS OF EU SECTOR POLICIES

Sector policies and their territorial impacts matter. The EU has policies for a number of sectors such as transport, environment, fisheries, agriculture, etc. There is a budget for each sector that is spent on priorities for that sector.

Territorial concerns are currently normally not a priority in sector policies. However, sector policies do have territorial impacts. They have the potential to assist in the realisation of territorial cohesion. The quality of transport infrastructure is likely to be a factor in regional competitiveness. Fisheries policies will impact particularly on coastal regions. The issue is not whether sector policies have different impacts on different regions, but what those impacts are. Progress has been made in developing methodologies to enable both ex-post and ex-ante territorial impact assessments (see ESPON's Scientific Progress Report for more details).

The ESDP argued that greater awareness of the territorial impacts of sector policies could promote better integration of such policies, and so help to deliver a more balanced pattern of development across Europe. Similarly today's aims for competitiveness and cohesion, can be assisted – or hampered – by sector policies.

Evidence of the effects of recent policies can help policy-makers to make informed decisions about future policies. Smart policy-making means not only maximising benefits within the sector, but also achieving helpful spin-offs to other EU priorities. Such win-win outcomes give best value for money and ignorance can be costly.

9.1 Cohesion and Structural Funds

Of all the sector policies, those concerned with cohesion and Structural Funds are the ones that is most closely connected to territorial concerns. Cohesion and Structural Funds tackle the economic and social disparities between regions in Europe. Structural Funds are mainly regional development programmes. Therefore they would seem to be important drivers of balanced development and territorial cohesion.

9.1.1 Structural Funds

The Structural Funds contributions to territorial cohesion stimulating regional and local innovation and development. However, less consistently than might have been anticipated. Data for the 1994-1999 period (the last for which comprehensive figures were available) revealed a complex picture. The main objectives of the funds were to reduce disparities in GDP and unemployment between regions, an objective which is also valid for the current programming period.

As map 14 shows, the main beneficiaries during the 1994-99 period were regions on the periphery of the EU as it was at that time. Examples are Spain and Portugal, Southern Italy, Greece, the eastern regions in Germany and in Finland, as well as Ireland, and Scotland's Highlands and Islands. Thus the effect has been to increase territorial cohesion across the EU. However, differences between regions within a country largely remained or were even accentuated.

Spending is only part of the story, equally important is the effect of that spending on economic growth. There is some vague relationship for example in France and Italy, a random picture in Greece and Portugal. However, Structural Fund spending is only a small part of a regional economy, but with important leverage effects.

To maximise cohesion benefits across all scales – from the European to the local – there needs to be good co-ordination between EU, national and regional initiatives.

For example, the designation of areas eligible for Structural Funds should not fragment a functional urban region.

There is evidence that the funds have boosted competitiveness and cohesion by empowering local and regional levels of governance, resulting in innovations, strategic planning, new partnerships etc. The textbox below cites some of the findings from Greece. It shows how sector polices can be a catalyst for actions that increase the territorial capital of an urban area.

Structural Funds in Greek urban areas
Structural Funds have changed urban areas in Greece by overcoming apparently insurmountable problems (environmental, transport, industrial decline) and thus contributed to the improvement of the quality of life. It is not so much the finance that was allocated as the legitimisation of the relevant issues as priorities of development planning. In these issues local authorities retain a major role in the decision making process.

Cities are crucial to Europe's competitiveness and cohesion, as several Chapters show. However, data about the targeting of funds to urban areas is so limited that rigorous assessment is not possible.

9.1.2 Pre-accession aid

Territorial development themes were not specifically addressed in the EU programmes such as PHARE, SAPARD and IPSA that supported the EU candidate and accession countries in the run-up to the 2004 enlargement, with the exception of Cyprus and Malta. Nevertheless, through promoting convergence to the situation in EU15, these programmes did help the territorial objective of cohesion. However, as with Structural Funds, there was no clear correlation between aid spending and regional growth measured in GDP per capita. Though the impacts of pre-accession aid were difficult to measure in quantitative terms, important benefits were observed in institutional capacity building.

Spending was relatively high in border regions. In general, capital city regions were in the two lowest categories for spending; only in Bulgaria and Romania was spending relatively high in the MEGA regions.

Furthermore, the analysis underlines the importance of sound economic frameworks, and strategic priorities. Good projects and effective implementation depend on local administrative and institutional capacity.

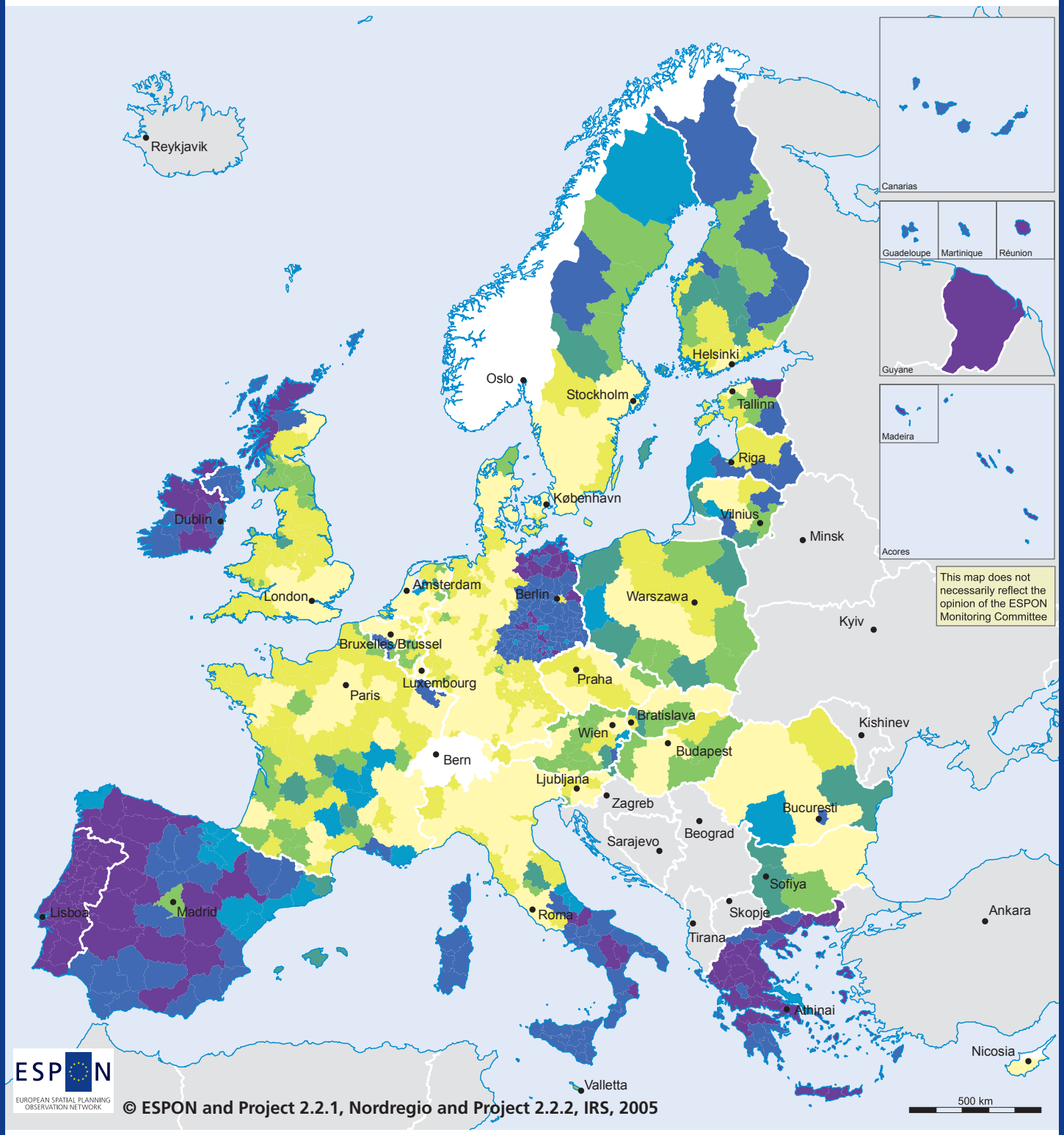
9.2 Networks of knowledge, transport and energy

The EU agenda for territorial cohesion seeks to mobilise the territorial potentials of all Europe's regions so as to enhance competitiveness and create jobs. Networks and access to networks are of critical importance. The quality of a region's infrastructure depends as much on access to the network as on the quality of the network itself.

9.2.1 Research and development

There are two main instruments for EU R&D policy. These are the Structural Funds and RTD Framework Programmes. Of course, these account for only a small part of all investment in R&D, so the territorial pattern of R&D activity cannot be attributed

MAP 14: Structural Funds and Pre-accession aid spending as share of GDP, 1995-99



Annual average Structural Fund (EU15 1994/95-99), PHARE, PHARE CBC and ISPA spending as a share of regional GDP in Euro (1999) in %

- up to 0.1
- 0.1 to below 0.2
- 0.2 to below 0.3
- 0.3 to below 0.4
- 0.4 to below 0.6
- 0.6 to below 1.2
- 1.2 and more
- not applicable

Regional level: NUTS 2: BG, CZ, HU, MT, PL, RO; all other countries NUTS 3
Origin of data: National data collection by Nordregio and IRS, Eurostat-Regio

Source: ESPON database

to the application of these EU policies. Indeed, the spending in the policies must follow the existing distribution of nodes in knowledge networks; for example, universities are important players in the Framework Programmes.

The EU policies are valuable because they help build and consolidate networks. Often it is the economically stronger regions that have the most firms and universities that are the main participants in the Framework Programmes. Analysis of project participants (per million population) in the Fourth and Fifth programmes revealed strong "islands" of involvement around Oxford and Cambridge, Lisbon, Madrid, Paris, the Randstad and other major academic centres.

Nevertheless, once account has been taken of existing economic strength and R&D expenditure, many less favoured regions benefit disproportionately from the Framework Programmes. The main impact of EU R&D policies on territorial potential is at the regional/local level. In some regions the Structural Funds are having important effects in forging links and supporting innovation and research capacity. Overall these EU sector policies can be seen as laying foundations that, over time, will enable new research institutions and firms to become increasingly connected into the European innovation system.

9.2.2 Transport

The White Paper "European Transport Policy for 2010: Time to Decide" (European Commission, 2001) sets out the basis of the TEN policy, whilst also stressing the importance of making users aware of the full, real costs of transport (including costs of accidents, environmental damage, noise, congestion, etc.).

