

ESPON for Nordic Regions

ESPON for Nordic Regions

Breaking down selected results from the
ESPON programme for the use
in a Nordic regional context

Jörg Neubauer

Nordregio
P.O. Box 1658
SE-111 86 Stockholm, Sweden
nordregio@nordregio.se
www.nordregio.se
www.norden.org

Nordic co-operation

takes place among the countries of Denmark, Finland, Iceland, Norway and Sweden, as well as the autonomous territories of the Faroe Islands, Greenland and Åland.

The Nordic Council

is a forum for co-operation between the Nordic parliaments and governments. The Council consists of 87 parliamentarians from the Nordic countries. The Nordic Council takes policy initiatives and monitors Nordic co-operation. Founded in 1952.

The Nordic Council of Ministers

is a forum of co-operation between the Nordic governments. The Nordic Council of Ministers implements Nordic co-operation. The prime ministers have the overall responsibility. Its activities are co-ordinated by the Nordic ministers for co-operation, the Nordic Committee for co-operation and portfolio ministers. Founded in 1971.

Stockholm, Sweden
2007

Table of contents

Part A: ESPON and its relevance for Norden	11
What is ESPON?	11
Nordic relevant content in ESPON	17
Part B: Nordic breakdowns of selected results from the ESPON programme	21
Economic development and the Lisbon agenda	22
Polycentric development and urban-rural relations	26
Accessibility to markets and services	35
Demographic development and migration	41
Territorial futures and desirable spatial evolution	43
Integrated multi-scalar approaches	49
Part C: Quantitative tools in ESPON	55
Data Navigator	55
Hyper Atlas	55
Web-GIS	56
Territorial monitoring	56
Conclusions	57
Annex	69
European map complement	60
Nordic ESPON 2006 stakeholders	76
Recommended reading	77
Supplement	
Nordic Hyper Atlas (prototype)	

Figures

Main part

Figure A.1: The evolution of ESPON as a tool for European territorial policy making	11
Figure A.2: The organisational structure of ESPON 2006 and its Nordic stakes	13
Figure A.3: The 'ESPON 2006 space' and its partner geography	14
Figure B.1: Average Lisbon labour market performance by type of labour market	23
Figure B.2: Lisbon labour market performance of Nordic FUAs 2005	24
Figure B.3: Intra-urban structure and polycentric integration potential of Nordic FUAs	27
Figure B.4: Rank size of the demographic mass of the largest Nordic FUAs and PIAs in 2001	28
Figure B.5: The industrial mix of Nordic FUAs	29
Figure B.6: The urban and rural Norden by ESPON measures	34
Figure B.7: Change of European potential accessibility by rail and road 2001-2006	35
Figure B.8: Intra-Nordic multimodal accessibility of Nordic FUAs 2004	37
Figure B.9: Car travel times to major hospitals in the Nordic countries 2001	39
Figure B.10: Car travel times to facilities of higher education in the Nordic countries 2001	40
Figure B.11: Population change by main component in Nordic FUAs 1990-2005	42
Figure B.12: Long term public policy choices in European territorial development	43
Figure B.13: European competitiveness-oriented scenario – final image 2030	46
Figure B.14: European cohesion-oriented scenario – final image 2030	47
Figure B.15: Territorial impact of EU policies (CAP, TEN, SF) on Nordic regions	49
Figure B.16: Population density in Denmark at different territorial levels 2006 – 2007	51
Figure B.17: Multi-scalar synthesis of unemployment rates of Nordic labour markets 2005	53

European map complement

Figure C.1: Economic Lisbon performance	61
Figure C.2: Index of Lisbon/Gothenburg structural indicators for NUTS 4 (seutukunta) in Finland	62
Figure C.3: Degree of polycentricity of the urban system in ESPON countries	63
Figure C.4: Typology of Functional Urban Areas (FUAs)	64
Figure C.5: Typology of Metropolitan European Growth Areas (MEGAs)	65
Figure C.6: The ESPON urban-rural typology	67
Figure C.7: Potential multimodal accessibility, ESPON space = 100	68
Figure C.8: Access to hospitals (raster cells), EU27+2=100	69
Figure C.9: Accessibility to facilities of higher education (raster cells), EU27+2 = 100	70
Figure C.10: Components of population development 1996-1999	71
Figure C.11: Territorial impact of EU policies: SF, Phare CBC and ISPA 1994/95-99	73
Figure C.12: Territorial impact of EU policies: TEN/TINA & higher transport costs until 2021	74
Figure C.13: Multi-scalar synthesis of unemployment rates (single criteria) in European regions	75

Tables

Table A.1: ESPON 2006 projects and their relevance for Norden	18
Table C.1: The fourteen indicators of the Lisbon and Gothenburg agenda	60
Table C.2: Main components of approaches on delimitation of urban and rural	66
Table C.3: Hypotheses underlying the competitiveness and cohesion scenarios	72

Methods & Concepts

M. & C. A.1: Territorial development and its components	12
M. & C. A.2: Typologies – essential tools for targeted policy intervention	15
M. & C. B.1: Territorial scales in ESPON – the three level approach	21
M. & C. B.2: Measuring the economic Lisbon performance of European regions	25
M. & C. B.3: Polycentricity in ESPON – a fuzzy concept to be defined and tested	31
M. & C. B.4: Territorial characteristics of European regions – the ESPON urban-rural typology	33
M. & C. B.5: Potential accessibility – locational advantage as a product of the transport system	38
M. & C. B.6: Policy oriented scenarios – disc. the future territorial impact of public policy choices	45
M. & C. B.7: Territorial Impact Assessment – evaluating the territorial impact of public policies	50
M. & C. B.8: Multi-scalar analysis – integrating multiple territorial contexts	54

Debates

Debate A.1: The ESPON programme – critics, shortcomings and the needs for further development	16
Debate A.2: ESPON and the Nordic regional development perspective	19
Debate B.1: Lisbon economic performance – a substitute for common economic indicators	22
Debate B.2: More competitiveness & cohesion for Nordic regions through polycentric development?	30
Debate B.3: Does European potential accessibility matter to Nordic regions?	36
Debate B.4: North of the road – immigration and its potential	41
Debate B.5: Putting common territorial futures on the Nordic regional development agenda	45
Debate B.6: Integrating European ex-ante TIA into SEA in the Nordic countries	48
Debate B.7: Multi-scalar analysis as tool for customisation of reg. policy in the Nordic countries?	52

Preamble

Over the past decade EU regional policies have ever more central to the formulation of regional policies in the Nordic countries. This is so even for regional development policy in Norway and Iceland, as both countries are party to the EEA agreement, which addresses a variety of issues tied to the processes of Europeanization and globalization that shape the development context of their regions. Strong influences on regional policy can also be derived from the re-launched Lisbon Agenda, the European Regional Development Fund (ERDF) and the European Social Fund (ESF).

As such, the demand for comparable territorial data placing Nordic regional structures and development trends in a wider European context has increased significantly among Nordic regional policy makers. With the emergence of the European Spatial Planning Observation Network (ESPON), established within the context of the EU Structural Funds under the Community Initiative INTERREG III, the body of knowledge concerning European territorial structures, development trends and perspectives, as well as policy impacts has thus increased substantially. After the completion of phase one of ESPON (2002-2006), the programme is now embarking upon its second period of development (2007-2013).

This report has been commissioned and financed by the Nordic Committee of Senior Officials for Regional Policy (EK-R) in order to further capitalise on the results of ESPON 2006 for Nordic regions and to examine Nordic needs in the upcoming ESPON 2013 programme. This includes the extraction of ESPON content relevant within a Nordic regional development context and a territorial breakdown of selected quantitative results to better fit the Nordic regional decision making level.

The focus here has been placed on capturing Nordic relevant key methods and concepts developed by ESPON, testing the evidence on Nordic territorial structures and on the trends they provide at lower spatial resolution as well as on discussing the relevance of the evidence/concepts/methods for Nordic regional policy making. A strong link to the original ESPON material, to be found in the Annex, has been maintained in order to facilitate direct comparisons. As a vast amount of potentially useful ESPON material exists for the Nordic regions while many territorial breakdowns proved to be too challenging to be realised, some consideration of the potential further direction of research is made at the end of this report. As a supplement to the study a prototype of a Nordic version of the ESPON *Hyperatlas* is introduced, which can be obtained for evaluation and commenting from alexandre.dubois@nordregio.se. For complementary information to this study, please, follow the project links provided in each section, visit the National ESPON websites or go to www.espon.eu.

This study has been compiled by Jörg Neubauer, *Nordregio*, with, in addition, major input from Kai Böhme of *Sweco Eurofutures*. Johanna Roto and Alexandre Dubois, *Nordregio*, assisted with parts of the thematic mapping. Ronan Ysebaert, *UMS RIATE*, undertook the construction of the Nordic Hyper Atlas prototype. We would also like to thank the Nordic Committee of Civil Servants for Regional Policy (EK-R) and our other colleagues at *Nordregio* for their valuable input. Chris Smith undertook the language editing tasks for the final document.

With this publication we hope to increase the regional reader's understanding of ESPON and to foster a broader discussion on its results as well as on Nordic needs for future territorial research within ESPON among Nordic policy makers.

Stockholm, October 2007

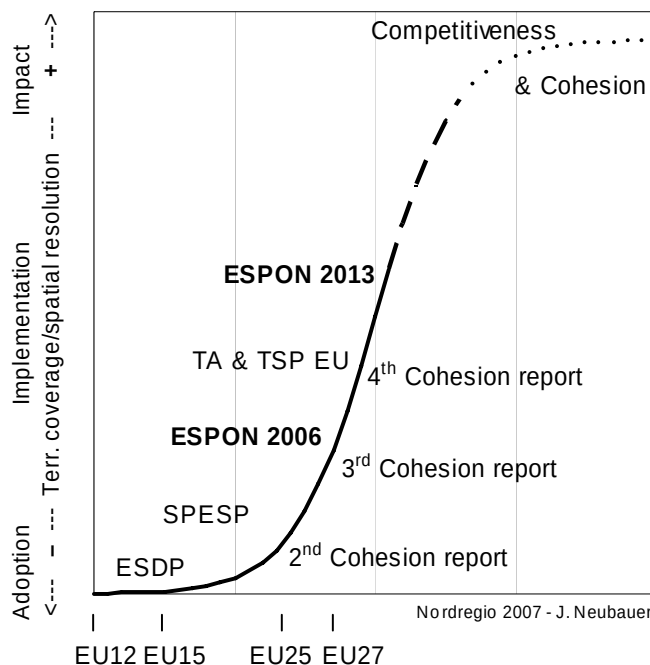
Part A: ESPON and its relevance for Norden

Understanding ESPON and the relevance of its findings for the Nordic regions demands some background information. This part of the report will briefly introduce the world of ESPON while summarizing its overall content with relevance to Norden. This includes the aim and character of the applied territorial research carried out in the context of ESPON at the European level. A critical analysis of the programme and a discussion of ESPON and, in particular, its utility for the Nordic development perspective is also undertaken.

What is ESPON?

The idea of a European territorial observatory was developed in the wake of the elaboration of the *European Spatial Development Perspective (ESDP)* in 1989-1999. At that time it became obvious that comparable and harmonised evidence on the territorial structures, trends and development perspectives of the European Union was needed in order to support territorial policy making at the European level.

Figure A.1: The evolution of ESPON as a tool for European territorial policy making



As an initial test case, the *Study Programme on European Spatial Planning (SPESP)*, was set up to see how such an observatory could be organised and what results could be expected. After this first test phase 1998-1999, ESPON was subsequently established under the Community Initiative INTERREG III. The first ESPON programme ran from 2002 - 2006

(ESPON 2006) with the follow up programme for 2007-2013 (ESPON 2013) currently about to launch.

Aim of the programme: The European Spatial Planning Observation Network (ESPON) was set up to support policy development 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.

Thus, ESPON aims at providing policy makers on the European, national and regional levels with systematic and new knowledge on territorial trends and on the impacts of the policies that affect regions and territories within Europe. As such, it serves as an information tool for policy development for all EU Member States and the European Commission and is designed to directly support the formulation and implementation of policies. Here the main focus is on policy development around territorial development addressing *European/regional competitiveness, economic/social/territorial cohesion and territorial cooperation*.

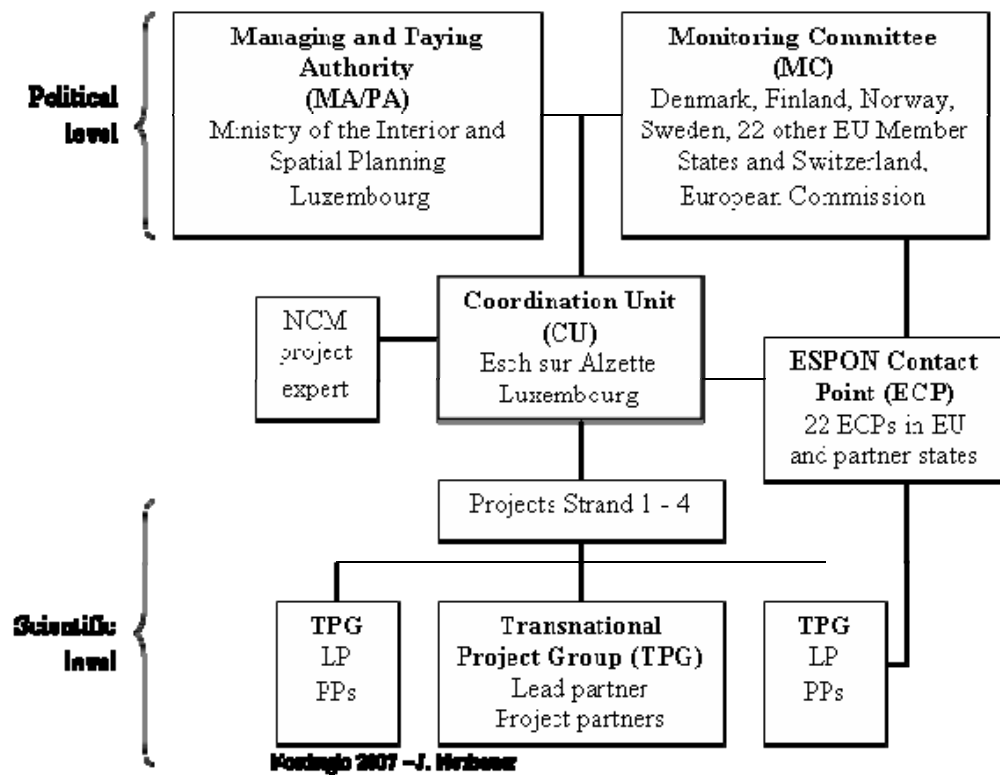
The work conducted in the context of ESPON 2006 took place in four categories (cf. also Table A.1). Firstly, there are *thematic studies* (Strand 1) on major territorial development trends in the European regions. Secondly, other studies look at the *territorial impacts of EU policies* (Strand 2). Thirdly, *cross-thematic studies* (Strand 3) attempt to draw wider conclusions on EU territorial development, trends and potentials. Finally *synergies between national and EU sources for applied research* (Strand 4) were explored through scientific networking.

Methods & Concepts A.1: Territorial development and its components

Territorial development is an *integrated approach to shaping the future of cities, regions and larger geographies* and the European complement to the widely used concept of regional development. The approach is something of an offspring from the spatial development work at European level undertaken since the beginning of the 1990s and a widely used base word in current EU policy making. Here economic, social and environmental opportunities and concerns as well as other factors of influence (including political interests) on the geographical location of activities and the function and organisation of ways in which different places, are brought together. The approach focuses on finding the *territorial capacity* of the geography in question, identifying its *territorial potential* and developing it by means of *territorial policy*, including *territorial cohesion*, and through *territorial cooperation*. Finally impacts are evaluated by means of *Territorial Impact Assessment*. For several of these concepts however the exact meaning and scope remains to be defined as indeed is the case for territorial cohesion.

Organisation and finance: ESPON is an *applied research programme* in the field of territorial development related to the *EU Structural Funds*. It is organised and funded as a programme in the field of European territorial cooperation. Between 2002 and 2006 it was organised as an INTERREG Programme, i.e. *co-financed by the European Union Community Initiative Programme INTERREG III and the 25 Member States, plus Norway and Switzerland*. After completion of the first phase (2002-2006) a follow-up has been launched (2007-2013) which will be funded under *Objective 3 (Territorial Cooperation) of the European Structural Funds*.

Figure A.2: The organisational structure of ESPON 2006 and its Nordic stakes



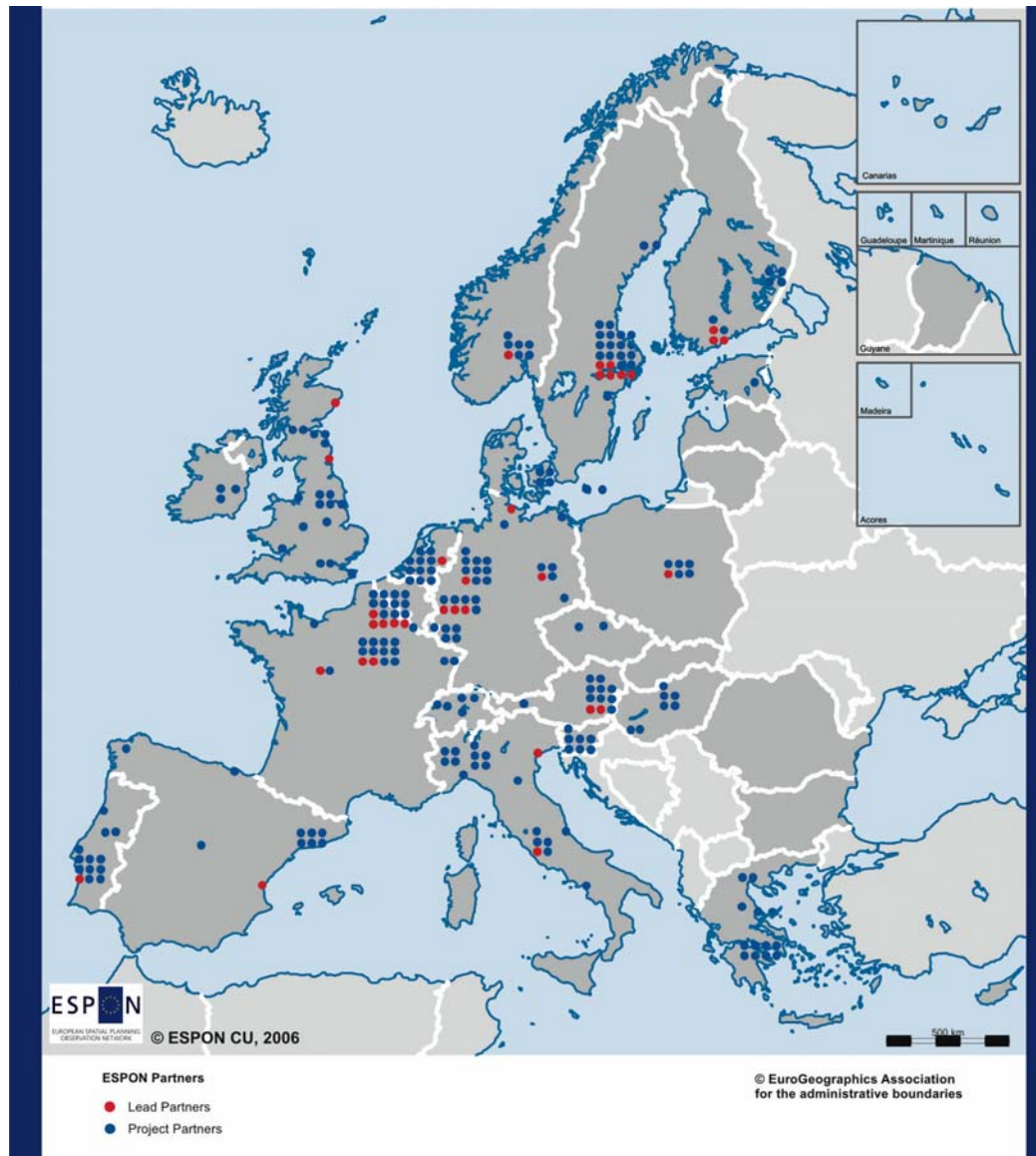
The funding framework also influenced the organisational settings of ESPON 2006 (Figure A.2) which are characterised by the following main features.

- *Monitoring Committee (MC)*: Concentrates on the management and fine-tuning of ESPON towards important policy developments. The Monitoring Committee, in principle, consists of one member from each EU Member State plus Norway and Switzerland and DG *Regio*. The national representatives mainly come from the national ministries in charge of either spatial planning or regional policy. The enclosed Annex has a list of the Nordic MC members.
- *Coordination Unit (CU)*: The programme secretariat, located in Esch-sur-Alzette in Luxembourg, handles the day-to-day management tasks and tries to keep all the different actors, i.e. researchers working on projects, Contact Points and Monitoring Committee members together while also managing the dialogue between researchers and policy-makers.
- *Projects & Transnational Project Teams (TPGs)*: The actual applied research is carried out by projects which are operated by transnational teams. The themes for the research are decided upon by the MC and thereafter the CU tenders the projects in an open procedure. The best tender is awarded a subsidy contract and the respective TPG is supervised by the CU. Between 2002 and 2006 34 ESPON projects have been carried through involving over 600 researchers across the ESPON space.
- *Contact Points (ECPs)*: In principle, there is one ESPON Contact Point in each country. Contact Points can participate in projects but their main task is to provide the

link between the European level and national communities and discourses. Consult the Annex to discover who the Nordic ECPs are.

- *Nordic Project Expert*: During the ESPON 2006 programme period the Nordic Council of Ministers seconded a Nordic project expert to the ESPON CU, Flemming Thornæs. For his contact details consult the Annex.

Figure A.3: The ‘ESPON 2006 space’ and its partner geography



All of the applied research undertaken within the ESPON 2006 programme addresses the territory of 29 European countries (the ‘ESPON space’) including the 27 Member States of the EU, Norway and Switzerland (Figure A.3). The Nordic countries have been rather active as partners in ESPON TPGs, both as lead and project partners. Swedish partners have led as many as six projects, as such, together with Germany they are the most active European nation in this regard.

Results & achievements: The work of ESPON 2006 was mainly based on *quantitative information, i.e., indicators applied at the NUTS II and III level*¹, the latter corresponding to *Amt* (until 2006)² in Denmark, *Maakunta/Landskap* in Finland, *Fylke* in Norway and *Län* in Sweden. *Case studies* and *qualitative research* were only undertaken in a few cases to support the quantitative research. The focus on quantitative information implied certain restrictions stemming from the limited availability of comparable and harmonised data for all of the NUTS II or III regions of the ESPON space. Since many projects began during the course of 2002 or 2003, the major part of the data used dates back to the period 1999-2001 and appears to be rather out of date in 2007.

However, because of its strong focus on maps and quantitative information, ESPON has made tremendous progress in mapping the territorial state of Europe. During phase one of the programme, a substantial new body of knowledge on trends, policy impacts, relationships and potentials within the European territory has been produced. In addition a number of regional typologies customized to European territorial policy making has been developed (Methods & Concepts A.2). The results are used by decision-makers at the European level but also at the transnational, national and regional levels in various European countries. Indeed, ESPON results have been taken on board in many European and national policy documents, the most prominent of which are the *Cohesion Report* and the *Territorial Agenda* and the *Territorial State and Perspectives of the European Union*. The close contact maintained between research and policy could be said to be one of the strongest points of ESPON 2006 as it clearly represented the intertwined nature of European spatial planning.

Methods & Concepts A.2: Typologies – essential tools for targeted policy intervention

In general typologies serve the aim of the categorisation of spatial units according to certain characteristics, which are derived from the purpose the typology should serve. One can think of typologies as different filters laid out over the same territory. Every filter tells a different story depending on what it is made for. In the case of ESPON the filters are made for the various facets of territorial development and policy.

By using typologies to, for example, monitor territorial trends, observations customized to territorial policy can be featured. In return regions can be targeted by policy measures according to their needs as a group. Such groupings of regions with broadly similar territorial characteristics and potentials have been developed through statistical analysis in several ESPON projects serving different territorial development contexts. Good examples here provide us with typologies for Metropolitan European Growth Areas (MEGAs) and urban and rural regions.

A fundamental debate over the nature of the ESPON results (Debate A.1) is currently under way and can be seen as a natural part of the process of evaluating the programme's outcome in the search for *scientifically sound evidence on territorial development in Europe*. Indeed, in many areas ESPON has undertaken pioneering work as regards the territorial coverage and

¹ NUTS = Nomenclature of territorial units for statistics used by EUROSTAT for the collection, development and harmonisation of EU community statistics, socio-economic analysis and framing of the communities' regional policy.

² After the change of the Danish administrative system in 2007 an entirely revised NUTS system is in the making and is set to be in place by 2008.

resolution of comparable regional analysis and/or *development of approaches for territorial research*. Thus ESPON research has successfully advanced the field of applied European-wide territorial research while also illustrating that further work and discussion is needed in the field.

Future perspectives: In late 2007 the second phase of ESPON will be launched to run over the period 2007-2013. This phase will build on the experience and achievements of the first phase (2002-2006) and will basically continue along the same line applying the *same organisational principles and settings* as that utilised during the first phase.

Iceland and Lichtenstein are likely to join the ESPON community during this period. Hence future projects will have to cover 31 rather than 29 countries. The *budget will be increased* substantially which allows for improved project funding and additional types of activities.

