



Federal Office
for Building and
Regional Planning

Germany in Europe

Assessment of the ESPON results
of 2006 from a German point of view

Abstract



Special Publication

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from a German point of view

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A project within the research programme “General Departmental Research“ conducted by the German Federal Ministry of Transport, Building and Urban Affairs (BMVBS) and the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) within the Federal Office for Building and Regional Planning (BBR)

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Introduction

Spatial development is increasingly considered as an element of European integration. The European Spatial Development Perspective (ESDP) agreed upon in 1999 constitutes the starting point for this development. In 2007, this document was complemented by the Territorial Agenda as well as by the document on the Territorial State and Perspectives of the EU.

The ESPON Programme (European Spatial Planning Observation Network) was implemented after the identification of information deficits which became apparent in the course of the ESDP development. The ESPON Programme primarily aims at the development of scientifically based knowledge about European spatial development, which is relevant for European spatial policy. Therefore, the ESPON Programme supports a policy-related observation of European spatial development and spatial development policies. It furthermore enhances the establishment of a Europe-wide research network reducing the previously identified information deficits. This network ought to develop and realise transnational research approaches for a considerable number of themes relevant for spatial development. So far, the ESPON Programme has been the only comprehensive approach of spatially comparative analyses for all regions of the EU member states¹. Consequently, this programme provides important information for various European political documents such as the Cohesion Reports, the Territorial Agenda and the document on the Territorial State and Perspectives of the EU.

Past analyses of the ESPON programme focussed on European themes of spatial development which are discussed in the ESDP. Between 2002 and 2006, altogether 34 transnational research projects were realised by the ESPON Programme. These projects' results were documented on several thousand pages. For quite different themes they aimed at analysing the European spatial development on the lowest possible territorial level while covering the whole ESPON territory at the same time. Due to the low number of applied European spatial research analyses, which had hardly been coordinated prior to the launch of the ESPON Programme, these objectives of ESPON were quite ambitious. The project teams therefore had to master numerous challenges.

The largest challenges concerned the unsatisfying data availability, the utilisation of NUTS units as a spatial reference, frequently changing NUTS delineations, the development of policy recommendations for the European Commission, the inclusion of all regions of the ESPON territory and the safeguarding of a continued transnational research cooperation. These problems need to be kept in mind when ESPON results are applied in order to avoid misleading interpretations. Many of these challenges have already been tackled in the course of the ESPON 2006 Programme. For other challenges solutions shall be sought in the new ESPON 2013 Programme (see research report published by the BBR). These aspects and challenges also affect the analyses of ESPON results from a German perspective:

- *Unsatisfied data provision:* Data often contained gaps in the spatial coverage of the ESPON territory or could not be provided for spatial levels lower than NUTS 2. Missing time series have limited the analyses of development trends. Consequently, the indicator selection is often dominated by pragmatic considerations and data availability rather than by scientific arguments.
- *Utilisation of the NUTS nomenclature:* The system of NUTS units for the spatial differentiation of the ESPON territory is quite heterogeneous. Its application is therefore not always appropriate for the different spatially relevant themes. The number of NUTS 3 regions in Germany and Sweden, two countries with roughly the same area, illustrates the heterogeneity of NUTS units: Currently, Germany has 429 NUTS 3 regions while Sweden is only differentiated into 21 such regions. Country-specific administrative units complemented by population figures are the grounds on which the NUTS units are delineated, which in consequence lead to these spatially diverging NUTS units. This leads to problems with regard to the comparability of European regions and artefacts concerning the results of spatial research.
- *ESPON territory as single reference:* The comparisons of the European regions are of relative character and depend on the reference area. Often a worldwide placement is missing. The inclusion of the east-

¹ Besides the EU member states, the previous ESPON Programme also included Switzerland and Norway in its analyses. In the following, this territory will be denoted by "ESPON territory".

ern European countries in the course of the EU enlargement alone has affected the placement of several German regions considerably. However, Germany as well as the whole of Europe globally competes for resources. The classification of Germany in Europe, e.g. related to the objectives of the Lisbon Agenda, therefore provides a partial assessment of the achievements.

- *Spatial analyses based on statistically derived maps:* The large majority of analyses in the completed ESPON 2006 Programme focused on the development and interpretation of maps. Such statistically based spatial analyses, however, cannot avoid statistical artefacts. Therefore, these assessments should always be complemented by content-related arguments. This is also important for Germany, especially with respect to the spatial implications of the reunification.
- *Inclusion of all regions of the ESPON territory:* The results of prior ESPON projects have revealed that the inclusion of all regions of the ESPON territory limits the projects' analytical options and thus restricts the explanatory power of the results. In order to obtain sound and robust results for the regional level, it is useful to restrict the geographical area under investigation at least in some cases and to focus on more specific research issues.
- *Safeguarding continuity:* Any large research programme, consisting of many projects in which numerous researchers are involved, faces the problem of continuity. The individual projects often conduct their analyses without appropriately considering already existing knowledge and methods within the research programme. Matters of intellectual property rights are also relevant, if data, methods and models developed outside the ESPON Programme are utilised by ESPON projects. Selective analyses do not ensure a continuous analysis of the development of the German regions in Europe. Thus, the placement of the German regions is usually limited to a few points of time and does not tend to be up to date if the analyses are not regularly updated.

The large majority of analyses in the ESPON 2006 Programme considered the European regions only from the European perspective. Na-

tional and regional features were often hardly mentioned. The same holds for their placement in the European context. This placement and the consideration of European-wide results are, however, useful from a national point of view. This perspective is of specific interest for Germany and object of this publication. The following objectives are in the centre of attention:

- This publication aims at improving the comprehensibility of ESPON results by applying a national perspective to the results. This approach is to add to the utility of ESPON results for German actors. In order to achieve this objective, the results of previous ESPON projects, which are most important for Germany, are summarised from the perspective of German regions. Results have been selected according to their relevance for Germany. A deeper discussion of these themes from a German perspective was published in the journal *Forschungen*, issue 135 of the BBR.
- This focussed discussion of ESPON results also complements the ESPON results themselves. It is obviously useful to have a comparative perspective of research results addressing the same issue from different spatial levels. This contributes to a better understanding of spatial interactions and potentials and allows a more appropriate assessment of spatial policies. This analysis achieves such an extended perspective by focussing on the placement of German cities and regions in Europe.
- The discussion of the German regions' placement in Europe is finally complemented by relating the spatial observations to the objectives of the Territorial Agenda. In this context, it has to be discussed in how far the German regions' spatial development is actually in line with these objectives. For this discussion the priorities of the Territorial Agenda constitute the thematic frame within which the ESPON 2006 Programme is analysed from a German perspective.

Since the German regions have been assessed on the basis of previous ESPON results, this publication consists of a systematic and very summarising presentation of a number of ESPON projects. Thus, the findings presented in this publication are less the result of extend-

ed own analyses but reflect the state of European spatial research complemented by a German perspective. Further conclusions from this review of ESPON results are made in the related BBR journal *Forschungen*, issue 135. These conclusions also include the identification of analytical and thematic gaps of European spatial research and the need for further research.

German cities from a European point of view

Cities and metropolitan regions are the hubs of social, political and economic power. Due to the concentration of economic, political and cultural life in cities, they hold gateway functions which nurture their national or international role respectively.

In contrast to Great Britain or France, there is no single metropolitan area dominating in Germany. Germany is rather characterised by several internationally important cities which are dispersely located and show different functional specialisations. Above all, this is reflected by the economic profiles of various city regions (e.g. media, trading, finances). They furthermore complement each other in terms of their collaboration and integration in networks.

German metropolises are important for the European urban system

ESPON has analysed urban regions with regard to their role as economic decision-making centres, industrial locations, centres of knowledge and education, transport hubs, tourism locations and as administrative centres. For these analyses Functional Urban Areas (FUAs) were defined which comprise more than the administrative cities.

Considering all six mentioned urban functions simultaneously, a polycentric urban structure is visible for Europe. Within this polycentric structure the FUAs accumulate in Europe's economic centre, the so-called Pentagon area². 76 of these FUAs are characterised as MEGAs (Metropolitan European Growth Areas), which represent urban areas of European relevance. In Germany, Berlin, Bremen, Düsseldorf, Frankfurt/Main, Hamburg, Cologne, Munich and Stuttgart are considered to be MEGAs.

In no other European country there are so many cities of national or international importance with respect to various functions. Altogether there are only 20 MEGAs in the ESPON

territory which are of national or international importance in terms of the five economic functions (tourism, transport, industry, knowledge and economic decision-making centres). Four of these 20 MEGAs, namely Hamburg, Düsseldorf, Frankfurt/Main and Munich, are located in Germany. Besides these German cities as well as Barcelona and Milan, all other cities of this group are capital cities.

Berlin is not part of this group. Although it is an important administrative centre it cannot be regarded as a nationally or internationally important, economic decision-making centre.

Numerous German cities are of national and transnational importance

More than four fifths of the European FUAs are of regional or local importance. About one eighth is of transnational or national importance. In Germany 143 FUAs are of local and regional relevance, while 35 FUAs are regarded to be important on the national or transnational level respectively.

