EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK

Bundesamt
für Bauwesen
und
Raumordnung

# ESPON project 4.1.3

# Feasibility study on monitoring territorial development based on ESPON key indicators

# Interim Report

Co-financed by the European Community through the Interreg III ESPON Programme

# ESPON Project 4.1.3

## *Feasibility study on monitoring territorial development based on ESPON key indicators*

## Interim Report

This report represents the final results of a research project conducted within the framework of the ESPON 2000-2006 programme, partly financed through the INTERREG programme.

The partnership behind the ESPON programme consists of the EU Commission and the Member States of the EU25, plus Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.



Information on the ESPON programme and projects can be found on www.espon.lu

The web side provides the possibility to download and examine the most recent document produced by finalised and ongoing ESPON projects.

This basic report exists only in an electronic version.
**Bundesamt für Bauwesen und Raumordnung**
**Bonn, Germany**
**July 2006**

# Foreword

This is the interim report of the ESPON Project 4.1.3 "Feasibility study on monitoring territorial development based on ESPON key indicators". The project started on June 1st, 2006.

The project 4.1.3 holds an important position in the ESPON Programme, because of the search for and selection of key indicators which should contribute to a spatial monitoring for the ESPON space.

The ESPON Programme was launched after the preparation of the European Spatial Development Perspective (ESDP), adopted by the Ministers responsible for Spatial Planning of the EU in May 1999 in Potsdam (Germany) calling for a better balanced and polycentric development of the European territory. The programme is implemented in the framework of the Community Initiative INTERREG III. Under the overall control of Luxembourg, the EU Member States have elaborated a joint application with the title "The ESPON 2006 Programme – Research on the Spatial Development of an Enlarging European Union". The European Commission adopted the programme on 3 June 2002.

See http://www.espon.lu for more details.

The views expressed in this report do not necessarily reflect the opinion of the ESPON Monitoring Committee.

The project team was composed from ten institutions.

The institutes are listed below, followed by a list of staff involved in the project.

The present Final Report of the ESPON Project 2.4.2 is a team effort of all project partners under the leadership of the BBR and IRS.[1]


BBR - Bundesamt für Bauwesen und Raumordnung

(Germany)

Contact: Dr. Peter Schön
Bundesamt für Bauwesen und Raumordnung (BBR)
*Federal Office for Building and Regional Planning*
Deichmanns Aue 31 - 37
53179 Bonn
Tel. +49.(0)1888.401-2329
Fax +49.(0)1888.401-2260
E-mail: Peter.Schön@bbr.bund.de
Web-page: www.bbr.bund.de

Bundesamt
für Bauwesen und
Raumordnung

TAURUS Institut an der Universität Trier
(Germany)

TAURUS
Environmental, Regional and Economic Research and Consultancy
Institute at the University of Trier

IRS - Institute for Regional Development and Structural Planning
(Germany)

IRS Institut für Regionalentwicklung und Strukturplanung

IGEAT - Institut de Gestion de l'Environnement & Aménagement du Territoire Université Libre de Bruxelles

(Belgium)

ULB
IGEAT

NORDREGIO - Nordic Centre for Spatial Development (Sweden)

NORDREGIO
Nordic Centre for Spatial Development


[1] Alphabetic order by names or titles of the institutes or companies

ÖIR - Österreichisches Institut für Raumordnung
(Austria)

DIG - Department of Management, Economics and
Industrial Engineering, Politecnico di Milano
(Italy)

RRG - Büro f. Raumforschung, Raumplanung u. Geoinformation
(Germany)

# Staff involved in the project

The staff involved in the project is listed in alphabetic order first by country and then by the surnames of the corresponding persons.

### List of persons involved in the ESPON Project 4.1.3

#### Austria

- *Schneidewind,* Peter; Österreichisches Institut für Raumplanung, Vienna
- *Schuh*, Bernd; Österreichisches Institut für Raumplanung, Vienna

#### Belgium

- *Lennert,* Moritz; Institut de Gestion de l'Environnement & Aménagement du Territoire, Brussels

#### Germany

- *Braun,* Thomas; TAURUS Institut an der Universität Trier, Trier
- *Gebhardt*, Dirk; Bundesamt für Bauwesen und Raumordnung, Bonn
- *Gensheimer,* Michaela; TAURUS Institut an der Universität Trier, Trier
- *Heidbrink*, Ingo; Bundesamt für Bauwesen und Raumordnung, Bonn
- *Müller,* Kristine; Institut für Regionalentwicklung und Strukturplanung, Erkner
- *Muschwitz*, Christian; TAURUS Institut an der Universität Trier, Trier
- *Porsche*, Lars; Bundesamt für Bauwesen und Raumordnung, Bonn
- *Schön*, Peter; Bundesamt für Bauwesen und Raumordnung, Bonn
- *Schmidt-Seiwert*, Volker; Bundesamt für Bauwesen und Raumordnung, Bonn
- *Schürmann*, Carsten; Büro f. Raumforschung, Raumplanung u. Geoinformation, Oldenburg i.H.
- *Zillmer,* Sabine; Institut für Regionalentwicklung und Strukturplanung, Erkner

#### Italy

- *Camagni,* Roberto; Department of Management, Economics and Industrial Engineering (DIG)
- *Capello,* Roberta; Department of Management, Economics and Industrial Engineering (DIG)
- *Caragliu,* Andrea*;* Department of Management, Economics and Industrial Engineering (DIG)

- *Fratesi,* Ugo*;* Department of Management, Economics and Industrial Engineering (DIG)

**Sweden**

- *Dubois,* Alexandre; Nordic Centre for Spatial Development, Stockholm
- *Gløersen,* Erik*;* Nordic Centre for Spatial Development, Stockholm
- *Neubauer*, Jörg*;* Nordic Centre for Spatial Development, Stockholm

## Abbreviations used by the project team 4.1.3

**Table 0-1 Abbreviations**

| Abbreviation | Term |
|---|---|
| AC | Accession Country |
| BSR | Baltic Sea Region |
| CDCR | Committee for Development and Conversion of Regions |
| CEMAT | Conférence européenne des Ministres responsables de l'Aménagement du Territoire |
| CORINE | Coordination of Information on the Environment |
| CU | Co-ordination Unit |
| ECP | ESPON Contact Point |
| EEA | European Environmental Agency |
| ESDP | European Spatial Development Perspective |
| ESPON | European Spatial Planning Observation Network |
| et seq | and the following |
| FR | Final Report |
| FUA | Functional Urban Area |
| GDP | Growth Domestic Product |
| GIS | Geographical Information System |
| i.e. | that is |
| ICT | Information and Communication Technology |
| IR | Interim Report |
| LP | Lead Partner |
| MA | Management Authority |
| MAUP | Modifiable Area Unit Problem |
| MC | Monitoring Committee |
| MEGA | Metropolitan European Growth Area |
| MS | Microsoft |
| NUTS | Nomenclature of Territorial Units for Statistics |
| OECD | Organisation for Economic Cooperation and Development |

| Abbreviation | Term |
|---|---|
| R & D | Research and development |
| RCE | Regional Classification of Europe |
| ToR | Terms of Reference |
| TPG | Transnational Project Group |
| WP | work package |

## Table of contents (for details, see next page)

# Detailed Table of Contents

## Tables



## Figures



## Maps

# 1 Summary

## 1.1 Executive Summary

This interim reports presents the work of the ESPON transnational project group for the "Feasibility study on monitoring territorial development based on ESPON key indicators". It belongs to the "ESPON Research briefing and scientific networking" priority and in particular to measure 4.1 "data navigator: preparatory survey on data and scientific support actions". The project has started its work in June 2006.

The main aim of this project is to contribute to the development of a European Spatial Monitoring System for the continuous assessment of territorial trends in relation to set territorial policy objectives. It tests the capability of the current indicators and tools of supporting a sequential reporting by elaborating a tentative spatial report. Therefore the project group defined a preliminary set of indicators suited for providing information on economic, social and environmental issues, which inform about the main changes in territorial structures, trends, imbalances and so on. Already at this point it is important to emphasize the differentiation between indicators for sectorally oriented themes (current structures and territorial dynamics) and indicators representing the development of relevant policy fields and objectives. The work on the selection process of suitable indicators is reflected in this interim report as well as a provisional selection of so called "routing indicators" (see chapter 3.1.1).