The coming activities within applied research will be organised in two strands. The first strand will be a *continuation of the European-wide applied research* deepening some of the themes researched by ESPON thus far while also broadening the spectrum of relevant topics. Policy impact studies, trends and future perspectives will probably feature strongly in this context. In addition the second strand will introduce a new type of *targeted analysis* which can be more focused on *specific types of territories*. Within the future strand two projects *potential users will join the ESPON Monitoring Committee as clients*. These potential user groups can be European organisations, Structural Funds programmes, national authorities or groupings of regional authorities. The exact format for these projects will be developed during the course of 2007 but focus will certainly be on the European ‘added value’.

Debate A.1: *The ESPON programme – critics, shortcomings and the need for further development*

The ESPON research findings have been widely discussed among policy makers. After the completion of the first phase, and in preparation for the second, the following needs for the further development of the programme have been identified:

- More focus needs to be placed on the analysis of *territorial trends*, its *driving forces*, *scenarios* and *future perspectives* as opposed to the state and structure of the territory at a certain point of time.
- The *scope of territorial indicators needs to be broadened* since ESPON 2006 relied primarily on regional economic indicators, the main reason for this however being their availability and international comparability. Hence territorial research on social and environmental issues is underrepresented.
- Scientifically sound evidence on Europe’s territorial development needs *quality control* and *policy acceptance*. Debates have highlighted the fact that certain types of data processing, methodologies and typologies developed and applied at the interface of science and policy making may be either too much simplistic to enable high quality decision making or too complex to gain acceptance across the policy community.
- Findings of applied territorial research and their interpretation and usability for policy purposes strongly depend on the spatial level addressed. The phenomenon is known in geography as *the modifiable area unit problem* (MAUP, cf. Part B). For the ESPON space, with its huge variation of territorial units across all levels, future research needs to meet this challenge by further developing a solution customized to territorial policy making.
- All ESPON 2006 projects shared a strong focus on the development of policy-oriented spatial typologies and map making. Hence most projects followed a quantitative approach

relying on a rather limited statistical base. The ESPON 2013 programme needs to overcome the limitations of such *data driven research*.

- The group of potential users of the ESPON results includes a wide range of actors with a territorial focus at different geographical levels. ESPON could improve its utility to policy makers by strengthening *close cooperation between the researchers and the potential users* reflecting the diversity of needs for support with territorial evidence.
 - *The future perspective* is another key issue which should be improved in the context of future ESPON work. Indeed, thus far most of the work has focused on assessing the *current* state of the European territory. However, information on future perspectives and drivers has only rarely been addressed. At the same time these are the most important aspects for the development of policies which are supposed to influence the territorial future.
 - *The territorial impact of EU policies* has been a field where ESPON has broken new ground. This field deserves further attention as it can make a crucial contribution to informing policy-making. Certainly it would also be worthwhile considering whether the focus should only be on EU policies or whether selected national policies could also be considered.
-

Nordic relevant content in ESPON

Up to 2006 ESPON had conducted 34 applied research projects, each of which covered the entire territory of the ESPON space. Some of the results of these projects are of interest for Norden in at least two ways. Firstly, some of the projects show that Norden, i.e. the parts of Norden which are part of the ESPON space, has distinct territorial development features as compared to the rest of Europe. Secondly, some projects have developed new methodologies for territorial research with a strong policy orientation, which could be interesting if applied in a more detailed Nordic territorial context.

Table A.1 lists all projects conducted during the ESPON 2006 programme. An overall indication is given with regard to the Nordic-relevant content of the projects based on a screening of the final project reports. Almost all projects contain results relevant to Norden in some way or other. The balance of the projects are of general thematic relevance while relevant new methodological approaches are however only to be found in a minor number of projects.

Table A.1: ESPON 2006 projects and their relevance for Norden

	Relevance for Norden through	
	Thematic findings	New methodology
Strand 1: Thematic studies		
1.1.1 'Polycentricity'	x	x
1.1.2 'Urban-rural'	x	x
1.1.3 'Enlargement & Polycentrism'	(x)	(x)
1.1.4 'Demographic trends'	x	x
1.2.1 'Transport trends'	x	x
1.2.2 'Telecom trends'	x	
1.2.3 'Information Society'	x	
1.3.1 'Natural & technical hazards'	x	
1.3.2 'Natural heritage'		
1.3.3 'Cultural heritage'	x	
1.4.1 'Small & Medium Cities'	x	x
1.4.2 'Social Dimension'	(x)	
1.4.3 'Urban functions'	x	x
1.4.4 'Flows'		(x)
1.4.5 'Tourism'		
Strand 2: Territorial impacts of EU policies		
2.1.1 'Transport Policy impact'	x	x
2.1.2 'R&D Policy impact'	x	
2.1.3 'CAP impact'	x	(x)
2.1.4 'Energy'	x	
2.1.5 'Fisheries'	x	
2.2.1 'Structural Funds impact'	x	(x)
2.2.2 'Pre-Acession aid'		(x)
2.2.3 'Structural Funds in urban areas'		
2.3.1 'ESDP impact'		
2.3.2 'Governance'		
2.4.1 'Environment'	x	
2.4.2 'Zoom in'	x	
Strand 3: Cross-thematic studies		
3.1 'Coordination'		(x)
3.2 'Scenarios'	x	x
3.3 'Lisbon strategy'	x	x
3.4.1 'Europe in the world'	x	
3.4.2 'Economy'	x	
3.4.3 'MAUP'	x	x
Strand 4: Scientific briefing and networking		
4.1.3 'Monitoring terr. development'	(x)	

Applied research and studies on territorial development and spatial planning provided by ESPON apply a *European perspective* for the support and development of *European policies*, which clearly affect the Nordic territories. The geographical coverage of the ESPON 2006 programme partly *excludes* certain territories important for developing territorial policies in a Nordic trans-national, national and regional context, namely *Greenland, Iceland* and the *Faroe Islands* as well as the Nordic adjacent area of *Northwest Russia*. In the coming programme period, however, Iceland is expected to join the ESPON community (higher emphasis placed on interaction with the European ‘neighbourhood’, cf. for example extension to ESPON 3.4.1)

Even if the *Nordic regions* are far from being homogenous, there are a number of *specific territorial characteristics* distinguishing them from most of the continental areas such as a generally remote location to Europe’s economic core (Pentagon) but a well performing economy, several small and isolated labour markets, large tracks of low population density areas with steadily declining population and many medium-sized cities maintaining regional and locally important functions of administration, service and business.

In a Nordic regional development context many in depth ESPON analyses may appear somewhat rough in their territorial scope and hence might fail to reach the Nordic regional decision making level. One reason for this is their reliance on NUTS 2 units in many cases, which in the Nordic countries comprise large sub-national areas (the entire country in Denmark!), i.e. groups of regions, which lack decision making functions (e.g. governance assignments). Thus territorial evidence at NUTS 2 level has a rather low orientation to Nordic regional users. However, for many of the ESPON concepts a translation to levels lower than NUTS 2 lacks support of comparable data. Furthermore the MAUP problem as described in Part B alters the findings when translating ESPON results to Nordic relevant regional levels.

In its recent proceedings (Nordregio WP 2006:4) the Nordic Working Group on Cities and Regions³ focuses on the role of urban areas in regional development applying a European and Nordic perspective. Here the group underlines the “*necessity to formulate territorial development policies that fully integrate the trans-national, inter-regional and the intra-regional perspectives*” and calls for a broader integration of “*national as well as regional aspects seen in the light of European developments*” into all levels of policymaking (p.74).

One lesson to be learned from different ESPON reports and research projects is that the situation of urban areas varies a great deal. Larger but also small- and medium-sized cities and towns must be understood according to their context, size, function and history. *Policies must therefore be differentiated and tailored for specific categories of urban areas* taking into account their size and function.

³ The working group was established by NÄRP (Nordic Committee of Senior Officials for Regional Policy) in 2005.

Part B: Nordic breakdowns of selected results from the ESPON programme

Part B provides a brief overview on some of the main ESPON findings on Norden and a breakdown of selected quantitative results for use in a Nordic regional context. The analytical results are presented within wider thematic areas integrating findings from various ESPON projects. For further reading a project link at the beginning of each section provides a path to the complete material of each of the projects to be accessed on the ESPON website www.espon.eu. A compact and easily understandable description of new Nordic relevant core methods and concepts developed by ESPON is provided in the accompanying boxes. In addition, a debate on the selected ESPON results and their policy relevance to Nordic regional development concludes each section. For each Nordic map its European correspondent is given in the European map complement in the Annex.

At this point it is necessary to introduce a central concept developed by ESPON entitled the *Three Level Approach* (Methods & Concepts B.1), which as far as possible is used throughout this section to link scientific analytical findings to different territorial levels of governance and policy making. In what follows the *macro* level refers to the *European level* including the entire ESPON space *as well as Norden* as an entity in relation to other parts of the European territory. The *meso* level addresses the *Nordic level*. Finally, the *micro* level captures the *regional and local perspective* in the Nordic countries.

Methods & Concepts B.1: Territorial scales in ESPON – the three level approach

ESPON has developed a systematic way of addressing territorial development issues/objectives that might appear differently, or even conflict, depending on the geographical scale approached. The so-called *Three Level Approach* uses three generic levels, namely the macro, meso and micro levels. On the *macro level* Europe (or the ESPON space) is addressed as a whole. The *meso level* covers national and trans-national territories such as the Baltic Sea Region or the Nordic countries. At the *micro level* regional and local issues are in focus. Here certain types of regions or communities may be addressed such as, for example, cross-border cooperation areas.

The approach provides a more systematic concept for research and policy to summarise the huge variation in the definition of territorial units across Europe while also dealing with the complexity of multi-level governance and policy making. Accordingly all ESPON projects are obliged to present analytical findings as well as policy implications and recommendations fitting this concept.

Economic development and the Lisbon agenda

Project link: ESPON 3.3; 3.4.2

Territorial development deals in many respects with the economic situation of regions as the major factor of their competitiveness. In EU regional development terms GDP *per capita* is the most frequently employed indicator used to measure economic development and to allocate funding at all levels. With the renewed Lisbon Agenda aiming at improving the EUs competitiveness enabling it to become the world's leading knowledge-based economy, a new official standard for benchmarking competitiveness has been adopted. The European Commission and the European Council agreed on a strategic set of fourteen indicators (see Table C.1 in the Annex) to measure the progress of the agenda in the domains of the general development of the economy and the labour market, research and development, and social conditions and environment. In ESPON the focus was primarily placed on the economic 'Lisbon' performance of regions merging seven out of the fourteen Lisbon indicators into a combined measure (cf. Methods & Concepts B.2). In both standard measures, GDP *per capita* and economic 'Lisbon' performance, the Nordic regions are doing fairly well in European terms.

Debate B.1: *Lisbon economic performance – a substitute for common economic indicators in Nordic regional development policy?*

The Lisbon set of indicators is designed to benchmark the progress of the European Union and its regions in fulfilling the strategic goals of the Lisbon and Gothenburg agendas, i.e. competitiveness. Those strategies were primarily launched in response to the sub-standard economic performance of the member states as compared to the USA or Japan. Hence those indicators are of an EU-level 'political' nature rather than a regional analytical choice. As such the selection of indicators may be especially useful when applied at higher spatial levels (e.g. national level) supporting European and Nordic policy makers in evaluating the preconditions for competitiveness relative to other countries/regions in Europe. When customising regional policies to different types of Nordic cities and regions, measurement needs may need to differ in order to serve specific performance goals at lower territorial levels. However, the Lisbon indicators can help to benchmark the Nordic regions to other parts of Europe on an overall level but may not hold as a single measure to replace other common economic indicators.

Some methodological aspects of the ESPON approach may also raise questions for Nordic regional policy makers. Firstly there is no weighting in the aggregation method. Hence all indicators are perceived as being equally important for attaining the Lisbon/Gothenburg goals, e.g. competitiveness. Secondly changes in overall performance may be hard to translate into applicable conclusions since ESPON Lisbon performance indicators are synthetic measures based on a number of indicators. Thirdly the categorisation of the underlying indicators may be somewhat fuzzy. Does the dispersion of unemployment rates between regions measure economic performance or rather social inequalities?

Last but not least, data availability for the Lisbon indicator set is somewhat restricted for Nordic regional administrative units and rather limited for sub-regional or functional entities. However, a first step in further regionalisation has been taken in Finland determining the Lisbon performance of the NUTS 4 level (*seutukunta*) based on eleven out of the fourteen Lisbon indicators (Figure C.2 in the Annex).

Macro level: 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. The combined indicator ‘Economic Lisbon performance’ (cf. Figure C.1 in the Annex) illustrates that regions with primarily high performance are mainly located in Switzerland, Austria, Germany, the Benelux, the UK, Denmark, Norway and Sweden. Furthermore, the territorial pattern of economic Lisbon performance clearly corresponds to the pattern of major accessible urban regions. 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 despite comparatively low accessibility and urban density.

Meso level: Apart from Itä-Suomi all Nordic NUTS 2 regions show medium or primarily high Lisbon performance in a European context. Generally, Finnish regions tend to have lower values than other Nordic regions except for the ‘more urban Nordic NUTS 2 regions’ which clearly outperform the other regions.

Micro level: The pattern becomes somewhat more differentiated when looking at the regional economic Lisbon performance of Nordic FUAs according to the ESPON methodology. Many macro economic indicators, such as GDP, are currently not available at all sub-regional administrative or functional levels in the Nordic countries and lack suitable substitutes. Hence Figure B.1a-B.2 focuses on the labour market component of the economic Lisbon performance for Nordic FUAs, which is supported at the functional level of labour markets. In Finland a first step in further regionalisation on a broader indicator basis has already been taken, determining the Lisbon performance of the NUTS 4 level (*seutukunta/economic regions*). The approach is based on eleven out of fourteen Lisbon indicators and employs a refined method different from ESPON. (Figure C.2 in the Annex) Finnish NUTS 4 units however lack comparable counterparts in the other Nordic countries.

Figure B.1: Average Lisbon labour market performance by type of ESPON FUA (a) and according to the Nordic urban typology (b)

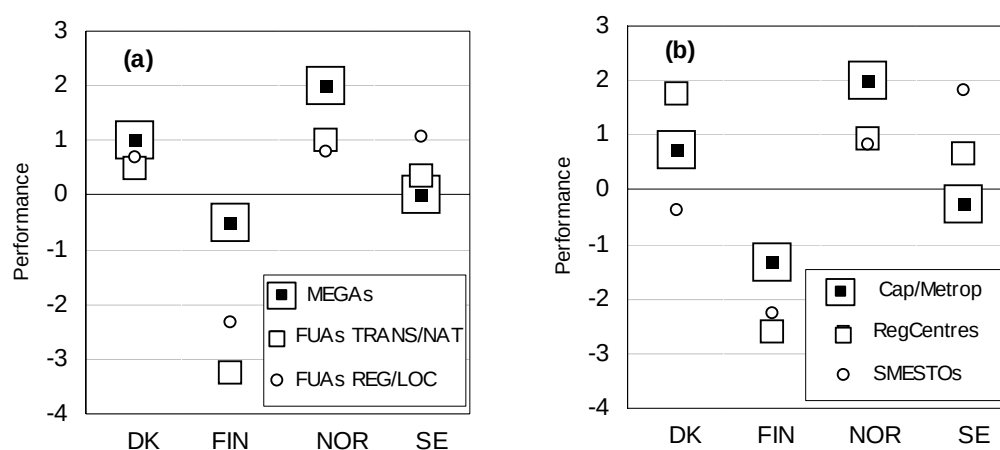
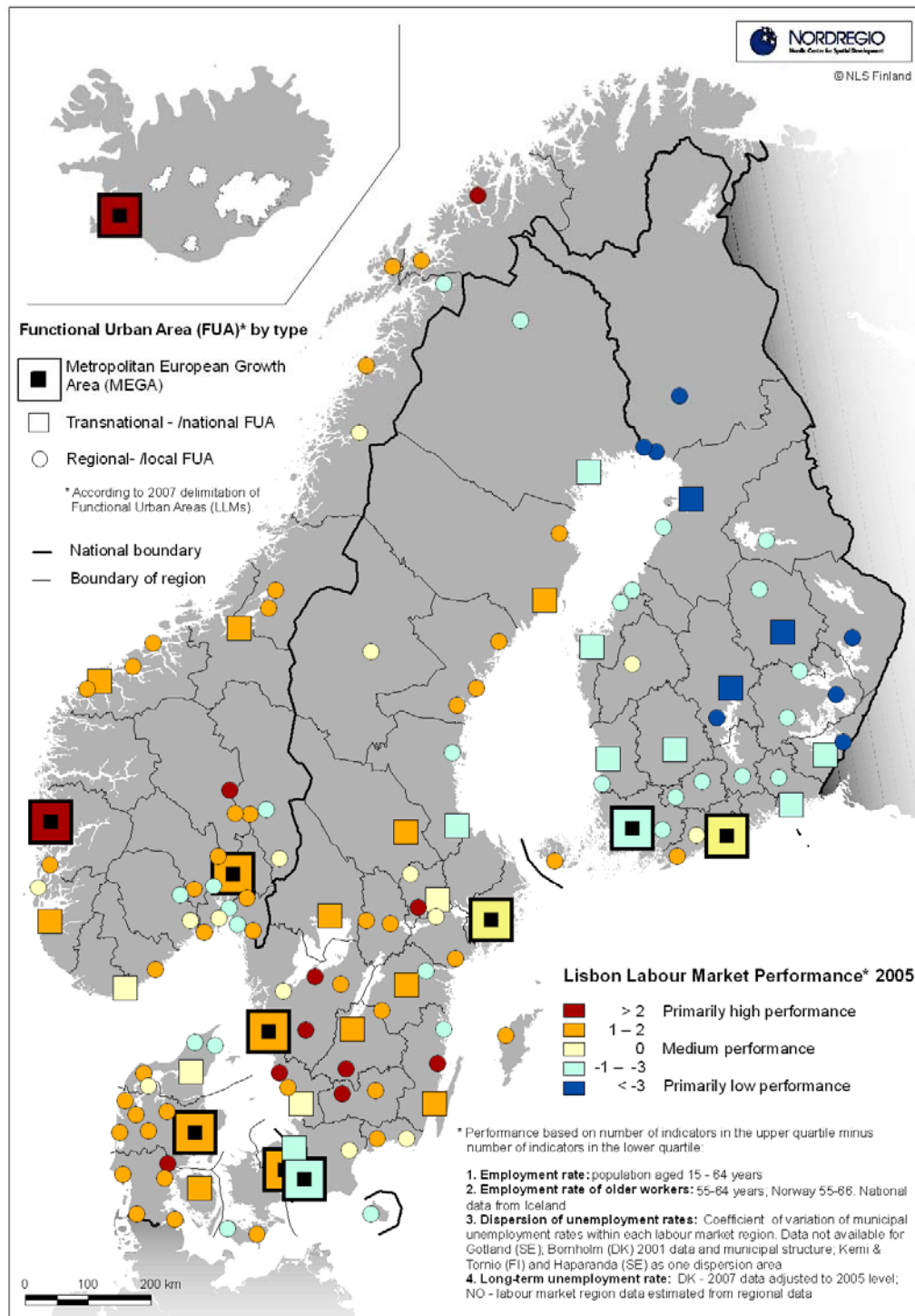


Figure B.2: Lisbon labour market performance of Nordic FUAs 2005



The general pattern of poorly performing Finnish labour markets as opposed to the other Nordic countries persists, especially when compared to Denmark or Norway. In addition MEGAs outperform their respective lower order cities when taken as a group, except for Sweden. In the latter country, as well as in Norway, the second order city (Gothenburg & Bergen) has a better functioning labour market than the capital. Labour markets of regional and local FUAs (SMESTOs) more often than not function better than those of

transnational/national FUAs, which, in particular, is evident in the south of Sweden. Disparities are rather modest between FUA types in Denmark, Norway and Sweden but rather accentuated in Finland. Considerable local performance differences arise across the Öresund straight and along the Oslo fjord.

Comparing disparities in the Lisbon labour market performance according to the ESPON typology of functional urban areas to the Nordic typology of functional urban areas (Nordic urban typology⁴) does not change the pattern significantly except for Denmark (Figure B.1b). In Finland performance differences between SMESTOs and larger cities decrease somewhat while they increase in Sweden.

Methods & Concepts B.2: Measuring the economic Lisbon performance of European regions

ESPON has analysed the Lisbon performance of European regions within the Lisbon domains of economy, social conditions and environment.

In order to benchmark the *economic Lisbon performance* of European regions ESPON has merged seven out of the fourteen Lisbon indicators into a single measure. These are (a) GDP in PPS *per capita*, (b) GDP in PPS per employed person, (c) total employment rate of persons aged 15-64, (d) employment rate of older workers aged 55-64, (e) gross domestic expenditures on R&D, (f) dispersion of regional unemployment rates and (g) long-term unemployment rate, i.e. persons unemployed for more than twelve month. After classifying the regional values of the indicators into four performance groups (*quartiles*) a ranking was employed. Accordingly the number of indicators in each region performing in the upper *quartile* was compared to the number of indicators performing in the lower *quartile*. Thereafter the regions of the ESPON space could be determined to perform at primarily, a high, medium or low level.

⁴ Typology based on Hanell & Persson. First presented in 'Performance of Local Employment Systems in the Nordic Countries' at the 43rd European Conference of the Regional Science Association in Jyväskylä, Finland, 2003.

Polycentric development and urban-rural relations

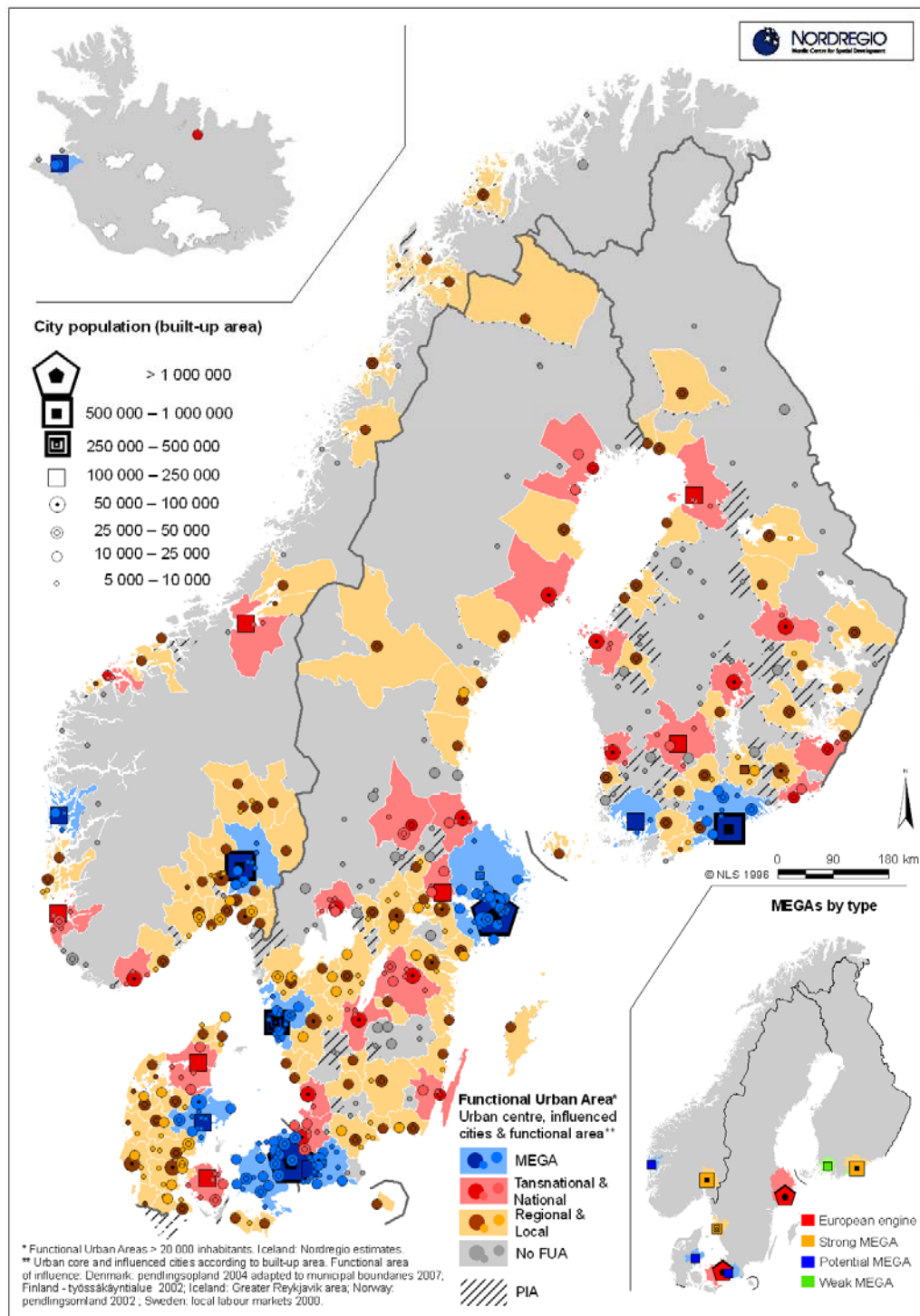
Project link: ESPON 1.1.1; 1.1.2; 1.4.1; 1.4.3

The territorial structure of Europe is to a large extent dominated by metropolitan areas, cities and towns and rural areas. Larger metropolitan areas currently receive the majority of attention in the context of policy making, despite of the fact that approximately 72% of the population in the ESPON space resides in cities with less than 100 000 inhabitants, i.e. small and medium-sized towns. Furthermore approximately one fifth of Europe's population is considered to live in rural areas. In contrast, agricultural activities account for only 2% of the GDP and 5.7% of the employment in the 'ESPON space'; they nevertheless take place on almost half of the territory and thus play a significant role in shaping the landscape. These figures are certainly not evenly distributed across Europe and thus the density and character of urban and rural areas differs widely. ESPON research has tried to capture the different urban and rural contexts and developed typologies to better illustrate this European diversity while also allowing different places to be compared to each other. In the European Spatial Development Perspective a more polycentric structure of the urban system is seen as a precondition for developing the economic potential of regions. However, scientific evidence for this remains rather weak while (cf. also Methods & Concepts B.3) polycentricity is clearly a multi-dimensional and thus complex concept.