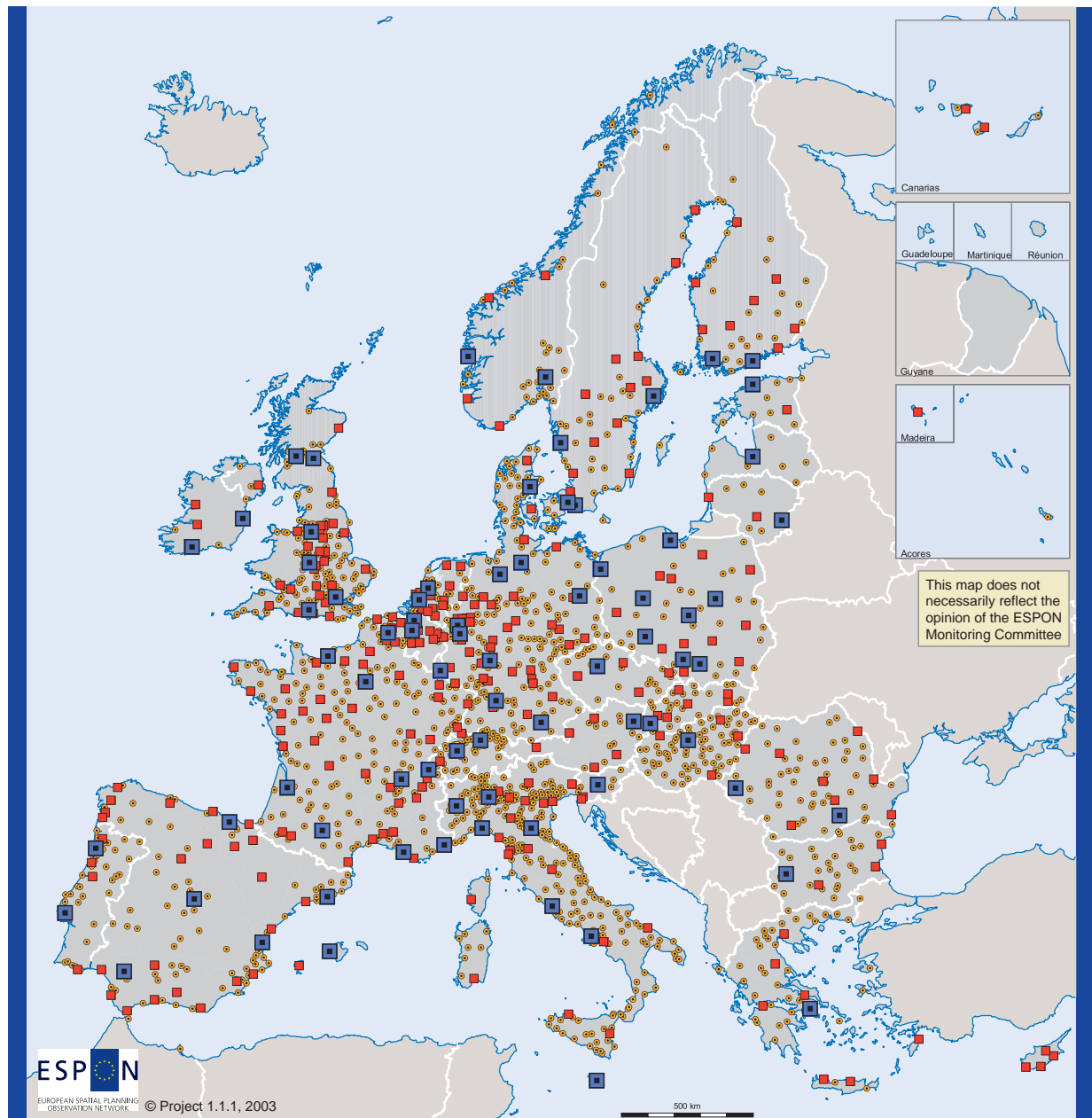
As compared to population numbers, Germany has relatively few FUAs. They are, however, of above-average importance and the share of nationally or transnationally important FUAs is relatively high as well. These features are due to the polycentric structure of the German urban system.

The German FUAs of national and transnational importance are Aachen, Augsburg, Bamberg, Bielefeld, Bochum, Bonn, Chemnitz, Dortmund, Dresden, Duisburg, Erlangen, Essen, Gießen, Göttingen, Hagen, Halle, Hanover, Heidelberg, Kassel, Kiel, Koblenz, Leipzig, Mainz, Mannheim, Marburg, Münster, Nuremberg, Osnabrück, Potsdam, Regensburg, Rostock, Saarbrücken, Trier, Tübingen and Würzburg. Especially with regard to knowledge and industrial functions as well as economic decision-making centres they are important in the European comparison.

Nationally important in terms of their industrial function are Augsburg, Bochum, Chemnitz, Dortmund, Dresden, Duisburg, Erlangen, Essen, Hanover, Mannheim, Nuremberg and Regensburg. With regard to this function they can be compared to locations such as Porto, Bilbao, Oulo, Genua or Cork. In addition, there are numerous German FUAs which are only of local or regional importance although they are nationally important in terms of their industrial sites.

² This term refers to the area between London, Paris, Milan, Munich and Hamburg.

Typology of Functional Urban Areas (FUAs)



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

© EuroGeographics Association for the administrative boundaries
Origin of data: Eurostat, National Statistical Offices, National Experts
Source: ESPON Database

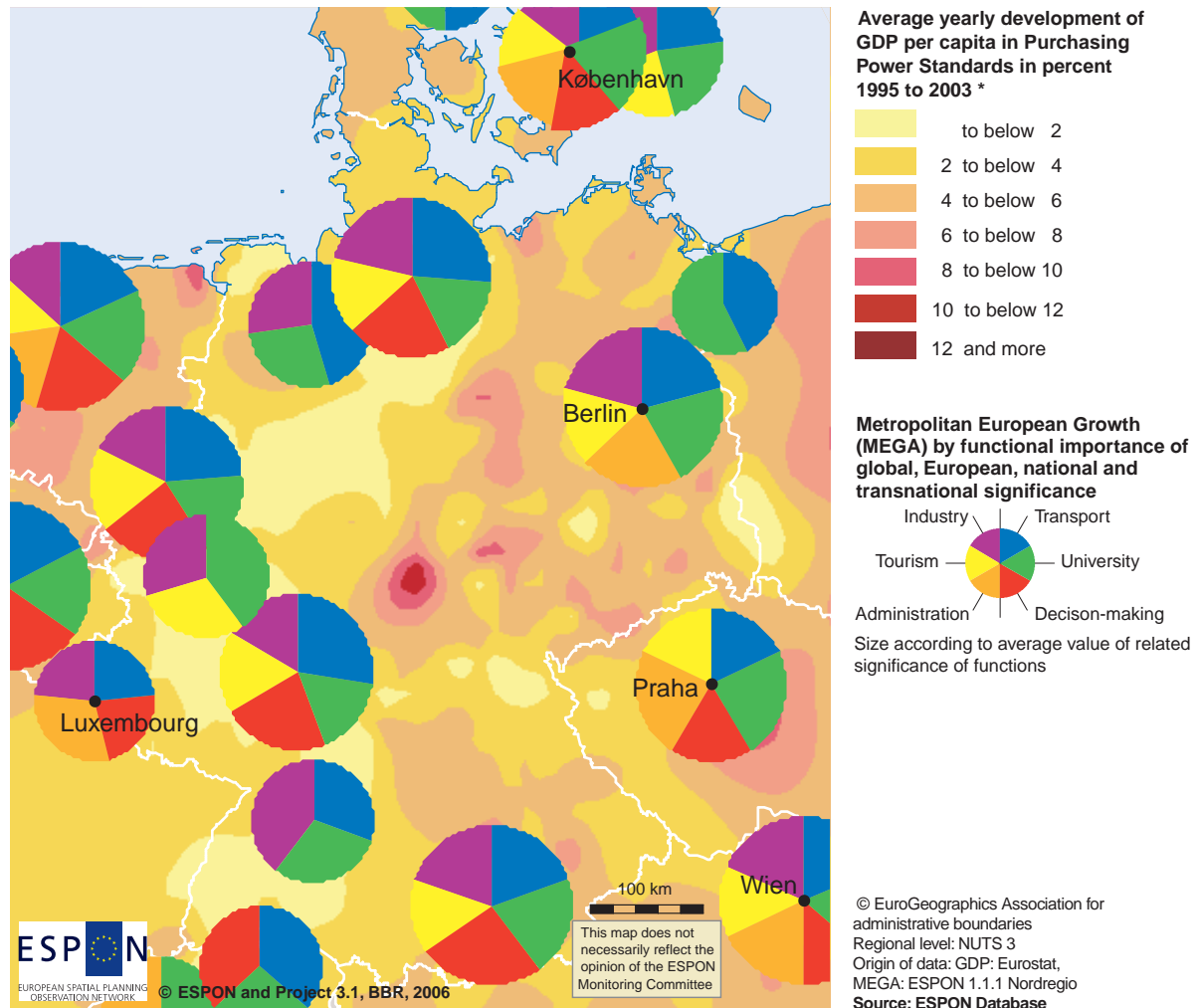
Essen is one of the few cities, which is nationally important as an economic decision-making centre although it is not a capital city. Other examples of such cities are Barcelona, Porto and Thessaloniki.

Polycentricity is the strength of the German urban system

The relatively balanced relation of city sizes is a specific characteristic of the German urban system. This is further supported by the differ-

ent profiles of the individual urban regions. In no other European country there are so many cities of international importance in terms of several functions as in Germany. This is a result of polycentricity, albeit it also restricts the importance of German cities: None of them is as important as London and Paris. Although the German cities hardly ever stand out in terms of their size, about 20% of the analysed German urban regions have several functions of national and international importance.

Functional importance of MEGAs



Competitiveness and innovation

One of the dominant themes in European discussions is that of Europe's competitiveness and innovativeness. In a framework where globalisation is favoured, innovations and advanced knowledge shall ensure the competitiveness and welfare of Europe. At the same time, the economic performance differs between the regions.

The economic centres of Europe, especially those located in the Pentagon area, coexist with economically weaker and often more peripheral regions. These disparities cannot only be observed for current regional economic figures but are also expected to persist for future economic developments.