Specially developed models simulated the impacts of different pricing policies and of various approaches to infrastructure development (e.g. only road projects, only rail, etc.), retrospectively and into the future. They revealed that overall EU transport investments do contribute to cohesion in relative terms, though they may actually widen the absolute economic gap between regions. The TEN transport infrastructure projects planned for the period up to 2020 have a decentralising effect, and so favour peripheral regions. However, even large increases in regional accessibility produce only small benefits in terms of regional economic activity. Quite simply, transport is only one of many factors that influence the socio-economic development of a region.

The magnitude of the economic impacts from accessibility improvements depends on the pre-existing level of accessibility. Regions in the core of Europe are unlikely to get much additional economic boost from bigger airports, new motorways etc.

The places that might benefit from such infrastructure are remote regions with under-developed transport infrastructure. However, improving peripheral regions' competitive position vis a vis more central ones in terms of accessibility is difficult. Only infrastructural policies strengthening the corridors between western and eastern Europe are likely to improve accessibility in all member states on the eastern periphery. Even then better transport could mean more competition.

In addition the strengthening and improvement of secondary networks facilitates the accessibility for rural and some remote areas and gives them easier access to the main transportation hubs.

An introduction of pricing policies that push up the costs of transport and especially road pricing, are economically more detrimental to peripheral and isolated regions (both at European scale and within member states) with a low level of accessibility than to more central regions with better accessibility.

The level of accessibility plays a significant part in the potentialities for more polycentric territorial development. In polycentric urban systems at national and regional scale, there is a functional division of labour between cities, both between higher-level centres and the lower-level centres in individual regions, and between cities at equal levels in the urban hierarchy. This implies that the channels of interaction – and therefore the connections – between cities of equal size and rank should be good.

In particular connections must be short and efficient between lower-level and higher-level cities. The quality of transport infrastructure and services is a good indicator of the potential for interactions between cities. An urban system with good connections between lower-level centres is generally more polycentric than one with mainly radial connections to the dominant capital. In polycentric urban systems, even lower-level centres must have good accessibility.

9.2.3 Energy

Most member states have reduced their dependence on fossil fuels over the past decade. However, future access to energy supplies is a growing concern. While it might be premature to speak of an EU energy policy, a number of legislative measures have been passed that are shaping a common, supra-national approach. An internal market is being fashioned in electricity and gas. Security of energy supply and the need to protect the environment are prompting strategies for more energy efficiency and use of renewable sources.

Some EU countries are very reliant on imports for their mainstream energy resources. Currently there are also large differences in energy prices paid by households in different member states (the prices charged to industry do not vary so widely).

Regions can be assigned to different categories in terms of their degree of self-sufficiency and sensitivity to price changes above or below the European average. For example, countries that use a lot of energy per unit of production are sensitive to price rises, as are regions where travel distances are great. Higher costs would also affect countries with few energy resources. The territorial impacts of such "energy shocks" might create calls for a compensatory transfer of resources to the regions with high price sensitivity.

High self-sufficiency / Low price sensitivity	**High self-sufficiency / High price sensitivity**
UK, Denmark, Norway	Estonia, Poland, Czech Republic, Romania,
Low self-sufficiency / High price sensitivity	**Low self-sufficiency / Low price sensitivity**
Latvia, Lithuania, Hungary, Slovenia, Bulgaria, Slovakia, Cyprus, most of France and parts of Italy.	All regions of Portugal, Spain, Ireland, Sweden, Finland, Germany, Austria, Belgium, most of Italy, parts of France, all Greece

Table 2 Self-sufficiency and energy pricing

9.3 Agriculture and Fisheries

There has been substantial political debate about the Common Agricultural Policy (CAP) and the EU's Fisheries Policy. However, little was known about their territorial impacts. How do these sector policies affect different regions?

9.3.1 The Common Agricultural Policy and Rural Development Policy

The CAP currently consists of two "Pillars". Pillar 1 provides market support and direct payments to producers. It shows much continuity with the way the CAP has operated since the Treaty of Rome. Pillar 2 comprises agri-environmental and other rural development expenditures and demonstrates that there has been some integration of policies between the agriculture and environment sectors.

Total Pillar 1 support was generally higher in more accessible regions, and lower in more peripheral regions, at all scales – European, national and regional. Higher levels of CAP expenditure per hectare of agricultural land were found to be strongly associated with more prosperous regions. Thus, because of the way that the market price support mechanism operates, Pillar 1 does not support territorial cohesion.

While Pillar 1 was never intended to be a cohesion measure, higher levels of Pillar 2 payments are made to peripheral EU regions. However, Pillar 2 remains focused on agricultural producers rather than territorial rural development, and will continue to be so during 2007-2013. This 'rural development' Pillar may aid cohesion within countries, but, as currently structured, it makes little contribution to EU-wide cohesion.

LEADER programmes, despite their small budget, are success stories in terms of the contribution they can make to territorial cohesion. As the Box shows, flexibility and the stimulus for local innovation are vital.

LEADER

The ex-post evaluation of LEADER II found the programme both efficient and effective. It proved to be adaptable to the different socioeconomic and governance contexts and applicable to the small scale, area-based activities of rural areas. It could therefore also reach lagging regions and vulnerable rural territories. LEADER activities induced and conveyed responsibility to local partnerships, linking public and private institutions as well as different interests of various local actors to a common strategy. A profound change from a passive to an active attitude was achieved among many local actors.

9.3.2 Fisheries

The EU is the world's biggest market for fish and fish products. Fish processing is a global industry that, like many others, is restructuring. The Common Fisheries Policy acts against this backdrop. It impacts on employment, economic development and cohesion in coastal regions with a history of fishing. In some under-developed rural regions, fishing is still a key component of the economy. While there has been a tendency for fishing to become more concentrated in urban centres, seafood industries are still often located in places that are beyond the commuting range to cities. In such territories, fisheries policy is likely to be a key influence on cohesion.

Aquaculture is different from fishing. It is more regionally concentrated, and in those regions it can be an important driver of cohesion.

Four territorial fisheries systems can be identified within Europe. These are:

(i) An East Aegean and East Mediterranean (small scale fishing), embedded on the Greek and Italian islands;
(ii) The global North Iberian fisheries, including regions in Spain, Portugal and France;
(iii) The North Sea/Atlantic fisheries of Denmark, UK, and France;
(iv) The Barents Sea fisheries mainly of Norway.

Restriction on fishing so as to conserve stocks has been a central feature of fisheries policy. This has had distinct territorial effects, depending on the type of fish and fishing activities to which the restrictions apply. Fisheries policy also provides subsidies and grants (Financial Instruments for Fisheries Guidance), which have cohesion objectives. There are also national quota policies and agreements with third countries.

The result is a complex picture of territorial impacts, both nationally and across the EU as a whole. Policies have had some unintended effects. Distribution of FIFG funds largely reflects the size of existing fleets and so larger harbours tend to be the main beneficiaries.

Sector Policy	Territorial impact
Structural Funds	Help increase territorial cohesion across the EU, but have little impact in terms of cohesion between regions within a country; however, they can empower local authorities and stimulate local and regional innovation.
Pre-accession aid	Help increase territorial cohesion at EU level, but mixed results at national scale; contribute to institutional capacity-building regionally and locally.
R&D	Consolidate rather than change the geographical pattern of R&D at EU and national scales. However, many less favoured regions benefit disproportionately from the Framework Programmes, and the foundations are being laid that will eventually better connect them into the EU innovation system. Important benefits to territorial potential at the regional/local scale.
Transport	Contribute to cohesion in relative terms though absolute gaps may be widened. Pricing policy to reflect full costs of transport will disadvantage remote regions at European and national scales. Under-developed regions may benefit from infrastructure improvements.
Energy	Network development and market liberalisation should improve cohesion, but regions with low self-sufficiency in mainstream energy supplies and high sensitivity to price changes are at risk. Renewables could boost regional economies in rural areas.
Agriculture	Pillar 1 does not currently assist cohesion policy at EU scale and nationally. Pillar 2 has some beneficial local-scale impacts but overall could make a stronger contribution to cohesion across the EU.
LEADER	Has delivered tangible benefits in lagging regions and vulnerable rural territories. Lessons from LEADER might be transferred to other policy instruments.
Fisheries	FIFG funds may contribute to EU cohesion but are likely to work against cohesion within a country by aiding more prosperous communities most. While the overall picture is complex, Common Fisheries Policies could potentially make a stronger contribution to aiding cohesion.

Table 3 Territorial impacts of EU sector policies

9.4 Sector policies and territorial cohesion

Strengthening territorial cohesion is proposed to be a shared responsibility within the EU and between the Union and the member states. The table below attempts to summarise current indications on the territorial impacts of important EU sector policies.

Policy relevant key findings:

- EU sector policies potentially increase competitiveness of areas. Various sector policies (e.g. Structural Funds, CAP and R&D) stimulate local actions and capacity-building. This can empower local and regional actors and levels of governance, make them better able to capitalise on territorial potentials.
- Mixed evidence on the coherence of EU sector policies. EU sector policies contribute at European level – if at all – rather coincidentally to territorial cohesion. This is because of diverging policy aims and lack of coordination. The contribution differs, however, from policy to policy and often depends on the concrete policy strands and measures.
- Territorial impact assessments facilitate policy coherence. Ex-ante territorial impact assessments can help sector policies to make a better contribution to territorial cohesion and thus also facilitate the coordination of sector policies.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 2.1.1/Transport impact, 2.1.2/R&D impact, 2.1.3/CAP impact, 2.1.4/Energy, 2.1.5/Fishery, 2.2.1/SF impact, 2.2.2/Pre-aid impact, and 2.2.3/SF in urban areas.

CHAPTER 10
LIVEABILITY: QUALITY OF LIFE AND COMPETITIVE PLACES

Europe is a continent of special places - historic cities, coasts and cultural landscapes so familiar that it is easy to overlook their global significance. The quality of life that a region offers can attract and retain the highly skilled people needed for regional competitiveness within today's knowledge economy.

Some 9 million people are now directly employed in tourism in the EU, which accounts for 5% of our GDP. Tourism can be an important and direct contributor to regional competitiveness and territorial cohesion.

The renewed Lisbon Strategy seeks to make Europe a more attractive place to work, live and invest. Therefore good management of the natural and cultural heritage, and good governance are important for competitiveness and for the Gothenburg Agenda's aim of sustainable development.

Chapter 9 has shown how EU sector polices can stimulate local innovation and action. What makes a place attractive for people and investments? What policies can help? How can Europe's territorial diversity be better explored as an asset in a standardised, globalised world?