Marco level: Generally, urban areas are considered as the poles of economic growth. The concentration of economic activities and population in the core of Europe has often been recognised. In the long run the enlargement or dispersal of the core and the growing importance of single urban nodes outside the core will dissolve the core-periphery pattern. Firstly, there is an expansion of the core which might in future also include areas which are currently in close proximity such as Rome, Vienna, Bratislava, Prague, Berlin, Manchester and Copenhagen. Secondly, there are a number of '*isolated hotspots*' throughout Europe, which are economic engines outside the Pentagon. Examples here include 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. From a European perspective *very few Nordic urban areas play an international role*. These are in particular the functional urban areas of the capital cities and Gothenburg. Copenhagen and the Öresund region might be able to benefit from the expansion of the European core and thus become part of its fringe in future. Oslo, Stockholm and Helsinki can play a role as more isolated nodes in the European urban system outside the core area. However, the major urban agglomerations in the Nordic countries have a role to play with regard to balanced territorial development in Europe and thus territorial cohesion and competitiveness. One aspect of polycentric integration at the macro level is the emergence of global economic integration zones. In ESPON the southern parts of the Nordic countries are primarily expected to globally integrate with the Baltic States.

Meso level: At the meso scale polycentric aspects include for example metropolitan areas and urban clusters. In the Nordic countries only Bergen, Oslo, Ålborg, Copenhagen, Malmö, Stockholm, Turku and Helsinki are considered MEGAs. All other Nordic urban areas are either transnational or only nationally or regionally important (Figure B.3). In addition the huge distances that exist between single urban areas clearly become visible here. Except for Denmark, the Nordic countries have a very low polycentricity index (cf. Figure C.3 in the Annex). The inclusion of Iceland only further emphasizes the picture of rather monocentric urban systems and unbalanced urban patterns in the Nordic countries. Finland, Iceland and Norway are among the most monocentric countries in Europe. However, at least four out of five Nordic inhabitants reside in a Functional Urban Area with more than 20 000 inhabitants.

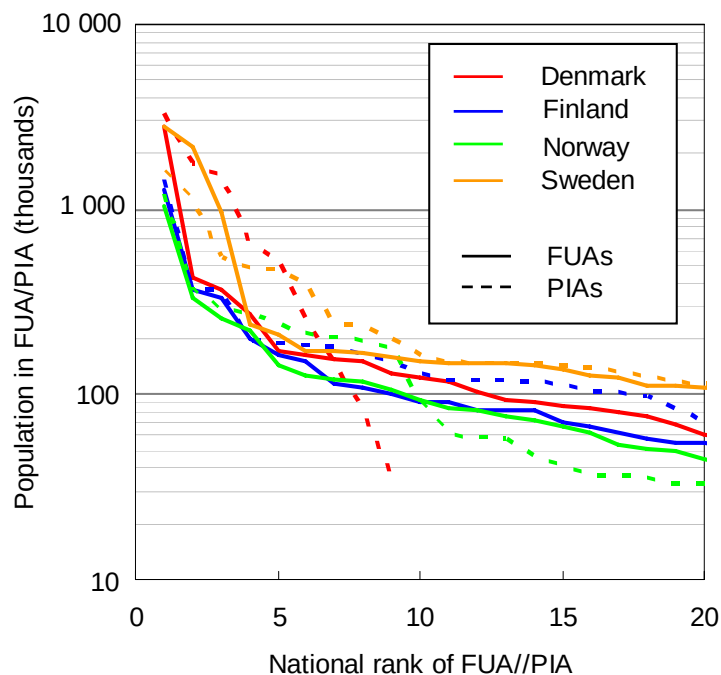
Figure B.3: Intra-urban structure and polycentric integration potential of Nordic FUAs



Micro level: ESPON has mainly addressed morphologic aspects of the urban system, i.e. size of functions and/or mass potentials for commuter catchment areas. Figure B.4 shows the population rank size of the Nordic urban system today (FUAs) and in a possible future (PIAs). The huge integration potential around Copenhagen, due to short physical distances, however turns the Danish system into something that is likely to be more monocentric than it is today. In Norway and Sweden it is mainly the second and third order city which can counterbalance

the dominance of the capital urban area in future though this hardly changes the overall slope of the line. Finland is an exception here since by using PIAs a number of regional FUAs seem to have a demographic mass increase potential, which might somewhat counterbalance the demographic primacy of the capital city. However, comparing a ranking of all FUAs and PIAs in the ESPON space suggests that even the morphological growth potential of the foremost FUAs in Finland, Norway and Sweden is rather small as opposed to their continental competitors. As such, the disadvantages of the Nordic peripheral FUAs, in terms of their lack of 'critical mass' are likely to be maintained into the future. This is further emphasized by the fact that between 80 and 90 % of the Nordic population already resides in an FUA while many Nordic labour markets are geographically isolated. Denmark provides an exception here taking advantage of its compact territory. The physical enlargement potential of a single FUA, however, does not say anything about linking potentials in a national, European or global context.

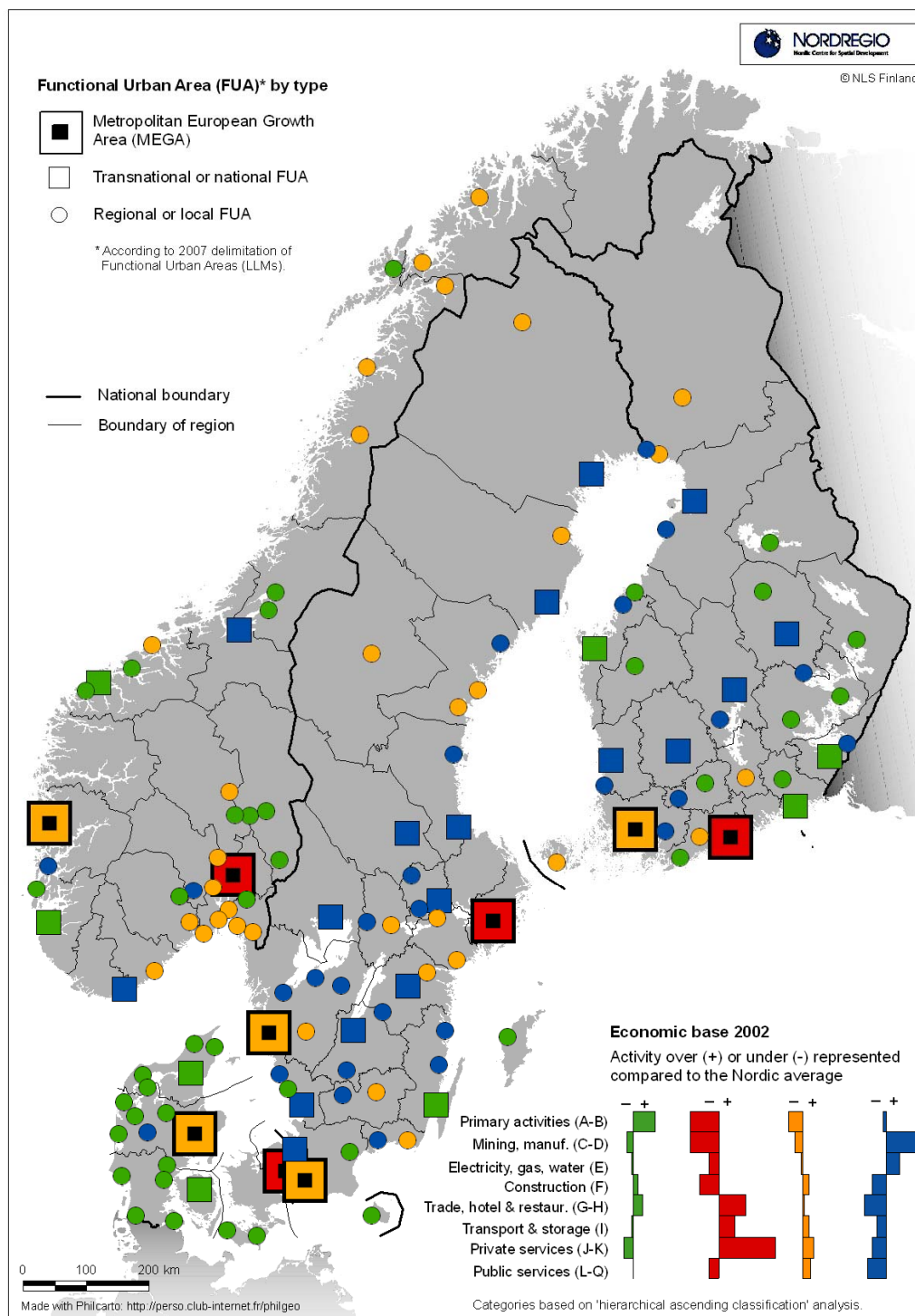
Figure B.4: Rank size of the demographic mass of the largest Nordic FUAs and PIAs in 2001



Although the ESPON approach of determining Functional Urban Areas in a comparable manner across the entire European territory (ESPON space) is rather unique and valuable, the concept faces a number of problems limiting its use to Nordic policy makers. In the Nordic countries the delimitation of the functional area of a FUA is based on municipally adapted commuter catchment areas periodically derived from register data on the inhabitant's place of residence and work. This concept is not available everywhere in the ESPON space. Hence the extension of FUAs, e.g. in Poland, has been estimated by experts. One may also consider that every urban function has its different territory and thus a commuter catchment area is just a proxy for the geographical context of travel-to-work and related functions, such as industrial structure. Furthermore the extensive provision of data in the Nordic countries is not standardized across all European countries. Consequently data shortages considerably limited the underpinning of urban functions by suitable indicators. The functional classification of FUAs thus rests on a rather narrow range of nine selected functions (cf. Concepts B.3), whose significance is mostly based on the size of a single indicator. For example, a central function in tourism such as global attraction or European significance means simply a large number of hotel beds in a FUA and ignores all other determinants of tourist attraction and importance. As in this case most functions are based on purely quantitative measures driving the

importance of the urban node according to size. A broader function of the economic specialisation or base of a FUA in European terms would also be a useful complement. The FUA industrial function only includes the 'value added' in industry. As an example Figure B.5 shows one alternative approach on determining more individual profiles of the economic base, or industrial mix, of Nordic FUAs.

Figure B.5: The industrial mix of Nordic FUAs



Another useful example here is the ‘knowledge function’ translated into the number of students in the FUA approach. Here an alternative qualitative option, at least for the university part of knowledge endowment, could be the use of an international ranking of universities like the JTU index based on six mostly qualitative criteria⁵. Employing this ranking would probably also place the FUAs of Oslo, Malmö (including Lund), Uppsala, Århus and Gothenburg among the Top European knowledge performers in addition to Copenhagen, Helsinki and Stockholm. Another drawback here however is the ‘weightless’ additive aggregation of all functions to find the final status of a FUA presuming that every urban function is equally important for prosperity and development. The determination and classification of MEGAs remains somewhat fuzzy in the context of this method but in the Nordic countries seems to be driven by a strong knowledge function. Finally the FUA approach excludes a number of aspects playing a decisive role in the polycentric discourse, e.g. networks of flows, co-operation between urban areas etc.

Debate B.2: *More competitiveness and cohesion for Nordic regions through polycentric development?*

There have been two types of approaches adopted towards the notion of polycentricity in the context of ESPON. The first approach is based on a *fixed definition of polycentricity*, characterising urban systems with *multiple nodes of similar size or functional importance*. On this basis, it is possible to assess the degree of polycentricity of an area (considering the three levels approach), and to compare this value with indicators of economic, ecological or social performance. This approach has however produced only weak correlations either for or against polycentricity.

The second approach considers *polycentricity as an essentially political notion*, which remains to be defined, but which nonetheless plays an important role in policy discussion and planning strategies across Europe. Researchers here have tried to understand what implicit or explicit meanings have been assigned to the notion of polycentricity and to assess whether these conceptualisations can be efficient tools in spatial policy making. This open approach is therefore rather focused on the policy context of spatial strategic planning.

In the Nordic context, the former option is mainly relevant in Denmark and parts of southern Sweden, as most other regions are too sparsely populated to have more than one significant urban centre. *Therefore the Nordic countries need to focus on reinventing polycentricity and adapting it to their specific preconditions*. Polycentricity can, for example, imply creating sustainable development strategies for smaller settlements in the peripheries, to avoid further polarisation and depopulation. It should not however be linked to the idea of creating “balanced” urban systems dominated by multiple urban nodes of similar size.

Despite several drawbacks limiting the relevance of the FUA concept for Nordic policy makers, the ESPON approach can be seen as a valuable first step in developing a comprehensive classification of Functional Urban Areas in Europe. A refinement of the

⁵ JTU - Institute of Higher Education at Shanghai Jiao Tong University: The index is based on the (a) quality of Education, i.e. the *Alumni* of an institution winning Nobel Prizes and Fields Medals; (b) the quality of faculty, i.e. staff of an institution winning Nobel Prizes and fields medal awards as well as highly cited researchers in 21 broad subject categories; (c) research output, i.e. articles published in Nature and Science N&S and articles in the Science Citation Index-expanded, Social Science Citation Index, and Arts & Humanities Citation Index; (d) size of the institution.

approach with increased value for Nordic policy makers may however need to include a broader indicator basis to cover more functions and a qualitative assessment of the functions and aspects of networks and relations, especially in the light of ongoing globalization.

Methods & Concepts B.3: Polycentricity in ESPON – a fuzzy concept to be defined and tested for evidence based policy making

Polycentric development is considered an important territorial ‘instrument’ to achieve competitiveness and/or cohesion in Europe. Hence ESPON has undertaken extensive work to find a scientifically sound methodology on the concept to make it available to evidence-based territorial policy making at the European level. The political concept rests on the ideas of the German geographer *Walter Christaller* and his *Central Place Theory* from 1933, which sought to describe the retail hierarchy of cities in Southern Germany. The theory suggests that laws exist determining the number, size and distribution of towns, in other words, deciding whether an urban system will develop monocentrically or polycentrically. His findings were actively applied in German spatial policy to achieve an economically and socially balanced development of the settlement pattern. However, the concept of polycentricity today goes well beyond the pure supply function and sees cities/centres as development motors of an entire region/nation. Germany, as the foremost polycentric country in Europe, has been very active in promoting this instrument during the development of the ESDP since the beginning of the 1990s.

There are many different ways to define cities, such as by build-up area, administrative units or functional influence. Within ESPON different approaches have been followed. In the most prominent, city delimitation is based on the latter, employing labour market functionality, that is to say, by using commuter catchment areas. Accordingly the concept is called the *Functional Urban Area (FUA)*, which in the ESPON context needs to be inhabited by at least 20 000 persons to be counted. In total there are 1 595 FUAs in the ESPON space. However, the travel to work distance cannot be measured sufficiently in all countries and hence commuter catchment areas were sometimes delimited by substitute criteria such as expert judgements (e.g. in Poland). For this inconsistent approach ESPON has received much criticism from the scientific community which pointed to the lack of comparability, leading to a revision in 2007. In the Nordic countries FUAs correspond to *Pendlingsopland* in Denmark, *Työssäkäyntialue* in Finland, *Bo- og arbeidsmarkedsregioner* in Norway and *Lokala arbetsmarknadsregioner* in Sweden.

In a next step the FUAs were grouped according to their function in the European urban system (global, transnational, national, regional, local) which finally led to the typology of *Metropolitan European Growth Areas (MEGAs)*. The grouping was based on (a) number of inhabitants, (b) competitiveness (GVA in manufacturing), (c) knowledge base (number of university students), (d) accessibility (number of airport passengers and volume of freight at a port), (e) access to decision making (number of headquarters of top 1 500 European firms) and (f) access to public administration (highest level of public administration located there). Furthermore ESPON defined a strategic territorial potential for demographic growth. Considering areas in 45 minutes reach from the FUA centre, *Potential Urban Strategic Horizons (PUSH)* could be defined. A wide range of these areas could be functionally integrated through cooperation with its neighbours and hence gain from emerging as larger demographic units, forming *Potential Integration Areas (PIA)*.

Based on the FUA delimitation ESPON has derived a *Polycentricity Index* composed of the FUA's *demographic and economic size*, their *location* (service areas) and *connectivity* (accessibility). Beside the possibility of ranking all ESPON countries according to their degree of polycentricity and following change, the major outcome was a correlation test of the index with national indicators representing the achievement of the three major policy goals, that is GDP *per capita* (competitiveness), equity in GDP *per capita* (cohesion) and energy consumption per unit of GDP (sustainability). It turned out that countries with *more polycentric urban systems* are on average *economically more successful* than countries with monocentric urban systems. Among the new EU member states those countries with more polycentric urban systems also tend to be *economically more equitable*. However, in the old EU member states this is hardly the case. Finally, in all parts of Europe more polycentric countries tend to be *more environmental sustainable*, although this relationship is rather weak.

It has to be noted that the definition and delineation of FUAs and in particular the constructed polycentricity index are not uncontested in ESPON. These are extremely valuable first steps entering a new field of territorial research, but more applied research will be necessary.

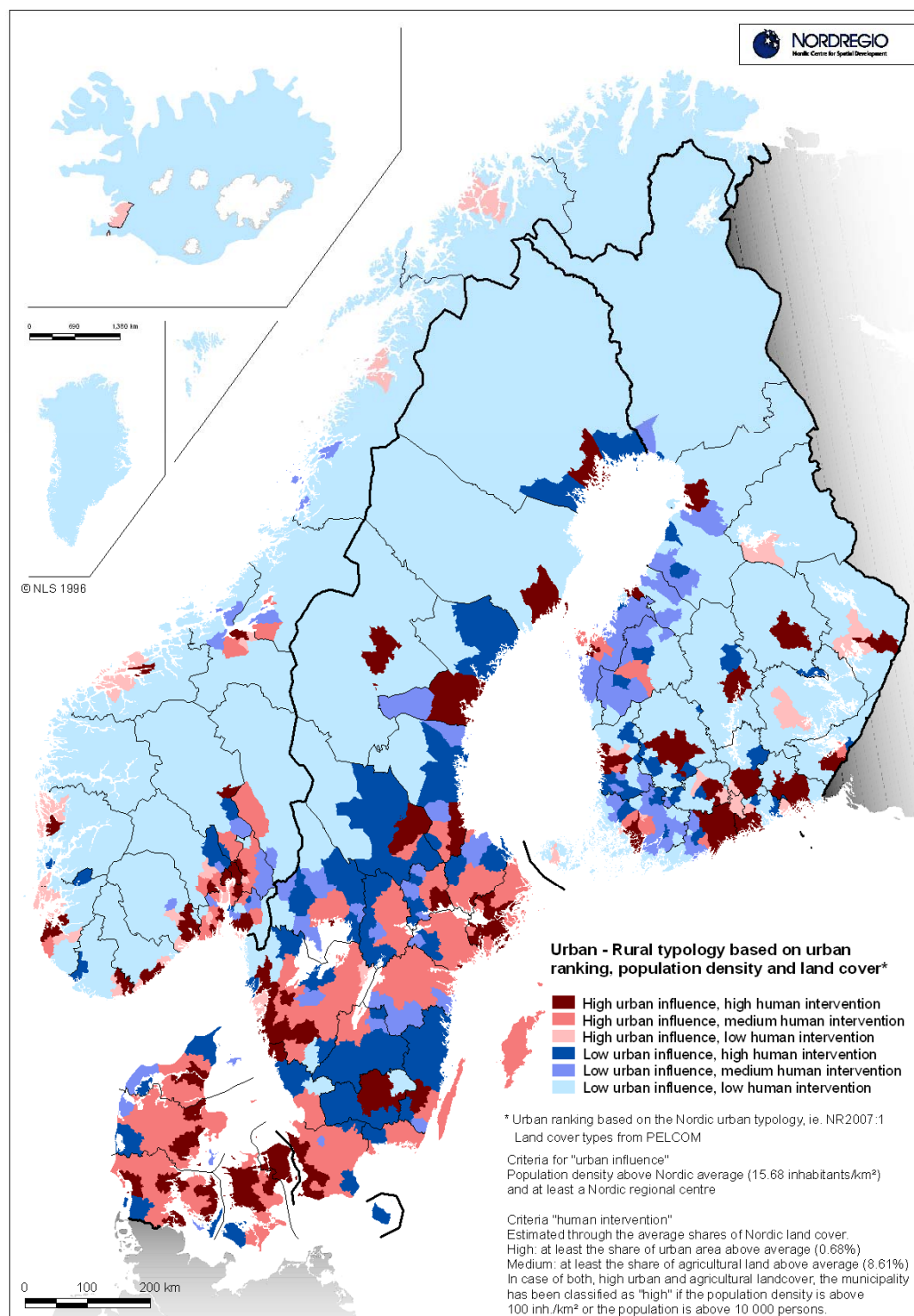
However, territorial development is not solely about larger metropolitan areas. Rural areas and the relationship between urban and rural areas are also of importance. Today however a clear delimitation between urban and rural areas seems increasingly illusive.

Macro scale: In almost every European country there a different definition exists for the urban and rural population (cf. Table C.2 in the Annex). ESPON's harmonised typology of urban and rural areas (Methods & Concepts B.4 and Figure C.6) reveals European and national core-periphery patterns of urban-rural settings. Predominantly urban areas with high human footprint can be found along a corridor running from Northern England through the Benelux countries and Western Germany to Northern Italy and partly down the Italian coast. A second East-West oriented corridor stretches through Southeast Germany along southern Poland and the northern areas of the Czech Republic into Hungary. The most *deeply rural areas with low urban influence and low human footprint* group mainly in large parts of Norway, Sweden and Finland, the peripheral parts of Spain and Greece as well as in the Alps.

Meso scale: In a European perspective most regions in the Nordic countries appear as rural with low urban influence and low human footprint. Exceptions here include the larger cities and in particular the capital cities. Furthermore Denmark's rural areas are considered as having a medium or high human footprint. Within the Nordic countries there are generally huge differences between the capital cities and the other regions as regards the urban influence and human footprint. Furthermore, the rural areas of Denmark and the other Nordic countries differ as regards the degree of human footprint.

Micro scale: Applying the ESPON urban- rural typology on the local level confirms the picture outlined above (Figure B.6). Several peripheral parts of Denmark show a high human intervention but low urban influence. The major part of the territory of Norway and Finland is rather unaffected by human and urban influence but encompasses a number of single highly urban cores, which are the regional centres and SMESTOs, each located rather remotely and isolated within the territory of the state concerned. This also holds as partly true for Sweden where human influence is generally higher, especially in its southern parts. However, we have chosen to replace the ESPON FUA typology by the Nordic urban typology to achieve a coherent picture.

Figure B.6: The urban and rural Norden by ESPON measures



Methods & Concepts B.4: Territorial characteristics of European regions – the ESPON urban-rural typology

Solving the question of what is urban or rural may seem rather easy for most people. However, as national definitions of urban and rural populations differ widely across Europe things look different, especially when it comes to the establishment of a typology to be used within the context of European territorial policy making.

For this purpose ESPON 1.1.2 grouped regions by combining *structural properties* (such as land use patterns, settlement structure and population distribution) and their *functional relations* (such as forms of production and consumption). The final typology employs two dimensions to distinguish six rural-urban area types. Firstly there is the dimension of *urban influence*, which is defined on the basis of population density and the functional ranking of urban centres (MEGA/FUA classification). Secondly the degree of *human footprint* is derived based on land cover types, namely the share of artificial surfaces, agricultural land and ‘wilderness’. While in many cases, urban influence and human footprint correlate, some remarkable inconsistencies remain. Thus the typology presented by ESPON shows a range of different types from highly urbanised areas to very rural areas.