Germany's path to Lisbon

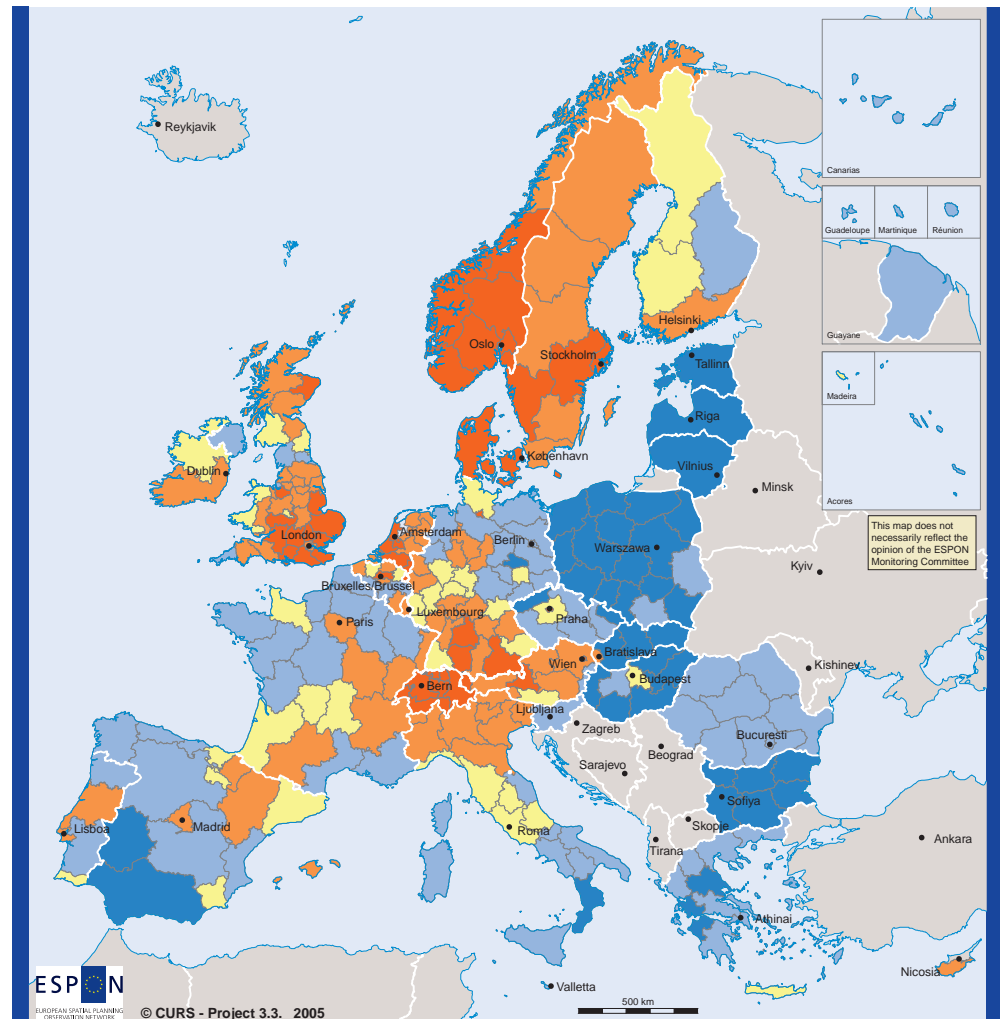
According to the Lisbon Agenda, the European Union shall become a knowledge-based and

the most competitive economic region of the world by 2010. With regard to the economic dimension of the Lisbon Agenda, the progress of its realisation is measured e.g. in terms of labour productivity, employment rates, R&D intensity and the regional level of education.

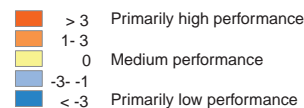
Generally speaking, northern and central Europe tend to be more advanced in terms of Lisbon Agenda achievements than the regions of southern and eastern Europe. Besides these large scale differences further disparities can be observed within individual countries. In many countries the capital regions and other regions with major metropolises differ considerably from their surrounding regions. Especially in eastern Europe the capitals can be considered as national economic lighthouses.

With respect to the economic dimension of the Lisbon Agenda, Germany belongs to the

Economic Lisbon indicators



Number of indicators in the upper quartile minus
number of indicators in the lower quartile



with use of the following indicators:

1. Gross Domestic Product in purchasing power standards per inhabitant in 2000.
2. Labour productivity: Gross domestic product as purchasing power parities person employed in 2000 *
3. Employment rate: employed persons aged 15-64 as a share of total population of the same age Group in 2000 *
4. Employment rate of older workers: employed persons aged 55-64 as a share of total population of the same age group in 2000 *
5. GERD: gross domestic expenditure on research and development as a share of GDP in 2000 **
6. Dispersion of regional unemployment rates: coefficient of variation of NUTS 3 level unemployment rates within each NUTS 2 region 2003 ***
7. Long-term unemployment rate: persons unemployed for more than 12 months as a share of the total labour force in 2000 ****

* NUTS1 for FR Département d'Outre Mer and DE Brandenburg

** NUTS1 for FR Département d'Outre Mer and DE Brandenburg; IT Bolzano-Bozen, Trento disaggregated from old NUTS2 regions;

UK disaggregated from NUTS1; DE, CH, IE, NO, SE on the national level; no data for Ceuta & Melilla

*** GR and PT: regional variations on NUTS0 level

**** NUTS1 for FR Département d'Outre Mer and DE Brandenburg; CH & NO on the national level; no data for Ceuta & Melilla

© EuroGeographics Association for administrative boundaries
Regional level: NUTS 2

Origin of data: Eurostat, national statistical offices

Source: ESPON database

leading countries of Europe. The economically strong regions of south Germany are at the top of the European regions when it comes to competitiveness and innovative abilities. Further innovative centres are located outside the German metropolitan regions.

Yet, not all German regions participate equally in the Lisbon process. Parts of northern and eastern Germany are only ranked above or even below the European average. The European comparison also stresses the German

and especially the eastern German labour market problems. In many parts of the country the share of long-term unemployment is above the European average.

The development towards an information society in this context is closely related to the Lisbon Agenda. Together with the Scandinavian countries, some German regions again are among the top European regions. In Germany this holds especially for the metropolises and the south German regions. In Germany

the disparities with regard to the information society seem to be relatively low. Nearly all regions participate in respective developments, while at the European level considerable development disparities can be observed.

Top of the second line – Germany's economic centres in Europe

European capitals and metropolises stand out concerning competitiveness, innovativeness and economic performance. They hold the economic centres of decision-making and represent internationally advanced producer service locations. London and Paris are global hubs of the European economic centres both in terms of their size and their economic functions.

While most European countries only have one or two locations which are economically important for Europe, the German economic structure is outstanding regarding the considerably larger number of important economic centres. Frankfurt/Main, Munich, Düsseldorf and Hamburg are economic centres of European importance and as such comparable to numerous European capitals. Berlin holds a specific situation in Germany as well as in Europe, since it cannot yet realise its potentials in terms of a corresponding economic performance.

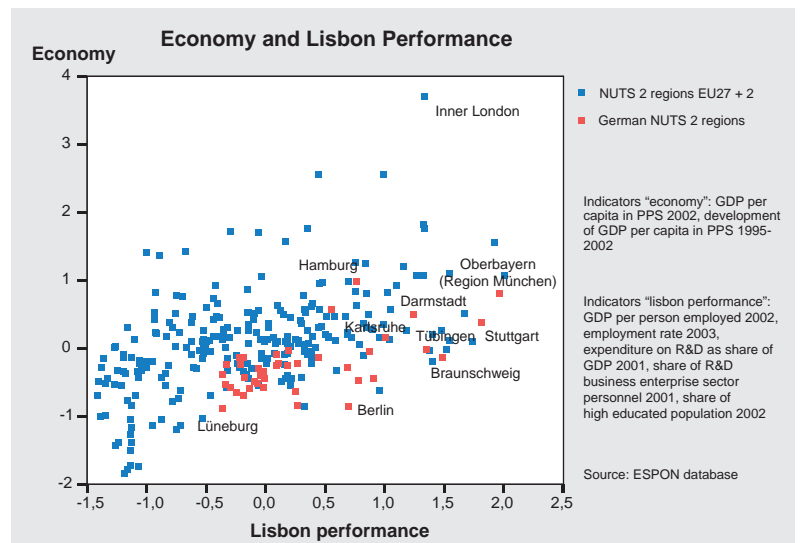
The variety of highly developed locations with a corresponding labour division of these centres, however, affects the placement of the leading German cities: They cannot compete with Paris and London, which are the leading European economic centres. Yet, the placement of several centres right in the next line behind Paris and London is unique in Europe.

High-tech made in Germany

Especially for the regions centrally located in Europe, high-technology industries are most important. Southeast France, the Paris basin, Denmark, the south of Sweden, the Czech Republic as well as parts of Austria and Slovakia are part of these regions. Besides these centrally located regions, the Finnish economy is also particularly dominated by high-technology industries. Apart of these spatial priorities of the high-technology industries, there are a few other regional locations with a domination of such industries.

In hardly any other European country the share of the high-technology industry value added is as high as in many regions of Ger-

many. Whereas in other countries these industries often concentrate in the neighbourhood of capitals, in Germany they can be basically found all over the country. With a few exceptions, this holds for nearly all west German regions. There is not any north-south division of Germany at the European level of comparison. In eastern Germany, Saxony, and especially its capital Dresden, is a leading high-technology location. In addition, high-technology industries usually have a relatively high intensity of R&D activities, which in turn contribute to the high innovative potential of German regions.



Net infrastructure for transport and communication

Depending on capacity, connectivity, speed and other similar characteristics, the quality of transport and communication infrastructure determines the relative quality of locations. The infrastructure thus represents a location factor and influences the regional competitiveness. Usually, accessibility indicators are utilised for measuring location factors building upon the transport infrastructure. Transport infrastructure investments affect location qualities and thus can cause changes of spatial development patterns. In Priority 4 the Territorial Agenda as well stresses mobility and accessibility as principal preconditions for a regional economic development.

High level of infrastructure supply with considerable disparities

Germany has the highest accessibility potentials of all European regions. Especially the regions along the Rhine and in the Ruhr area

achieve top placements in terms of their transport infrastructure location. At the same time, considerable accessibility potential disparities can be observed across Germany. Depending on the chosen indicator and the transport mode the European periphery can even be found in Germany. This holds for instance for many east German regions with regard to road and rail accessibility while many regions located in between major airports are affected in terms of air accessibility. With regard to the communication infrastructure supply, the German regions are only placed in the upper (west Germany) and lower (east Germany) middle respectively. This is mostly due to the relatively late provision and use of mobile phones and broadband internet accesses.