Usually before a spatial analysis is started, it is necessary to think of the bundle of indicators which is dealt with. As a profound knowledge about data and indicators, problems and challenges as well as the relevance for policy makers is not the day-to-day business and a deeper knowledge can not be taken for granted, ***chapter two*** gives an introduction into the field and substantial background information. The chapter starts with a general discussion and step by step approaches the challenges of availability and homogeneity connected with questionable quality of existing data. It examines complex indicators versus simple indicators and the again and again cropping up debate on qualitative and quantitative indicators. The latter has also to be discussed here, because most suitable indicators for a spatial monitoring and the related spatial areas have to be selected. Since the research area of the project is no smaller than the EU 25+2+2, the qualitative approach seems to be the best choice. This is still a challenge, because data is collected in at least 29 different ways in the corresponding 29 countries in question.

Sub-chapter 2.3 introduces the question, which statistical unit or standard is appropriate for the survey to analyse and represent current structures and territorial dynamics as well as the development of relevant policy fields and objectives. The first answer is either that one has to use what exist (Nomenclature of Territorial Units for Statistics, NUTS II/III) or that the NUTS does not serve for nothing, because of their enormous differences and variations. For example, the NUTS 2 is meant to be most suitable to indicate and to illustrate regional development in terms of regions with functional interactions. But in several countries the NUTS 2 level does not represent functional areas. At the moment there is no real solution for this difficulty[1]. For the time being the ESPON and thus the project 4.1.3 have to make the most of the given situation and existing statistical units. But for the future, a more appropriate solution has to be found. In the penultimate sub-chapter, the different expectations concerning a spatial monitoring are argued, especially from the point of view of policy makers. It is obvious that scientists and policy-makers have different approaches and taking different actions to reach an aim. But it is obvious, too, that both need each other. Policy-makers are interested in the future rather than in the past. However, data on the past can give misleading pictures for the future; often (but not always) experts know where these past-future-fallacies are. A first attempt towards a combination of key ideas of policy fields and the thematic orientation of the ESPON research projects shows the "matrix" (see chapter 2.6). The current matrix consists of 28 key indicators which have been classified according to 14 thematic fields (row) and 10 policy objectives (column). These policy objectives have been grouped by the project 4.1.3 to altogether 6 policy concepts (Lisbon and Gothenburg strategies, territorial cohesion, etc).

The **third chapter** works on a framework for the monitoring of the European territorial development. To form the basis for a continuous European spatial monitoring, it is, above all, necessary to identify and specify indicators, which can appropriately describe spatial developments of the European territory. Such indicators need to fulfil a number of requirements, e.g. in terms of their quality, spatial coverage, spatial level. In order to structure the search for indicators appropriate for spatial monitoring the chapter firstly, shortly specifies the problems of indicator selection, and secondly, outlines a methodology for their identification. Both policy makers and researchers are especially in need of quite specific and focused information and indicators. As pointed out in the ToR, within ESPON project 4.1.3, the restriction using only ESPON indicators is removed and indicators used and/or available outside ESPON can be proposed for spatial monitoring, if they are useful and contain high explanatory power in terms of the thematic field they represent and the tackled policy objective. Thus, the existing ESPON indicators, but also possibly a newly developed combined indicator could serve. Given this new frame, it is useful to assign a new name to such an indicator list to stress its differences to previous indicator list concepts. These indicators are now called '**routing**' indicators. The identified 'routing' indicators need to be complemented by

[1] Different ESPON projects discussed the problems and the so called MAUP project (no. 3.4.3) has worked intensively on the issue.

a wish-list of indicators not appropriately available yet but highly useful. The way to the routing indicators passes through a so called “multi level filter process” (see chapter 3.1 et seq). Two standardised procedures are developed:

- Filtering Procedure for the routing indicators and
- the Wish list Procedure for those indicators that have certain shortcomings but should become part of the routing indicator list in the future.

The major difference is that routing indicators must be able to represent much broader contexts and should even be able to show the tendency of a whole thematic field. Their function is that of a lighthouse, guiding through endless information sources or an early-warning-system that shows whenever something unrequested is going on.

A short detailed description of preliminary selected indicators for each concept, a list of used sources and a resume for each of the altogether 6 policy concepts, which have been developed from the matrix, are presented in **chapter four**. It shows a very good first step into the right direction and will serve for the future discussions within the WPs, the TPG and with the ESPON CU.

The following **fifth chapter** covers the prerequisites and approach towards a tentative spatial planning report. The philosophy of continuous spatial monitoring is to measure and analyze spatial phenomena and keep information about regional disparities and their development. As for national territories also a European-wide spatial monitoring is necessary. Especially for researchers, politicians and other decision makers, such a monitoring gives evidence-based information and has to be seen as a tool supporting the decision making processes. Thus a permanent, well structured and good organised basis is without alternative. Besides, monitoring not only asks for a comprehensible content but also for the possibility to realise it continuously. Only by means of continuous monitoring it will be possible to easily recognise territorial trends and to put them in relation to territorial policy objectives. Furthermore, such a monitoring, if applied correctly, can also be used to carry out necessary and reasonable forecasts. The main elements of spatial monitoring are the used concepts and their indicators. Thus the project favours a policy-orientated spatial monitoring in a lean way, which consists also of all necessary thematic concepts. But it includes only a limited number of "routing - indicators" per concept. Such a more slimmed monitoring obviously needs a selection of the most important indicators which have to be confronted with the problems and targets of spatial policies. These indicators have to be the right appropriateness, complexity and expressiveness. One of the most important preconditions is the fact that the indicators of the monitoring system cover the whole ESPON area and that the statistical data have to be updated in short periods, mostly annually. Sources outside ESPON are analysed here, too. Basis for the future discussion is the (new) extended matrix (see chapter 5.2) which confronts and compares the 28 starting indicators with new developed ones.

**Table 1-1 Sources for the identification of indicators and / or data**

| | |
|---|---|
| INTERREG IIIB BSR | Nordregio (special study) |
| Eurostat Regio Database | World Bank |
| CORINE 2000 Dataset | EEA |
| Various national sources on sustainability | Various national sources on Lisbon and Gothenburg strategy |
| United Nations University | |

Sub-chapter 4 shows that at this stage the quality of indicators varies widely. Some indicators appear to be of a very specific character (e.g. location of multinational headquarters) while others tend to be much more general (e.g. population density). While most suggested indicators are quite straight forward (e.g. proportion of households with internet access) and easy to understand, other indicators are highly complex. To improve coherence, comparability and comprehensibility of the proposed indicators further discussions will be conducted within the TPG. Some indicators tend to be more focused in terms of their linkages to policy objectives and thematic fields mentioned in the matrix than others. In the remainder of the project duration it is certainly possible to achieve further improvements in this context.

Concerning the developed tools it has to be stated that the project is on the right track. Improvements are obviously necessary and will be done, but the tools already proved their practicality. Furthermore, the tools allow more practicable applications. Potentially all tools and interfaces to other software that exist for MS Access databases can be applied. In the context of spatial monitoring a linkage can be made to Geographic Information Systems (GIS). In general this tool is open for many more potential applications than it is used for until now, depending on the demand of the future sequential reporting. Furthermore, adjustments can easily be made to incorporate further information on the indicators.

As the project is asked to compile a so-called tentative spatial monitoring report, the last subchapter presents the projects idea on it and a draft table of contents. The structure of the matrix is the base for the general outline of the report. It will concentrate on sectoral orientated themes (part I) as well as on policy fields and objectives (part II). Part one of the report will be thematically oriented. This part can be interpreted as the one on “ever lasting” and continuous issues of spatial importance and monitoring. The second part of the tentative report will focus more strongly on the development of relevant policy fields and objectives, i.e. the territorial dimension and long term spatial policy objectives.