Accessibility to markets and services

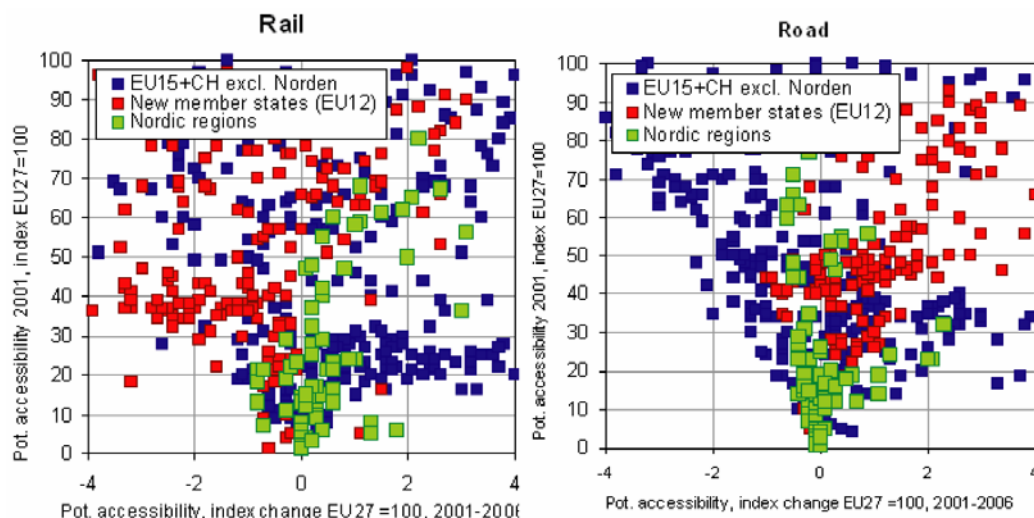
Project link: ESPON 2.1.1, 1.2.1 and accessibility update 2007

Accessibility in terms of physical transportation and knowledge transfer e.g. ICT networks and facilities of higher education, are considered key aspects for regional development in Europe. The quantity and quality of a region's infrastructural endowment as well as its distance to population and/or economic centres are important components of attraction. Hence accessibility is one of the most important indicators used in ESPON to determine the locational advantage of a region and to describe the territorial aspects of the transport system. Good accessibility is often equated with good economic performance. However, ESPON analyses show that the hotspots of multimodal accessibility in Europe are in no way homogenous in economic terms. Accordingly many Nordic regions, especially the capital areas, perform well in GDP terms despite comparatively low indices of accessibility. This illustrates then that accessibility is not the decisive factor determining economic strength and competitiveness.

Macro level: When it comes to accessibility by *rail or road* the European picture shows a *clear core-periphery pattern* with better accessibility in the densely populated core of Europe. Good accessibility by *air* is very clearly concentrated towards the *major international airports*. Combining the various transport modes to multimodal accessibility (see Figure C.7 in the Annex) delimits an arc of high accessibility stretching from Liverpool and London over northern Italy, via Paris, Lyon, Benelux and up to the Rhine area. 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.

Meso level: The Nordic NUTS 3 regions show *below European average multimodal accessibility*, apart from the regions in the influence area of Kastrup airport (Figure C.7). The more peripheral Nordic regions belong to the category with the *lowest potential multimodal accessibility in Europe*. At the same time good economic performance, despite low accessibility, indicates that European accessibility might not be the most important development factor for Nordic regions.

Figure B.7: Change of European potential accessibility by rail and road 2001-2006



Micro level: Although almost all Nordic regions have a multimodal accessibility below the European average there were considerable differences in 2001. In particular the *capital cities*

with internationally relevant airports have better accessibility values while the *regions in closer proximity to the European core* also have slightly better values than do other areas because of better accessibility by road and rail.

Figure B.7 depicts the change in the latter two components from a European perspective for Nordic and other regions over the first half of the current decade. Accessibility by rail and road hardly improved for Nordic regions but has not considerably worsened either. The Nordic winners of recent infrastructure investments are primarily those regions with already good accessibility to the European core in Nordic terms. This includes the major part of the Danish regions. In addition east-southern Sweden (Jönköping, Kronoberg and Kalmar County) is considered to be an area with poor accessibility somewhat improved its rail and road transport network towards the central parts of Europe. As an exception Varsinais Suomi (Turku/Åbo) in Finland and Bornholm in Denmark are more accessible by 'road' today than just a few years ago. The reason for this may be better ferry connections. In addition almost all low accessibility regions in the new EU member states are quickly linking themselves up to the European core by road. All in all the locational disadvantages of Nordic regions in relation to central European markets remains. Furthermore the nature of transport developments in recent years has not changed the overall European spatial accessibility pattern. However, the impact of the two recent EU enlargements on low accessibility areas has been most distinct in the new member states and in non-Nordic regions of the old EU member states. In particular locations close to the Eastern fringe of the European core could considerably improve their position regarding accessibility by rail and road. Calculations for air and multimodal accessibility are not however currently available.

Debate B.3: *Does European potential accessibility matter to Nordic regions?*

In ESPON European potential accessibility has been given priority. These measures play an important role in developing policies to build a more competitive and cohesive Europe by means of EU policy. Among other things European potential accessibility measures supported EU transport policy in qualifying the Trans-European Networks (TEN). However, a clear correlation between a region's transport infrastructure endowment and its economic growth has not been verified scientifically.

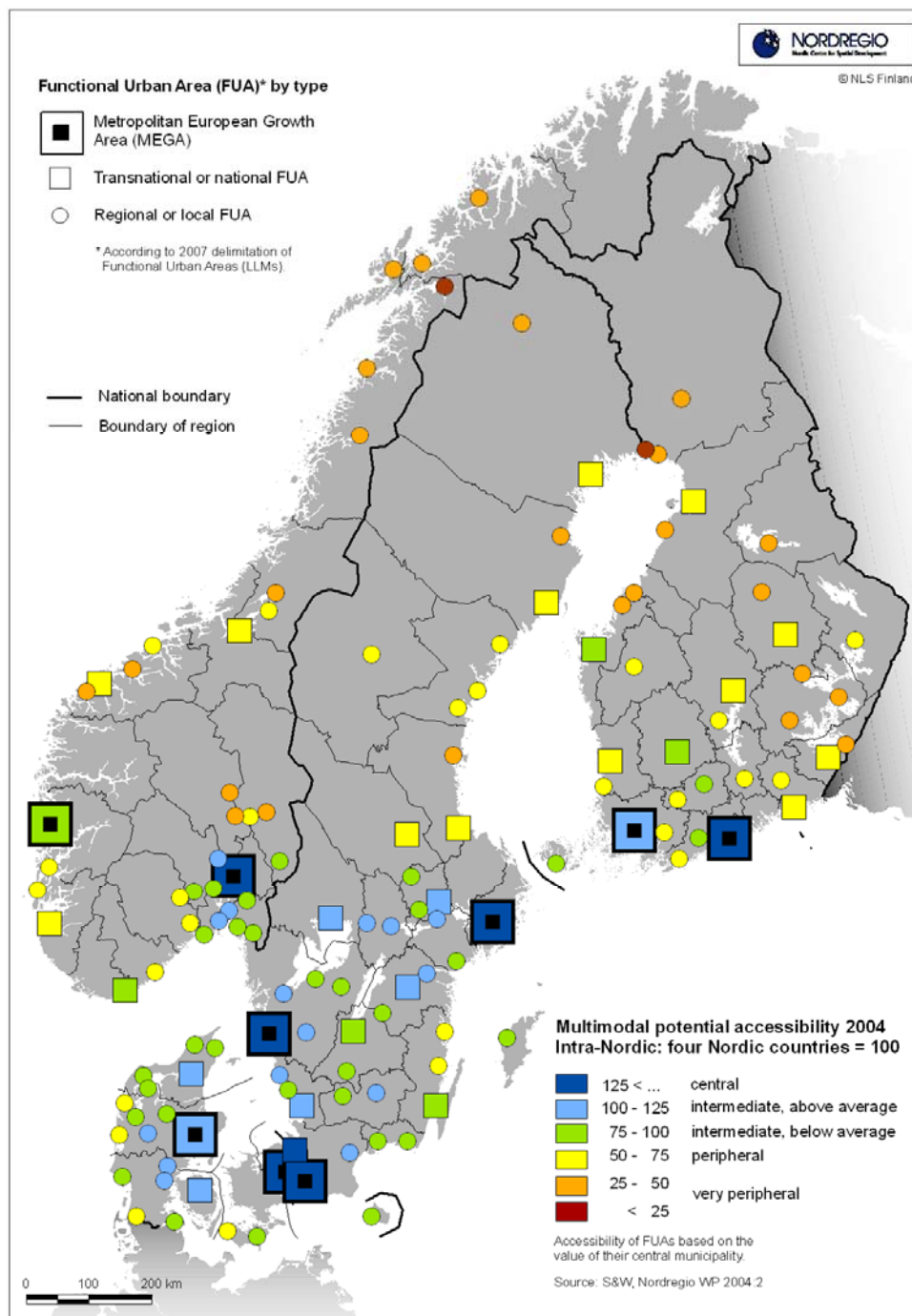
In regional development various other factors including *global and local accessibility potentials* (e.g. to public service, local industries and population or to overseas markets of multinational corporations) can often play a far more important role than European accessibility *per se*. This fact is particularly evident in the Nordic countries with a number of regions which regardless their low European accessibility and sparse population perform rather well in European economic terms.

Furthermore the value of European potential accessibility to Nordic regions depends on which *transport mode* is employed (road, rail, air, or multimodal). On the one hand each type of accessibility depicts specific locational advantages, which form preconditions for implementing certain regional development strategies. On the other it is the industrial blend of each region that determines the importance of different modes of transportation. In timber- and mining hubs heavy load taking rail and/or road connections are crucial while tourist hubs need reliable and fast air services for medium and long distances. Thus European potential accessibility matters to regions mainly targeting European markets. In addition *inter-regional accessibility potentials* play an important role for peripheral regions, numerous in the Nordic countries, in order to enhance economic growth by building wider integrated functional regions.

Finally, in order to fulfil the policy target of territorial cohesion in the sense of not disadvantaging people wherever they happen to live, the spotlight needs to be placed on a *balanced pattern of access to local services of general interest and knowledge infrastructure*.

Focusing on Nordic functional urban areas and their accessibility from a Nordic context (Figure B.8) reveals, not surprisingly, a centre-periphery pattern, which follows the urban hierarchy and a distinct North-South divide. Most of the nationally and regionally important Nordic FUAs north of the line Oslo-Stockholm-Turku-Helsinki suffer from a rather peripheral location, and thus are not even half as accessible as the Nordic MEGAs and many southern national and regional FUAs. Since physical distances in the Nordic countries are huge, intra-Nordic multimodal accessibility is strongly determined by the quantity of air services.

Figure B.8: Intra-Nordic multimodal accessibility of Nordic FUAs 2004



In ESPON the quality of local service provision has mainly been assessed in terms of the infrastructure endowment of a region or urban area relative to e.g. its population. Those approaches are useful in a benchmarking process but neglect intra-regional disparities and the importance of a region's infrastructure for adjacent regions. Figure B.9 and B.10 captures the location of selected public services in the Nordic countries and their accessibility by road compared to the European situation. On average a major hospital (> 300 beds) and/or an education facility (> 1 000 students) can be reached by car within approximately 1.5 hours drive in Europe. Hospitals are quite equally dispensed across the territory. Large continuous areas with considerably longer driving times to hospitals can only be found in the Nordic countries (cf. Figures C.8-C.9 in the Annex).

However, the infrastructural endowment must be seen relative to the population, which can be served by those local facilities. Making the assumption that travel times to specialised services may be somewhat longer than times for daily commuting, a one hour drive may be seen as an acceptable distance. Despite the low population density in the Nordic peripheries facilities of higher education are rather numerous. Nevertheless, in most Nordic peripheral regions only up to half of the population can access hospitals or facilities of higher education within one hour by car. This also includes regions in the Eastern part of Danish Jutland. Comparing Finland and Sweden reveals that Finnish inhabitants of peripheral regions are better served in this respect than those in Sweden.

Methods & Concepts B.5: *Potential accessibility – locational advantage as a product of the transport system*

Accessibility is the *main ‘product’ of a transport system*. The task of transport infrastructure is to enable spatial interaction, i.e. the mobility of persons and goods for social, cultural or economic activities. In the context of spatial development, the quality of transport infrastructure in terms of capacity, connectivity, travel speeds etc., determines the *locational advantage of an area* (i.e. of a region, a city or a corridor) relative to other locations. Transport operates on different modes and hence there is accessibility by *road, rail, air* or combined measures such as *multimodal* accessibility. Hence accessibility indicators describe the relative location of an area and illustrate the benefits that occur to households and firms in terms of available transport infrastructure and services.

There are various types of accessibility indicators, of which *potential accessibility* features strongest in ESPON. *Potential accessibility* is based on the assumption that the attraction of a destination increases with size, and declines with distance, travel time and/or costs. Thus potential accessibility is a construct of two functions, (a) the destination or activity function representing the *activities or opportunities to be reached* and (b) the impedance function representing the *effort, time, distance or cost* needed to reach them. Destination size is usually represented by population or economic indicators such as GDP or income. Accessibility to population is seen as an indicator for the size of market area for suppliers of goods and services while accessibility to GDP determines the size of market area for suppliers of high level business services.

Figure B.9: Car travel times to major hospitals in the Nordic countries 2001

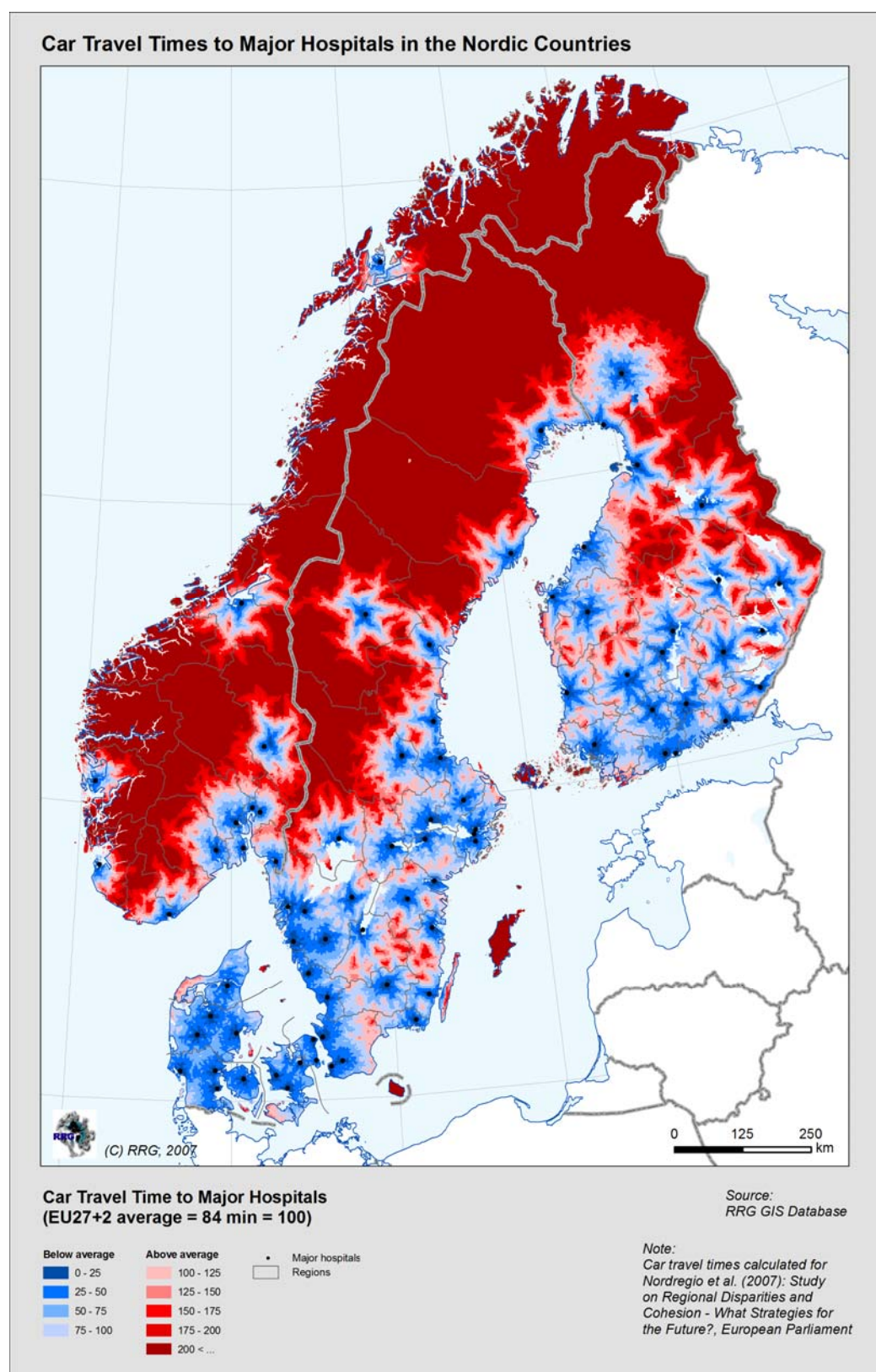
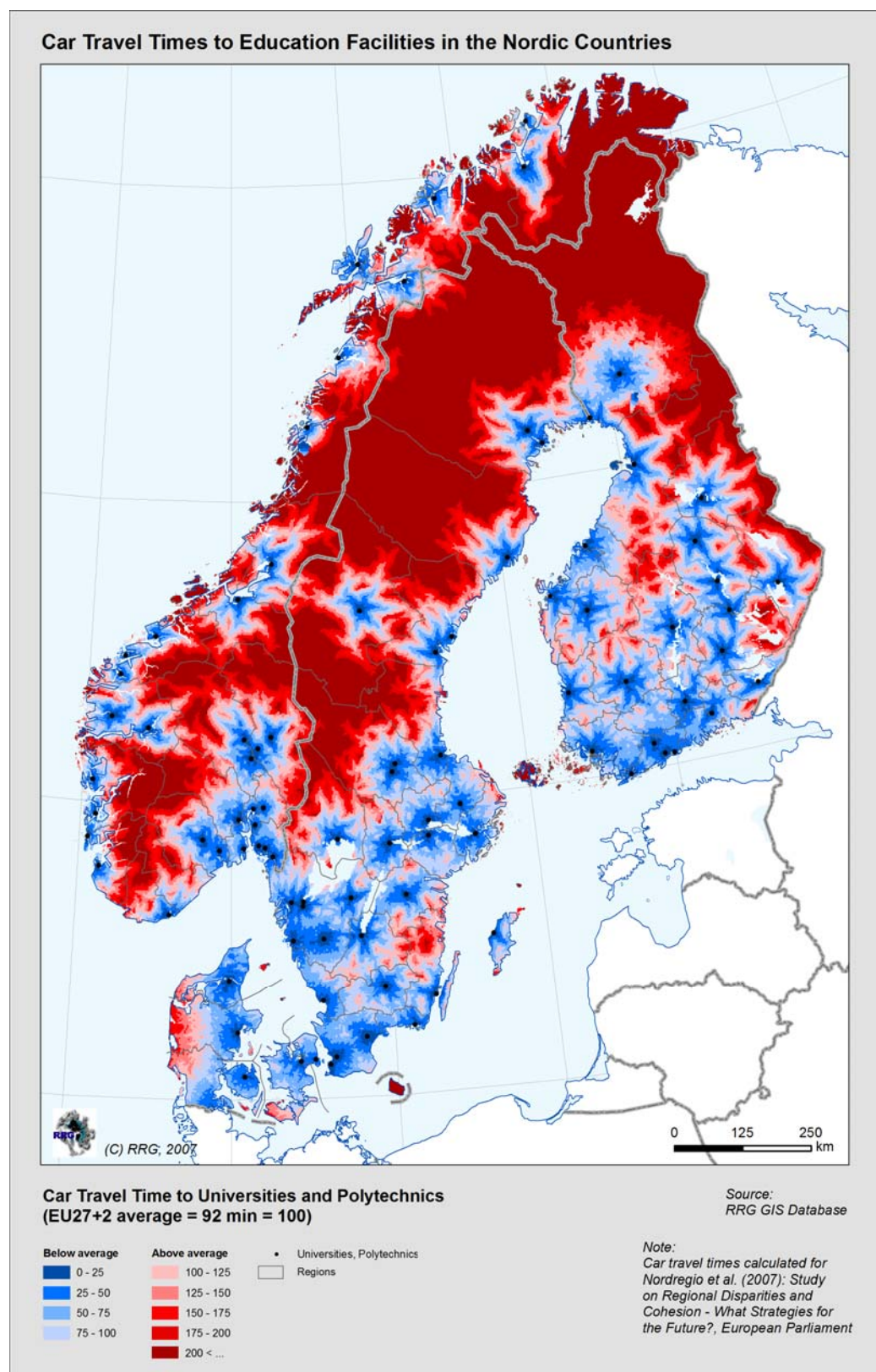


Figure B.10: Car travel times to facilities of higher education in the Nordic countries 2001



Demographic development and migration

Project link: ESPON 1.1.4

A century ago large parts of Europe experienced a ‘rural exodus’ to the towns. Today there is evidence of counter-urbanisation and ‘rural revival’.

Macro level: Europe is growing unevenly in population terms. There is a sharp East-West divide with contradictory population developments occurring in each half of the continent (cf. Figure C.10 in the Annex). While in the east large parts of the continent have witnessed a decline in population mainly due to low birth rates, out-migration is one of the major reasons for losses in the Nordic peripheries. However, in these areas, they are often also accompanied by low birth rates. Developments here are on par with the new German *länder*. By contrast large areas of Western Europe continue to gain in migration and natural growth. Exceptions here include some of the interior parts of France, parts of Scotland and the North of Spain. On an overall level, the population in the Nordic countries is however steadily increasing.

Meso level: In parts of Europe, people are moving out of the larger cities to live in the countryside. In Britain, this amounts to approximately 1 700 persons per week. In France, some rural areas, even some of the most isolated ones, are witnessing a growth in population. This process of counter-urbanisation is leading to a rural revival, particularly in areas between the dense urban networks of central and north-western Europe, but also in both the Southern European and the Nordic countries. Here more balanced flows can be observed. However, young people continue to leave isolated rural areas to live in the cities. This process of rural-urban migration is particularly evident in central Spain, Portugal, *Finland, Norway and Sweden*.

Debate B.4: *North of the road – immigration and its potential role in counterbalancing labour shortages, demographic aging and spatial polarisation in Nordic regions*

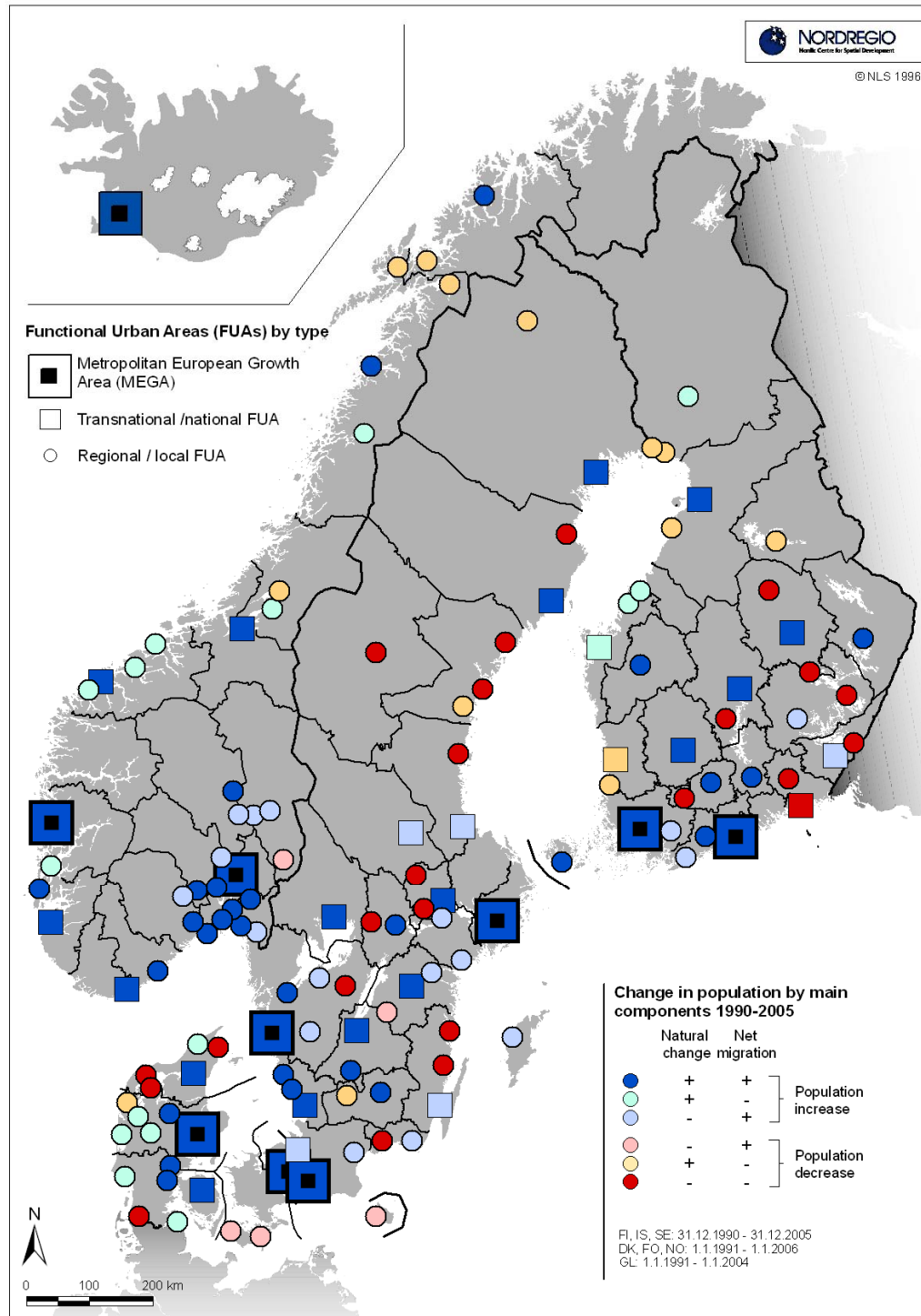
The major nationalities of all immigrants to the Nordic countries are Nordic nationals returning to their home country, followed by other Nordic citizens. Only a small part of the total immigration to the Nordic countries (except Norway) is related to labour immigration (between 5-10 per cent) from outside Norden. In an international comparison the migration to the Nordic countries is rather small. Even if the migration from the New Member States in the EU to the Nordic countries is increasing, it is still insignificant compared to most central European countries. Furthermore the New Member States cannot be seen as a labour reserve since their labour stocks are rather small in general and problems of demographic ageing are worse than in the Nordic countries.