Germany only partially takes advantage of its favourable location

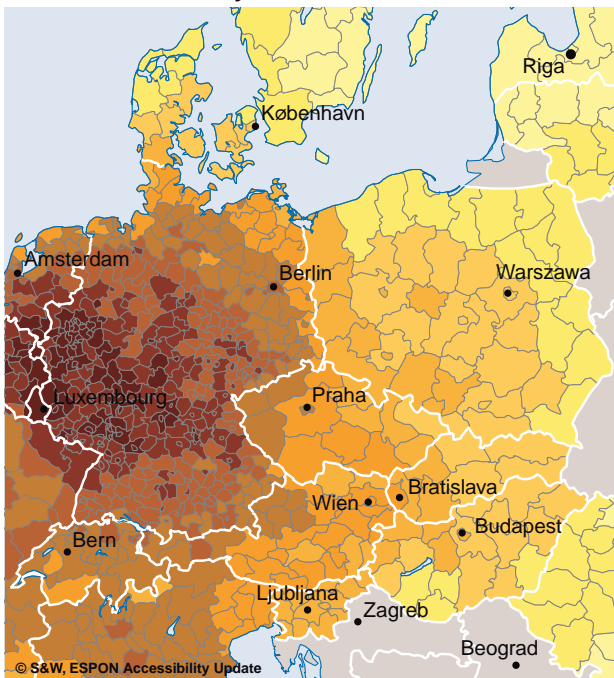
In most German regions the economic performance is not as high as suggested by their accessibility potentials. Thus, many regions do not fully utilise their location potential. For many west German regions this relation can be attributed to the above-average accessibility potentials. Obviously, additional acces-

sibility does not seem to add to the additional economic performance once a specific potential accessibility is achieved. For east German and old industrial regions the economic restructuring process might be a reason for this relation. During such processes, accessibility seems to be less determining for the economic performance than in regions not undergoing a restructuring process. The Scandinavian regions even show that high accessibility is not necessarily a precondition for a good economic performance. These regions obviously manage to compensate accessibility deficits by other location factors.

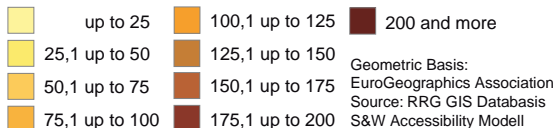
Germany is a winner of European transport infrastructure policies

German regions strongly benefit from the development of trans-European transport networks. All German regions benefit in relative terms and especially in terms of absolute additional income. Even the development of transport infrastructure in the eastern European neighbouring countries is beneficial for German regions and especially for the east German regions. In absolute income terms these regions benefit even more than the regions in

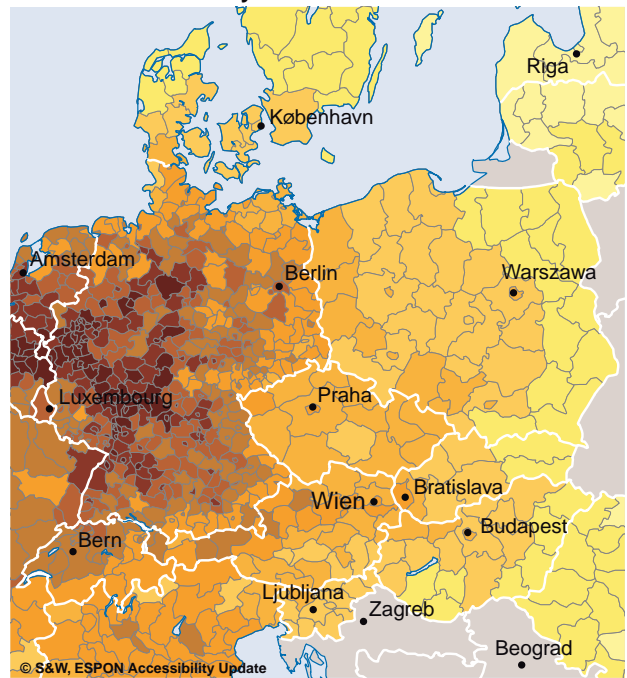
Potential accessibility 2006: Road



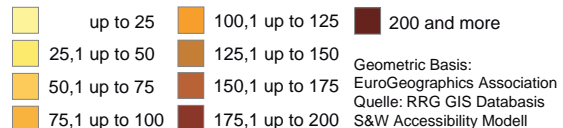
Potential accessibility (EU27 = 100)



Potential accessibility 2006: Rail

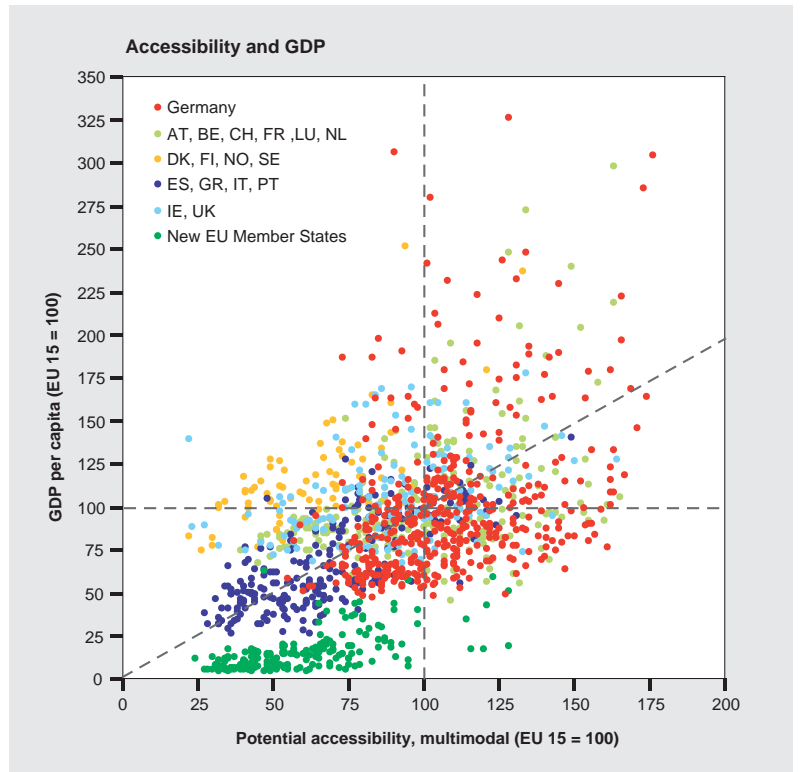


Potential accessibility (EU27 = 100)



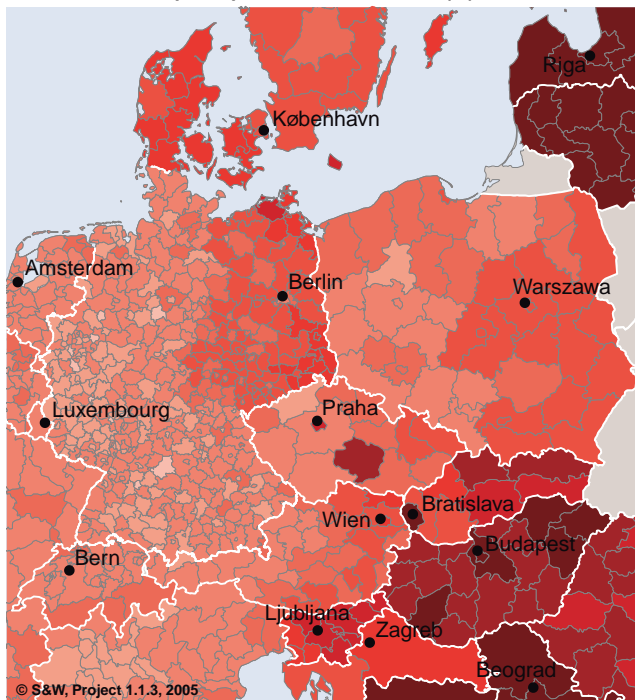
which the transport infrastructure is actually implemented.

Due to their location potential and regional economic effects resulting from further infrastructure developments, the German regions are in a favourable position. However, the high level of additional income of German and other centrally located regions in the old EU member states as a result of further infrastructure investments requires a deepened discussion on territorial cohesion and related policies.

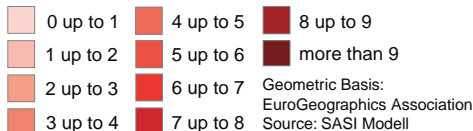


Effects of the EU enlargement and of transport policies on GDP

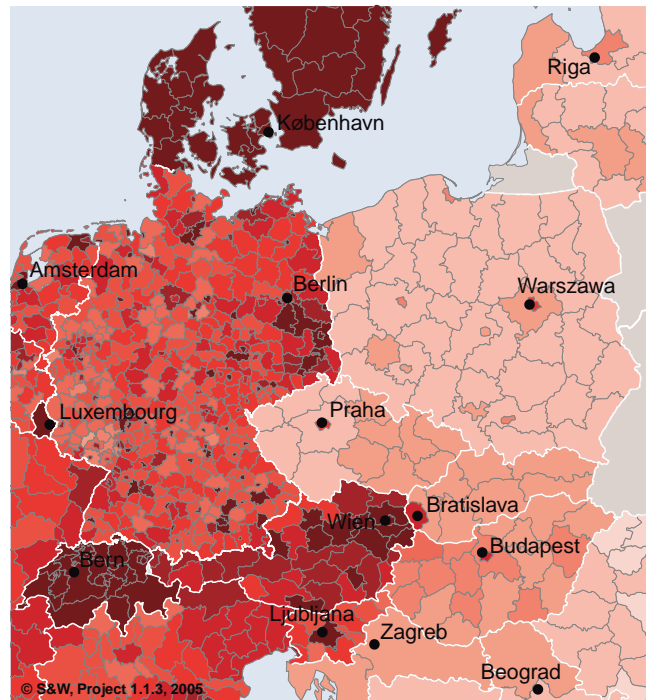
Scenario B5: GDP per capita, relative difference (%) 2031



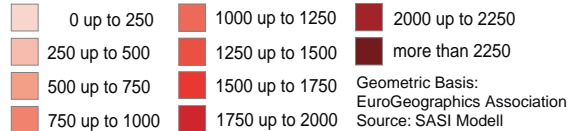
Relative difference to reference scenario 2031 in %



Scenario B5: GDP per capita, absolute difference (%) 2031



Absolute difference to reference scenario 2031 (Euro of 2005)



Demographic trends and perspectives

Currently, about 490 million people live in the EU. They account for roughly 7% of the world's population. Yet, this share will decrease. In the 1960s, the population in the EU has grown strongly, however, this growth has declined since the 1970s. Already since the 1990s, the population has even started to decrease occasionally. Simultaneously, the European population has become older (Eurostat 2007³). In the light of the worldwide population growth, global discussions often focus on scarce resources and their effects on the distributional justice. In contrast to this, European discussions more often centre on issues of services of general interest, justice between generations and migration.