The following table of contents for a tentative version of a spatial monitoring report is a first idea and outline based on the Terms of Reference for the project 4.1.3.

<u>Table of contents:</u>

- *Executive summary*
- *Introduction*
    - aims and objectives of the report
        - methodology
        - approach and guiding questions
        - selected indicators
- *Part I: Current structures and territorial dynamics (sectoral oriented themes)*
    - current structures and situation of the European territory using main socio-economic and demographic indices (including maps)
        - demography
        - economy
        - social issues
    - territorial dynamics within Europe and its regions
    - resume
- *Part II: Development of relevant policy fields and objectives*
    - Territorial cohesion
    - Lisbon
    - Infrastructure
    - Gothenburg
    - Socio-Cultural
    - Governance
    - resume
- *Part III: Resume*
    - Resume
    - Spatial challenges encountered
- *Annex: Detailed information on each indicator* (source, years, calculation, etc. etc.)

## 1.2 Scientific summary

Right from the beginning the ESPON 2006 Programme put a main focus on the retrieval of data and indicators, trying to develop systematic ways of accessing them. The whole process started with the so called data navigators, which were set up for every country and were launched usually before the thematic work of the TPGs began. This process followed the research logic, that all content orientated projects were in need of good data.

### Prologue

Against this background data navigators acted as the platform or the gate keeper of national data. Without them it would have been impossible to achieve another level in data generation and management, the ESPON data base. Here all data is collected that complies with the quality standards of ESPON. The first version of the ESPON data base was developed by ESPON project 3.1. From that stage on it was consecutively maintained and data sets were added continuously. The latter was done by the several thematic TPGs , who functioned in a double role. On the one hand they used the data base and on the other hand they tried to get hold of new data, backing their individual research interests. Every time the new data matched the standards of the ESPON data base, it was then added to it. A fourth step was the systematic exploitation of the data base. This process started in parallel with the work of the thematic TPGs. Its aim was to condense the tremendous amount of indicators systematically to a limited number of 'most important' indicators, derived from a policy perspective. This task was undertaken e.g. in the frame of the coordinating projects 3.1 and 3.2. The TPGs isolated the so-called 'core' indicators from other indicators used in their respective projects. These indicators have been compiled in the 'core indicator list' by the coordinating projects and represent the most important indicators for the respective thematic fields analysed by the TPGs. Altogether roughly 100 such indicators have been identified from a total list of more than 1000 indicators in the ESPON data base. From this group of indicators, the coordinating project 3.2 selected the so-called 'key' indicators. These indicators attempt to link the thematic fields with territorial policy objectives. The first draft of this key indicator list resulted in a matrix structure currently including 28 indicators.

### ESPON 4.1.3 focus

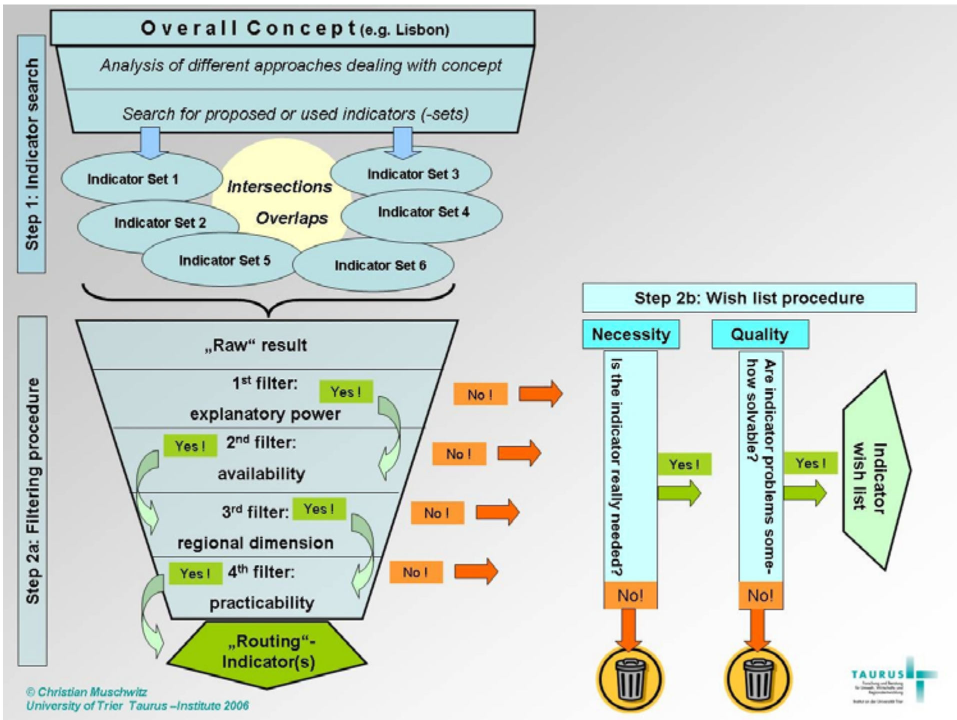
ESPON Project 4.1.3 now marks the end of the chain of attempts of ESPON’s data and indicator process. The main idea of the project is to find a set of indicators that could function as the pioneer for an all European spatial monitoring. Therefore it is necessary to have a fairly limited number of indicators but with an enormous thematic relevance. Unlike the so called "key indicator list", ESPON 4.1.3 is allowed to search for indicators also outside the ESPON data base. Furthermore, the project is not bound by the quality standards of the ESPON data base, which means indicators can be chosen but may not be available in the necessary depth or wideness. If this is the case, they will enter the process by becoming part of the so called "indicator wish list".

Altogether six overall "spatial concepts" are going to be covered by ESPON 4.1.3: territorial cohesion, Lisbon, infrastructure, Gothenburg, socio-cultural-issues and governance. These fields are assigned to different partners within this TPG as individual work packages .

### Methodology

One major challenge of the project is to secure a common methodology for selecting the indicators for the spatial monitoring. The chosen indicators should of course comply to a same standard, concerning their quality and their explanatory power. To guarantee this, ESPON 4.1.3 developed a multistep approach which will act as a common guideline for picking indicators or suggesting them.

**Figure 1-1 Multi-level filtering process and Wish list procedure**




Source: TAURUS-Institute 2006

The process starts with a broad analysis of projects and documents dealing with the respective theme. Here, not only ESPON projects will be of interest, although they naturally form the core, since not a lot of other research activities examined Europe as a whole. the chosen projects and documents are analysed for relevant indicator sets. The sets are compiled and intersections and overlaps are identified. The now visual amount of indicators form the basis for the next step. The so called filtering procedure which consists of 4 steps:

> *Explanatory power*
>
> The first filter is maybe the most challenging one. Each indicator will be checked for its ability to represent the thematic field it comes from in the best possible way.
>
> *Availability*
>
> The second used filter is the availability of the collected indicators. This is a basic necessity. It is futile to check any other quality criterion if the data is simply not available on a reasonable basis.
>
> *Regional dimension*
>
> In statistical terms this means NUTS 3 or beyond!
>
> *Practicability*
>
> Some indicators may be ideal only for mere scientific purposes but lack a clear link to practice.

Indicators that stand all the tests are called “**routing** indicators”. The term ‘routing indicator’ exceeds the currently existing definition or main idea of so called ‘core or key indicators’. The major difference is that routing indicators must be able to represent much broader contexts and should even be capable of showing the tendency of a whole thematic field. They are really the best existing indicators for a certain thematic field. They represent more than the others the whole set of indicators belonging to the theme. At each step of the filtering process, indicators will of course be sorted out. But they are not thrown away, they enter another procedure, that is the so called “indicator whish list” procedure. Two more questions are asked in this procedure: first, if the indicator is necessary and second, if the problems with this indicator are thought to be solvable with a reasonable amount of resources or in a certain time. The entire process results in two lists. Firstly the so called "routing indicators list", which consists of indicators that fulfil the quality criteria for a constant spatial monitoring. Secondly the so called "indicator wish list", which contains desirable indicators with minor weaknesses that have a high potential to become routing indicators. For the collection and description of the routing indicators and the whish list indicators ESPON 4.1.3 developed a standardized procedure by using MS ACCESS. Two data input masks were developed, one for the routing indicators and one for the whish list indicators. The input masks are designed to capture the main information concerning the indicators and to help reduce possible misunderstandings or wrong entries. Moreover, the input masks are designed to create automatically word documents containing the main information. One last advantage is the possibility to create homogeneous data bases for both, the routing and the whish list indicators. Because of the special format of ACCESS data bases they are open for any kind of standardised research queries.