While most refugees and labour immigrants head for metropolitan areas and major cities the need for labour immigrants in the Nordic countries is higher outside those areas. Labour immigrants target on the one hand low-skilled, marginally productive and unqualified jobs in the lower segment of the service sector and on the other hand high-skilled jobs. There is then an obvious risk that the new immigration and settlement patterns will increase the already existing regional polarisation and hamper polycentric development potentials.

Despite the demand for highly skilled labour, a considerable amount of vacancies open for immigrants are in the ‘3D’ sector meaning dirty, dangerous and degrading jobs. This, in combination with a compressed wage structure, high taxes and xenophobia, makes the highly skilled migrants choose other countries. The difficult Nordic languages and cold climate do not improve the situation.

Thus labour market reforms and increased geographic mobility of the labour force are likely to have a greater effect than immigration in solving labour shortages and labour market bottlenecks in Nordic regions.

Figure B.11: Population change by main component in Nordic FUAs 1990-2005



Micro level: The pattern described above is particularly evident when observing long-term development at the local level. Figure B.11 shows the population development by component in all Nordic FUAs. Size matters in the demographic development of the Nordic urban system, at least when looking at functional urban areas in the long run, here viewed over a period of fifteen years. The period spans almost two economic cycles and hence the picture provides a rather stable observation of the Nordic territorial demographic trend. MEGAs and most transnational/national FUAs enjoy positive surpluses in migration and natural growth. The picture in regional/local FUAs is however somewhat more divided often favouring those located in proximity to higher order FUAs, especially the national capitals.

Territorial futures and desirable spatial evolution

Project link: all ESPON Strand 2 projects and ESPON 3.2

In order to support a European level debate on territorial futures involving regions, cities and larger territories within the ESPON space, the programme has developed several spatial scenarios, exploring alternative directions of possible trends and driving forces related to the future territorial development of the EU. The main outcome of the debate is seen in the coordination of a large number of public policies with territorial impact to backup long term spatial development strategies. The time horizon is set to 2030, a period of approximately 25 years into the future. In addition to a trend scenario, assuming that public policies do not fundamentally change over the period, two different policy systems were selected over which intense debate has occurred in recent years, namely European *competitiveness* and *cohesion*.

Figure B.12: Long term public policy choices in European territorial development

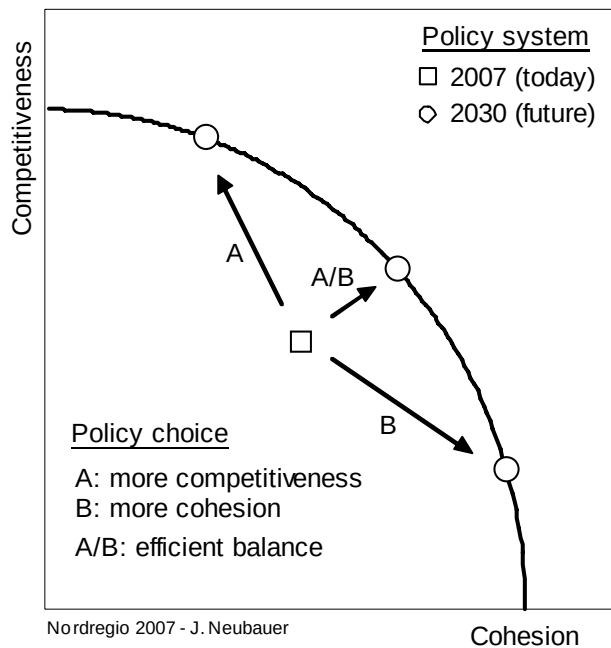


Figure B.12 illustrates the debate about the two policy systems by capturing them in a utility possibility diagram. Here the line represents the maximum territorial impact (utility) public policy can provide to influence spatial evolution matching the policy objectives of competitiveness and cohesion. It is assumed that today's European public policy system is inefficient in delivering a maximum of impact on competitiveness and/or cohesion. Hence it is placed inside and away from the line. This would also be the policy system, for which the possible future territorial outcome is depicted by the trend scenario. By doing the impossible, i.e. coordinating all public policies with a territorial impact (or the territorial stakeholders) to strive towards competitiveness and/or cohesion three principal future policy systems might be achieved. In general attaining more competitiveness may result in less territorial cohesion and *vice versa*. Furthermore an 'optimal' balance would probably mean compromising both policy objectives. However, the public policy choice between efficiency and equity is a case of societal preference. By using scenario techniques ESPON 2006 illustrated the possible territorial consequences of those choices for the European territory as follows.

Warning! Policy oriented spatial scenarios are *tools to foster debates* between territorial stakeholders about possible future states of their territory. Those scenarios are *by no means predictions!* As such no exact delimitation and/or location of the spatial impact of policy choices can be depicted from the accompanying maps, especially in the medium and/or long run (i.e. until 2030). Hence any scenario map presented in this report should be interpreted with **extreme caution** and taken as a rough 'guestimate' of one possible future state of the territory.

In what follows the ESPON competitiveness and cohesion scenarios are looked at from a Nordic point of view while attempting to discern the possible outcome of European policy choices for Nordic regions. Since scenarios are rough 'gestimates' with rather fuzzy delimitation of policy impact areas, a further breakdown of the scenarios is not suitable here. For an outline of the assumptions underlying the scenarios consult Table C.3 in the Annex.

The *competitiveness oriented scenario* (Figure B.13) corresponds to the general objective of stronger global European competitiveness at world scale. In a nutshell it may be the result of a further enlarging European Union with a rapid liberalisation and privatisation of its internal market combined with market-oriented investments in infrastructure and R&D. In the Nordic countries this is likely to result in a further strengthening of the prime position of the capitals and a few other selected Nordic *metropoles* such as Tampere and Turku in Finland, Gothenburg in Sweden and the wider Århus region in Denmark. At the same time the Öresund region is likely to more strongly integrate with the continent linking up with the northern tip of the pentagon towards Hamburg. In contrast, the metropolisation of territorial development may further contribute to rural marginalisation of the Nordic peripheries. The industrial base of economic development outside the *metropoles* will decline and probably eventually be replaced by service jobs in most interior parts of these countries. The main European economic activities will remain concentrated in the pentagon far from most Nordic regions.

The *cohesion oriented scenario* (Figure B.14) aims at maintaining a high level of economic, social and territorial cohesion in Europe in order to counterbalance the shocks and disruptions generated by the globalisation process and other main factors of change. Besides a freezing of the European Union's further enlargement plans it is assumed, that public intervention (e.g. by means of the Structural Funds) will reinforce targeting the weakest and most peripheral regions. This will also include promotion of a more decentralised infrastructure. Consequently peripheral areas of the Nordic countries will face less risk of rural marginalisation. Furthermore enlarged and more polycentric metropolitan regions around the Nordic capitals are expected to emerge as is the case in many other larger urban settlement areas across the European territory. The most intensive flows and economic activities are likely to be

concentrated in the south of Sweden, the Oslo region and Denmark. A further integration of the Nordic countries with their neighbours in the Baltic Sea Region performing well outside the pentagon may also be a result. This scenario is likely to further increase the size of the public sector in the Nordic countries.

Debate B.5: *Putting common territorial futures on the Nordic regional development agenda*

Both scenarios point to *rural marginalisation* of the Nordic periphery as a major future risk, although with different intensities. Despite a more polycentric development in the cohesion scenario, polarisation of development towards the Nordic metropolitan areas is seen as a mega trend. Since the Nordic countries do have a number of specific territorial characteristics in common, and hence partly share the same risks, a further co-ordination of policy action aiming at addressing these common territorial futures in a European debate may help to counterbalance the presence of central European development issues for example in ESPON 2013. This is increasingly relevant as Iceland is expected to join the ESPON community for the upcoming project period.

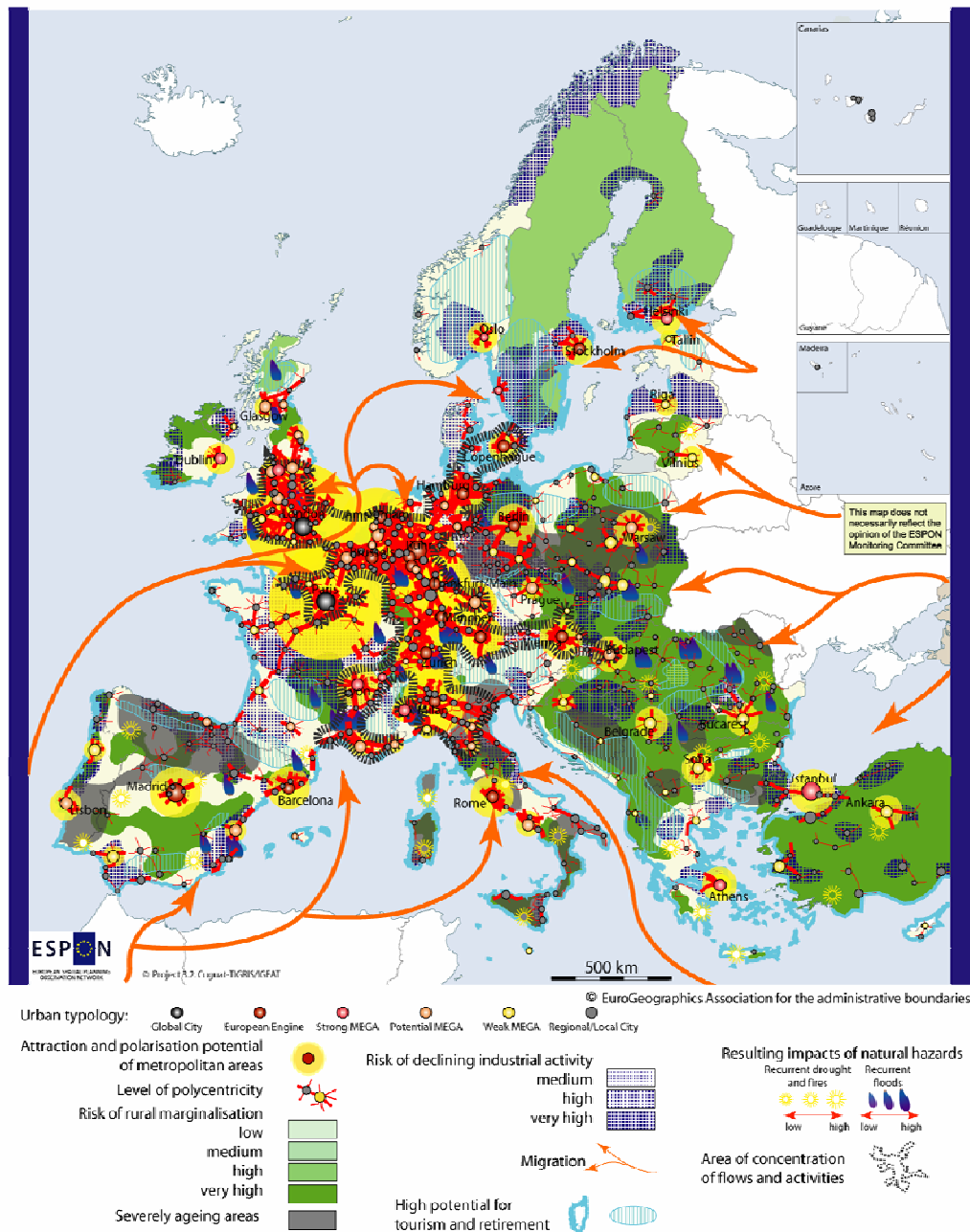
Methods & Concepts B.6: *Policy oriented scenarios – discussing the future territorial impact of today's public policy choices*

In a number of ESPON projects scenario techniques have been used in order to better describe the possible future perspectives of territorial development choices. Thinking about the future is an essential precondition for investigating where policies are necessary and how they should be shaped. Within the ESPON 3.2 project policy-oriented spatial scenarios were developed covering the entire European territory.

Here a *combination of qualitative techniques* (literature review, creative thinking, and workshops) and *quantitative techniques* (econometrics and modelling techniques) were employed in developing the scenarios. The main steps of the scenario approach are as follows. Firstly *thematic scenario bases* are established collecting and integrating a wide range of information sources for each theme in order to understand the past and present trends and driving forces as a basis for the exploration of the likely development of the theme in a realistic way. Hereafter *thematic scenarios* are elaborated for each theme including two or more alternative policy scenarios which take into account the wider context of the policy, the policy itself, its territorial impacts, and the final image of the EU. Then the thematic scenario bases are used to develop *integrated scenarios* taking mutual relations between the themes into account. The final step is the *testing of the integrated scenarios* by the help of different 'wild cards' to determine the stability of the scenarios. *Wild cards* are low probability events, which potentially cause high territorial impacts when occurring, such as, historically, the fall of the iron curtain or perhaps, in future, a breakthrough towards the hydrogen economy.

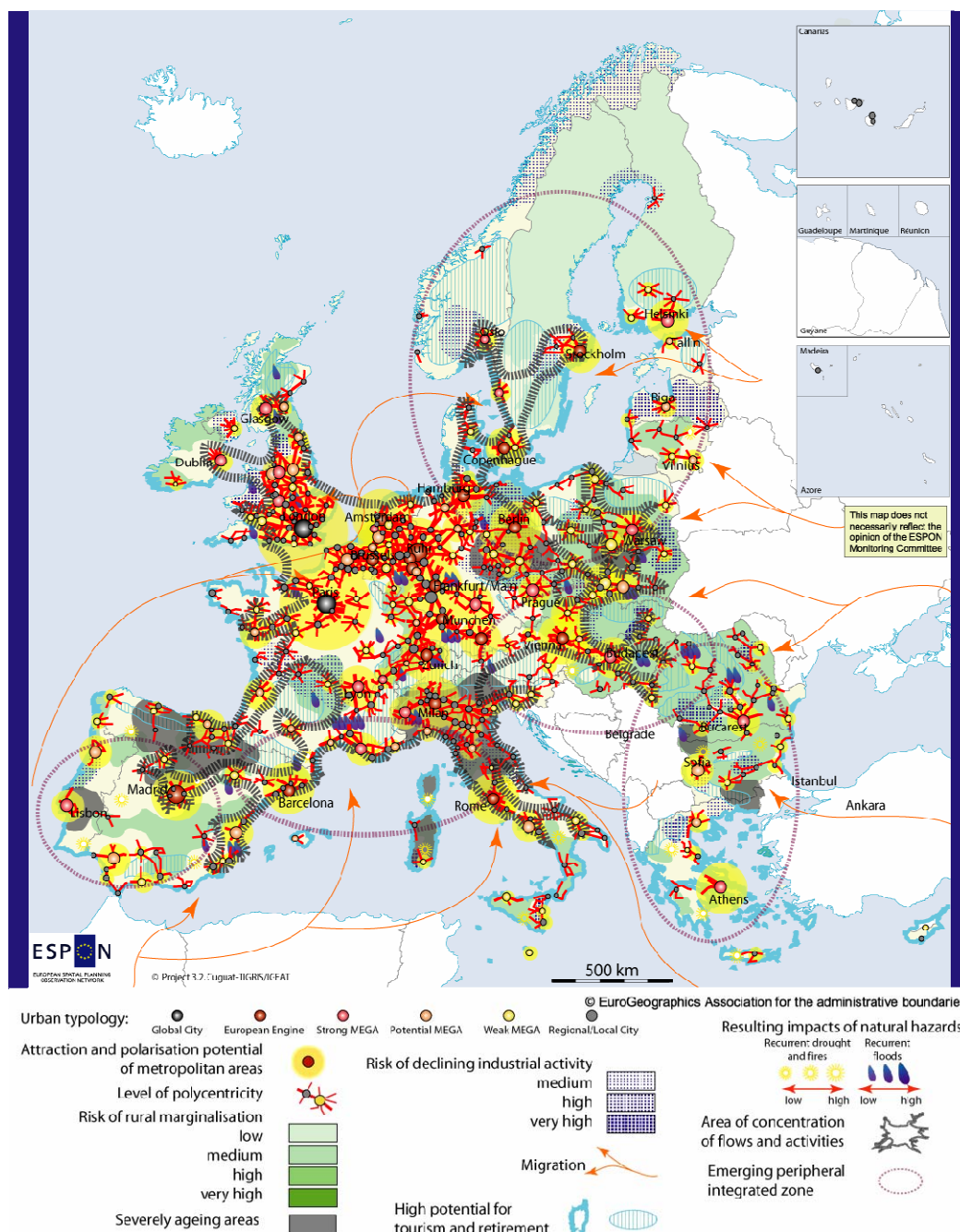
In addition, the project considered a *cyclical scenario approach*. A scenario cycle consists of the following building blocks: making a scenario base (comparable to the integrated scenario base described above), building prospective scenarios (exploring the most important trends and driving forces with their territorial impacts), designing pro-active scenarios (exploring various desirable future states of the EU territory with the EU policies required to realise them) and deriving policy recommendations (providing input for a strategic vision on the near future).

Figure B.13: European competitiveness-oriented scenario – final image 2030



The framing of long-term territorial futures and the set up of related territorial policy objectives needs to be supported by an assessment tool enabling the regular evaluation and adjustment of the policies in order to ensure the impact matches the target. In fact, through ESPON this is the first time that the territorial effects of EU policies have been studied systematically at the European level. The type of *Territorial Impact Assessment (TIA)* and the procedure differ widely across projects, something that is also reflected in the results (cf. Methods & Concepts B.7). An important outcome of the studies relates however

Figure B.14: European cohesion-oriented scenario – final image 2030



to the territorial impacts of EU sector policies and the extent to which EU policies contribute towards achieving the aim of territorial cohesion. 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 or locality. After all, the contribution of sector policies to cohesion objectives is rather mixed. However, techniques for undertaking Territorial Impact Assessment might be a

step towards further improving policy coherence. It is undoubtedly the case however that the work carried out under ESPON 2006 is only a first step towards the delivery of the necessary information on the territorial impact of policies.

Debate B.6: *Integrating European ex-ante TIA into SEA in the Nordic countries*

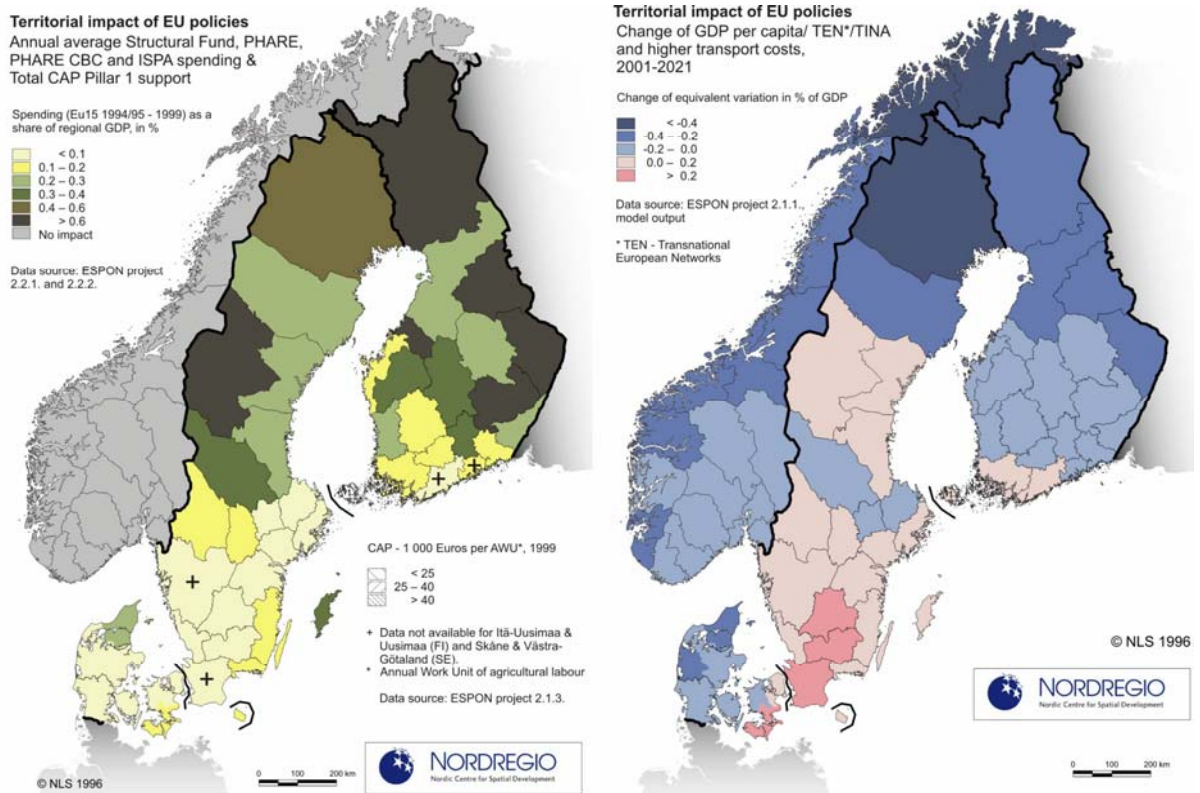
The first decade of EU accession for the Nordic regions has shown the considerable impact of EU policies on these regions. However, the concrete territorial effects often remain somewhat fuzzy. As such, evaluating the territorial impact of EU policies in a Nordic SEA framework may prove to be a valuable future asset and might gain from a further development of the TIA approach in ESPON 2013, together with the development of a spatial monitoring system at the European level. However, the question remains whether this integration would allow the TIA of policies to function as foreseen.

Integrating TIA into SEA in the Nordic countries may be relevant and feasible in the Nordic context given that some key preconditions are met. These preconditions include e.g. that regional (development) policy is developed (a) as an evidence-based rather than ideologically-based policy field, (b) as a regionally-specific, endogenous policy field rather than “one-size-fits-all” area of policy, (c) that evaluative practice is developed in a holistic fashion, more as a process evaluation approach than a step-by-step differentiated policy cycle approach and (d) in a systemic rather than linear framework, expecting that impacts emerge as an iterative process, influenced by a variety of external and internal factors, rather than in a one-off linear process of input-output-result-effect.

In contrast to some continental countries such as Austria or Germany, the Territorial Impact Assessment of policies is a rather new approach in Nordic regional development. Today, only in Finland is the territorial impact of plans and programmes assessed in the framework of Strategic Environmental Assessment (*Suunnitelmien ja Ohjelmien Ympäristövaikutusten Arviointi* - Environmental Assessment of Plans and Programmes). Here the authorities have been required to assess the environmental impacts of all their planning and programming activities since June 2005.

Figure B.15 however illustrates the territorial impact of EU policies in Nordic regions. On the one hand this includes the historic impact of Structural Fund spending in the Nordic EU member countries (left hand side) but also the likely future impact of the European transport policy (TEN/TINA). For example, during the first SF period immediately after accession (1994/95-1999) regions like Lapland and Kainuu in Finland or Jämtland in Sweden received financial aid making up more than half a percent of their GDP.

Figure B.15: Territorial impact of EU policies (CAP, TEN, SF) on Nordic regions



Integrated multi-scalar approaches

Project link: ESPON 3.4.3

The fact that the size of territorial units differs widely across Europe poses a challenge to comparative territorial analysis and policy making in various respects. The phenomenon is known as the *Modifiable Area Unit Problem (MAUP)*⁶. In a nutshell it can be stated that with changing spatial resolution and perspective over time the message perceived from an analysis will also change and on occasion even lead to contradictory findings. Hence MAUP is a highly relevant problem for evidence-based policy making at all levels, e.g. in the search for the disparities to be addressed by cohesion policy. Comparable measures also need comparable territories!

⁶ In ESPON the MAUP problem manifests itself by, for example, using NUTS units of the same level (e.g. NUTS 3) throughout the entire territory. However, the geographic phenomenon is far from being unique for ESPON also applying at any given combination of territorial units in the Nordic countries.

Methods & Concepts B.7: Territorial Impact Assessment – evaluating the territorial impact of public policies

In order to shape a desirable future state of the territory, public policy seeks to influence spatial evolution to match set territorial objectives. ESPON has carried out a number of projects aiming at systematically assessing the territorial impact of EU territorial policies and evaluating it against the objectives set by those policies (strand 2 projects). The task was complicated by the fact that territorial impacts can take many forms and be understood in many different ways. Most of the studies concentrated on *ex-post* assessment and only the ESPON 2.1.1 study on transport policies applied an *ex-ante* approach, which is of particular interest in the policy debate. In general two assignments were carried out, which were the development of methodologies that operationalise the territorial impact of the respective EU policy hence turning it into measurable objectives and the collection of EU-wide data necessary to measure the impact at a sufficiently detailed geographic level.