Migration dominates the overall population development – Germany experiences contrasting developments

Some European regions experienced an increasing population between 1990 and 2000, which was due to a positive migratory balance. These regions are mostly located in the European core area, whereas the population has been decreasing in peripheral regions. The latter refers to the majority of eastern European regions outside their urban centres, to Scandinavia, large parts of Spain and Portugal as well as to the majority of the east German regions. In Italy, migration to the economically prosperous north confronts the natural population development and supports a spatially balanced development. In the West European countries the metropolitan regions usually experience an above-average population growth as a result of migration (Spain, Norway, Sweden, Finland). Due to the spatially small delimitation of regions, for several eastern European capitals as well as Berlin suburbanisation tendencies can be observed.

Consequently, migration dominates the local population development leading to growing and shrinking regions in the spatial neighbourhood. The German population development is similarly characterised by such duality. Most east German regions are shrinking, while the population in the west are stagnating or even growing. However, within east Germany as well both growth and shrinkage occur next to each other. A growing population can be observed for urban regions such as the metropolitan areas of Berlin and the Saxon Triangle. Yet, east Germany in general is among those Eu-

ropean regions which are most strongly affected by a shrinking population. This is the result of a low fertility rate, a relatively low in-migration and a considerable out-migration to west Germany. In contrast, the west German regions are among those European regions with the highest population growth. This development is due to internal and external in-migration. These aspects account for a large-scale duality with regard to the population development in Germany, which represents extremes in Europe. This cannot be found in any other European country to this extent.

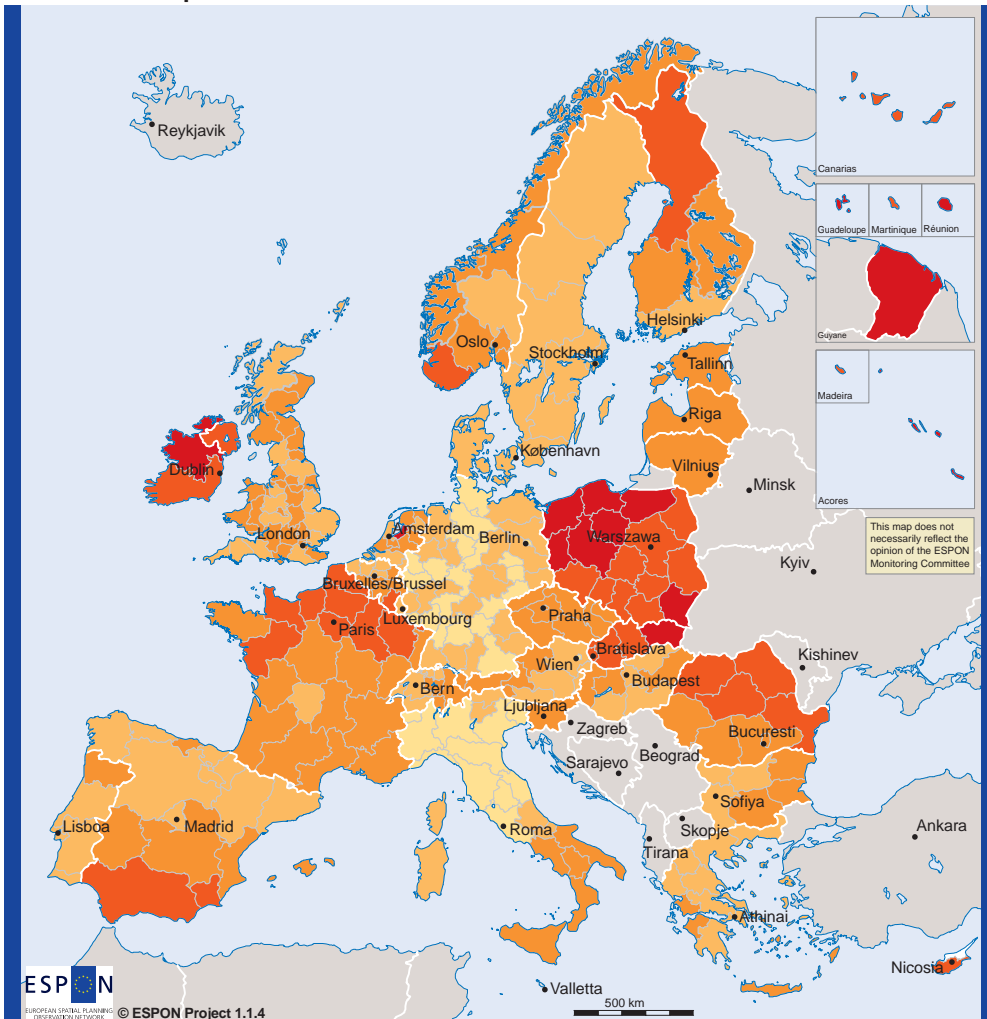
This duality is certainly the result of past events: During the 1990s, Germany was the main destination for immigrants. Every year roughly 678,000 migrants moved to Germany, one fifth of them coming from the European Union and some 200,000 migrants per year belonging to the group of the German World War emigrants. In addition, immigration per inhabitant was among the highest in Europe. In terms of total figures, Italy and England also were preferred immigration destinations with total immigrant numbers roughly equal to the German World War emigrants. In relation to their inhabitants, Luxembourg, Switzerland, Portugal and Ireland also experienced considerable immigration. From a regional perspective, the dominating urban areas, especially capital cities, and their surroundings were the most favoured destinations of immigrants.

Europe is ageing and labour supply becomes scarce

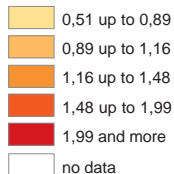
Despite considerable immigrations, the European population as a whole is ageing. In 2000, the ageing process in Germany and its regions was at European average. A particularly high share of the population aged 65 years and above is registered for southern Europe. Population ageing is an exceptionally persistent process which is difficult to stop or even to reverse. Due to low fertility rates, the whole of Europe will face a sinking labour supply in the medium term. Even an intensified immigration can only diminish this process, it will, however, not be possible to avoid it. In order to keep the European population of the former EU 15 constant by 2050, immigration would have to amount to some 74 million people. For the whole of the ESPON territory the respective figure amounts to more than 100 million people. If one aim would be to achieve a constant relation of the labour force to the pen-

³ Eurostat (2007): Europe in figures – Eurostat Yearbook 2006/07. Luxembourg.

Labour force replacement ratio in 2000



Population aged between 10 and 20 years/
population aged between 55 and 65 years, 2000



Geometric Basis: EuroGeographics Association
Regional level: NUTS 2

Origin of data: Eurostat,
Norway and Switzerland: national statistical offices

Source: ESPON database

sioned population, immigration would have to amount to 405 million people in the EU 15 and 542 million people on the ESPON territory. The latter figures are highly unlikely (de Abreu 2007⁴).

With respect to the labour market this means that the overall labour supply will be most critical between 2015 and 2030. Afterwards the

labour supply will stabilise again. So far, the consequences of this restriction are not clarified, since other factors need to be considered as well. For instance the increasing productivity could partially compensate the low labour supply. Furthermore, it is expected that in the face of the increasing life expectancy the population will be longer involved in working processes.

⁴ De Abreu (2008): Planning for decline: The Demographic Imperative. In: Faludi, A. (Edit.) (2008) European Spatial Research and Planning. Cambridge MA: Lincoln Institute of Land Policy.

State and perspective of rural areas

Usually, rural areas are much less densely populated than urban areas. Despite continuous urbanisation, settlement structures with villages and small cities still dominate. The countryside is characterised by agriculture and forestry, even though they have not dominated the economic structure for quite a while. Rural areas are actually located in economically strong districts in the surrounding of urban agglomerations as well as in areas with highly competitive and extensive agriculture and peripheral areas without agglomerations. The delimitation of rural areas thus is not only hampered by the increasingly difficult differentiation between cities and villages but also by the variety of rural areas.

This variety is accompanied by a changing role of rural areas in relation to cities and metropolises. Their connections as well as their functions differ and have become more complex. The exchange of people, capital, goods, technologies and information has become more intensive. Often the small and medium-sized cities take over a specific role as centres in rural areas.

German rural areas are relatively urban

An analysis of European rural areas swiftly points out that the understanding of what is to be characterised as rural considerably differs between the European countries. Therefore, quite different national measures are applied on the delimitation of rural areas. This can be illustrated by comparing population densities of nationally delimited rural areas: Rural areas in England and the Netherlands are quite densely populated with mostly more than 150 inhabitants per km². In contrast to this, even urban regions in Scandinavia rarely have such high population densities. Similarly to Spain and Greece, Scandinavian rural areas have a very low population density.

Large parts of the German rural regions are rather densely populated as well. Only in parts of North Brandenburg, Mecklenburg-Western Pomerania, Saxony-Anhalt and Lower Saxony some rural regions can be found which have less than 50 inhabitants per km². The European regions with the lowest population density are located in Finland and have partially less than five inhabitants per km².