## First results

Since the time for this first working period of the project was fairly limited, the results achieved so far have to be seen as preliminary. The work on all themes has started, but clear inequalities in the status presented can not be ignored. The differences are most obvious when looking at the stage of the filtering process (as described above) for each of the themes. While some themes seem to have completed this process (e.g. territorial cohesion), some other themes are still in progress and have achieved the compilation of their "raw results", discussing more than 35 indicators. For the theme "governance" no concrete indicator have been suggested at the moment, due to the enormous complexity of this topic. Further discussions on the indicators will be enhanced especially during the TPG meeting in August 2006.

The search for indicators appropriate for European spatial monitoring was structured in correspondence with the following list of policy concepts and objectives:

*WP 1: Territorial Cohesion*

- Balanced distribution of population, wealth, cities, etc.
- Sustainable settlement structures

*WP 2: Lisbon*

- Assets for global competitiveness
- Innovative knowledge society
- Diversified regional economies

*WP 3: Infrastructure and accessibility*

- Sustainable transport and energy

*WP 4: Gothenburg*

- Healthy environment and hazard prevention

*WP 5: Socio-cultural*

- Socially inclusive society and space
- Diversified cultural heritage and identities

*WP 6: Governance*

- Territorially oriented governance

The following paragraphs give a short overview of the state of the work:

### Territorial cohesion

The original title of this work package was “territorial cohesion”. However, with the concept of territorial cohesion being so large and encompassing nearly the entire indicator matrix, it is proposed to re-baptise this work package to “cohesive spatial structures”, better reflecting the contents of the two columns of the matrix to be dealt with, i.e.:

- balanced distribution of population, wealth, cities, etc
- sustainable settlement structures

Both of these imply the normative idea that some forms of spatial organisation are better than others and, notably, that a more polycentric distribution of populations, activities and infrastructures is better than a monocentric distribution. In order to go beyond the general normative idea that cohesive and polycentric development is an aim in itself, it is necessary to see what is underneath these notions and clarify the actual objectives implied. The main aim obviously is wellbeing, but this is just as vague. To reach a more precise level of description, one can list, amongst others:

- access to services and jobs from any point in the territory
- avoiding negative externalities of excessive concentration of population, traffic, production, etc.
- avoiding excessive disparities in terms of income and wealth, both at a pan-European scale and specifically between neighbouring regions
- a limited use of surfaces and environmental resources for human activities

Therefore, indicators in this section should respond to these objectives.

Altogether nine indicators belong to the first proposal of routing indicators for this thematic field:

| | |
|---|---|
| 1. | Population density |
| 2. | Household income |
| 3. | Share of urban fabric |
| 4. | Dependency ratio |
| 5. | Index of sustainable demographic development |
| 6. | Intra-regional income dispersion |
| 7. | Regional price index |
| 8. | Accessibility in time to public services |
| 9. | proportion of long-distance commuters |

Most of the above indicators are fairly straightforward and area quite easily available and updatable. However, some of the most important social indicators (income dispersion, price levels, access to services) are not currently available and imply either a serious data gathering effort by ESPON, or lobbying with Eurostat and the national statistic institutes to convince them to collect these data.

**Lisbon**

The Lisbon strategy aims at a very ambitious goal, which is to make the EU "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" until 2010 .

Competitiveness is one of the key terms in the Lisbon Strategy as it involves more than asserting a position in the global market in economic terms. It can be considered as a cross-cutting issue, linked to different sectoral policies. Therefore the Lisbon Strategy emerged as a comprehensive concept, addressing economic, social as well as environmental renewal.

In its' Spring Reports the EU Commission regularly assesses the progress made in achieving the Lisbon goals. This annual review is based on a shortlist of 14 structural indicators that cover the following six domains:

1. General Economic Background
2. Employment
3. Innovation and Research
4. Economic Reform
5. Social Cohesion
6. Environment

This system of indicators and their regular analysis can be seen as a monitoring system for the thematic areas covered by the Lisbon Strategy.

The starting point for the analysis of existing Lisbon indicators was the set of Structural Indicators by the EU Commission. These indicators were confronted with the indicators used in 5 selected ESPON projects dealing with Lisbon topics. Obviously, ESPON Project 3.3 on the territorial dimension of the Lisbon/Gothenburg Process was a key source of information in this respect. Given the relatively short period of time and the comprehensive tasks to be dealt with to put this Interim Report together, it was not possible to look into national sets of Lisbon indicators and to include them in the analysis.

At this point in time, we have altogether 350 different indicators covering the six Lisbon domains mentioned above. The status of filtering the indicators is not yet completed, therefore 35 indicators are discussed. But it is very clear that most of them will not be available in the demanded quality.

## General economic background

1. Labour productivity per hour worked
2. Inflation rate
3. Consumption per capita (Consumption per capita/ PIL per capita)
4. Purchasing power indices
5. Labour costs )
6. Household Budget Survey (Final Consumption Expenditure per household and per adult equivalent as an average for the population, broken down by several cross-sectional variables)

## Employement

7. Life-long learning - total
8. Average exit age from the labour force: total
9. Total employment rate
10. part-time employment
11. Ageing labour force
12. Unemployed under 25/1.000 inhabitants , aged 15 -< 25 years
13. Temporary Work

## Innovation and Research

14. Gross domestic expenditure on R&D
15. Science and technology graduates- total
16. Patents
17. Youth education attainment level - total

## Economic Reform

18. Business demography: Birth rate of enterprises
19. Business demography: Survival rate of enterprises
20. National (firm) aids (% of GDP)

## Social Cohesion

21. Inequality of income distribution (income quintile share ratio)
22. At-persistent-risk-of-poverty rate - total
23. Early school leavers - total
24. Total long-term unemployment rate
25. Jobless households
26. Child poverty
27. social spending (Public social spending, Private social spending, Total social spending) Working mothers

Environment

| | |
|---|---|
| 28. | Total greenhouse gas emissions |
| 29. | Energy intensity of the economy |
| 30. | Road share of inland freight transport |
| 31. | Share of electricity from renewable energy to gross electricity consumption |
| 32. | Protected Areas for biodiversity: Habitats Directive |
| 33. | Final Energy Demand |
| 34. | Vulnerability |

The Lisbon Strategy was complemented by the Gothenburg Strategy one year after it had been endorsed. As a result, there are intersections between the two concepts that also become apparent in the indicators used to assess the respective implementation of each strategy. These overlaps will have to be examined in more detail and decisions will have to be taken on which indicator should be used for which theme or if one indicator could also be used for monitoring two themes.

**Infrastructure**

Accessibility is the main 'product' of a transport system. It determines the locational advantage of a region relative to all regions. Indicators for accessibility measure the benefits households and firms in a region enjoy from the existence and use of the transport infrastructure relevant for their region. In general terms, accessibility then is a construct of two functions, one representing the activities or opportunities to be reached and one representing the effort, time, distance or cost needed to reach them. The important role played by the transport infrastructure in regional development is one of the fundamental principles of regional economics. In its most simplified form it implies that regions with better access to the locations of input materials and markets will, ceteris paribus, be more productive, more competitive and hence more successful than more remote and isolated regions. In this sense the improvement of transport infrastructure is contributing to the (global) economical competitiveness of a region. Beyond this, it is widely expected that improvements in transport systems also imply cohesion effects in that they should reduce regional disparities. The proposed core infrastructure and accessibility indicators are presented in the table below, grouped into ‘whish list indicators’ and ‘second best indicators’. As some ‘whish list’ indicators are not yet calculated for the ESPON space (for whatever reason), a second best alternative indicator is presented. If the whish list indicator is already been calculated for ESPON space both the whish list indicator and second best indicator are identical. However, ESPON space here does not necessarily mean that the proposed indicators were calculated in ESPON projects, but that basically the indicator would be available from any data source for the ESPON space.