10.1 Regional competitiveness re-visited

Traditional factors such as physical infrastructure and access to land, labour, materials, markets and capital remain the basic determinants of competitiveness. However, the economy has changed, and so has regional policy. In the days when smoke-stack industries sat protected by national tariff barriers, regional policy was mainly about hard infrastructure – new factories and roads bestowed by governments, gifts from outside the region itself. Today the response involves upgrading the business environment through "soft infrastructure". Less tangible assets need to be cultivated, that enhance territorial capital and enable a region to realise its own potential.

The exact formula will depend on the particular region. For example, in less prosperous states and regions gaps in health care can be a barrier to economic development. Promotion of social inclusion and sustainable communities may be particularly important in metropolitan regions. In addition, the urban environmental quality has become a factor of more importance. Some of these key "modern" drivers of competitive performance are now discussed.

10.2 Quality of life

"Quality of life" is hard to define. An integrated, territorial approach is needed to deliver sustainable development. The social dimension is important, encompassing concerns for social inclusion, gender equality and fair access to the social and cultural services on which citizens depend, alongside the producer services that more directly meet the needs of business.

At the same time it has to be acknowledged that these aspects of quality of life are also threatened by a range of natural and technological hazards.

10.2.1 Environment and natural heritage

Europe's environment matters both for sustainable development and competitiveness. For example, economic sectors such as agriculture and tourism are dependent on air quality.

Europe's most extensive natural areas are mainly the mountains – the Alps, the Pyrenees, the Carpathians, the Cantabrian mountains, and the uplands of Scotland and Greece, as well as Scandinavia's mountains and forests. Effective management of the natural heritage is crucial for its conservation.

Natura 2000 is the main EU policy instrument for protecting flora, fauna and habitats. Spain, Slovakia, Slovenia, Hungary, Luxembourg and Estonia have a high percentage of Natura 2000 network area (>10%) all over their territory, but generally the areas protected are mainly in peripheral regions. Large parts of the Canaries and Madeira belong to the Natura 2000 network, but the percentage of protected areas in the French overseas areas and the Azores is low.

Natural heritage across Europe is under pressure from the intensification of agriculture, urban spread, tourism and climate change. National, regional and local action is essential to conserve the natural environment. All ESPON countries have relevant legislation in place: much depends on effective management and enforcement of planning controls.

Development pressures around the Mediterranean coasts are a concern: tourism in some places can destroy the assets that draw the tourists. However, there are also concerns in Germany, the Netherlands and the UK. The strong growth in GDP in Ireland, Latvia, Lithuania and Estonia is also likely to translate into increased pressures on the natural environment there.

Conservation can conflict with economic development. Nature and biodiversity policy potentially has strong effects on both environment and territorial efficiency. This ambivalent character of nature and biodiversity policy - effective but with strong side effects –means that sophisticated balancing strategies are needed in territories where conservation is vital for long-term sustainable development.

Nature and biodiversity is one of four priority topics identified in the EU's Sixth Environmental Action Programme. The others are climate change, environment and health and natural resources and waste. The programme stresses the need to integrate environmental considerations into the kind of sector policies that were discussed in Chapter 10. These and other EU environment policy themes (e.g. those for air, noise and water) have territorial implications, which need to be addressed from European to local level.

10.2.2 Cultural heritage

Creative industries and tourism are two of the most dynamic sectors in Europe's post-industrial economy. The cultural heritage of monuments, museums, townscapes and landscapes underpins the growth of jobs in these sectors. This heritage is fundamentally territorial in character.

The enlargement of 2004 considerably enriched the cultural diversity and heritage of the EU. Not only did it bring in new ethnic groups, languages and dialects, but it also added no less than 49 sites on the UNESCO World Heritage List – and there are another 16 in Bulgaria and Romania.

This hints at how culture-based development might become a driver for territorial cohesion. Analysis of accessibility and the density of cultural heritage assets at NUTS III level reveals that most of Germany's eastern Lander and also parts of Southern Italy have a high potential for culture-based regeneration. There is also potential in Moravia, Estonia, Slovenia and most of Southern Poland. Cultural heritage is also significant in the territorial capital of a number of "potentially lagging regions", including Cumbria, Sardinia and the Peloponnesus region, as well as the cities of Prague, Berlin and Liege; then in a slightly lower category, but still with important endowments of heritage, are the Basque country, Tuscany, the region around Bratislava, Algarve and Northern Sweden.

All ESPON countries are rich in cultural assets, and the potential benefit of them is especially high in some regions where GDP currently is below average. Deliberate polices are needed. Examples might be the construction of a creative cluster around the heritage, development of cultural tourism and raising the awareness and appreciation of the local population about the region's cultural heritage.

Towns and regions where the economy is weak are at risk of not being able to afford the investment necessary to maintain their heritage. If that heritage crumbles (perhaps literally) then assets of potential economic value are lost. The sense of identity, an intangible but important force for cohesion, is also likely to be undermined.

To break this vicious circle it is necessary to valorise cultural assets, in other words to mobilise awareness of local culture as a means by which communities "make themselves known". A number of INTERREG projects have sought to do just this. However, the task is not one for the public sector alone: having effective polices means often involving private partners and NGOs.

Jews were a significant ethnic group in Spain until the medieval period when they were expelled from the country. The network of Spanish Jewish Sites (Sefarad route) is an association of local authorities who co-operate to conserve and promote this heritage. There are 15 towns in the network, which began in 1995. Then in 2004 the Council of Europe established a Jewish Heritage route across 14 countries, including Spain.

The project has therefore contributed to the conservation, production and valorisation of culture through innovative management and territorial co-operation at European, national and local scales.

Europe has only a limited number of cultural clusters. Through proximity or networks, clusters can be created in which customers, risks and costs are shared, and synergies create an entrepreneurial outlook. In Amsterdam clusters have been the backbone of the growth of creative industries, which have increased employment opportunities, not least amongst groups vulnerable to social exclusion. For example, jobs have been created in modern dance, an "urban culture" rooted in ethnic minorities and practised in squatter houses and theatres in peripheral housing estates.

In summary, cultural heritage is important both as a direct source of economic activity in tourism and related industries, but also it is a factor in creating places with the qualities that attract highly skilled workers and specialised industries, not least those with a key role in the knowledge economy.

10.2.3 Hazards

Natural and technological hazards affect the European territory. When disasters occur they damage business and communities. The environmental and economic impacts of oil spills or drought can be widespread and long-lasting.

Few people are aware of the level of vulnerability of the territories where they live, work, study, or take holidays. Floods, droughts, forest fires, storms and similar hazards do not respect political boundaries, yet have significant territorial impacts. Risk management helps to protect life and investments. There is a territorial component to risk management.

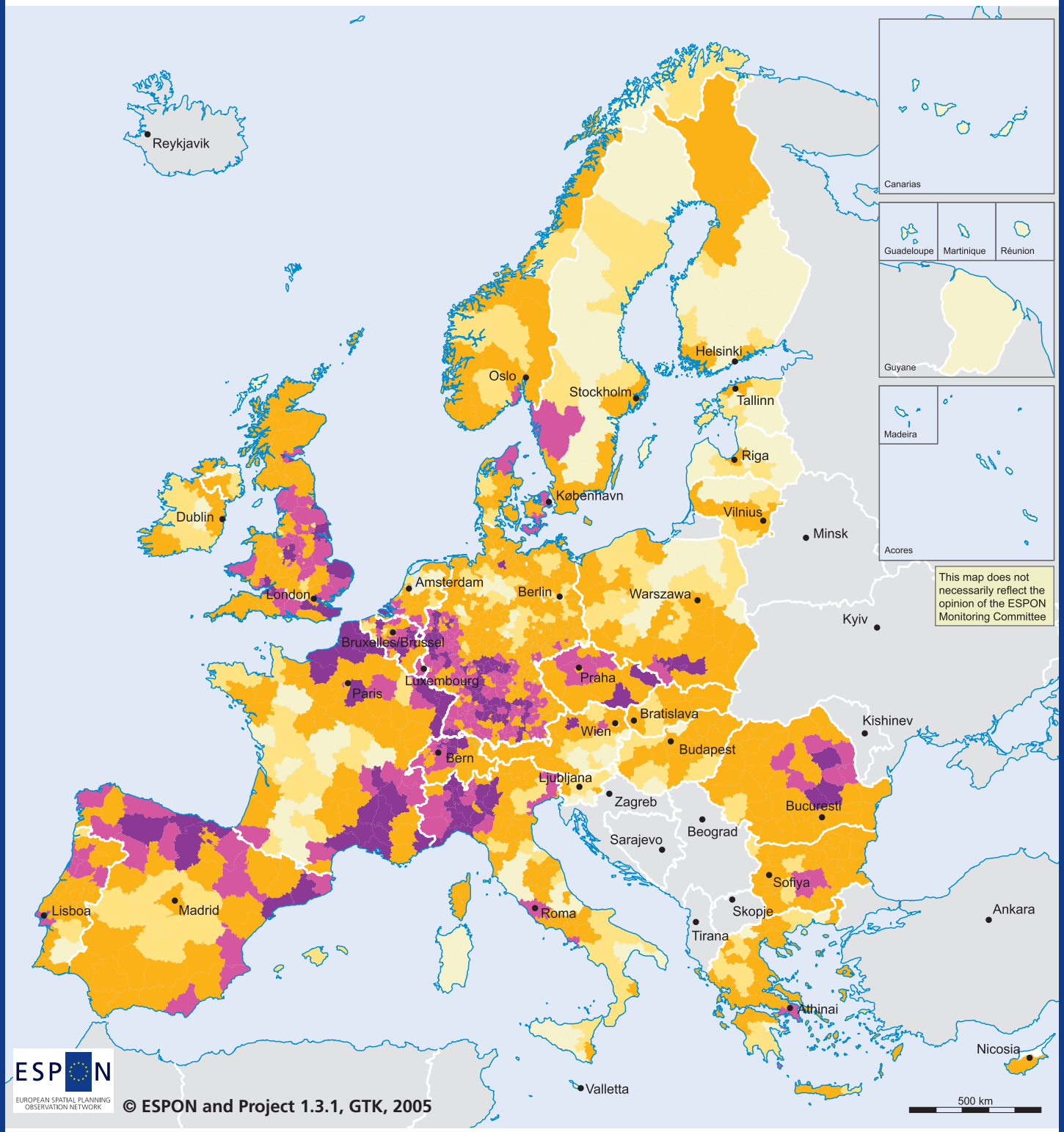
Map 15 combines spatially relevant hazards that have been weighted from a European perspective. Strikingly few large areas have a very low exposure to this basket of hazards. On these criteria, the safest places are mainly in Scandinavia and South-central France, while the Pentagon has an array of hazards. Quite clearly the existence of hazards within a territory does not necessarily undermine its competitiveness.