The figure "Urban-rural typology" compares European rural and urban regions with regard

to their urbanity and land use. In contrast to the previous conclusions, a European perspective is now applied. Complementing the national perspective, this European categorisation leads to an even higher number of German regions which are considered to be urban. German rural areas are furthermore characterised by intensive land use. This can be put down to a high share of areas covered by buildings as well as to an intensive agricultural use. Relatively large rural areas are mainly located in Franconia, Mecklenburg-Western Pomerania, Brandenburg, Schleswig-Holstein and parts of Lower Saxony. Similarly, only a few other countries located in the European centre, such as Benelux and England, are as urban as Germany. The other neighbouring countries of Germany (France, Austria, Switzerland, Poland, the Czech Republic and Denmark) are considered to be much more rural than the majority of the German regions.

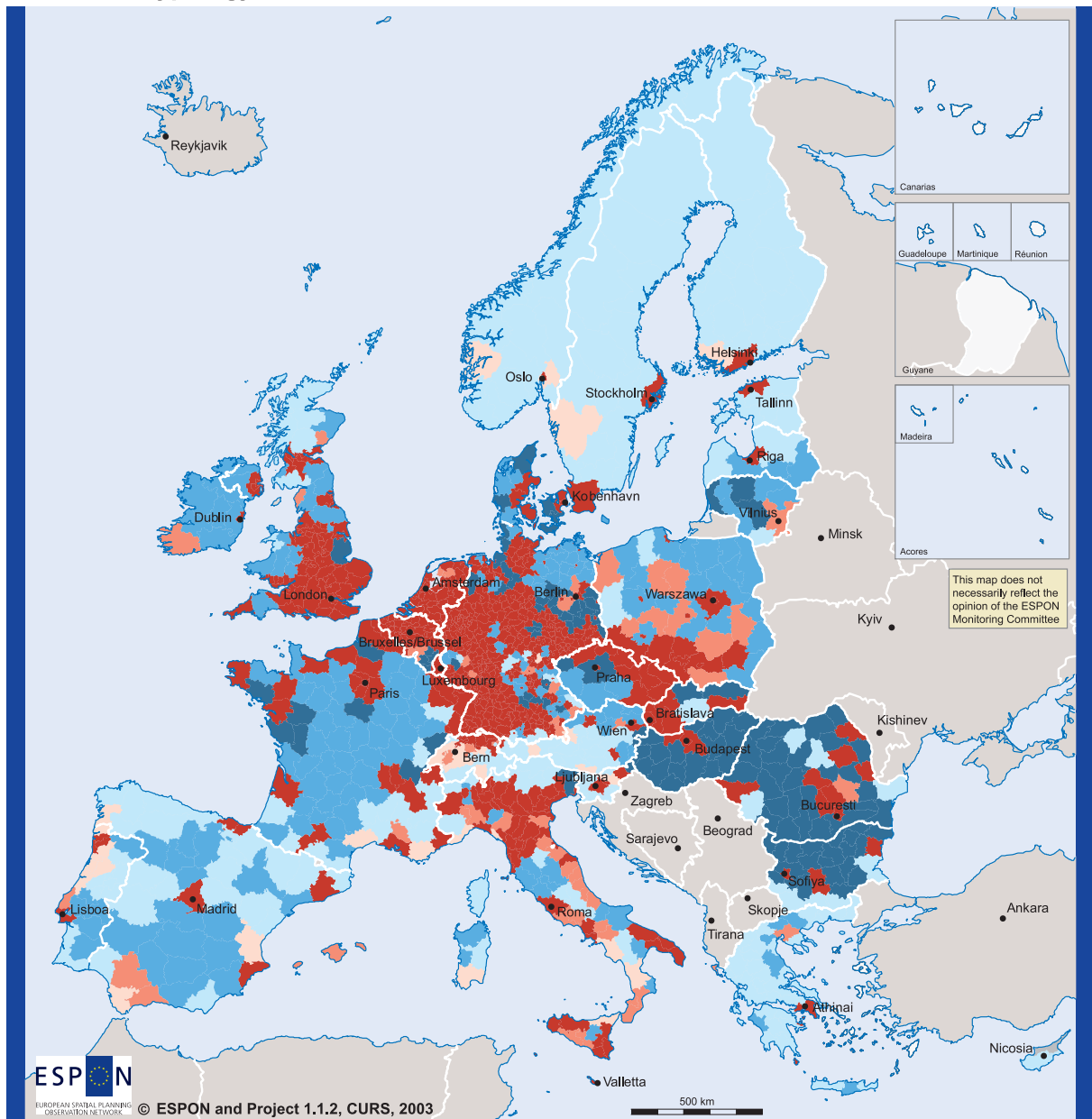
The European agricultural policy favours rural areas in Germany

Although the Common Agricultural Policy (CAP) of the European Union does not directly aim at the development of rural areas it considerably influences these areas' development. Between 2000 and 2006, roughly 80% of CAP funds were allocated within the first pillar of the CAP. This pillar mainly comprises measures to stabilise the prices for agricultural products, direct payments and quotas affecting the agricultural supply. The importance of the CAP differs between the EU member states and strongly depends on the role that the agricultural sector holds in a country: The share of people employed in the primary sector varies from less than 5% in large parts of central Europe including Germany to more than 25% in eastern Poland and parts of Romania.

In Europe, the funds of the first pillar are mostly allocated to regions with a high GDP per capita, low unemployment and above-average population growth. These payments are high in regions which are well accessible and in which large farms dominate. A considerable share of these payments is allocated to urban regions. Thus, the first pillar does not support European territorial cohesion.

In Germany, however, especially the economically weaker regions in north and east Germany benefit from the first pillar. In these regions, the payments per person employed in agriculture are above-average. The coastal areas as

Urban-rural typology



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

- High urban influence, high human intervention
- High urban influence, medium human intervention
- High urban influence, low human intervention
- Low urban influence, high human intervention
- Low urban influence, medium human intervention
- Low urban influence, low human intervention
- no data

The criteria for urban influence:

- Population density above the average (107 inhabitants/km² in EU25+4)
- And/or at least a European level functional urban area (based on typology made by ESPON Action 1.1.1)

Degree of human intervention is estimated through the average shares of land covers (in EU23+3, no data on Cyprus, Malta and Norway):

- High human intervention: at least the share of artificial surfaces above average (3,48%)
- Medium human intervention: at least the share of agricultural land above average (50,36%)
- Low human intervention: only the share of residual land use above average (46,16%)

© EuroGeographics Association for administrative boundaries
 Regional level: NUTS 3
 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
 Cyprus: Data for government controlled areas only
Source: ESPON database

well as parts of Mecklenburg-Western Pomerania and Saxony-Anhalt and the Münsterland even were among the European regions which received the highest respective support per labour force in 1999. This is mainly due to the large farm structures in these regions, which in particular benefit from the first pillar's support structure. Compared with the European trend, this policy therefore contributes to territorial cohesion in Germany.

Rural regions do not need to be marginalised

With regard to their future perspectives it can be stated, that European rural areas face considerable challenges. In the European comparison, the German rural regions, however, have relatively good development perspectives. They are either located in spatial neighbourhood to economically strong urban centres, which are also beneficial for the rural areas, or they have efficient agricultural structures or significant tourism potentials at their disposal. The danger of marginalisation is therefore rather low in the European comparison, although it can not be ruled out. From a national point of view, the danger that already existing economic disparities increase is considerable for some rural regions.

Environment, natural heritage and risk management

With regard to the natural heritage of Europe, the term nature first needs to be explained. It is actually difficult to find really untouched natural areas in Europe, since humans have nearly everywhere intervened in natural developments for several centuries and have thus continuously changed the environment.

Europe is dominated by cultural landscapes

As a consequence we mainly find cultural landscapes in Europe. For instance the Lüneburger Heide would not exist without human intervention; it is such a cultural landscape. Cultural landscapes typically differ considerably from the potential endogenous flora and fauna. Europe has gained a tremendous abundance of species mainly as a result of several centuries of agriculture and forestry and a moderate climate. The natural heritage therefore also is a cultural heritage. Irrespective of being natural or untouched, large continuous natural areas become smaller and more rare in Europe. Europe's natural heritage is increasingly endangered. This is the outcome of the development

of modern agricultural industrial methods and of the extending human settlement activities.

Cutting up natural areas increasingly endangers Europe's nature

Natural areas become smaller and disintegrate into smaller fragments. Possibly this would not be so dramatic if not many species needed large continuous areas. Fragmentation appears as a barrier for many plant and animal species. This can result in lacking new genetic material for the populations and it may affect their behaviour. Therefore, the degree of fragmentation of natural areas can be used as an indicator for biodiversity potentials and problems.