Proposed whish list and second best transport indicators.

| Field[1] | Wishlist indicator | Second best indicator |
|---|---|---|
| H1 | Average travel time by car to next three regional cities (> 50,000 inh.) | Average travel time by car to next three regional cities (> 100,000 inh.) |
| H2 | Potential accessibility to population, multimodal, ESPON space=100 | Potential accessibility to population, multimodal, ESPON space=100 |
| H4 | Lorry travel times to transport terminals | Connectivity to transport terminals (ICON indicator) |
| E5 | Proportion of households with internet access | Proportion of households with internet access |
| H5 | Modal split passenger transport (car, plane, train) (survey/empirical data) | Modal split passenger transport (car, plane, train) (modelled data) |
| J5 | Final energy consumption by transport (Mtoe) (NUTS 2) | Final energy consumption by transport (Mtoe) (NUTS 0) |
| L5 | Land consumption by transport infrastructure (statistical data) | Land consumption by transport infrastructure (CORINE database) |
| M5 | Number of people injured and number of people killed in transport per inhabitants | Number of people injured and number of people killed by road transport per inhabitants |
| H6 | People within 50 km distance ('regional population potential') | People within 50 km distance ('regional population potential') |
| H7 | Proportion of population living within 30 min of next railway station | Connectivity to rail stations |

[1] *the column 'field' refers to the chequer presented in the next extended matrix, see chapter 5.2.*

Ten key infrastructure and accessibility indicators are suggested, addressing different policy goals of the indicator matrix. Two further indicators are proposed to measure global competitiveness and diversified regional economies, while four indicators focus (but are not limited to) sustainable transport and energy. A final indicator tries to capture the notion of socially inclusive society and space. Special concern was also given to ensure that the proposed indicators are not overlapping with one another (i.e. double-counting same or similar measures). Comparing the proposed routing indicators with the wish list indicators, it turns out that already three out of ten routing indicator exactly match the wish list indicators. These three are: (i) Potential accessibility to population, multimodal, ESPON space = 100; (ii) Proportion of households with internet access; (iii) People within 50 km distance (regional population potential)). Further two indicators only need to be slightly modified to match the wishlist indicators.

### Gothenburg

In 2001 the European Commission agreed upon a long-term EU strategy on sustainable development, commonly known as the "Gothenburg Strategy". This strategy provides a policy framework for a sustainable development, i.e. to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. The strategy rests on three separate pillars - economic, social and environmental - which need to reinforce one another to ensure sustainable development. The economic, social and environmental implications of all sectoral policies thus need to be examined in a coordinated manner and taken into account when those policies are being drawn up and adopted. The Gothenburg Strategy identifies six unsustainable trends on which action needs to be taken: poverty and social exclusion, the implications of an ageing society (already covered by the Lisbon Strategy), climate change, health, natural resources, transport. The long-term objectives accordingly include (among others) limiting climate change, limiting major threats to public health, food safety and quality, removing threats to the environment posed by chemicals, a more responsible management of natural resources, limiting the adverse effects of transport and reducing regional disparities. These objectives are all in line to a high degree with the overall aims of the European Spatial Development Perspective (ESDP). In correspondence to these trends and objectives, the Gothenburg Strategy's aims cover a wide range of topics which can add up to altogether 10 thematic fields. A hierarchical thematic framework was developed on the basis of the policy priorities of the Sustainable Development Strategy. The 10 themes, which may be further developed in the future, are :

1. Economic development
2. Poverty and social exclusion
3. Ageing society
4. Public Health
5. Climate change and energy
6. Production and consumption patterns
7. Management of natural resources
8. Transport
9. Good governance
10. Global partnership

At the moment for this WP the status of filtering the indicators is not yet completed, therefore 40 indicators are discussed. But it is very clear that most of them will not be available in the demanded quality.

Poverty and Social Exclusion (Social inclusion, demography and migration) (economy)

| | |
|---|---|
| 1. | Ageing Society |
| 2. | Inequality of income distribution Gini-coefficient (standard measurement) |
| 3. | Change of GDP pps per capita from 1995 to 1999 |
| 4. | Unemployment rate |
| 5. | Inequality of regional income distribution |
| 6. | Funds for poverty and aging (regional expenditure in pps per capita) |
| 7. | Population by age group |
| 8. | Total migratory balance |
| 9. | Socio-demographic performance ratios (ageing, dependency, sex composition, labour market pressure), educational level |

Climate change and energy (Climate change and clean energy)

| | |
|---|---|
| 10. | Consumption of Energy per GDP / Energieverbrauch je Bruttowertschöpfung (Energieverbrauch (Schätzung) je Bruttowertschöpfung [MJ/1000 €]) |
| 11. | Share of renewable energy sources / Anteil regenerativer Energien an der Energieproduktion (Anteil der über Windenergieanlagen und Blockheizkraftwerke erzeugten Energie an der Energieproduktion insgesamt [%]) |
| 12. | Use of renewable energy in relation to electricity consumption |
| 13. | Energy intensity of the economy (Gross inland consumption of energy divided by GDP) |
| 14. | Greenhouse Gas Emissions |

Production and Consumption Patterns (Sustainable Consumption and Production)

| | |
|---|---|
| 15. | Energy Inland consumption |
| 16. | Land cover replaced by built-up area 1990-2000 |
| 17. | Land use / land use change |
| 18. | Change of settlement area / Entwicklung der Siedlungs- uns Verkehrsfläche (Relative Entwicklung der Siedlungs- und Verkehrsfläche [%]) |
| 19. | Municipal waste generated NUTS0*(Population NUTS 2/Population NUTS0) |
| 20. | Management of natural resources (Conservation and management of natural resources) |
| 21. | Area of untouched forests |
| 22. | Rivers and lakes with clearly good ecological status |
| 23. | Natural Areas |
| 24. | Urban sprawl (as a composite of three subindicators: Urban Growth (1990 – 2000), Growth of residential areas (1990 – 2000), |
| 25. | Growth of Industrial Areas (1990 – 2000) |
| 26. | Water quality |

Transport (Sustainable Transport)

| | |
|---|---|
| 27. | Share of rail and waterway freight / Anteile des Schienenverkehrs und der Binnenschiffahrt an der Güterverkehrsleistung |
| 28. | Commuters / Pendlersaldo (Einpendler minus Auspendler je 100 Erwerbstätige [%]) |
| 29. | Share of public transport / Anteil der ÖPNV-Benutzer im Berufsverkehr (modal split) (Anteil der Berufspendler mit ÖPNV-Nutzung und im nicht-motorisierten Individualverkehr an den Berufspendlern gesamt [%]) |
| 30. | Average energy efficiency for passenger transport and freight transport |
| 31. | modal split (passenger and freight) |
| 32. | Accessibility rail/road/air travel and rail/road freight |

Public Health

| | |
|---|---|
| 33. | Life expectancy at birth |
| 34. | Total health expenditure per capita, US$ PPP |
| 35. | Practising physicians Density per 1.000 inhabitants |
| 36. | Expenditures on health |
| 37. | Global partnership (Global poverty and sustainable development challenges) |
| 38. | Development assistance as percentage of gross national income |
| 39. | Official Development Assistance |

The Gothenburg Strategy is intrinsically multi-sectoral. On the one hand, this offers the opportunity to make use of a large pool of existing indicator sets. On the other hand, the simple fact that there is an abundance of indicators to cover this subject does not necessarily mean that the same indicators are repeatedly applied, i.e. there are surprisingly little overlaps. Consequently, a first selection of indicators is not as simple as might have been expected at the outset in view of the supply of indicators. Furthermore, the indicators we found are defined on and for different spatial levels. So it still remains to be seen which indicators can eventually be proposed for a territorial monitoring system of the ESPON territory.