Climate change potentially increases the risk and magnitude of some natural hazards. For example, dry spells and heat waves might increase in the Mediterranean. Evidence-based spatial planning practice will have a vital role to play in mitigating risks.

The Solidarity Fund, created after the Elbe river flood of 2002, is an example of an integrated approach to post-disaster recovery, which connects environmental, economic and social aspects, and can address territorial problems. However, it is a reactive measure: effective evidence-based territorial management implies a proactive approach, which identifies potential hazards, undertakes preventative monitoring and avoids, or at least mitigates, disasters.

The SEVESO II Directive aims to prevent major accidents involving dangerous substances and to limit the damage. National and local land use planning systems are important in the delivery of this Directive.

MAP 15: Aggregated natural and technological hazards



Hazard classification

- 0-10 percentile
- 10-25 percentile
- 25-75 percentile
- 75-90 percentile
- 90-100 percentile
- no data

This map shows the aggregated hazard typology based on 15 hazard indicators. Every indicator gives the value from 1 to 5 depending on the magnitude of the hazard in the NUTS 3 area. For the class "no data" value is 0. These values are then weighted on base of expert opinion (Delphi method questionary). At the end the sum of 15 weighted indicators are classified on base of percentile rank. For instance, NUTS 3 areas that belong in 90-100 percentile have their score greater than or equal to 90% of the total of all the summed hazard values.

Natural hazards:
- Avalanches
- Drought potential
- Earthquakes
- Extreme temperatures
- Floods
- Forest fires
- Landslides
- Storm surges
- Tsunamis
- Volcanic eruptions
- Winther and tropical storms

Technological hazards:
- Air traffic hazards
- Major accident hazard
- Nuclear power plants
- Oil processing, storage and transportation

Regional level: NUTS 3
Origin of data: ESPON Project 1.3.1, GTK

Source: ESPON database

10.3 Governance as a driver of regional competitiveness

The term 'governance' has been increasingly used in the last decade or so. Before that the focus of policy analysis was only on governments. However, the power of governments and their capacity for control has changed, economically through globalisation and politically through shifting relations between different tiers of government, and as a result of challenges from civil society.

10.3.1 Smart public administration

Governance is about more than governing and making policy. It is about the manner and the process of "doing government". Smart public administration can be a force for jobs and economic growth and territorial cohesion. There are particular challenges in the Cohesion countries and regions falling under the Convergence Objective.

The growth and integration of the EU has created a supra-national scale of government, making vertical co-ordination of policy between levels of administration more important than in the past. Furthermore, the spread of urban areas and changes in the countryside have created new urban-rural relations and a need to integrate policy at a regional scale.

Territorial governance is the process of making and implementing policy in an integrated and coherent way, amongst the different interests and actors (and the territories they represent) at, and between, different territorial scales. Good territorial governance is an essential condition for progress towards territorial cohesion. The research evidence shows that the vertical dimension of territorial governance seems to be evolving more quickly than the horizontal dimension.

There are different national traditions of governance across the ESPON space. These still influence practices, though EU funds are an important dynamo to create good approaches to working in partnership, for example. A categorisation of countries in terms of their "shift towards governance" shows broadly a south-east to north-west progression, with countries such as France, Ireland, Spain, the UK, Sweden, Denmark and the Netherlands being the most "governance-oriented".

Good governance factors are: participation, openness, accountability, effectiveness and coherence. They are closely inter-related. One valuable contribution that the EU could make would be to improve the integration of its different sector polices and to ensure that they adequately take account of their territorial impacts (see chapter 9). Coherence, surprisingly the least recognised good governance principle, is interconnected with horizontal coordination. Another step to smart public administration is evidence-based policy making and the use of academics or professionals to inform the policy-process.

10.3.2 The ESDP: an innovative approach to territorial governance

The ESDP is a non-binding document that invites voluntary application by national and regional governments and agencies. This application is based on governance processes – there is no top-down imperative from the EU, for example.

The ESDP concerns for balanced and polycentric development and a new urban-rural partnership, wise management of the natural and cultural heritage and parity of access to infrastructure and knowledge were reflected in the Structural Funds

Guidelines for 2000-2006. In the Guidelines for Cohesion Policy 2007-2013 the issues are still in, but no direct reference is made.

The Sustainable Development Strategy and the White Paper on governance both mention the ESDP, but overall the potential for synergies between sector policies and territorial concerns has still to be explored. Of course, there have been significant changes in Europe since the ESDP was published, not least the enlargement from a Union of only 15 members.

In contrast, many national spatial planning policies appear to be better in tune with the ESDP. Not surprisingly, the level of conformity is greatest in the countries that were already members when the ESDP first appeared. Though this consistency may not be a direct response to the ESDP, the ESDP probably contributed to institutional change in countries where the spatial planning system was changed shortly after 1999. Influence can for instance be seen in Greece, Portugal, Spain, Hungary, Latvia and Bulgaria.

There are five countries where the regional level has been the most important for the application of the ESDP. These are Austria, Belgium, Italy, Norway and Spain. Austria and Belgium are federal countries where the regional level leads spatial planning practice.

Timing and a sense of ownership therefore appear to have been important in using the ESDP.

Since 2003 there have been two separate, but related, new territorial governance initiatives worth noting. Both show some influence from the ESDP. EU Member States are currently cooperation on a Territorial Agenda for the EU based on an appreciation of the state and perspectives for the EU territory, which will be handled at the level of ministers in spring 2007. This approach is similar to the way that the ESDP was produced. The other work is led by the European Commission and has developed the new strategic Guidelines for Cohesion Policy.

10.3.3 INTERREG

The INTERREG III programme has prompted new practices in governance through territorial co-operation. It was strongly influenced by the ESDP. The IIIB programmes (2000-06) in particular were shaped by ESDP policy guidelines. While there are many differences between different projects, overall the funding through INTERREG has helped the application of ESDP principles. However, the Baltic Sea has been the area for most intense co-operation in INTERREG IIIB, but connections between the ESDP principles and the Baltic INTERREG programming priorities are relatively weak.

Thus vertical integration and application of policy is most successful when there is a convergence of policy priorities at the different scales, and a strong measure of subsidiarity.

10.4 Towards liveable, sustainable and competitive places

The elements of a smart public administration that can deliver liveable, sustainable and competitive places are listed in the table on page 86. The table identifies some of those elements and connects findings at European, national and regional/local scales.

Elements	Europe	National	Regional/local
Integration / Synergy	Some good practices, e.g. the Solidarity Fund after the Elbe floods attempts to integrate environment into sector polices, and to link cohesion policy to growth and jobs. However better integration of a territorial dimension into other policies would be beneficial.	When national priorities coincide with those at EU scale, then vertical integration and policy coherence is most likely.	Subsidiarity and a sense of ownership are important for local delivery of policies. Partnerships are important for synergy. Spatial planning practice needs to integrate heritage with a growth and jobs agenda.
Innovation / Creativity	EU is highly attractive in terms of quality of life – economically, culturally and environmentally. However, 2007-13 Structural Funds give low priority cultural projects.	All countries have assets. INTERREG is stimulus for innovative projects. Scope for co-operation around imaginative projects like the Sefarad route.	Culture-led regeneration can play an important role, especially in some weaker regions. Scope to nurture cultural clusters.
Conservation of heritage and environmental quality.	Natura 2000 is a valuable initiative. However, Europe's natural heritage is under pressure. New Guidelines for Cohesion recognise that environmental protection underpins economic growth.	Pressures on natural environment, especially round Mediterranean and countries experiencing high growth rates.	Effective spatial planning systems play a key role in conserving heritage and enhancing quality of life.
Strategy / Vision	ESDP not championed at EU level. Territorial strategy needed for Lisbon/Gothenburg and ECU Strategic Guidelines.	Timing and ownership important, as shown by application of ESDP.	Risk of loss of cultural and natural heritage assets if plans and policies are not in place.
Mobilisation/ Inclusion	Cultural diversity is an important part of Europe's territorial capital. Access to services of general interest is an important territorial cohesion issue, especially in remote rural areas.	Structural Funds and INTERREG mobilise action, but their focus must be relevant to national/regional priorities. National welfare systems largely define social quality.	Participation needs to reach beyond the main public sector players. Valorising cultural assets can mobilise communities.
Implementation	Effective vertical links are developing but territorial dimension of sector policies could enhance implementation of territorial cohesion policies.	Different countries are at different stages in move to governance.	Key level for partnerships and implementation

Tabel 4, Elements of a smart public administration that can deliver liveable, sustainable and competitive places

Policy relevant key findings:

- Soft location factors are of increasing importance. "Soft" factors like governance, culture and natural environment are part of territorial potentials and offer synergies for the jobs and growth agenda. The potentials for these "soft factors" differ widely between areas.
- Hazards do not undermine territorial competitiveness. Only a few places have very low exposure to the main natural and technological hazards in Europe, and climate change is expected to increase the risk of hazards in the future. Currently hazards do not undermine the competitiveness of a region.

Further information on the issues addressed in this chapter can mainly be found in the final reports of the ESPON projects 1.3.2/Natural heritage, 1.3.3/Cultural heritage, 1.4.5/Tourism, 2.3.1/ESDP impacts, 2.3.2/Governance, 2.4.1/Environment, 2.4.2/Zoom, 3.3/Lisbon, 3.4.1/World, and 3.4.2/ Economy.

Will the territorial diversity, challenges and potentials be the same tomorrow as they were yesterday? So far most ESPON research has analysed current territorial settings. However, some efforts have been made to develop territorial scenarios sketching possible future developments.

To gaze into the future it is necessary to understand the driving forces that shape territorial development and various possible future developments and interrelations with the territory each driving force might bring. Bringing them together into integrated prospective scenarios is then the final challenge. The scenario presented here is based on analysing and imagining what might be the long-range territorial impacts of diametrically contrasting policy approaches at EU level.

Out of the numerous ESPON studies used to compile this report, the scenarios project is the only one which was not completed at the time of writing. Thus the present chapter illustrates the approach adopted and provisional results. A special report on territorial scenarios is expected to be published, in this same ESPON series, once the project is completed.

11.1 From driving forces to thematic scenarios

Among the important driving forces influencing future territorial development are demographic development (including migration), economic integration, transport, energy, agriculture and rural development, climate change, further EU enlargements and territorial governance.