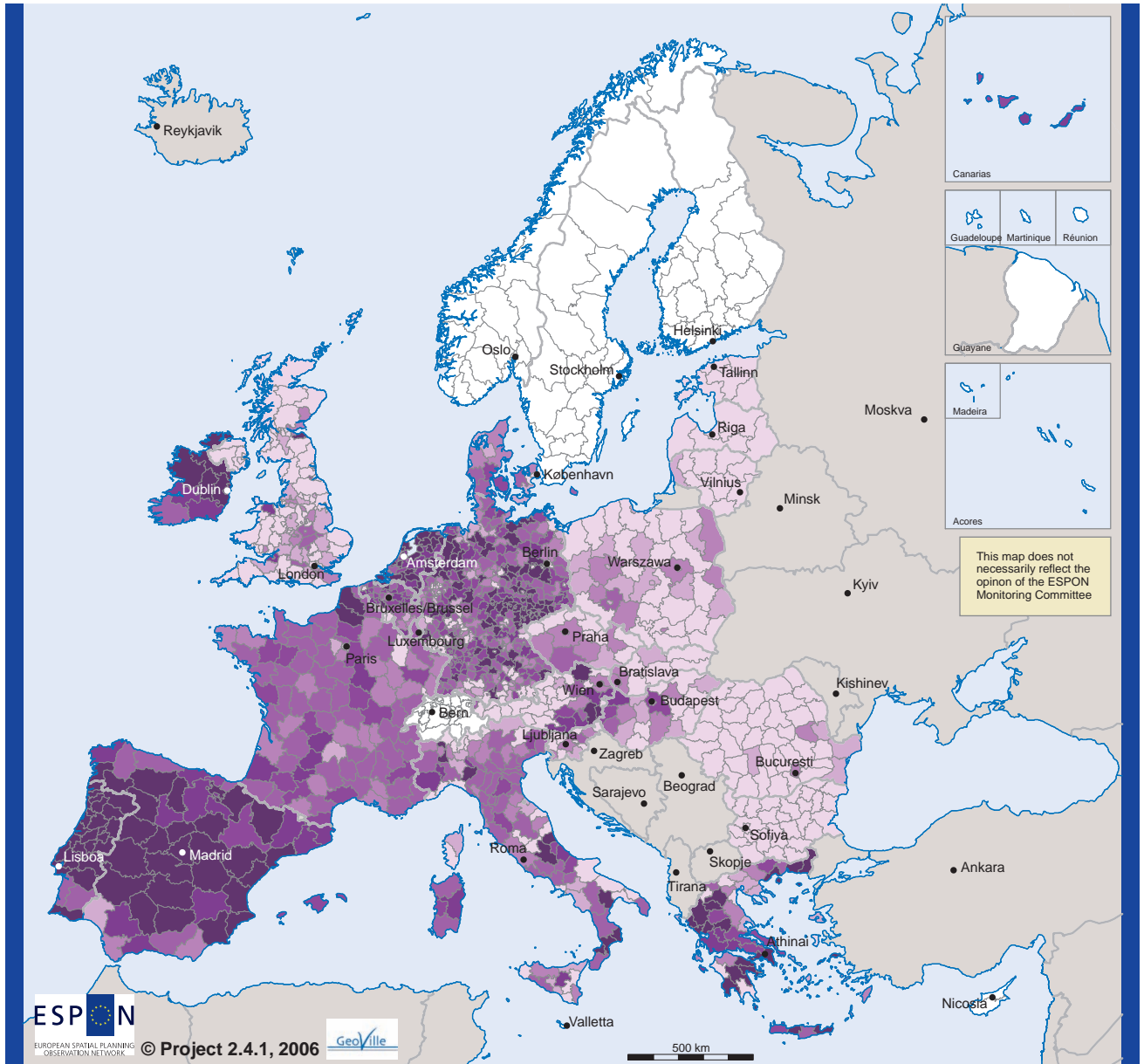
Europe's least fragmented natural areas are mostly located in the high mountains and low mountain ranges. Larger natural areas can thus be found today in areas difficult to be settled. The coastal areas are those areas the most affected by fragmentation.

In Germany a considerable degree of fragmentation can be observed along the coastlines, too. Other areas with high fragmentation are the agglomeration areas of large cities. The (old) industrial regions Rhine-Ruhr, Rhine-Main, Stuttgart as well as the region in and around Munich are affected as well. A few large but not fragmented areas can be found in the low mountain ranges such as the Harz, Sauerland, Taunus and in the high mountains of the Alps. In Germany regions with natural and semi-natural areas of more than 50% of the total area are hardly found. A few of them are located in the central areas of the low mountain ranges and in the Alps. Thus, Germany can be considered to be highly fragmented and affected by human interventions.

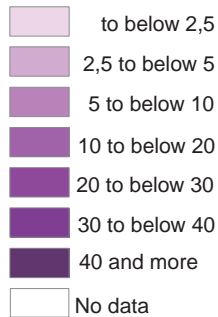
Europe's settlement structure extends wherever possible

Settlement activities are one of the major reasons for the fragmentation and the disappearance of natural areas and the abundance of species in Europe. In the most densely settled regions the share of the settlement area accounts for 50 to 100% of their area. These regions are either located in the European Pentagon area or in the surrounding of large agglomerations. A particularly high concentration of such densely settled areas can be found in Belgium. The regions with the lowest settlement density are located in the European mountain ranges. This indicates that humans tend to settle in easily accessible regions.

Increase of commercial land use



Increase of commercial land use 1990 to 2000 in %



Geometric Basis: EuroGeographics Association
 Regional level: NUTS 3
 Origin of data: CORINE changes 1990-2000:
 European Environment Agency
 Regional level: NUTS 3

Source: ESPON Databasis

CORINE changes 1990-2000 do not exist for Cyprus, Finland, Malta, Norway, Sweden, Switzerland and the remote areas of France and Portugal.

In comparison with other European countries, Germany has a high share of regions with an average to high settlement density. Not surprisingly these regions stretch along the River Rhine, they include the Ruhr area, the Rhine-Main area as well as the large cities and industrial regions. Only a few German areas belong to the category with the lowest settlement density. These are located in the Eifel, the Hunsrück and in Mecklenburg-Western Pomerania.

A review of land use dynamics between 1990 and 2000 shows that the east-west difference is a predominating pattern of growing land use. The core area of the EU has been further urbanised during this decade due to urban growth and the increase of the commercial land use. It is, however, amazing that this trend can also be observed for regions with a declining population.

In Germany only a few regions are among those regions with very low growth rates. They are located in the Saarland, in southern Bavaria and around Munich, in parts of the Ruhr area as well as in some low mountain range areas (Taunus, Harz) and south Thuringia. In all other German regions urban and commercial areas have increased. The regions with the highest growth rates are found in and around Berlin, in the northwest of Lower Saxony, in northern Thuringia and in Saxony as well as along the River Rhine and in and around Stuttgart.

Future perspectives

The European spatial scenarios indicate for Germany a challenge in balancing an increasing concentration of economic growth in some metropolitan regions and a lower growth in the remainder of the country. Three selected ESPON scenarios allow some insights into the spectrum of possible futures:

Trend scenario: Germany's spatial balance continues

The trend scenario describes the future showing a continuation of current developments. Their spatial consequences result in major metropolitan regions in the European core area and increasing disparities between the European centre and periphery. The European core area, however, in this scenario grows along the important transport axes including some of the more peripheral metropolises. Therefore, large parts of Germany will belong

to the European economic core area. This implies economic growth for the German metropolitan regions, which, furthermore, will grow in terms of their European importance. The economic decline in old industrialised regions, such as the Ruhr area, the Saarland or east Germany, will be reduced although not avoided by the extension of the European core area. Beyond the spatial limits of this enlarged European centre, the risk of economic decline and marginalisation of rural areas increases.

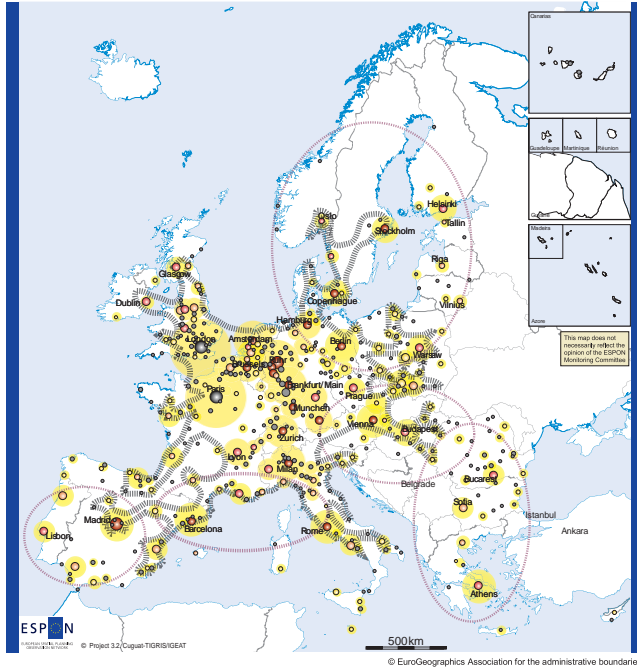
Competitiveness scenario: growing disparities in Germany

The competitiveness scenario assumes a powerful Lisbon policy and a strong influence of global competition. In the long run, this is likely to induce economic and financial losses. This is especially indicated by the growing disparities between metropolitan, rural and peripheral regions. The overall concentration in the European economic centre and some metropolitan regions will be stronger than in the trend scenario. The economic core area, however, will constitute only one part of today's Pentagon area while simultaneously extending along a few important transport axes, e.g. towards Vienna and Copenhagen. This will result in a considerably stronger spatial concentration in Germany as well as compared to the trend scenario. Economic growth will largely concentrate in the west German metropolitan regions and Berlin, whereas large parts of the country will be challenged by economic decline and increasing marginalisation.

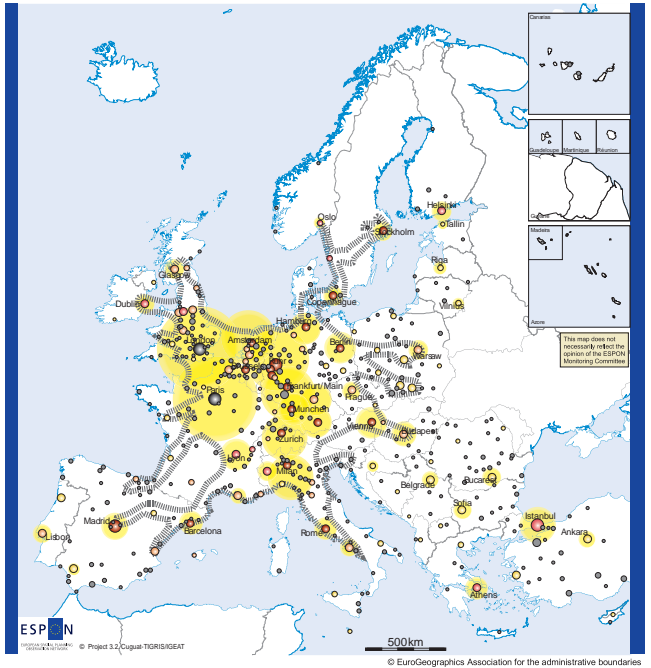
Cohesion scenario: a mixed picture for Germany

The cohesion scenario is based on a strong European cohesion policy which is complemented by further balancing measures. In this case the overall economic development will be weak resulting in a disadvantaged position of Europe in the worldwide competition. The spatial consequences are visible by a considerable enlargement of Europe's economic centre. This centre will include a large number of peripheral cities comprising most parts of Germany. For rural regions the risk of marginalisation will be relatively low. In Germany only a few parts of Saxony-Anhalt, Brandenburg and Mecklenburg-Western Pomerania will be concerned. From a European perspective, the regions with marginalisation risks will be largely identical with those of the trend scenario, although the areas concerned will be smaller