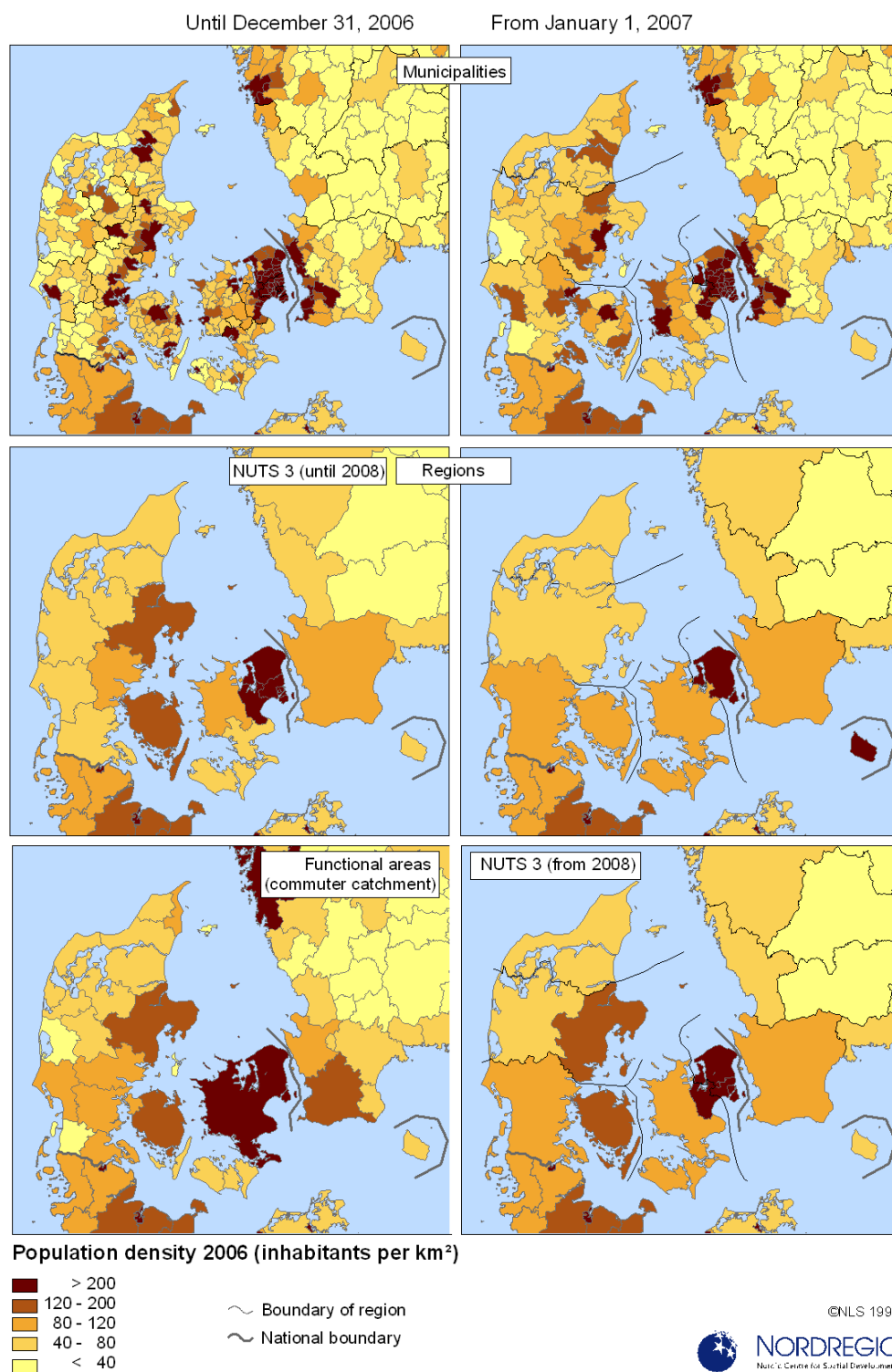
Here is a selection illustrating the variety of objectives, impacts and approaches taken. By applying an *ex-post* assessment, based on the geography and type of support, mixed with case studies, ESPON project 2.1.3 evaluated observable changes in economic, social and environmental conditions resulting from the *Common Agricultural Policy (CAP)*. Project 2.2.1 applied a similar method to investigate the direct and indirect contributions of the *Structural Funds* to different aspects of polycentricity and territorial cohesion. In contrast, project 2.1.1 on transport policy impact applied an *ex-ante* evaluation of planned actions based on different types of modelling to prognosticate the effects of reconstruction of the *Trans European Network (TEN)* on the increase in GDP *per capita*. (Source: Böhme & Eser 2007)

A further outcome of the ESPON policy impact projects has been the identification of *minimum requirements for territorial impact assessment* and a proposal on an *overall approach to the ex-ante territorial impact assessment of EU policies*, the so-called TEQUILLA model. TEQUILLA is an econometric, multi-criteria model suitable to function as an easy to manage ‘early pre-warning system’.

However, the key question remains how to best place a TIA in the policy process. Keeping in mind the fact that ESPON should contribute to policy-making, an answer to this question is necessary in order to provide appropriate guidance to the further development of the TIA methodology going beyond the purely academic interest of methodological improvement.

A Nordic illustration of MAUP capturing the dimension of scale as well as of change over time is given in Figure B.16. Perhaps the most stunning feature of Denmark’s territorial transition due to MAUP is that by looking at the most simple indicator of population density the new regional divisions make the East-West divide in Jutland disappear (although preserving it at the new NUTS 3 level) converting it into a North-South divide instead. In the same way Bornholm stands out, together with Copenhagen, as one of the most densely populated areas in Denmark. Turning to functional areas (commuter catchment areas) the recognised spatial pattern as observable by using the old regional divisions is visible again. At the same time new municipalities and regions are more comparable in an international context, at least when including Sweden.

Figure B.16: Population density in Denmark at different territorial levels before and after the administrative structural reform of government in 2007



Several questions on regional policy could be derived from these changes. Is the new picture in compliance with the territories addressed by Danish regional policy today? How should we delimit sparsely populated areas or other target areas for regional policy? Does it imply a total revision of Denmark's regional policy or should the new regions not be used at all for the purposes of territorial policy? Which divisions should be used to compare the Danish situation to the Swedish one or, more generally, what effect does the new territorial structure have on comparability with other regional contexts in the Nordic countries?

These are some of the questions, which demonstrate the high relevance of the MAUP problem in a Nordic regional development context. Other typical Nordic examples of MAUP are the Finnish city of Oulu and its surrounding region of Pohjois- Pohjanmaa as well as Umeå and Västerbotten in Sweden.

Debate B.7: *Multi-scalar analysis as tool for customisation of regional policy in the Nordic countries?*

The rapid internationalisation of regional development issues in the Nordic countries, due to e.g. globalisation and the ongoing liberalisation of EU markets, calls for more integrated approaches in territorial development policy. As pointed out by the Nordic Working Group on Cities and Regions (cf. Debate A.2) the trans-national, inter-regional and the intra-regional perspective must become part of all levels of policymaking. For this purpose the *HyperAtlas*, described in Part C could prove to be a useful tool worth adapting to the Nordic development context. A basic Nordic version of this tool has been developed and is part of this paper.

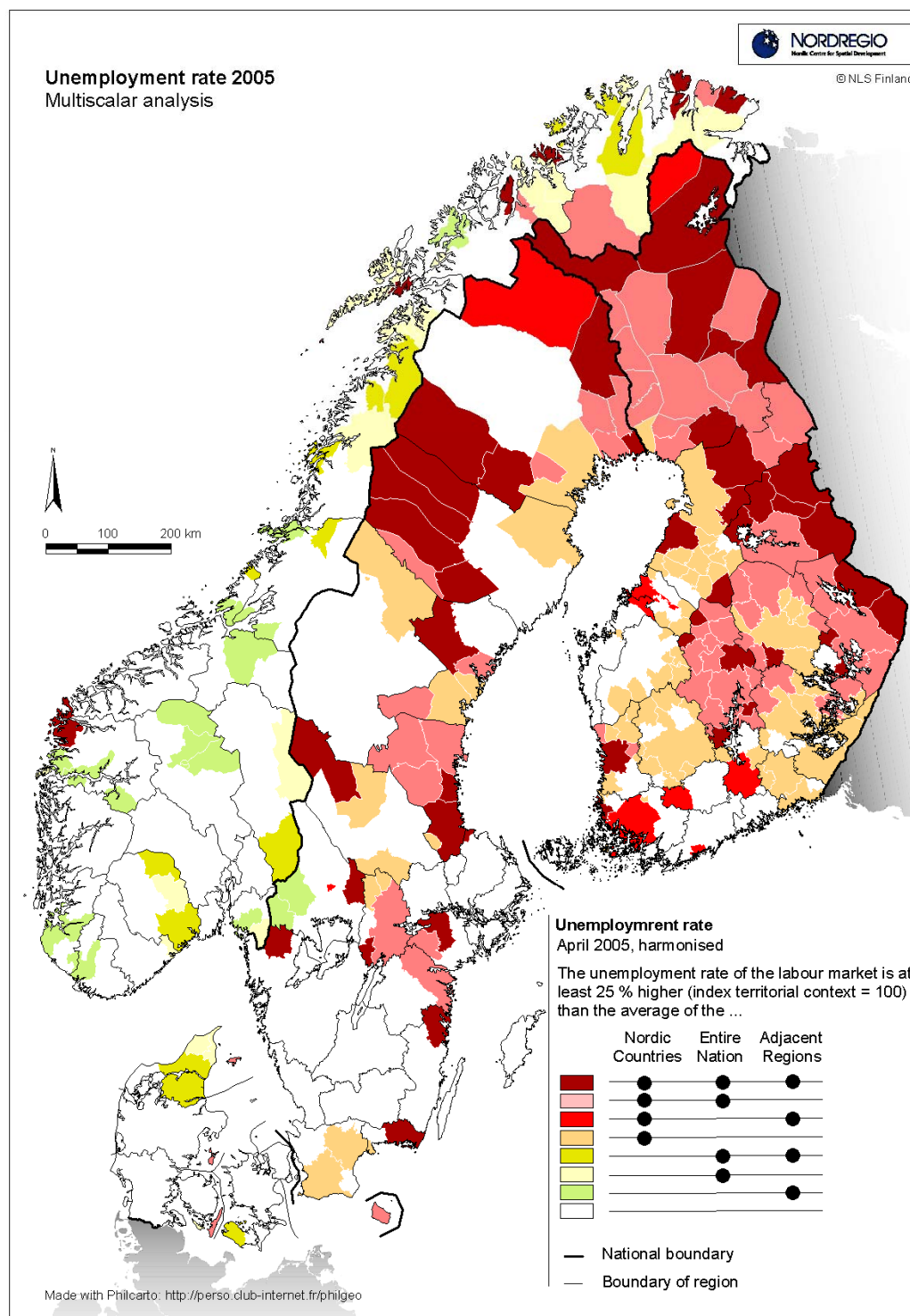
Multi-scalar analyses provide a synthetic picture of territorial aspects across different spatial contexts. Therefore it may serve as a suitable quantitative tool to help customise Nordic urban and regional development policy addressing the *specific situation of [or types of] cities and regions according to their multi-level context*. This is to include traditional regional as well as national/trans-national (e.g. Nordic) and European aspects of territorial development.

However, by employing multi-level approaches the *complexity of territorial evidence* provided to policy makers is bound to *increase*. This fact can considerably limit its utility in practise and may even prevent us from fully taking advantage of multi-scalar analysis in the development of new policy approaches.

In order to overcome MAUP, or at least lower its impact, ESPON has developed a number of ideas on how to meet this challenge in future territorial research. The solutions address two dimensions. On the one hand there is the *horizontal dimension* which seeks to alter the official NUTS nomenclature based on functional criteria fitting the relevant context and hence adopting a *customized mix of NUTS 2 and 3 units*. On the other hand the *vertical dimension* is employed. One approach favours an *extension of the analytical scale in both directions* including more local and more global levels. An example here is a classical regional analysis based on NUTS units strengthened by a 'Europe in the world' component and case studies at local administrative level (LAU 1 and LAU 2)⁷. Another approach called *multi-scalar analysis* (Methods & Concepts B.8) integrates the multiple and interlocked territorial contexts of one or more issues (e.g. unemployment). Figure B.17 shows the actual unemployment situation of Nordic labour markets based on the multi-scalar approach using internationally harmonised data.

⁷ LAU = Local Administrative Units. This terminology refers to the local territorial units in the NUTS system such as municipalities (LAU 2). Those units have been renamed from NUTS 4-5 to LAU 1-2.

Figure B.17: Multi-scalar synthesis of unemployment rates (single criteria) of Nordic labour markets 2005



Methods & Concepts B.8: Multi-scalar analysis – integrating multiple territorial contexts

Multi-scalar analyses aim to provide a *synthetic picture of territorial aspects across different spatial contexts* and hence promote multi-level governance. In today's policy practice decision making often relies on analysis that only takes into account the specific spatial level relevant to the respective policy. A simple example here is the identification and targeting of lagging areas in terms of economic performance. In the case of EU political decisions on structural funding the base is a threshold of 75% of the EU regional GDP *per capita* average at NUTS 3 level. This identifies the disadvantaged regions from the European point of view eligible for financial support. However, a region lagging in Europe may be rather prosperous within the national or local context. Moreover, the spatial levels are interlocked and consequently call for greater synergies between the political levels to avoid conflicting impacts. The approach would also help to develop more tailor-made regional policies.

In order to bridge the gap multi-scalar analyses employ *geo-statistical methods* – e.g. geographically weighted regression, territorial autocorrelation or other approaches – to benchmark regions within their different territorial contexts and to identify their position from a *multiple level point of view*. Furthermore the method can be extended to also include multiple criteria (e.g. GDP/capita and unemployment rate).

ESPON has also developed a multi-medial application of the multi-scalar approach launched as the *Hyper Atlas*. Here interactive maps allow alternative representation of the same phenomena on the web in real time. The application can be found at www.espon.eu >Scientific Tools/ESPON HyperAtlas. A prototype of a Nordic Hyper Atlas is part of this paper and can be obtained for evaluation and commenting from alexandre.dubois@nordregio.se.

Part C: Quantitative tools in ESPON

In addition to thematic and policy impact studies ESPON has developed a set of scientific tools which primarily aim to provide access to the quantitative base of ESPON. Such tools are, moreover, designed to support the user-interactive creation of territorial analysis on maps.

Data Navigator

Project link: [ESPON Scientific Tools](#)

The Data Navigator is a basic framework for the Transnational Project Groups to enable the speedy identification of those entities across the ESPON space that can provide relevant datasets and maps. It covers 27 countries as well as European and transnational sources. The directories provide information on the main data sources, contact points, structures and links to other potential sources of support. The Data Navigator supports searches for territorial data down to the NUTS 3 level within all thematic areas covered by the various ESPON projects.

Data sources include National/Regional Statistical Offices but also development or business agencies, tourist boards, associations of regional and/or local authorities, ministries and others.

Hyper Atlas

Project link: [ESPON Scientific Tools](#)

The *Hyper Atlas* is an application based on the multi-scalar approach described above. It allows for the visualisation of a spatial phenomenon on maps taking into account its relative situation and localisation. As such, several indicators can be derived on the basis of the ratio of two initial geographical indices (target index) according to different spatial or territorial contexts, namely the global (e.g. EU 29, EU 25, EU 15), medium (NUTS 0, 1, 2, 3) and local (contiguity) context.

The user is required to download and install the *Hyper-Atlas* application on his/her local machine. Then deviations of a certain region with regard to the three geographical levels used in ESPON can be determined based on quantitative information from the ESPON database.

In order to formulate Nordic territorial development policies integrating multi-level perspectives, the *Hyper Atlas* is a valuable tool. Hence we have developed an alternative version of the ESPON *Hyper Atlas* adapting the Nordic regional development context. A prototype of the *Nordic Hyper Atlas* is supplemented as companion to this publication and can be obtained for evaluation and commenting from alexandre.dubois@nordregio.se.

Web-GIS

Project link: [ESPON Scientific Tools](#)

The Web-GIS is an interactive cartographic-portal to be accessed via the Internet and supports spatial data analysis based on ESPON data. This includes producing predefined maps on a selection of thematic indicators but also basic statistical analysis of the underlying data (e.g. extreme values, average, deviation, variation). For the Nordic countries the database includes information on Denmark, Finland, Norway and Sweden down to the NUTS 3 level depending on the type of information requested.

With Web-GIS the user can quickly study the spatial distribution of a phenomenon or identify basic spatial trends at different spatial levels. Some of the indicators in the ESPON database have been updated recently, which partly enables us to follow the changes in spatial patterns occurring in the recent decade and thus to use the Web-GIS as a very basic monitoring tool.

Territorial monitoring

Project link: [ESPON 4.1.3](#)

ESPON 2006 has conducted a huge number of territorial analyses covering a wide range of territorial aspects. This includes the development of concepts for policy use but also indicators suitable for monitoring the territory. In order to regularly provide up-to-date information on the territorial state of European regions, ESPON has made a feasibility study on monitoring territorial development at the European level. The system shall serve as a basis for continuous assessment of territorial development trends in relation to set territorial policy objectives. The study tested the capability of current ESPON indicators and tools and elaborated a tentative spatial monitoring report. In addition to the core ESPON indicators this also includes *ex-ante* Territorial Assessment tools and results achieved thus far by the applied research projects. The feasibility study was also a scoping document for the possible continuation of ESPON activities.

A further elaboration of the approach and the establishment of a regular reporting system may be part of ESPON 2013.

Conclusions

The ESPON 2006 programme has taken a giant step forward in raising awareness of territorial matters in a European regional context and in developing concepts to support evidence-based territorial policy making at this level. For Nordic regions, the possibility of positioning themselves in relation to other European regions and seeing their territorial characteristics in a wider continental perspective is moreover of significant value in it self. As such, several ESPON results are rather useful in a Nordic regional development perspective enabling us to more fully take on board the wider European context.

In order to target the Nordic regional decision making level however the territorial resolution of many ESPON results is rather poor and rests on a quantitative base not available at lower administrative or functional units. Moreover, some concepts need to be improved before being fully relevant to Nordic regional decision makers, e.g. the FUA typology. Last but not least various methodological issues concerning the quantitative territorial concepts used need to be clarified in order to increase their relevance for Nordic regions.

Thus all of the results from the ESPON 2006 programme as they are broken down in the context of this report may only be seen as a first step representing only one European view of the Nordic regions. At the same time the methodological questions raised within the different sections call for further development and improvement in the light of the prospective 'added value' for Nordic regions. As a next step the following actions may be considered to be useful in further adapting the ESPON results to a Nordic regional context and in addressing Nordic regional needs in the context of the ESPON 2013 programme.

- As was highlighted in this report the ESPON results can often be difficult to interpret and digest. *A broad dialogue involving both scientists and decision makers at various geographical levels in the Nordic countries* might help to better capitalise on the results delivered by ESPON.
- *Regionalising additional Lisbon indicators for all Nordic countries*, e.g. GDP and social measures, in order to broaden the basis for monitoring and benchmarking of Nordic regional performance in an EU policy context.
- Using ESPON results for *more perspective work* and encouraging ESPON to work in a more future-oriented fashion might also help to better understand the implications of territorial structures and developments. Based on existing material various scenarios and forecasts for the Nordic countries can already been developed employing various foresight techniques.
- *Adjusting the concept of polycentric development to a northern regional context* beyond the idea of simply achieving more 'balance' and competitiveness based on an urban system with nodes of similar size. This may also include a stronger qualitative focus on the functional role of Nordic urban nodes in a local as well as in a global context, and their patterns of national and international co-operation or networking taking into account their individual territorial profiles. This seems particularly relevant for Nordic small and medium-sized towns.
- The studies on the *territorial impacts of EU policy* give a rather general picture of the Nordic countries. To better understand how different policies *affect the Nordic countries* a more detailed analysis of these policies would be necessary. This might imply an

application (and possibly further development) of ESPON approaches at a lower geographical scale for the Nordic countries.

- *Supplementing European with global, inter-regional and local accessibility potentials* according to different transport modes taking into account the various territorial contexts of the Nordic regions. This may also include potential access to various local services.
- Developing a *fully capable Nordic Hyper Atlas*, which can serve as a ready made tool for instant access to actual territorial evidence in Nordic regional decision making
- Further co-ordinating policy actions in order to *address the common territorial futures of Nordic regions in a European debate*

Annex

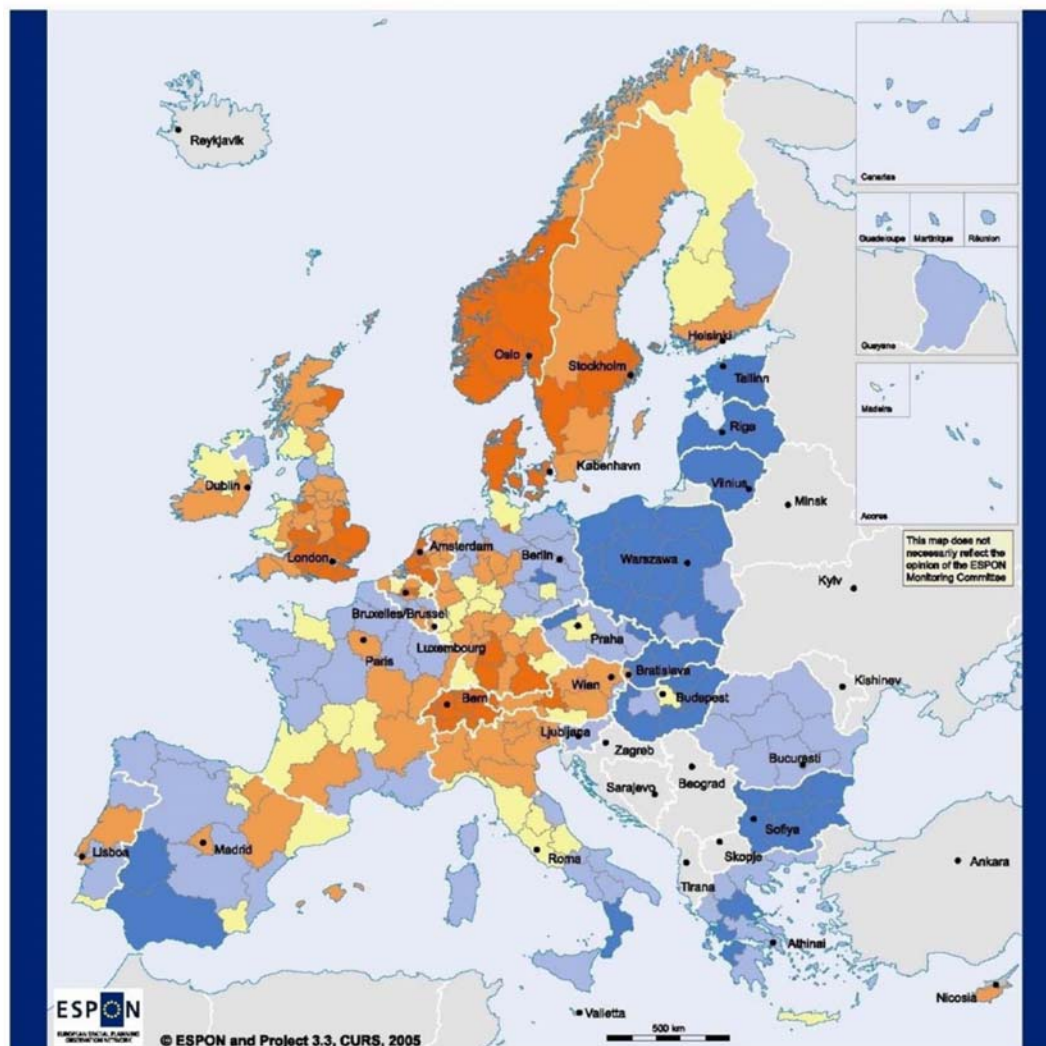
European map complement

Table C.1: *The fourteen indicators of the Lisbon and Gothenburg agenda*

1. GDP (PPS) *per capita*
2. GDP (PPS) per employed person
3. Employment ratio (employed persons aged 15-64 as a share of total population)
4. Employed persons at higher ages (55-64) as a share of total population in the age group
5. GERD: *Brutto* expenditures for R&D as a share of GDP
6. Share of population with secondary level education (gymnasium)
7. Comparable price levels
8. Fixed *Brutto* investment as a share of GDP
9. Share of persons with disposable income less than 60 percent of the country average after social transfers
10. Dispersion of unemployment rate between regions
11. Persons without a job over more than 12 month as a share of the total work force
12. Total emission of the six greenhouse gases in the Kyoto protocol measured in CO₂ equivalents
13. Gross domestic energy consumption as a share of GDP
14. Goods transport volume in ton kilometres as a share of GDP

Figure C.1: Economic Lisbon performance

Economic Lisbon indicators



Performance

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

- > 3 Primarily high performance
- 1 - 3
- 0 Medium performance
- 3 - -3
- < -3 Primarily low performance
- No data available

© EuroGeographics Association for the administrative boundaries
Regional level: NUTS2
Origin of data: eurostat, national statistical offices

Source: ESPON database

with use of the following indicators:

1. GDP in PPS per person 2000
2. Labour productivity 2000
3. Employment rate 2000
4. Employment rate of older workers (55-64) 2000
5. GERD 2000 (NUTS 1 for BE, CH, IE, NO, SE, no data for Ceuta & Melilla)
6. Dispersion of regional unemployment rates 2003
7. Long-term unemployment rate 2000 (CH & NO on the national level, no data for Ceuta & Melilla)

Figure C.2: Index of Lisbon/Gothenburg structural indicators for NUTS 4 (seutukunta) in Finland