**Socio-cultural-issues**

This work package deals with the two policy goals “Socially inclusive society and space” as well as “Diversified cultural heritage and identities”. Starting point have been the existing indicators suggested to depict these two long term territorial goals. So far only two indicators in the thematic fields of “Culture” (for diversified cultural heritage and identities) and “transport” (for socially inclusive society and space) have been put forward. These two indicators have – in a first attempt – been checked in terms of plausibility and availability. Then further indicators have been identified and checked in order to complete the indicator matrix for these two policy fields. The definition of the two rather heterogeneous policy fields – socially inclusive society on the one hand and diversified cultural heritage on the other hand – causes some problems. The two ESPON projects dealing with these issues – i.e. ESPON 1.4.2. “Preparatory Study on Social Aspects of EU Territorial Development” and ESPON 1.3.3. “The Role and Spatial Effects of Cultural Heritage and Identity” – had the same problem when pinning down these issues to a simple picture and definition. So far altogether eight indicators are suggested, but many more are to be proofed and may enter the whish list. The eight indicators are:

1. Accessibility by public transport (rail)
2. Number of cultural sites
3. Unemployment rate
4. Health care/ hospitals
5. Household income (as disposable household income)
6. Gini coefficient of household incomes
7. Social spending
8. Employed persons by highest level of education attained

In this first attempt of finding routing indicators a rather pragmatic and reality-driven approach was chosen. The two suggested indicators in the two policy fields have been taken as a starting point. The idea was to try to check their plausibility by cross checking their use in the two ESPON studies and other policy related indicators sets. As both of them were to be found reliable in this respect we decided to keep those two indicators in the matrix for the time being. The second step will probably add additional indicators. Due to the decentralised responsibility for the legislation that lies within the Member States, the availability of European-wide, harmonised data on a regional level (NUT2 or NUTS3) for social issues is rather poor. Within the ESPON project 1.4.2. indicators of various European and international sources and databases have been analysed. More than 230 indicators have been identified as relevant for social-territorial issues. However, about 80% of all these social indicators are only available at national level, e.g. all OECD data and lots of UN-data. Moreover, the data from the Urban Audit are just available for selected cities, not covering the territory of EU 25+2+2. They are therefore only usable to a very limited extent for analyses within the ESPON-space .All in all, out of the huge database investigated, only 32 indicators were available at NUTS2 throughout Europe . (Just about 1/6 exist also on NUTS3 level.) Therefore just two more indicators are added to the matrix – i.e. unemployment rate and Health care/ hospital beds per 100 000 inhabitants. This is just a first tentative approach to fill the matrix – in the coming months we will have to check these indicators and maybe add some more, which depict other aspects of socially inclusive society and space.

With the topic “Cultural Heritage and Identity”, the situation is even worse. ESPON project 1.3.3. provided very little data on the NUTS 2/3 level which could be seen as key information for a European spatial monitoring scheme. It will be one of the main tasks to look for additional indicators in this field – probably stemming from other sources.

## Governance

Good governance is widely considered as being fundamental for economic growth and political stability. Within this field, the theme of territorially oriented governance touches a relatively new scientific field, in which the attempts for measuring or monitoring the related development in space have been very limited so far. This is why the definition of the term 'territorially oriented governance' is still to be discussed. In addition, empirical approaches to the measurement of governance show the difficulty in developing appropriate indicators and gaining valid data (see e.g. Court, Hyden and Mease, 2002). Due to the different spatial levels under consideration once territorially oriented governance is to be measured, this problem is even aggravated. Within the ESPON 2006 Programme it is the ESPON Project 2.3.2 which dealt with territorial governance issues. The extensive final report to this project impressively shows the difficulty in finding 'the' key indicator which could provide a comprehensive but simultaneously precise picture of achievements in territorial governance of a region, a state or a transnational territory. In addition, governance issues are not easily dealt with in a quantitative way but are based on numerous qualitative – and partly quantitative – observations, which are considered jointly in order to gain a comprehensive overview. To further complicate the search for governance key indicators, different spatial levels as well as a variety of policies need to be distinguished and cannot be easily aggregated to one single or very few indicators. Primarily, governance focuses on procedures of problem-solving, conflict-mediation and decision-making. Some basic principles have been summarised and accepted by the Commission of the European Union (see White Paper p.10), as principles of good governance in general:

1. ***Openness:*** Are relevant processes concerning spatial policy implementation publicly discussed, is decision-making transparent? Are decision and policy contents understood by the general public? (Degree of active communication within the process of territorial governance and the decisions it takes).
2. ***Participation:*** Are all relevant actors of the policy chain included in the processes of policy conception and implementation? (Degree of empowerment and involvement of a wide range of actors).
3. ***Accountability:*** Can (public and private) actors be held accountable for spatial policy implementation and are the roles of the different actors clear? (Degree of taking responsibility by the involved actors in implementing spatial development issues).
4. ***Coherence:*** Are policies of different sectors and different spatial levels coherent in terms of objectives but also responsibilities etc.? (Degree of consistency within the complex system of sectoral policies affecting the same territory).
5. ***Effectiveness:*** Are policies effective and timely, delivering what is needed on the basis of the ESDP objectives on the respective territorial level of decision and implementation? (Degree of delivering regional/local needs on the basis of territorial objectives)

To detect features of the principle of openness, criteria have to be found to assess the communication of policies among the different actors. Of special relevance as enabling the development of a good openness of governance structures is the transparent character of the formulated territorially oriented policies, and the availability of information on policies and actions. A high openness itself can be described by aspects of communication practices, and further by the understanding and acceptance of policies and governance actions among the public. As can be seen, there is no single indicator, which could describe either of the principles appropriately without being misleading. Thus, the production of a qualitative description of territorially oriented governance, taking account of different detailed aspects, will not yet be feasible for the Spatial Monitoring Report. It will have to be discussed, to which extent this policy field shall still be included in the report. Further improvements of the methodology regarding the monitoring of territorially oriented governance could then be envisaged for the next report.

### Next steps/ Further work until final report

Going through the summaries of the work packages reflecting the six thematic fields, it is obvious that there are concrete overlaps between the fields regarding the suggested or selected indicators. Moreover it is visible that there are differences in the progress of the WPs. Although a common methodology was developed there are still some inconsistencies that have to be solved. Therefore it is also clear that until the final report will be delivered certain things have to be done:

1. discussion about the proposed indicators among the WPs
2. harmonise existing differences
3. mutiple suggestions have to be rejected, to avoid overlaps
4. indicator gaps have to be filled (if possible)
5. indicator definitions have to be elaborated(if possible)
6. develop a final decision on the routing indicators
7. clear suggestions have to be made on how to draw policy conclusions from the indicator work of the spatial monitoring

Nevertheless, taking into account, that this project group has not had a single personal meeting and had only very few time to sketch this FIR, the achieved result is quite appealing and it is indeed visible, that a very practical and precious suggestion for a spatial monitoring system is in sight.