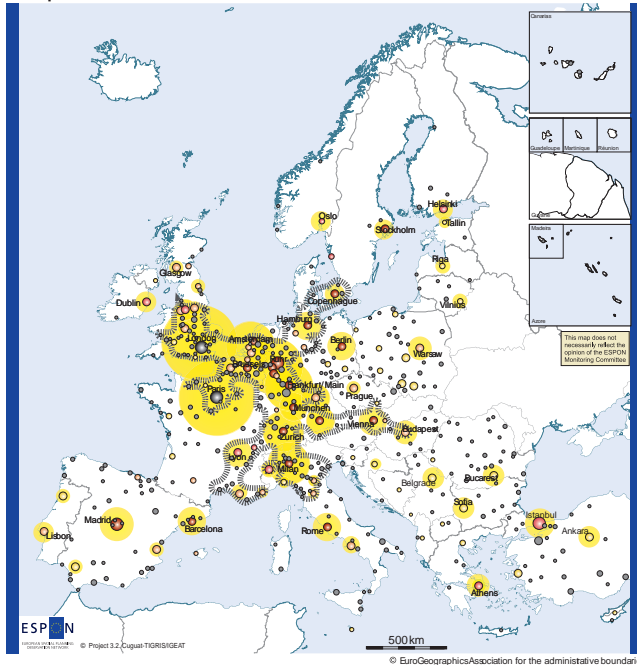
Cohesion-Oriented Scenario



Trend Scenario



Competitiveness-Oriented Scenario



Urban typology:

- Global City
- European Engine
- Strong MEGA
- Potential MEGA
- Weak MEGA
- Regional/Local City

- Attraction and polarisation potential of metropolitan areas
- Area of concentration of flows and activities
- Emerging peripheral integrated zone

and their marginalisation risk will have a lower intensity.

Spectrum of possible economic developments

Neither of the proposed scenarios will exactly occur as described. Their comparison, however, indicates that economic and demographic dynamics will concentrate in a few central areas if the competitiveness scenario is applied while the Pentagon is expected to enlarge ex-

tensively into all different directions in case of the cohesion scenario.

The economic winners of the trend scenario will especially be central and eastern Europe. In Germany the winners will be located in parts of Bavaria and Thuringia. The developments resulting from the competitiveness scenario will be beneficial for the metropolitan regions in Southwest Europe; in Germany only the Cologne conurbation will benefit.

The cohesion scenario indicates the northern periphery as the only winner.

The scenarios also differ with regard to the level of economic growth in Europe. It can be expected that the overall economic growth will be higher for the competitiveness scenario than for the other scenarios. This higher growth will be accompanied by a higher spatial concentration.

For the trend scenario the risk of economic decline especially exists for the regions in the European periphery. In this case, no German regions are concerned. The competitiveness scenario reveals such risks for larger areas in Europe including centrally located regions. In Germany this holds for many areas east of the line drawn by Hamburg-Cologne-Frankfurt/Main-Munich. In case of the cohesion scenario, only very few areas in western Europe will be affected by marginalisation. Yet, according to this scenario, economic decline will endanger eastern Germany, especially regions in Saxony-Anhalt, Brandenburg and Mecklenburg-Western Pomerania.

German regions are exposed to natural and technological hazards

Natural disasters are often assigned to Africa (draught), North America (tornados) or Asia (tsunamis). But also Europe is a continent with mutual natural hazards, even if the degree of occurrence is often less ultimate. With regard to natural hazards the potential is relatively high in the southwest and south of Germany. This is mostly due to the flood potential.

Germany and its neighbouring countries are also faced with a high technological hazard potential. This is the result of the strong industrialisation. Both types of hazard potentials occur in Europe, and especially in Germany, in partially highly concentrated settlement structures. This further increases the risk potential.

Conclusions - Germany in relation to the Territorial Agenda

The project "Germany in Europe", aimed at complementing the European point of view of the ESPON projects by a German perspective in order to gain new insights into the results developed by the ESPON 2006 Programme. The thematic context of this project was provided by the Territorial Agenda of the EU agreed upon in May 2007. Therefore, in the following, the conclusions drawn for Germany are related

to the priorities of the Territorial Agenda.

As regards Priority 1: polycentric development and innovation through networking of city regions and cities

The first priority of the Territorial Agenda stresses the role of networks in a polycentric territory as a precondition for success in the global competition. The results of the ESPON 2006 Programme indicate a functional polycentricity for Germany. This is considered to be the result of a relatively balanced distribution of the German cities in terms of their size. This situation is favourable for the Territorial Agenda's request of polycentric networks between regional centres in order "to ensure their added value for other cities in rural and peripheral areas as well as for areas with specific geographic challenges and needs".

Since Germany is characterised by functionally specialised cities, it does not have any metropolis which is of equal weight to Paris or London. There are, however, several German cities which are internationally important and represent vital European economic centres of the "second row". Their functional specialisation can be considered to be favourable for cooperation according to the Territorial Agenda.

The perspectives for the future European spatial development indicate that the demanded polycentric development is not to be regarded as a matter of course. Since cities and metropolises are important economic growth poles, a growing concentration of social and economic development in these regions is to be expected. Due to the functional polycentricity of the German metropolitan regions, however, it can be expected that Germany can also profit from a balanced spatial structure in the future.

As regards Priority 2: new forms of partnership and territorial governance between urban and rural areas

The second priority of the Territorial Agenda focuses on cooperation and networks between urban and rural areas, whereas the results of the ESPON 2006 Programme primarily provide analyses of these types of regions while neglecting their mutual relations.

As compared to other European countries, Germany has a particularly tight urban network. Due to the good accessibility of cities they are always close to each other. In addition, the large majority of regions, which are rural from a German perspective, are relative-

ly densely populated. The support of partnerships between urban and rural regions aims at ensuring an integrated development of rural regions avoiding that they fall behind. Since the German regions have less rural characteristics than those of other European countries, they tend to be less endangered by marginalisation. A consolidation of the already existing disparities, however, cannot be ruled out. Policies at all spatial levels will be challenged by these dangers.

As regards Priority 3: promotion of regional clusters of competitiveness and innovation in Europe

With regard to the realisation of the Lisbon Strategy, Germany is one of the leading European countries. This, however, does not hold for all German regions, especially not for several regions in northern and eastern Germany. The economically strong regions are among the top European regions as regards competitiveness and innovation of their enterprises.

This placement is in line with the priority of the Territorial Agenda aiming at stronger profiles and specialisations of urban regions. This is mirrored by the functional specialisation of the German economic centres as well as by the role the high-technology industry plays for quite a number of German regions. No other country focuses on high-technology industries in a comparable way as Germany. Since these industries are usually connected with a high intensity of R&D activities, innovation is also strengthened in these regions.

A sustainable development of the innovative clusters strived for can only be achieved if the demographic change and its effects on the labour market are taken into account and if they are tackled. This implies specific political challenges: A considerable decrease of labour supply, especially of the highly qualified labour force, needs to be smoothed, since it is an important prerequisite for the development of competitive and innovative regional clusters in Europe.

As regards Priority 4: strengthening and extension of Trans-European Networks

The objectives of the Territorial Agenda with regard to Trans-European Networks concern three types of networks: transport, information and communication technology as well as energy networks.

The ESPON 2006 Programme primarily pro-

vides analyses of transport networks. Generally speaking, Germany is well equipped with transport infrastructure and has in some areas one of the best accessibility levels of Europe. Disparities are, however, considerable and, depending on the chosen indicator, the European periphery can already be found in Germany. The development of Trans-European Networks is not automatically accompanied by a simultaneous development of local and regional networks. This results in local accessibility deficits which can also be found in centrally located German areas.

According to the Territorial Agenda, mobility and accessibility are "key prerequisites for economic development". This leads to the question in how far realised accessibility potentials can be translated into economic power. The analyses point out that, compared to their accessibility potential, the majority of German regions falls behind in terms of their economic performance. For the respective west German regions, which have the highest European accessibility potentials, this might be explained by diminishing marginal utility stemming from high accessibility potentials.

Calculations for further trans-European transport infrastructure developments in the eastern European neighbouring countries indicate that in terms of economic performance Germany will benefit more than the regions in which the infrastructure is actually built.

As regards Priority 5: promotion of trans-European risk management including the impacts of climate change

Considering the cross-border effects of environmental risks and of the global climate change, the Territorial Agenda aims at "joint transregional and integrated approaches and strategies [which] should be further developed in order to face natural hazards, reduce and mitigate greenhouse gas emissions and adapt to climate change". Within the ESPON 2006 Programme the effects of climate change have hardly been tackled. However, they will be considered in the new ESPON 2013 Programme.

So far, ESPON analyses were conducted with regard to natural and technological risks. These analyses indicate that German regions as well including several agglomerations are affected by such risks. The technological risks, which Germany faces, are the result of the high industrialisation. Although many natural

risks could be reduced by implementing respective protective measures, there are still regions which face a relatively high flood risk. This is repeatedly shown by the floods of the major German rivers.

As regards Priority 6: strengthening ecological structures and cultural resources

According to the Territorial Agenda, specific spatial values and local characteristics shall be utilised for the individual development and be strengthened by an integrated spatial development policy. The use of ecological resources, however, is accompanied by a European wide danger for the natural heritage and variety. Human interventions in natural areas are

considerable and further increasing. Apart of a few mountain regions, this especially holds for Germany, which has a high settlement density and whose area is highly fragmented.

The sixth priority is very future-oriented. It therefore raises the question in how far the latest developments indicate a responsible use of natural resources. The analyses show that commercial and settlement areas continuously contribute to a steady urbanisation in Europe. Even in many regions with stagnating or decreasing population, additional area is utilised. This cannot be considered to be sustainable and requires political measures in order to harmonise the aims of this Priority with the actual use of the European territory.