Demographic development

Population ageing is a long-term process which affects most parts of Europe. Soon it will become a serious issue, when large numbers of people reach retirement age and leave the labour market. At the same time, pressure for immigration into Europe is mounting along external EU borders.

What are the likely territorial impacts of a combination of population ageing and strong limitation of immigration? The "Silver Century" scenario can be compared and contrasted with an "Open Borders" scenario, which assumes a situation of liberalisation of immigration control. How do the two compare in terms of labour markets, dependency rates, territorial differentiation by age groups etc.?

Immigration itself can be viewed through various perspectives of how successful integration policies might be. Two scenarios illustrate the impacts of sustained immigration, especially in cities. One assumes that socio-cultural integration does not happen, and that significant problems develop and the emergence of gated communities is seen across urban Europe. The alternative scenario assumes strengthened and effective integration policies that underpin the rise of a socially cohesive and multicultural Europe.

Economic integration

The economic scenarios are mainly built around the combination of major EU policies for competitiveness and cohesion in a context of accelerating globalisation. Working with the hypothesis that each of these two EU policy aims can be weak or strong, four different scenarios can be written. Thus they highlight very divergent territorial expressions of disparities, ranging from the enticing prospect of competitive and territorially balanced regional economies to the opposite extreme of gross disparities characterising a Europe that has abandoned cohesion policies.

Transport

The transport sector is characterised by significant internal contradictions in terms of policies. While EU policy advocates a modal shift in favour of more environmentally-friendly transport modes, the strongest growth in transport demand is exactly the opposite - the strongest growth is in the road and air sectors. In order to illustrate the long-term territorial impact of this contradiction, two opposite scenarios were elaborated.

The first was a "More investments in motorways" scenario. It envisages a strengthening of the road transport mode. The result is that traffic begins to flow better and accessibility is improved in and between territories. However, this bliss is short-lived. Settlements sprawl, environmental impacts increase and in the long term even the traffic begins to get congested again. This scenario corresponds to current transport policies in a number of countries.

The second scenario was labelled "Decoupling economic development from the mobility of people and goods". In this one, policies attempt to reduce the importance of road and short-distance air transport. The scenario assumes that this is only possible if Europe becomes a more intangible, technological and service-oriented economy. A high level of road pricing coupled with ambitious development of public transport then deliver the "decoupling". In this script regional disparities widen in the short-term, as might happen anyway with increasing oil prices. Long-term benefits are however realised, with more compact settlements, cities well connected by efficient and rapid public transport and, more generally, a more competitive economy that does more of its business electronically.

Energy

The European economy is highly dependent upon oil, and the price of crude oil is escalating. How might these trends unravel and what are the policy implications? Again there are two scenarios with different emphases. "Europe in a context of high energy prices" assumes that oil price will continue to grow regularly during coming decades, bringing with it a general and strong price increase for other primary energy sources. This results in economic difficulties with high inflation. Significant territorial changes follow in terms of reduced mobility, more compact spatial organisation of production systems, evolution of settlements, changes in rural areas etc.

The alternative scenario, "Europe after oil peaking", investigates the likely territorial impacts of sudden oil depletion at world scale and oil scarcity. There are extremely high energy prices, which affect the attractiveness of large cities, generate pressure on rural areas and inhibit mobility.

Agriculture and rural development

Rural areas are strongly affected by EU agricultural and rural development policies. The past decade has seen significant changes and further reforms are expected in the coming years, partly related to the World Trade Organisation (WTO). Two long-standing and opposing philosophies have been used as working hypotheses for the elaboration of two contrasting scenarios.

The "Open market" scenario extrapolates liberalisation trends in the agricultural sector. The Common Agricultural Policy (CAP) and rural development policy become weak. Market forces largely shape the future of agricultural areas. A strong

dichotomy emerges between intensively farmed and over-exploited fertile rural areas and the abandonment of extensive, less fertile and more remote rural zones.

In contrast "sustainable rurality" envisages stronger CAP support and rural development policy. It results in more balanced rural structures, with less depopulation of marginal areas and less environmental damage in more central, fertile regions.

Climate change

The acceleration of climate change is considered as one of the most important challenges for the future. Public attitudes towards the potential impacts of climate change are contradictory. Again two scenarios were elaborated to show the directions to which opposing policies might point.

"Repairing instead of preventing" assumes that the thrust towards climate change is only countered by limited preventative measures, as such restraints are rather costly and unpopular. Increasingly prolonged and serious droughts in southern Europe, sap life from numerous rural areas, while simultaneously increasing pressure on the rural areas of northern Europe. Flooding increasingly menaces assets and settlements in wetter parts of Europe.

The alternative scenario is "anticipation of climate change through preventative measures". It entails protection and wise management of water resources and of rural landscapes and forests, as well as measures against flooding. It results in more prosperous rural areas in southern Europe and containment of the threats from flood damage in more central regions.

Territorial governance

Territorial governance has significant impacts on territorial development. The traditional dialectics between centralisation and decentralisation/regionalisation can be translated into scenario hypotheses. The first scenario is "Let a hundred flowers bloom". It reflects a drive for regionalisation/decentralisation. A strong territorial dimension becomes a feature of many EU policies, and use of integrated territorial development approaches becomes the norm. A more polycentric development pattern begins to emerge across Europe, based on the strengthening of mega-regions. However the divides widen between the mega-regions and the less developed ones.

Strongly sectoral policies continue in the second scenario, "divide and rule". Central governments in member states resist further devolution of powers to regions. This generates weak territorial integration throughout Europe, with capital cities strengthening their position against regional capitals.

Further EU enlargements

Further EU enlargements have become the subject of a serious and popular debate. The main issue is the controversy between deepening EU policies and further enlarging the EU for both economic and political reasons. The first scenario sees "Europe as a market place". It investigates the territorial impacts of an EU with roughly 40 Member States, in terms of disparities and cohesion, the nature and intensity of EU policies applied, territorial integration, migrations etc.

This time the contrast is with "Europe as a temple", a scenario that does not foresee any enlargements after Romania and Bulgaria. Deepening of EU integration takes place through multi-speed processes. The EU opens new policy fields such as socio-cultural policies or the management of impacts of climate change. Over the the long-term regional disparities become less, except along external borders, which then trigger calls for more intense neighbourhood policies.

11.2 Future territorial development in Europe

The purpose of integrated scenarios is the investigation of the territorial impacts of a combination of driving forces acting simultaneously. Basically, three integrated prospective scenarios are offered. One corresponds to the continuation of existing trends and present policies. The two others are based on strengthened policies, respectively for competitiveness and for cohesion.

The individual hypotheses of these integrated scenarios are less extreme than those of the previous thematic scenarios, though they still take account of a variety of trends and changes in various fields. The scenarios result in a final territorial image for the year 2030. Here is a sketch of the final image of the baseline (present trends continued) scenario:

"The characteristics of the European territory in 2030 reflect a number of important changes, compared with the situation in 2005. By 2030, the European population is, on average, much older than in 2005, though there are strong variations from region to region. The ageing process already observed in the early 2000s has been amplifying up to 2030, despite a revival of fertility rates in a number of countries. As early as 2015 wide areas in Europe (the northern half of Italy, northern Spain, Switzerland, Austria, Germany, central parts of Sweden and eastern Finland) reached a median age above 44 years. In 2030, most European regions, with a few exceptions (western and southern France, England, Ireland, southern Norway, southern Finland and a few regions along the eastern borders of the EU) have reached a similar situation. In some regions the median age of the inhabitants is even over 50 years (north-west Spain, northern Italy and Sardinia, Corsica, East-Germany, Scotland, central Sweden). The regions with lowest median age in 2030 are metropolitan regions in Northern and Western Europe like Paris, London, Brussels, Amsterdam, Hamburg, Luxemburg, Stockholm, Helsinki, Oslo, Copenhagen, etc. In general, the population is ageing more slowly in north-west European regions than in eastern and southern ones (see map 16).

After three decades of accelerating globalisation but only moderate economic growth and disappointing competitiveness in Europe, a number of large European companies have been taken over by foreign multinationals from North America, Japan and emerging economies (Asia, Brazil). Strong restructuring and rationalisation has taken place in their European branches. Europe is a world leader in a few sectors, such as aeronautics, some new energy technologies and specialist sectors of biotechnologies. A few large energy companies control the production and distribution of electricity, the sectors of renewables (in particular the production and transformation of energy crops, the wind farms); the development, renewal, operation and maintenance of nuclear power plants; the distribution of natural gas; coal-powered gas plants, and the production and distribution of hydrogen. Service industries and advanced tertiary activities are much more developed than they were in the early 2000s, as are household related services. However, numerous industrial activities using only low and medium-level technology have disappeared

from Europe, even from the countries which joined the EU in 2004. Quite simply, they were no longer competitive. The same fate befell energy-intensive industrial activities, especially metal production, petrochemical and basic chemical activities. These trends, accompanied by asymmetric shocks, have led to strong territorial differentiation and specialisation.

The catching-up of Eastern European countries (see map 17) remains rather incomplete. East-West per-capita GDP differentials persist. Regional disparities have decreased very slightly, as a result of two opposite tendencies: a decrease of the disparities among countries, counterbalanced by widening disparities within countries. Peripheral regions of Western countries still have income levels below the EU average. Thus Greece, Southern Italy, Spain (with the exception of Madrid), Portugal, and Northern Ireland are weak in 2030 even though they have been supported through the structural and cohesion funds for a long time now. The Pentagon area maintains its relatively high income level. The highest per capita income levels are recorded in Southern Germany and Austria, and also in regions like the Randstad-Holland, Southern Ireland, Denmark and some southern regions of Scandinavian countries.

In the European territory of 2030 sustained growth processes are specific to a few categories of areas, in particular those that offer high-level metropolitan or gateway functions, those attractive for particular population groups such as retirees, tourists etc. or those with innovative and significant economic activities in emergent fields such as new energy technologies and renewable energy supply (the production of biofuels in particular). The catching-up processes that the poorer countries enjoyed after their accession to the EU proved relatively short-lived. Generally it did not last more than 15 years. After that, significant processes of territorial differentiation took place, based more or less on the same principles as those prevailing in the more central areas. While metropolitan regions continued to achieve above-average development rates, the development pace slackened in rural and intermediate regions, except those well-known for their attractiveness. A similar history has been played out across quite a number of regions in the old "EU-15", particularly the peripheral ones.

In a world-wide perspective, Europe's global cities have become even more competitive than they were in the early 2000s, though their distance from the global cities of North America and Asia has remained quite unchanged. At Europe-wide scale, the metropolitan areas of the Pentagon, together with a few others, have strengthened their leading European position. The "original Pentagon" from the late 1990s, has been expanding along major corridors with significant metropolitan areas, towards the British Midlands, the southern parts of the Nordic Countries, and down the Rhone Valley and the Danube Valley as far as Budapest.