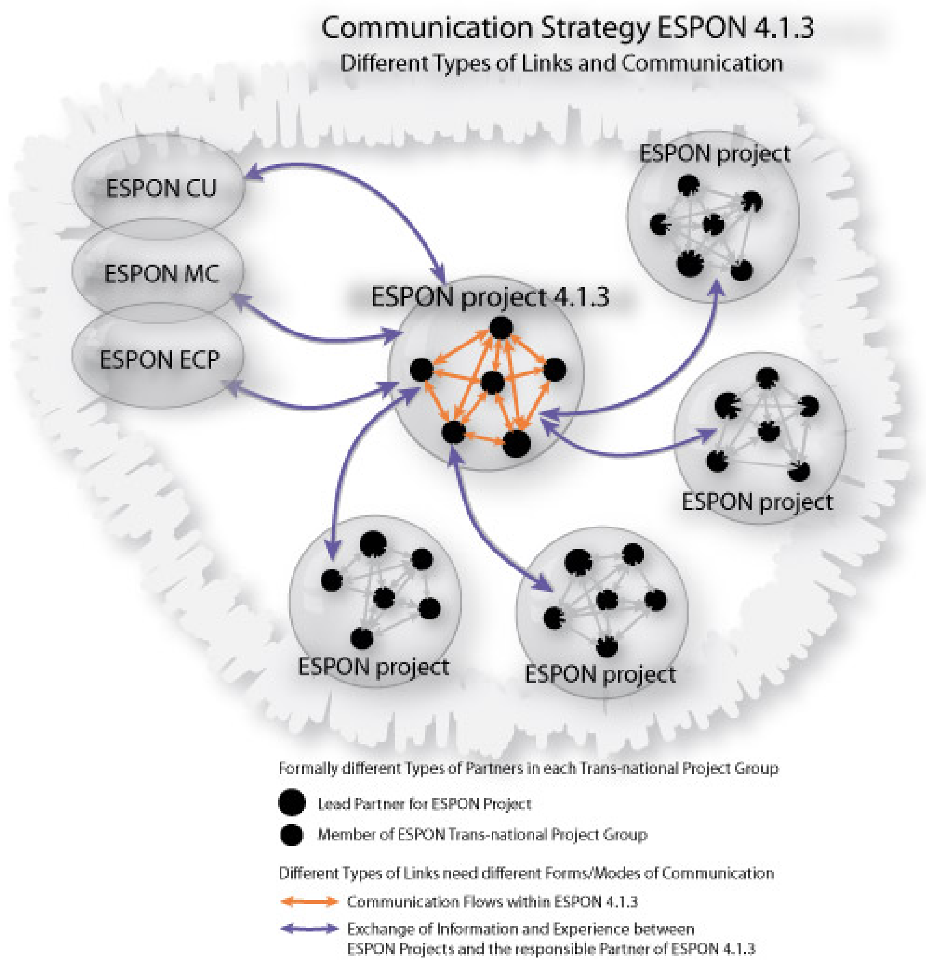
The so far developed methodology and the standardized ACCESS procedure will provide a solid base for a spatial monitoring system that is easily maintained has a good consistency.

## 1.3 Networking and Self-evaluation

### Integration in the ESPON Network

Networking is a fundamental aspect of the ESPON project 4.1.3 and its work. It is presented and reviewed here.

**Figure 1-2 Communication strategy ESPON project 4.1.3**




### Networking between 4.1.3 and other TPGs

In order to reach the determined objectives of searching and recommending indicators which should be used for a spatial monitoring of the ESPON space results of ESPON projects are of high importance. Thus close contacts with other relevant ESPON projects is of very important for ESPON project 4.1.3. Furthermore the contact to the ESPON CU as the interface between the project and the ESPON MC and MA as the contractors and clients is of high importance, too.

The project builds and is going to build on a strong co-operation with other ESPON projects, like e.g. project 3.2 or 3.4.3. The project results concerning data and indicators are considered as the starting point for the work on the selection of indicators. Thus all ESPON project results will be taken into consideration to cover a diversity of results and spatial coverages.

**Networking between 4.1.3 and the ESPON Programme level**

Beside contacts to other ESPON projects, ESPON project 4.1.3 intensively made use of discussions and exchange with the CU.

As the interface between the MC and the MA in cooperation with the CU it is possible to adjust the selection of indicators in an appropriate way for the ESPON Programme. At the same time bearing in mind the use, applicability and practicability for the envisaged ESPON II Programme.

Overall close contacts with the ECP network are ensured by activities of TPG partners who function as ECP at the same time (Germany and Luxembourg).

All in all the realised networking mentioned above could be assessed as a big step forward within a short time period, taking into consideration that the project started just in June 2006. All discussions as well as first co-operation were fruitful and are promising.

### 1.3.1 Internal Project Management and Co-ordination

The trustful and professional co-operative atmosphere within the TPG helped the project group to overcome some obstacles. It has developed good results within a very short period of time. That couldn't taken for granted, because the strict and tight time table did not allow a meeting before the delivery of the Interim Report to meet and get to know every one.

The content related division of responsibilities by work packages and issues related to the projects organisation, contracting and financial reporting, which was clarified at the beginning, shows its positive effects in a smooth and successful running of the project.

Due to the relative short period of time of the project the TPG faces a tight time schedule, which requires strong project management and co-ordination. Research and analysis in the context of work package 1 to 6 started parallel, so that a close communication, clear division of responsibilities and tasks has been and is needed. For several working steps this is organised by the elaboration of templates and guidelines. These serve as common basis for the collection as well as presentation of indicators (conducted by all partners), e.g. Access indicator form, Word “indicator fact sheet”, etc. Results of the specific collections and the corresponding analysis are integrated in the chapters of the report.

The table below shows the relevant meetings in which the project team or a member of it participated or was present. As mentioned above, the project started in June 2006. Thus not many is listed below.

**Table 1-2 List of meetings in which the project team or a member of it participated***

| Date | Type of meeting |
| --- | --- |
| June 2006 | ECP Meeting |
| June 2006 | Project Meeting 1.3.3. “cultural heritage” |
| June 2006 | Meeting with the CU, LP 3.2 |
| July 2006 | Project meeting 3.2 “scenarios” |

*chronological order of meetings since the start of the project

### 1.3.2 Self-evaluation

The work on this Interim Report shows that the project is on the right track, even if gaps exist and technical solutions need improvement. For the short period of time the project is ongoing it has made a huge step forward.

The search for indicators has not been similarly successful for all policy fields. Clear inequalities and inconsistencies in the status presented can not be ignored. However, e.g. the discussion on appropriate routing indicators for “Governance” shows, that in some cases deeper discussions within the project group, but also with the CU have to be on the agenda for the rest of the project's lifetime. For other policy fields a lot of indicators are listed in this report already. Here it is now important to go through a very intensive selection process. This will be done within the project's work packages and during the meeting of the whole project group in August 2006 in Bonn.

The work with the Access indicator form and the corresponding Word template for the automatic compilation of the indicator sheets showed some minor weaknesses concerning technical aspects. As this is a technical solution for a standardised process adjustments  will be necessary to get a perfect output.

The layout is still not perfect, but should not be the first objective, as the aim was to come to a preliminary appropriate choice of routing indicators within a very limited time. For the final report the layout will be improved.

## 1.4 Outlook

The work on the interim report showed that there have to be necessary improvements. This concerns on one hand side technical aspects. On the other hand side overlappings and unsuitable indicators have to be avoided. Also the structure and content of the tentative spatial planning report has to be further developed. The present report serves as the basis for the improvements.

The project team will concentrate until the rest of the project life time and until the delivery of the final report on:

| time | task / issue |
|---|---|
| until Oct. 2006 | - improvement of the layout for the standardised indicator sheets |
| until Oct. 2006 | - improvement of the access indicator forms |
| until Oct. 2006 | - final careful selection of routing indicators*<br>o discussion and agreements on indicators within the TPG<br>o discussion and agreements on indicators with the CU |
| Aug. 2006 | - TPG meeting |
| Sep. 2006 | - participation in the ESPON TPG lead partner meeting in September 2006 |
| Oct. 2006 | - delivery of the final version of the scientific working paper, including recommendations on future data collection |
| Oct. 2006 | - delivery of the final version of a tentative spatial monitoring report |
| Nov. 2007 | - Presentation of results – ESPON Seminar in ESPOO, Finland |

* - discussion about the proposed indicators among the WPs
- harmonise existing differences
- multiple suggestions have to be rejected, to avoid overlaps
- indicator gaps have to be filled (if possible)
- indicator definitions have to be elaborated(if possible)
- develop a final decision on the routing indicators
- clear suggestions have to be made on how to draw policy conclusions from the indicator work of the spatial monitoring

# 2 Introduction and approach towards the selection of indicators for a continuous spatial monitoring

Quantitative indicators and the respective data are nowadays a very popular means for spatial analyses. In social sciences this became especially true in the late 1960s, when positivistic tendencies entered more and more the every day research work of scientists. The focus changed from qualitative case study work with the aim of finding tendencies in single cases that may lead to common strategies, to quantitative indicator based calculations, that can be interpreted and from which intervention strategies can be derived.