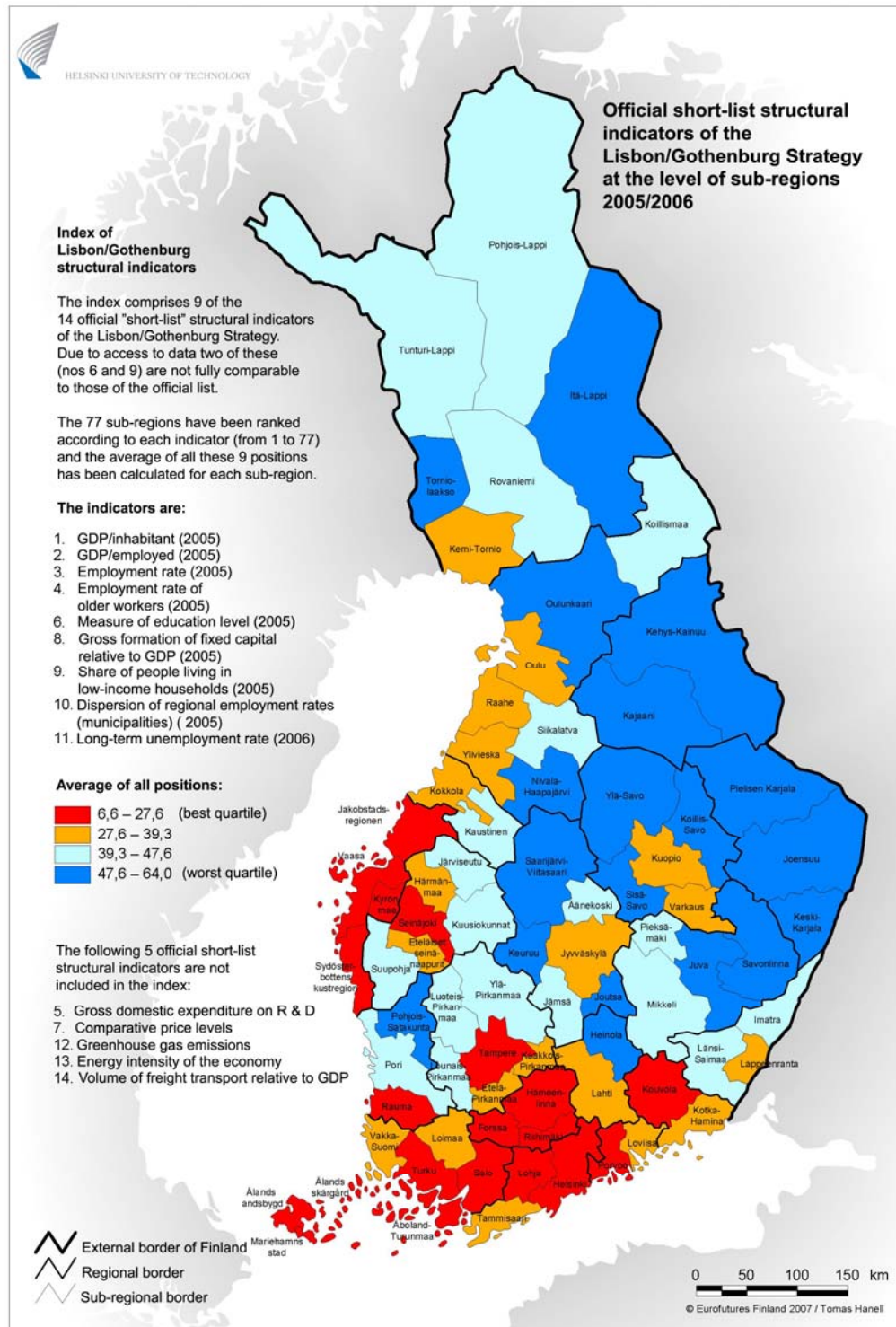


Figure C.3: Degree of polycentricity of the urban system in ESPON countries

Polycentricity index

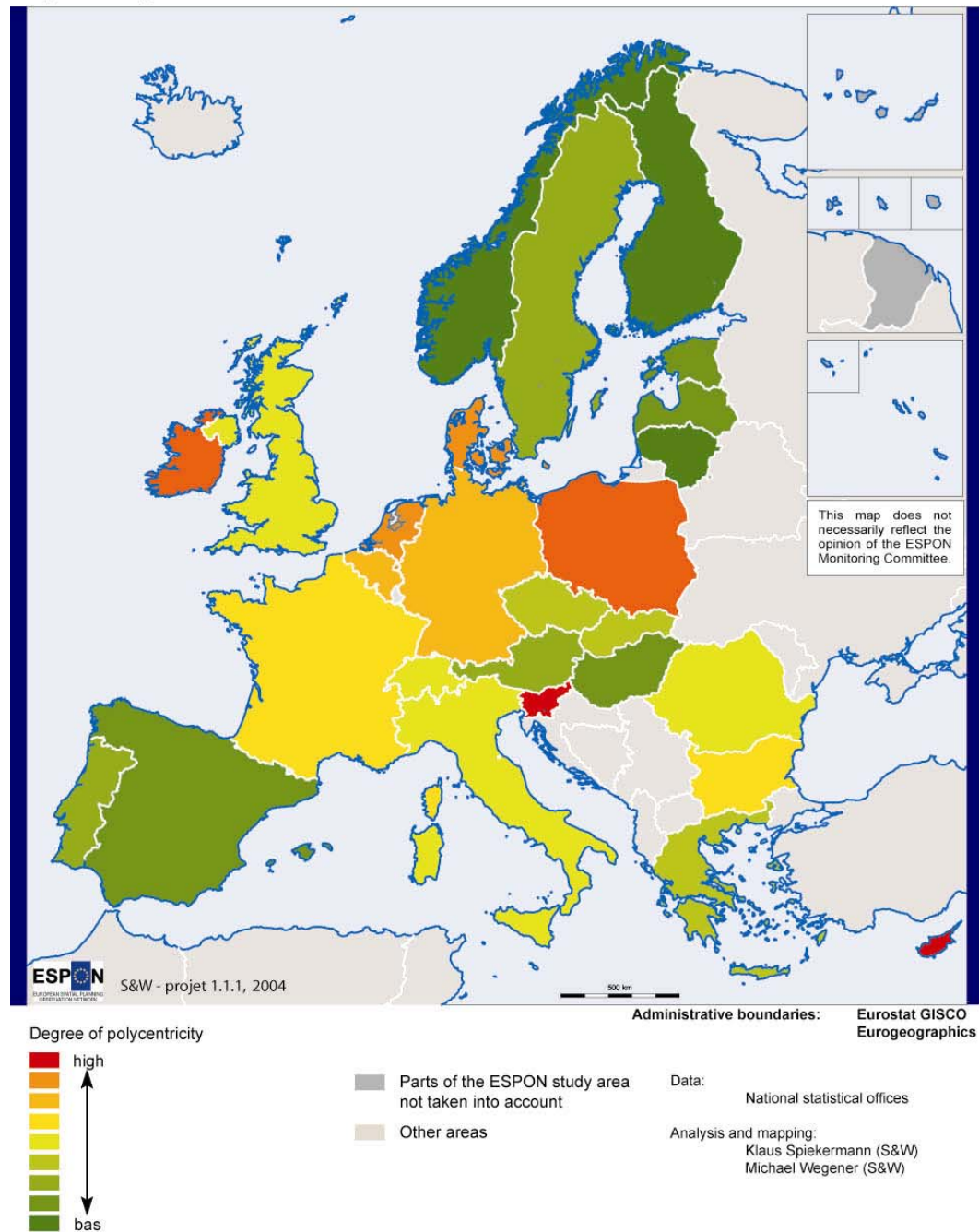


Figure C.4: Typology of Functional Urban Areas (FUAs)

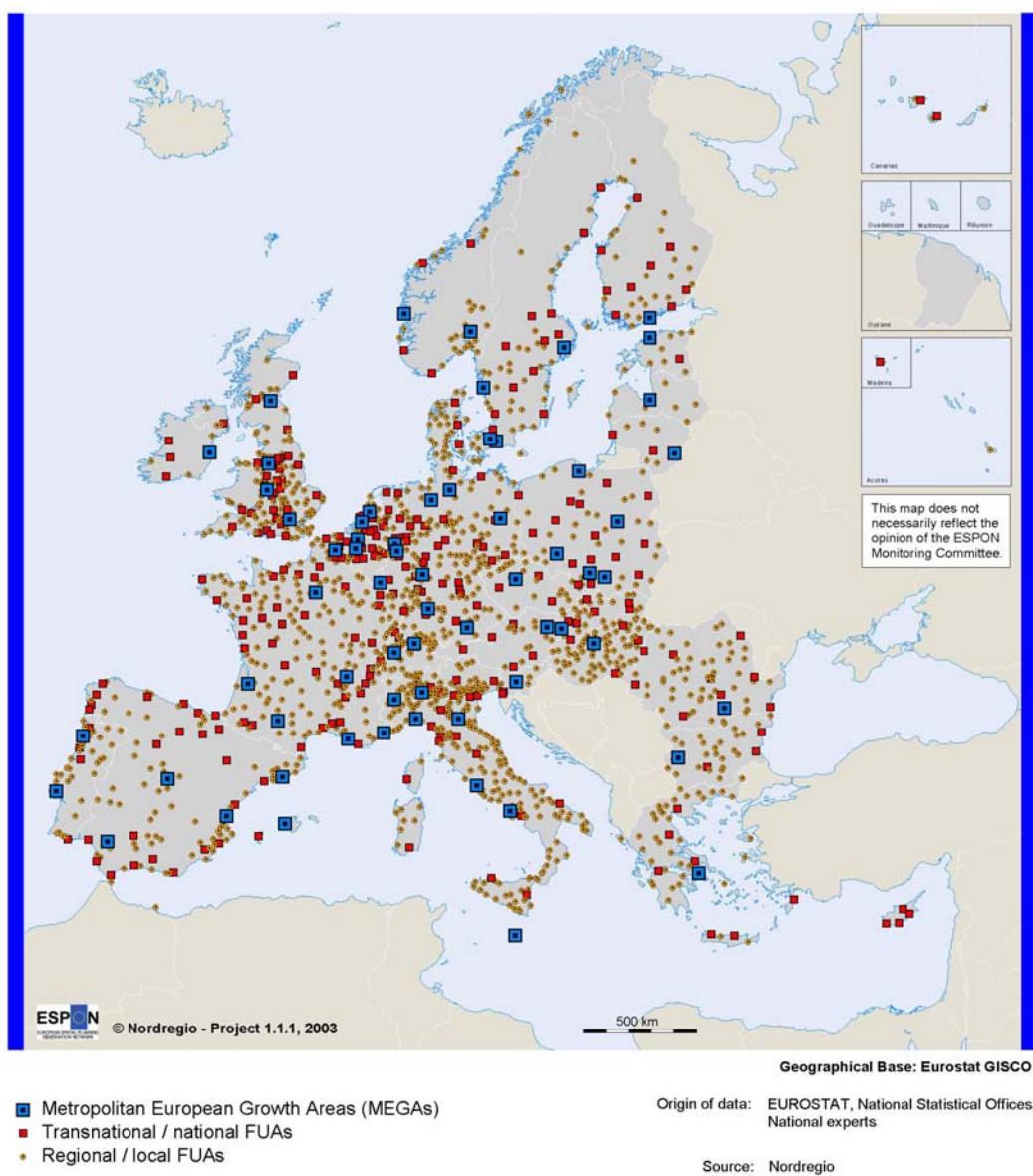


Figure C.5: Typology of Metropolitan European Growth Areas (MEGAs)

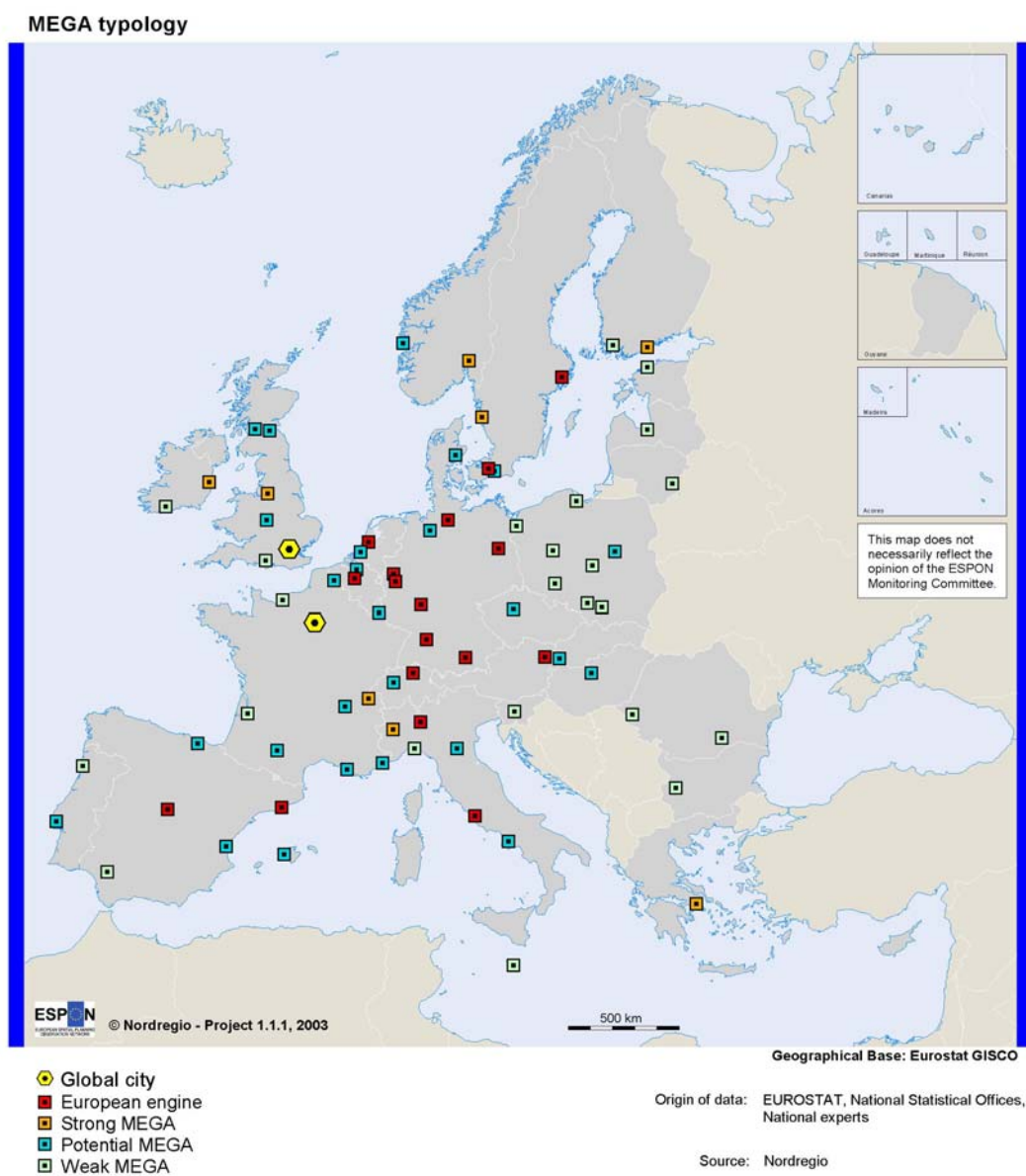


Table C.2: Main components of approaches on delimitation of urban and rural population in Nordic and European countries

Country	Delim.	Criteria						Spatial reference unit		Population		Year					
	Approach	Population			Other			Administrative	Other	Proportion (%)	Ref. year						
	Conceptual	Government decision	Size of largest centre/urban unit	Size of spatial unit	Density	(Non-) agricultural share of workforce	Commuting/Travel-to-work	Central place function	Legally established (city/town/village)	City/town proper/locality	Municipality/commune/ward		Parishes, municipality sub-districts	Commuter catchment area	Morphological unit (i.e. built-up area)	Urban	Rural
	(1)	(2)	(3)	(4)					(5)								
Austria															67	33	2001
Belgium															100	0	2001
►Denmark															85	15	1998
►Finland															81	19	1995
France (A)															75	25	1999
Germany															85	15	2001
Greece															60	40	1991
Ireland															58	42	1996
Italy (B)															75	25	1986
Luxembourg															92	8	2000
Netherlands															80	20	1999
Portugal															70	30	2001
Spain															75	25	2001
►Sweden															84	16	1995
United Kingdom (C)															72	28	2001
►Norway															77	23	2002
Switzerland															68	32	2000
Bulgaria															68	32	2000
Cyprus															69	31	2001
Czech Republic															79	21	2001
Estonia															69	31	2000
Hungary															65	35	2002
Latvia															69	31	1998
Lithuania															68	32	1998
Malta															91	9	2000
Poland															62	38	2002
Romania															53	47	2002
Slovakia															56	44	2001
Slovenia		*				*	*		*	*	*		*	*	51	49	2002
OECD															-	-	

Source: Nordregio, Jörg Neubauer 2003 - ESPON 1.1.2

(1) The delimitation of urban and rural population by government decision may sometimes also be based on conceptual frameworks.

(2) Threshold 2,000 inhabitants always.

(3) Note! The following thresholds apply for different reference units. Denmark/Finland/Norway/Sweden: 200 inhabitants, Germany: around 100,000 inhabitants, France: 2,000 inhabitants, Spain 10,000 inhabitants, Czech Republic: 2,000 inhabitants, Malta: 1,500 inhabitants, Slovakia: 5,000 inhabitants, Switzerland: 10,000 inhabitants, Ireland 1,500 inhabitants.

(4) Germany: 150 inhabitants/km², Netherlands: 500 addresses/km², Portugal: 100 inhabitants/km², OECD: 150 inhabitants/km² (Eurostat modified: 100 inhabitants/km²).

(5) Cyprus: Nicosia and district towns covered by local town plans.

(6) Netherlands: neighbourhoods comprising "buurten", Portugal: parishes (freguesias).

(A) Excluding Guadeloupe, Martinique, Guyane and Reunion.

(B) The list of criteria also includes active population (>14 years, women), age cohort > 14 years,

average number of family members, number of private owned dwellings and penetration rate of phone contracts.

(C) Excluding Northern Ireland, Scotland and Wales. The set of criteria for England also includes ratio of active and inactive population, use of public transport and share of ethnically non-white people.