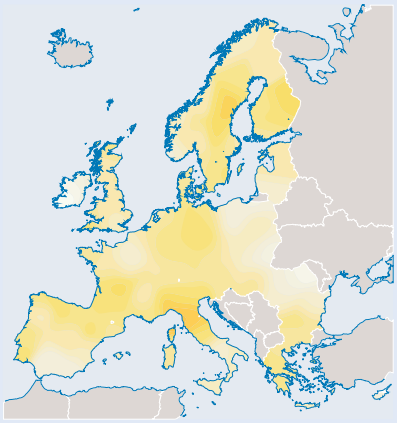
Remote peripheral regions, and even those with large cities, have generally not been successful in generating or maintaining vigorous development processes. This is why no global economic development area ever emerged outside the "new Pentagon". As a result, large cities in the peripheries of Europe have continued along rather isolated development paths and have not benefited much from network and synergy effects.

Some other territorial patterns have changed quite a lot. When we look at the local/regional level, we see that there are big differences between the urban

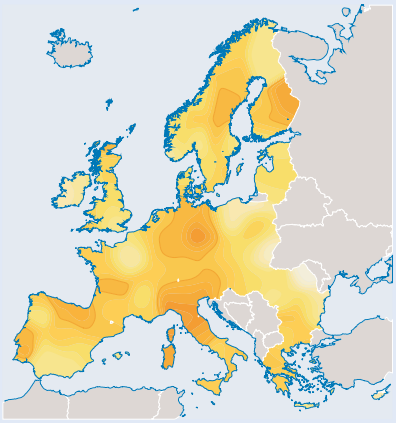
MAP 16: Baseline scenario: Demographic perspectives

Median Age (years)

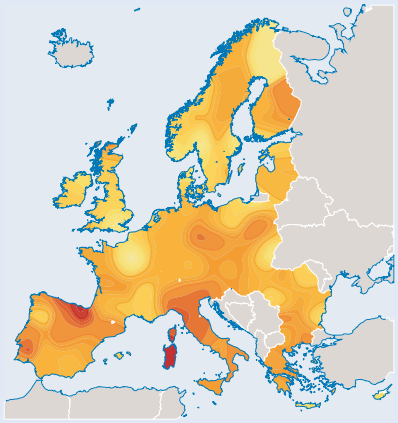
2000



2015

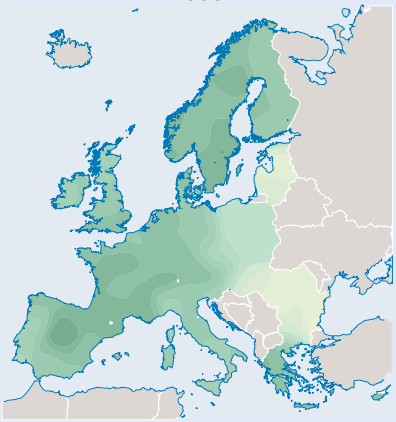


2030

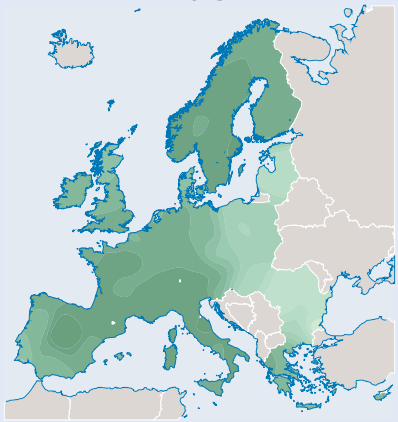


Life expectancy at birth (years)

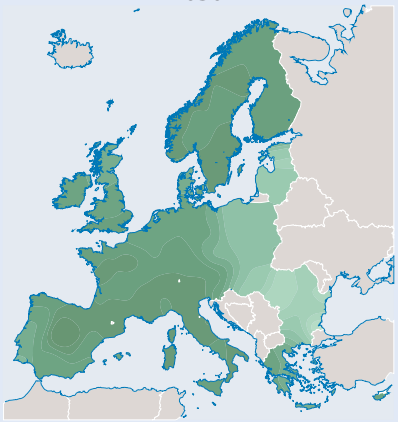
2000



2015

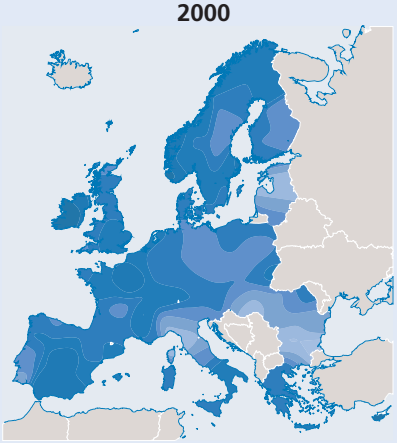


2030

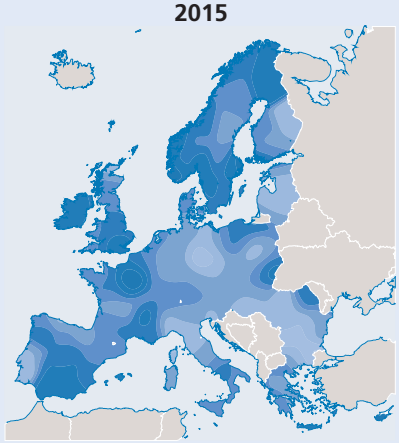


Index of sustainable demographic development

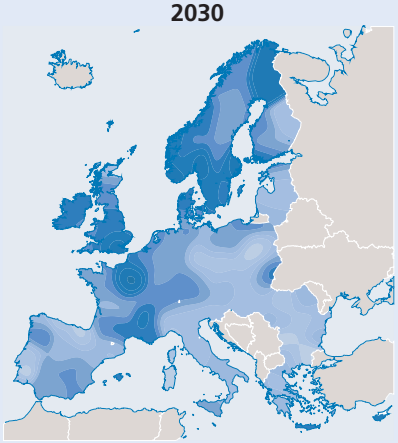
2000



2015



2030



ESPON
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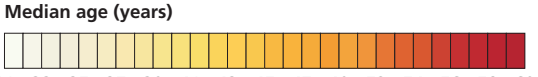
0 km 500 km 1000 km

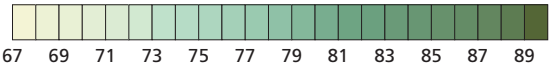
This map does not necessarily reflect the opinion of the ESPON Monitoring Committee

Median age (years)



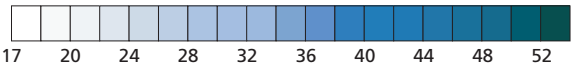
31 33 35 37 39 41 43 45 47 49 52 54 56 58 60

Life expectancy at birth (years)



67 69 71 73 75 77 79 81 83 85 87 89

Index of sustainable demographic development
Life expectancy – Median age (years)



17 20 24 28 32 36 40 44 48 52

Origin of data: Projections based on data from UNPP 2004, ESPON database 2005 and ULB 1991

Source: ESPON database

systems in 2030 and those of the early 2000s. Several factors with cumulative impacts have helped reshape these urban settlements. People felt less and less safe in cities. Energy prices just kept on rising. Was enough done to assist in the economic, social, educational and cultural integration of ethnic minorities, and especially the youngsters from the second generation? Was the growth of social and physical segregation in cities cause or effect? Sporadic troubles, occasional riots…. High oil prices have favoured compact cities, with lower volumes of commuting, higher use of public transport systems and better integration of urban functions. Recreation and leisure facilities were developed around the edges of agglomerations. Densification and new urban developments took place around the stations and nodes in public transport networks. Home working has progressed a lot, so that numerous active people do not need or want a daily commute into a city. They prefer their homes in the village surrounded by the countryside, but well connected by public transport. The urban pattern at local/regional level is one of increased social/physical segregation compared to what was common a generation ago, combined with compact approaches to new developments and redevelopment. It is clear though, that this global pattern is largely differentiated according to the types of regions. Booming metropolitan areas are very different places than the declining industrial medium-sized cities.

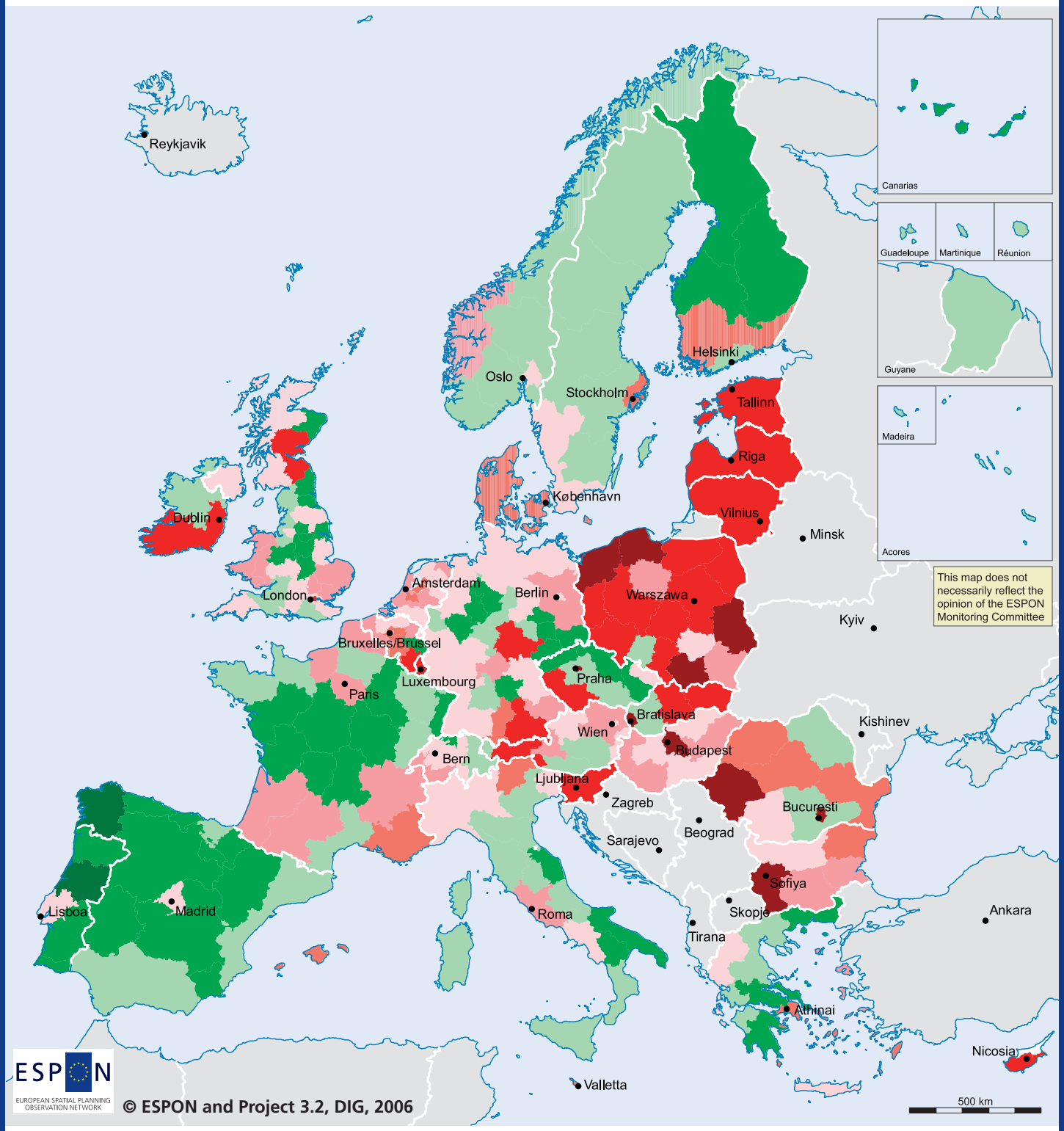
During the three decades that followed the year 2000, Europe's rural areas were subject to strong dynamics. The diversification process already initiated in the 1990s in western Europe continued and spread to central and eastern Europe. The countries that joined the EU in 2004 benefited from CAP support, though the CAP itself has been through various reforms, including the implementation of WTO decisions. Large production of biomass and energy crops gave a new impetus to rural areas, including less fertile ones. Last but not least, the acceleration of climate change was rather detrimental to rural areas in the southern half of Europe, though those in the northern half gained some benefits from the longer growing seasons".

Policy relevant key findings:

- Market forces and social change are important drivers for territorial development. Market forces and the general evolution of the European society are important factors influencing territorial development and attenuating the impacts of public policies. An example is the effect of rising oil prices.
- The long-term future probably will not be a continuation of current trends. The long-term evolution of the European territory (beyond a 20 year horizon) may differ significantly from the anticipated short and medium-term trends. For example, the current catching up processes in central and eastern Europe could stall.
- The future might require new and different policies. In the light of the new challenges which the European territory is likely to face in the coming decades, current policies appear insufficient or not adequately targeted. New policy approaches will be necessary in future, departing in many respects from those applied today.

Further information on the issues addressed in this chapter can mainly be found in the final report of the ESPON project 3.2/Spatial scenarios.

MAP 17: Baseline scenario: GDP growth perspective in the period 2002-2015



Cumulative % real GDP growth rate 2002-2015, baseline scenario

- less than 25
- 25 to below 30
- 30 to below 35
- 35 to below 40
- 40 to below 45
- 45 to below 50
- 50 to below 55
- 55 to below 65
- 65 and more
- no data

Regional level: NUTS 2
Origin of data: ESPON Project 3.2, Politecnico di Milano

Source: ESPON database

CHAPTER 12
THE ESPON 2013 PROGRAMME

The results achieved by the ESPON 2006 Programme have given policy-makers more and better information and understanding of European territorial trends, perspectives and policy impacts.

Findings and European maps from ESPON projects and synthesis reports have been used in several policy documents, particular at European level. The data and tools provided have been applied increasingly in work on national and regional development strategies. They are also proving useful for transnational cooperation activities and project selection, in cross-border discussions on the larger territorial context and by scientists, students and individual European citizens.

The EU Commissioner for Regional Policy and Ministers responsible for territorial cohesion have stressed, at meetings in Rotterdam, Luxembourg and Amsterdam during 2004-2006, the importance of a coherent approach to the development of the European territory, which should be based on continuous observation of European trends and developments as an instrument supporting the pursuit of territorial cohesion.

12.1 Aiming at policy support and more use of results

Cohesion policy and regional policy, with their objectives for cohesion and competitiveness as well as European territorial cooperation, have to rely on solid and comparable regionalised information to meet the new challenges and be efficient. This holds true for all three objectives of Structural Funds 2007-2013.

Policy makers dealing with development of regions and larger territories need evidence and comparable information about regions. Long-term trends and perspectives provide valuable insights into how a region or territory is likely to change.

An understanding of a region's position in comparison with others can help policy makers help to discover new potentials for development. Key options have to be explored from a European perspective: the larger territorial context can bring into focus new opportunities and latent strengths.

As a European dimension is increasingly important for the development of both smaller and larger territories, the ESPON 2013 Programme envisages making the ESPON evidence and analytical support directly available to interest users. The aim is to enhance the capacity of policy makers at different seats in defining the optimal development strategy for their territory and comparative advantages and options for added value through "territorial" cooperation with other regions.

Awareness raising and involvement of policy makers and practitioners will become very important elements in the ESPON 2013 Programme. Communication with these will be an important activity. Stakeholder events with representatives from all administrative levels and relevant sectors will be a key means of implementing the programme.

All in all, the European process moves on towards a more integrated approach to policy making which makes the territorial dimension important for policy makers. The aim of territorial cohesion proposed by the Commission supports this approach by taking the territory as unit of policy making. By providing evidence based on territorial units of analyses the ESPON 2013 Programme becomes of strategic importance for the European cooperation.

12.2 Programme strategy and priorities envisaged

The ESPON 2013 Programme will support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory. It will provide comparable information, evidence, analyses and scenarios on framework conditions for the development of regions and larger territories. In doing so, ESPON will be facilitating the mobilisation of territorial capital and potentials and contributing to improving European competitiveness, to wider and deeper European territorial cooperation and to sustainable and balanced development.

The ESPON 2013 Programme will bring continuity, change and innovation. In promoting the overall aim, the following overall objectives will guide ESPON's work:

- The ESPON 2013 Programme will enhance European evidence and knowledge in relation to territorial cohesion and development, building on the platform created by the ESPON 2006 programme.
- Policy demand will define the applied research actions and focus the themes and EU policies that need to be addressed. The progress made by the ESPON 2006 programme will be deepened and extended in the light of priorities identified by policy makers. Exploratory investigations and perspective studies will support policy relevant themes of the future. The applied research will pave the way for integrated analytical activity in specific territorial contexts.
- A user-oriented approach will be adopted for the ESPON 2013 Programme. The current ESPON knowledge base already can offer operational support to strategic processes in smaller or larger territorial settings and about the themes studied so far. Through awareness raising and partnerships, the new Programme will offer and carry through targeted analytical deliveries upon demand, responding to needs.

The ESPON 2013 Programme will involve numerous actions within 5 priorities at Programme level, which reflect the Programme's strategy and overall objectives.

The 5 ESPON 2013 Programme priorities are:

1. Applied research on territorial development, competitiveness and cohesion: Evidence on territorial trends, perspectives and policy impacts;
2. Targeted analyses based on user demand: A European perspective on the development of different types of territories;
3. Scientific platform and tools: Comparable regional data, analytical tools and scientific support;
4. Awareness raising, empowerment and involvement: Capacity building, dialogue and networking; and
5. Communication and technical/analytical assistance.

The actions will be delivered by transnational consortia contracted through an open competitive procurement procedure. The implementation principles will ensure continued close cooperation with other Community programmes and related activities in Member States.

The budget is envisaged to expand substantially compared to the ESPON 2006 Programme, to more than €45 million. The new ESPON 2013 Programme will start its operations on 1 January 2007.

The ESPON 2013 Programme will, as the ESPON 2006 Programme, be managed by the Ministry of Interior and Spatial Development in Luxembourg.

CHAPTER 13
THE ESPON RESEARCH COMMUNITY

ESPON applied research is based on the efforts of many researchers drawn from all over Europe. The map gives an overview on where the various ESPON partners are located. The list presents all ESPON lead partners and project partners in alphabetical order. Subcontractors are not included.

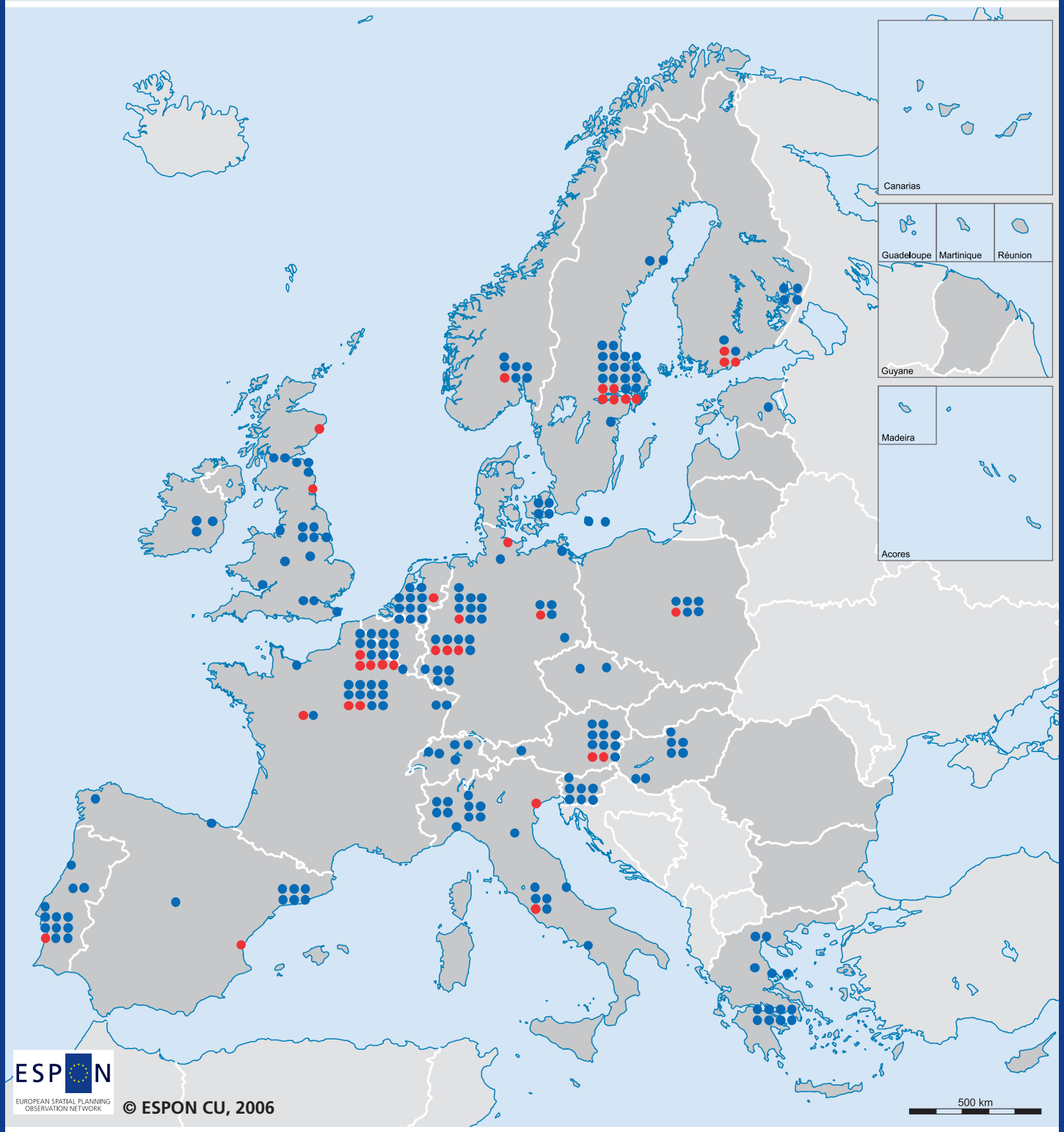
Aalbu, Hallgeir (EuroFutures), Abegg, Christof (ETH), Ache, Peter (IRPUD), Aguiló Pérez, Eugeni (Universidad de les Illes Baleares), Al-Assi, Samir (ULB), Albrechts, Louis (Catholic University Leuven), Ali, Disougi (ECOTEC), Allain, Remy (UMR RESO), Allt, Anu (CURS), Amorim, Filipa (IERU Coimbra), Andrade, Inês (CEDRU), Andrikopoulou, Eleni (SDRU), Angelidis, Minas (National Technical University of Athens), Anselmo de Castro, Eduardo (CEIDET), Antikainen, Janne (Nordregio), Apostolides, Patrocolos A. (Cyprus Association of Town Planners), Asprogerakas, Evangelos (National Technical University of Athens), Astra, Georgia (ECOTEC), Aujean, Laurent (IGEAT-ULB),