- = No data

* = Not available

Figure C.6: The ESPON urban-rural typology

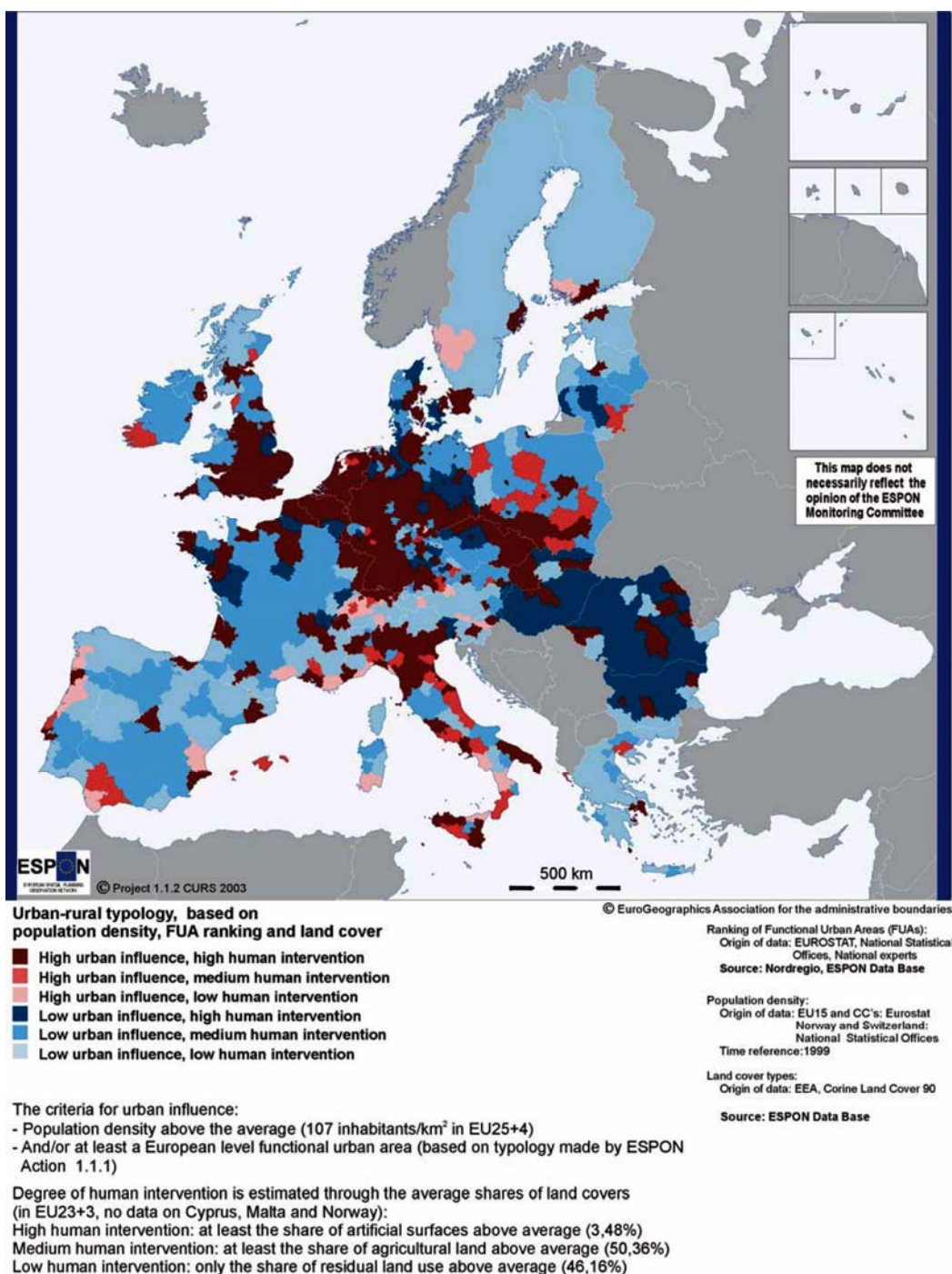


Figure C.7: Potential multimodal accessibility, ESPON space=100

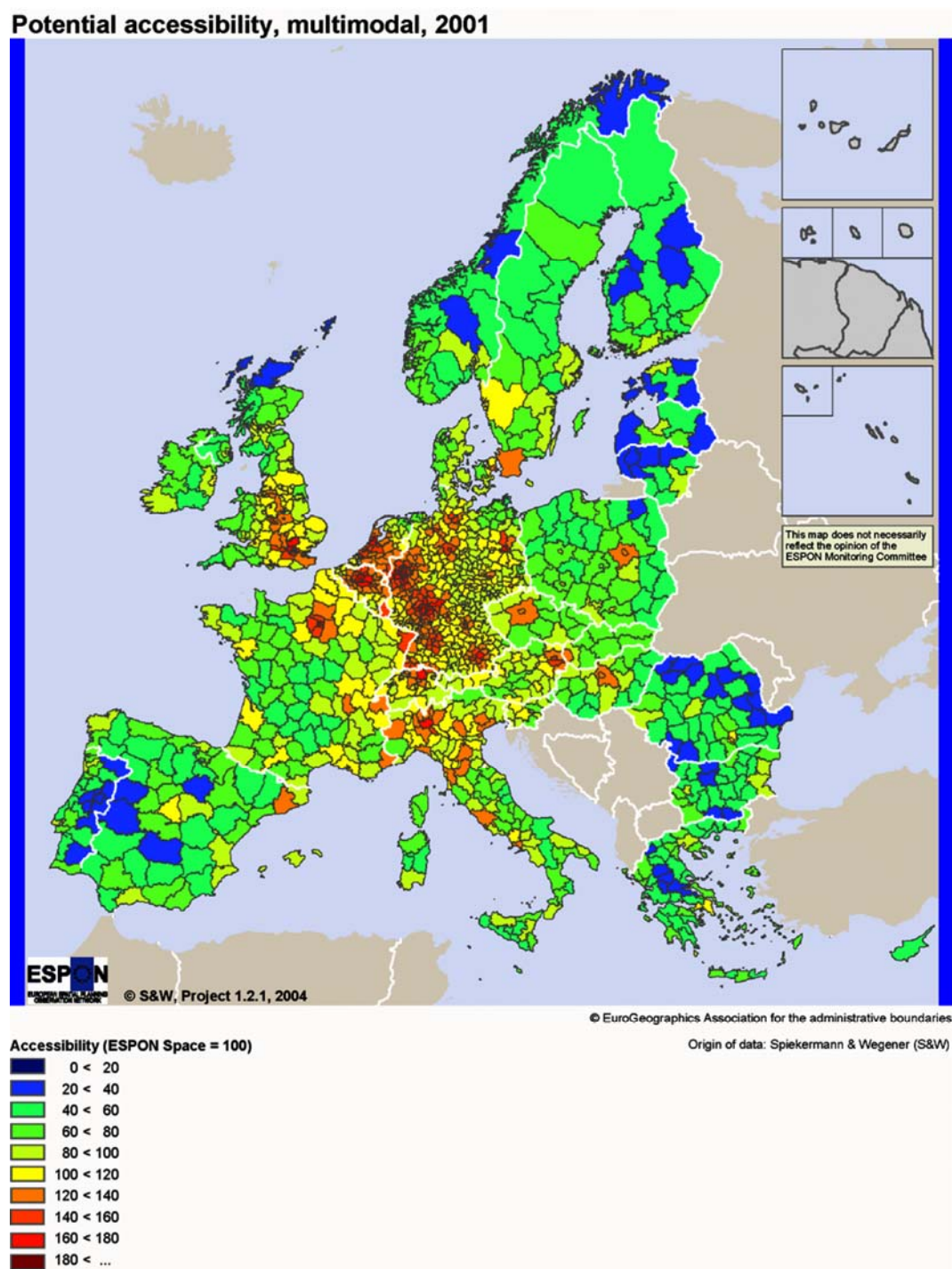


Figure C.8: Access to hospitals (raster cells), EU27+2=100

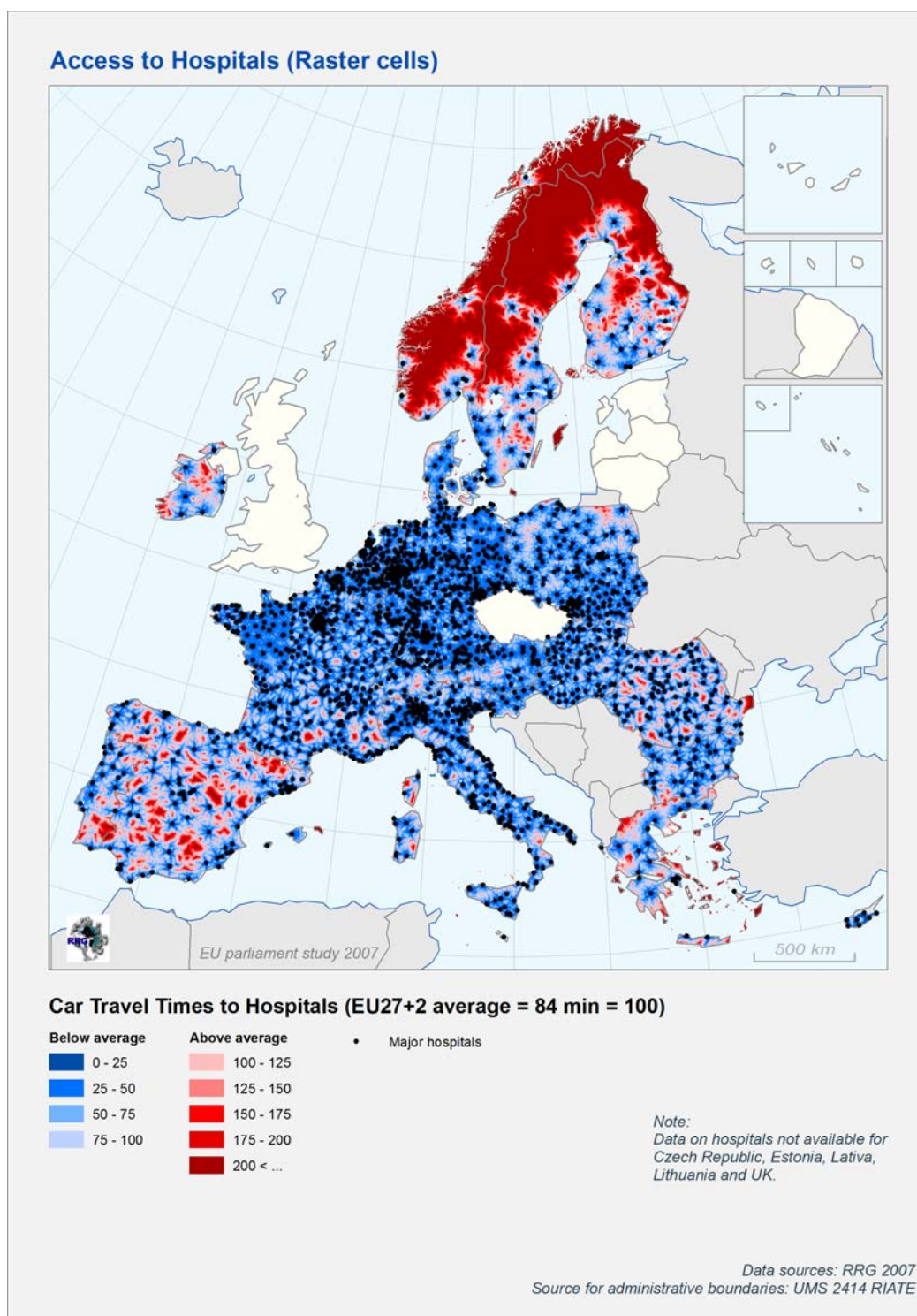


Figure C.9: Accessibility to facilities of higher education (raster cells), EU27+2=100

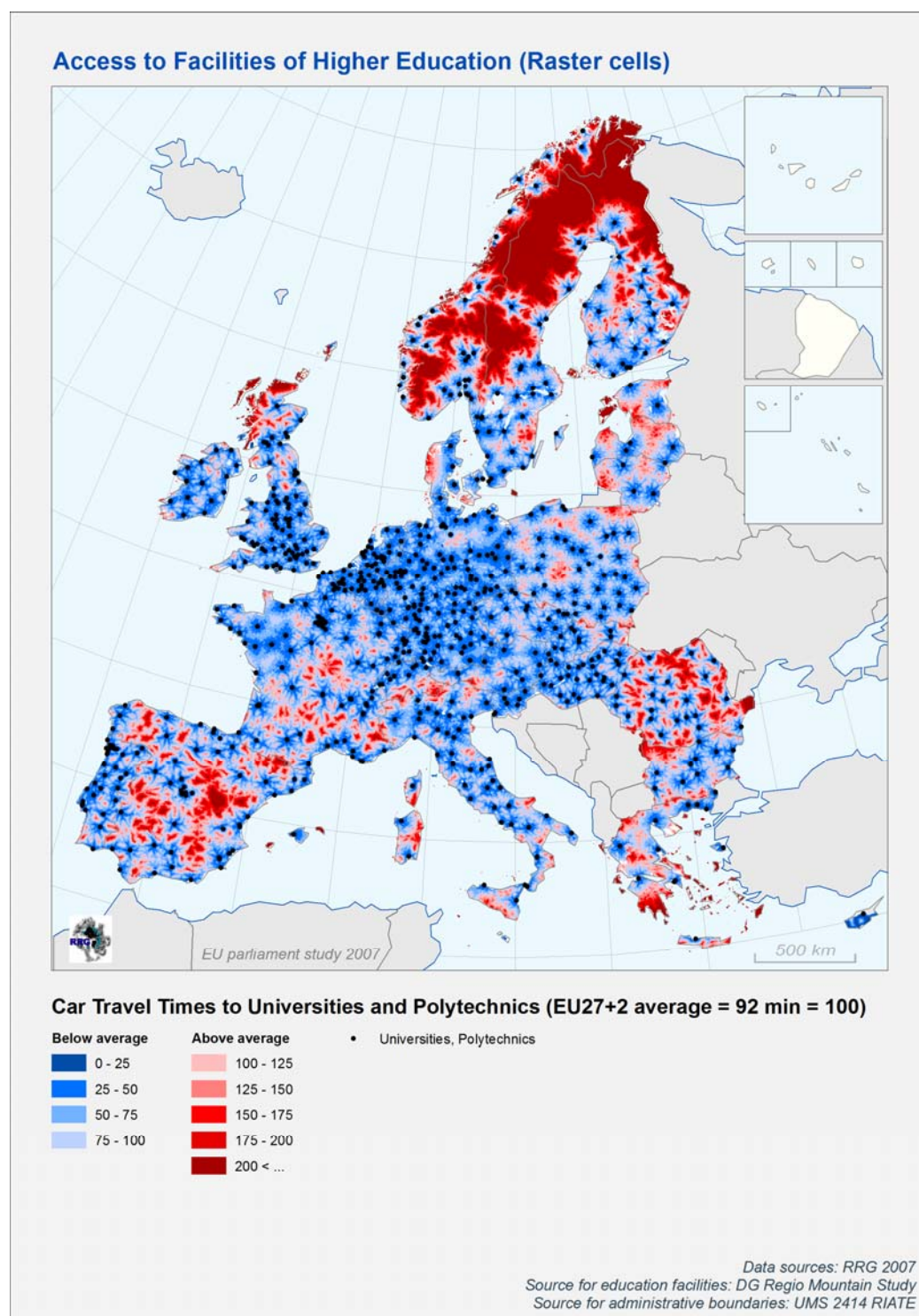


Figure C.10: Components of population development 1996-1999

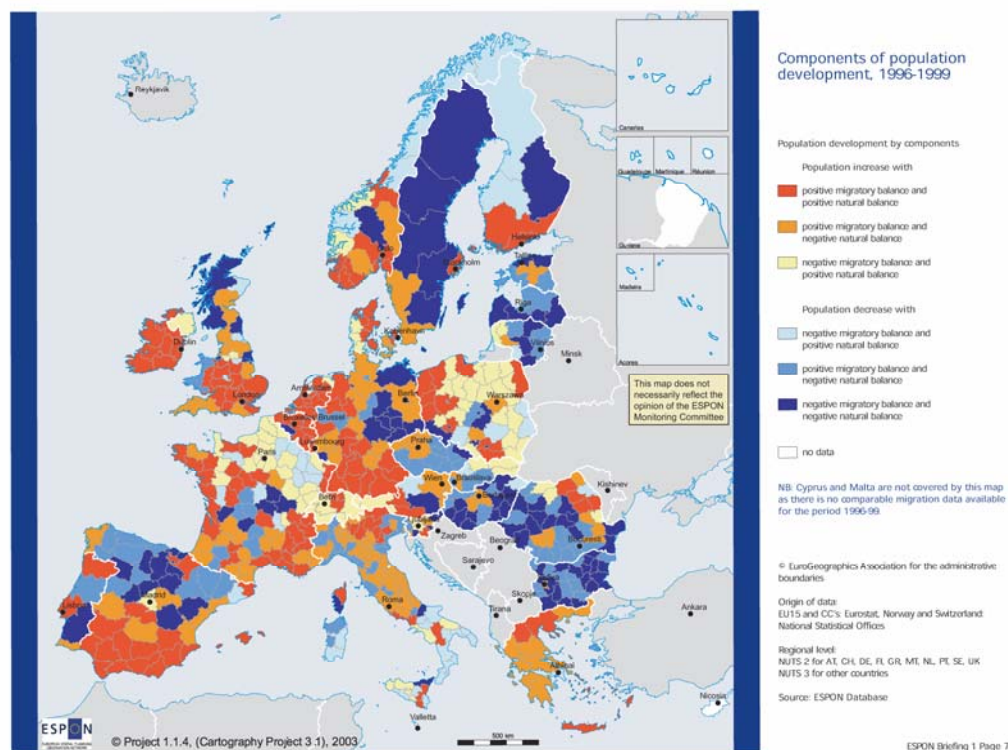


Table C.3: Hypotheses underlying the competitiveness and cohesion scenarios

Competitiveness-oriented scenario	Cohesion-oriented scenario
<i>Enlargement:</i> – Priority given to enlargement – Western Balkan and EFTA/EEA countries in 2015 – Turkey in 2020	– Priority given to deepening – Break on further enlargement
<i>Demography:</i> – Selective external in-migration; no constraints to internal migration – Increase in retirement age – Encouragement of fertility rate through fiscal incentives	– Restrictive external in-migration – More flexible retirement ages – Encouragement of fertility rates by more flexible arrangements for child care
<i>Economy:</i> – Strong reduction of EU budget – Further liberalisation and privatisation of public services – Strongly growing R&D budget	– Maintaining EU budget – Reinforcement of structural funds and concentration on weakest regions
<i>Energy:</i> – Increasing energy consumption – Realisation of TEN-E: investments in infrastructure acc. to market demand	– Realisation of TEN-E – Promotion of decentralised energy production, particularly renewables
<i>Transport:</i> – Realisation of TEN-T: investments in infrastructure acc. to market demand – Priority given to links between metropolitan areas	– Development of TEN-T, priority given to peripheral regions – Support to transport services in rural and less developed areas
<i>Rural development:</i> – Rapid and radical liberalisation of CAP: reduction of tariffs, budget and export subsidies – Reduction of support to rural development	– Minor CAP reforms, shift from pillar1 to pillar 2 – Priority given to environment and animal health – Priority given to less developed areas
<i>Governance:</i> – Abolishment of cross-border market barriers – Less public intervention – Wider application of the Open Method of Coordination	– Active multi-level territorial governance in areas supported by structural funds – More public intervention
<i>Climate change:</i> – Increasing emission levels – Mitigation measures based on flexible schemes – Adaptation measures only where cost efficient	– Constant emission levels – Strict mitigation measures – Wide range of adaptation measures

Figure C.11: Territorial impact of EU policies: SF, Phare CBC and ISPA 1994/95-99

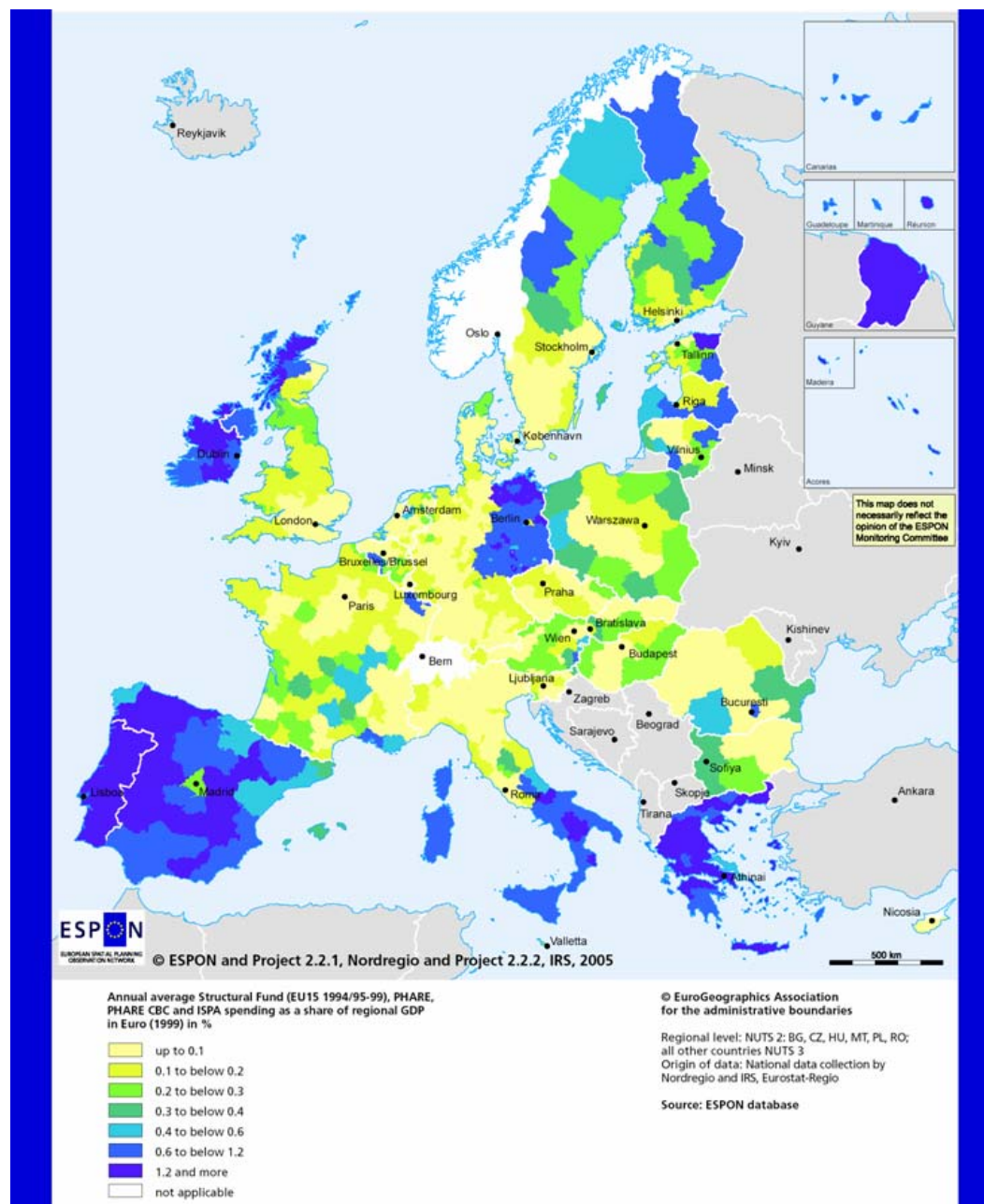


Figure C.12: Territorial impact of EU policies: TEN/TINA and higher transport cost implementation until 2021

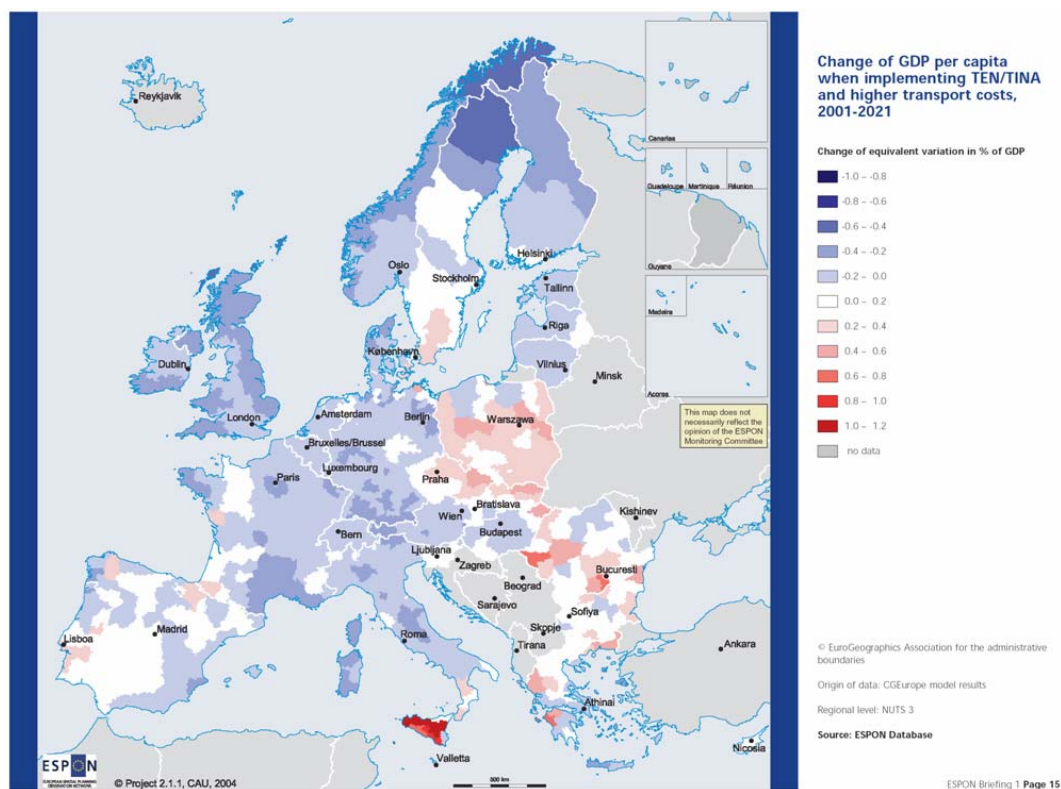
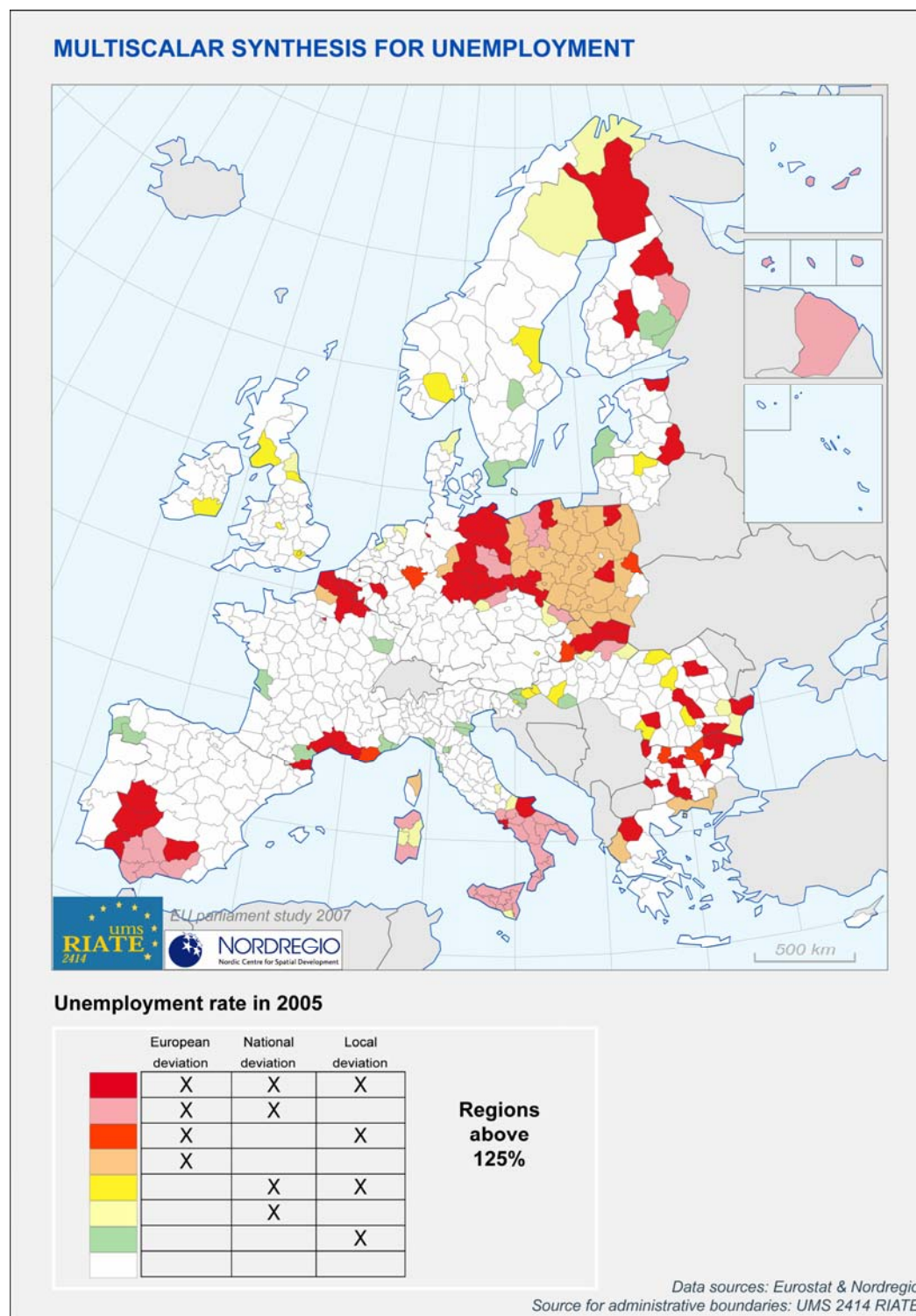


Figure C.13: Multi-scalar synthesis of unemployment rates (single criteria) in European regions



Nordic ESPON 2006 stakeholders

Nordic Project Expert in ESPON 2006: Flemming Thornæs, Agency for Spatial and Environmental Planning. Tel. +46-72-542 467; fth@blst.dk

Denmark

MC members: Flemming Thornæs, Ministry of the Environment

ECP: Niels Boje Groth, Danish Forest and Landscape Research Institute (KVL)

nbg@kvl.dk, tel.: +45-76-32 00

Website: www.sl.kvl.dk/Forskning/ByOgLandskabsstudier/ESPON.aspx

Finland:

MC members: Ilkka Mella, Ministry of the Interior & Harri Pitkäranta, Ministry of the Environment

ECP: Consortium comprising the Centre for Urban and Regional Studies (YTK/CURS at Helsinki University of Technology), the University of Joensuu and the Finnish Environment Institute.

Contact person: Timo Hirvonen, Karelian Institute/University of Joensuu, timo.hirvonen@joensuu.fi, tel.: +358-13-251 4160

Website: www.tkk.fi/Yksikot/YTK/tutkimus/ESPON/index_frame.html

Norway

MC members: Birgitte Sem & Odd Godal, Ministry of Local Government and Regional Development (KRD)

ECP: Olof Foss, Norwegian Institute for Urban and Regional Research (NIBR)

Olof.foss@nibr.no, +47-229-58 800

Website: www.nibr.no/content/view/full/2298

Sweden

MC members: Sverker Lindblad, Ministry of Industry, Employment and Communications & Kajetonas Ceginskas, National Board of Housing, Building and Planning (Boverket)

ECP: Mats Johansson, Royal Institute of Technology (KTH)

matsj@infra.kth.se, tel.: +46-8-790 9218

Website: –

Recommended reading

European Parliament (2007): *Regional Disparities and Cohesion – What Strategies for the Future?* Brussels.

ESPON (2007): *ESPON 2007-2013 Programme*. Version 3, 16 July 2007.

European Commission (2007): *Growing Regions, growing Europe*. Fourth report on economic and social cohesion, provisional version May 2007.

Ministry of the Environment and Interior of Finland (2006): *Positioning Finland in a European Space*. Helsinki 2006.

Nordregio (2007): *Polycentrisk stadsutveckling ur ett europeiskt och nordiskt perspektiv*. Nordregio Working Paper 2006:5.

Nordic Working Group on Cities and Regions (2006): *The role of urban areas in regional development*. Nordregio Working Paper 2006:4

European Commission (2007): *Territorial Agenda of the European Union*.

European Commission (2007): *The Territorial State and Perspective of the European Union*.

ESPON (2007): *Territorial Futures*. Luxembourg..

ESPON (2006): *ESPON Atlas – Mapping the structure of the European Territory*. Luxembourg.

ESPON (2006): *Territory matters for Competitiveness and Cohesion*. ESPON Synthesis Report III, results by autumn 2006. Luxembourg.