Bachtler, John (EPRC), Balay, Maëva (CURS), Baptista, António (CIRIUS), Barbosa de Melo, João Paulo (IERU Coimbra), Bardaji Azcárate, Isabel (Universidad Politecnica de Madrid), Barendregt, Geske (Royal Haskoning), Bärring, Lars (SMHI), Barroqueiro, Mario (CEG), Barta, Györgyi (CRS), Bartley, Brendan (NIRSA), Bartol, Blanka (MESP), Basler, Ernst (ETH), Batista, Maria Joao (INETI), Batty, Mike (UCL), Baudelle, Guy (UMR RESO), Baudet-Michel, Sophie (UMR Géographie-cités), Beckouche, Pierre (LADYSS), Beiglböck, Sebastian (ÖIR), Bekatoros, Dionissios (Urban Environment and Human Resources), Bengs, Christer (CURS), Benini, Roberta (NOMISMA), Benson, Lutz (TAURUS), Berroir, Sandrine (UMR Géographie-cités), Bessa, Konstantia (University of Thessaly), Besussi, Elena (UCL), Bika, Zografia (University of Aberdeen), Billing, Peter (CRT), Biot, Valérie (IGEAT-ULB), Bjarnadóttir, Hólmfrídur (Nordregio), Björinge, Jenny (EuroFutures), Blanes, Núria (ETC/TE), Blažek, Jiri (DSGRD-UP), Blomeyer, Roland (ECOTEC), Bock, Emilie (University of Tours), Bogataj, Ludvik (KMOR), Bogataj, Marija (KMOR), Böhme, Kai (Nordregio), Bonerandi, Emanuelle (UMR Géographie-cités), Borg, Malcolm (Paragon Europe), Borrelli, Nunzia (EU-POLIS), Bouloudis, George (Urban Environment and Human Resources), Bozzani, Sandra (INRETS), Braataa, Hans Olav (ENRI), Bradley, Karin (Nordregio), Brandao, Jorge (CCDRC), Braun, Thomas (TAURUS), Bretagnolle, Anne (UMR Géographie-cités), Bröcker, Johannes (University Kiel), Buguellou, Jean-Baptiste (University of Tours), Burgess, Peter (ECOTEC), Buunk, Willem (University of Utrecht), Buxeda, Cécile (UMR Géographie-cités),

Camagni, Roberto (DIG), Canalis, Aleix (ETC/TE), Capek, Jan (University of Pardubice), Capello, Roberta (DIG), Capitani, Giancarlo (Poltecnico di Milano), Cappellin, Riccardo (University of Rome "Tor Vergata"), Capron, Henri (ULB), Carbonaro, Isabella (CEIS), Carrière, Jean-Paul (CITERES), Cattan, Nadine (UMR Géographie-cités), Cecchini, Isabella (Universita Ca'Foscari di Venezia), Centeno, Luis (CEEETA), Chamat, Oscar (Mcrit), Charef, Mohamed (ORMES), Charlton, Martin (NCGIA), Cheng, Jianquan (NCGIA), Cicille, Patricia (UMR Espace), Clark, Joe (ECOTEC), Coccossis, Harry (University of Thessaly), Commins, Patrick (NUI Maynooth), Copus, Andrew (Nordregio), Coquio, Julien (University of Tours), Corminboeuf, Bernard (UMS RIATE), Cornaro, Antonia (ÖIR), Corpataux, José (University of Neuchâtel), Cortés Ballerino, Camila (KTH), Costa, Nuno (CEG), Cotella, Giancarlo (Politecnico di Torino), Crampton, Zoe (ECOTEC), Cremaschi, Marco (Università Roma 3), Crevoisier, Olivier (University of Neuchâtel), Cristescu, Juliette (UMR RESO), Cuenot, Olivier (LSR-IMAG), Cunningham, Emmanuèle-Sabot (UMR RESO),

D'Abreu, Diogo (CEG), Da Rosa Pires, Artur (CEIDET), Dahlström, Margareta (Nordregio), Dallhammer, Erich (ÖIR), Dammers, Ed (NISR), Damsgaard, Ole (Nordregio), Dancs, László (CRS), Dantas, Marcos (Universitat Autònoma Barcelona), Davies, Sara (EPRC), Davoudi, Simin (IRES, Newcastle University), Dax, Thomas (Federal Institute for Less Favoured and Mountain Areas), De Boe, Philippe (PhDB Consultant), De Bruijn, Pieter (TNO Inro), De Lemus, Menica (ECOTEC), De Sousa Santinha, Gonçalo (CEIDET), de Vries, Aldert (NISR), de Vries, Arjen (Royal Haskoning), Decoupigny, Christophe (NESTEAR), Degorska, Bozena (Polish Academy of Sciences), Del Bufalo, Nicoletta (ECOTEC), Delbaere, Ben (ECNC), Demathas, Zacharias (Urban Environment and Human Resources), Dematteis, Giuseppe (Politecnico di Torino), Di Zio, Simone (University G.d'Annunzio), Dias, Gabriela (CEEETA), Didelon, Clarisse (UMS RIATE), Diekmann, Anya (Katholieke Universiteit Leuven), Dionisios Kalivas (RDI), Dispenza, Raffaella (EU-POLIS), Dolkas, Konstantinos (Urban Environment and Human Resources), Dominic Stead (OTB), Donaldson, Sophie (CPLAN), Drobne, Samo (KMOR), Dubois, Alexandre (Nordregio), Duch, Jordi (Universitat Autònoma Barcelona), Dumas, Eugénie (UMR Géographie-cités), Dumitru, Valentina (SDUR),

MAP 18: Lead partners and project partners of the ESPON 2006 Programme



ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK

ESPON Partners

- Lead Partners
- Project Partners

Eidhammer, Olav (TOI), Eikeland, Sveinung (Norut Group), Eiser, David (ECOTEC), Eskelinen, Heikki (University of Joensuu), Essel, Nadine (TAURUS), Estevens, Ana (CEG), Evans, Neil (CUDEM), Evers, David (NISR), Eythórsson, Grétar Thór (University of Akureyri Research Institute),

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List of all ESPON applied research projects
This report is based on the work of the transnational project groups working on ESPON projects:

1.1.1	The role and specific situation and potentials of urban areas as nodes in a polycentric development
1.1.2	Urban-Rural relations in Europe
1.1.3	Enlargement of the European Union and the wider European perspective as regards its polycentric spatial structure
1.1.4	The spatial effects of demographic trends and migration
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1.2.2	Telecommunication services and networks: Territorial trends and basic supply of infrastructure for territorial cohesion
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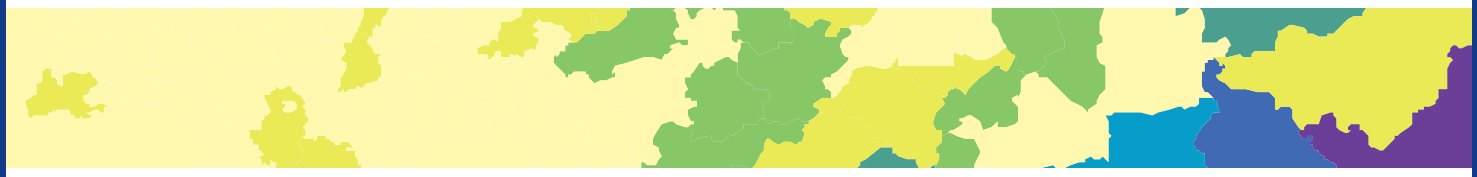
3.4.3	The modifiable areas unit problem (MAUP)
4.1.3	Feasibility study on monitoring territorial development based on ESPON key indicators



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The European Spatial Planning Observation Network (ESPON) is set up to support policy development and to build a European scientific community in the field of territorial development. The main aim is to increase the general body of knowledge about territorial structures, trends, perspectives and policy impacts in an enlarged European Union.

The purpose of this ESPON Synthesis Report III is to communicate the main findings of the ESPON 2006 Programme, and to nourish policy development for different territories in Europe through a dialogue among policy makers, practitioners and researchers. As part of this dialogue you are welcome to state your views and proposals by e-mail to info@espon.eu

The EU Commission and EU Member States have stressed the importance of a coherent approach to the development of the European territory, based on continued observations of European trends and developments as an instrument supporting the pursued territorial cohesion. The ESPON 2013 Programme will take the challenge of further improving European-wide territorial evidence for policy making.

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