This does not mean that qualitative approaches lost their attractiveness, nor that they may not be as scientific as quantitative approaches. The reality is that both main strands are complementary. However, both approaches need to be carried out very carefully and the interpretation of the results requires particularly careful attention.

Although not all spatial levels can be analysed with both approaches in the same quality, in general, for spatial analyses there is a clear correlation between the size and heterogeneity of the area in focus and the methodological approach. Moreover not all themes can be analysed with the same attitude, certainly there are themes and subjects that are easier to be analysed by using qualitative approaches others may be more feasible to be analysed with quantitative methods. Nevertheless with the usual exceptions it can be stated that the bigger (and more heterogeneous) the area in focus gets, the more likely a quantitative approach will be applied. This is insofar logical, as the strength of case studies lies in the explanation of very small and very controlled main units. If too many different main units exist, which are not (or not very good) comparable, then the value of case studies reduces rapidly. So for large heterogeneous areas there is almost no alternative to quantitative work.

The research area of our project is no smaller than the EU 25+2+2! Altogether 29 different countries with different population, cultures, political maturities and economic states as well as different sizes need to be considered. In addition, also within these countries, at regional level, we find numerous heterogeneous structures and processes. To cover this area with a spatial analysis by using a qualitative approach, would obviously provoke the need for hundreds of case studies, which would have to be carried out in parallel and with the same scientific setting. And to gain updated information over time, these case studies would have to be repeated once and again. This is surely not completely impossible, but far from being practical or affordable.

In this case a quantitative approach is obviously the best choice. But of course the business is still a tricky one. Since the indicators chosen and the data collected have to be of a specific quality, it is not so easy to come to a precise analysis.

Usually before a spatial analysis is started, it is necessary to think of the bundle of indicators which is dealt with. It has to be checked how many "right" indicators are necessary vs. how many of them are available (see also below). Than one has to concentrate how the indicators will be treated, once they are available: is it feasible to deal only with simple descriptive means or are more elaborated methods chosen? Last but not least a common basis is required which means one needs comparable data sets and indicators for the space in focus (see below).

## 2.1 Indicators and data

*Data* can be defined as the representation of any kind of information (such as facts, concepts, or instructions) in a formalised way. The formalisation is necessary to make the data suitable for communication, interpretation, or processing by humans or by automatic means. This means that data can exist in a variety of forms, such as numbers or text on pieces of paper, as bits and bytes stored in electronic mediums etc. Scientifically, data is the plural of datum, a single piece of information. The term data is often used to distinguish binary machine-readable information from textual human-readable information. Data is neutral, there is no interpretation included, nor is there a direction included, there is no good or bad data. Finally, the term data is not to be confused with the term indicator!

*Indicators* can consist of one single datum or be a combination of different data (sets). Indicators should indicate something useful and they should indicate it clearly. Indicators can be defined as measurable units which evaluate the state and / or the dynamics of a phenomenon. Indicators should be univocal and traceable, which means it should be very clear how their underlying data is collected or treated. From a scientific perspective, they should be reproducible and from a practical position they should be easy to maintain. Looking at the contents the indicators are dealing with, the question is always: does the indicator help to highlight the problem or the cognitive interest in question? Here indicators are often misused, not always by purpose of course.

For example, if one wants to investigate the state of an economy and the share of the citizens on the economic development of an area, then most of the time an economic indicator is chosen. But the most popular economic indicator "GDP/per capita" does not say anything about the concrete allocation of capital among a population, nor does it say anything about welfare or unemployment among a population.

## 2.2 Availability , homogeneity

Although scientists would like to examine nearly all imaginable aspects of life and space, indicators are just not available for all interesting spatial aspects. So in a lot of cases certain aspects are examined, without having the exact indicator or indicator set, instead an indicator (or set of indicators) which comes close to the aspect in question is selected.

The next critical point is the quality of data. As an optimum it would be brilliant to collect all data in the same way. This means at the same time or periods of time, with the same instruments or methodology and on the same level of detail and so on. However this is the ideal, the reality is different. Data is collected in at least 29 different ways in the 29 countries in question. In some cases the data collection is harmonised, which means the data is really comparable, but for most data, such a harmonisation is far beyond reality.

Since the situation requires certain standards (ToR), namely the coverage of EU 25+2+2 and an analysis on the regional level (NUTS III), it is quite obvious that several problems with data availability will occur. Moreover harmonised or homogeneous data is favoured (see above). All these requirements obviously have an influence on the amount of indicators that match these standards. They act as filters (see also chapter 3). But this does not mean, that this project will only deal with indicators that fulfil these very high requirements. Project 4.1.3 will also propose indicators that may not (yet) match the standards, but are of such an importance, that they should be available in better quality in future. This issue is described in detail in the chapter which deals with the so called "Whish list Procedure".

### Vertical and horizontal comparability

In a lot of contexts, especially in the context of the Agenda 21-process, one main requirement of indicators is the comparability. This means that indicators collected on a certain spatial level can be compared either within the same level (e.g. from town x to town y) that would be called horizontal comparability or across different levels (from town x to region x to national state x) that would be called vertical comparability. The idea behind this, is to gain a maximum transparency. So that changes on one spatial level can be compared to other levels or to the neighbours to the left or to the right.

In the case of a spatial monitoring this, of course, is a challenge that should be discussed. Especially when the spatial area of investigation is as broad as the EU 27+2. But before desires are raised which can not be fulfilled in the end, it has to be said, that such a level of complete transparency and comparability would of course make a lot of sense but is absolutely not realistic at the moment. At present the spatial world is more than just happy, if a certain indicator does exist for all the 29 countries at all!

So one can ask for this quality criterion and of course the demand is legitimate, but it is a challenge for the next decades!

### 2.3 Complex indicators vs. simple indicators

The coordinating projects of ESPON have regularly presented a list of core indicators and core typologies. This list was used as the basis for the discussions concerning possible "key" indicators for spatial monitoring. During the debates, however, it became quite clear that very different understandings of indicators and typologies exist. More important, a very important question, coming out of this discussion is whether an "indicator" necessarily needs to represent a construction out of several different "raw" variables, or whether one single of these variables can be an indicator of its own.

In this project and in the proposal for a Spatial Monitoring Report, we propose to leave this discussion behind for several reasons:

- For the purpose of this project, it is not relevant, whether an indicator or measurable unit (see above) is in the form of a raw variable, a typology, or the summary of a multivariate analysis.
- There are no "bad" or "good" indicators by definition. An indicator's quality always depends on the need it is supposed to fulfil (see above). Obviously, this will depend on several issues:
    - the relevance to the subject
    - the relevance to the political question
    - the understandability
    - the ease of reproduction
    - (in the context of monitoring): the maintainability over time
    - For a spatial monitoring covering a large variety of themes, it is impossible to define one "good" type of indicator. For each theme and each political question the appropriate form has to be found, and might change over time.

These elements, however, do not invalidate the question of which type of indicator is most useful in the context of policy debates, which often involve non-specialists in the debated subject. A compromise thus has to be found between, on the one hand, the noted elements of understandability, reproducibility, and maintainability, and, on the other hand, the scientific rigour and the comprehensiveness needed to give a sufficiently sound response to the relevant questions. In other words, where a simple variable might be the easiest to obtain, maintain and explain, it might leave out too many aspects of the question to give a relevant response. On the other hand, a multivariate construct might be more comprehensive in its message, but less understandable and more difficult to reproduce over time. Again, there is no one-size-fits-all answer, but this question needs careful evaluation for each of the thematic fields studied in this project.

## 2.4 Administrative units and other statistical units important for spatial analysis

A substantial aspect, which has also direct influence on the results and significance of regional analysis, is the selected level of aggregation of spatial units.

The common analysis levels are based on the Nomenclature of territorial units for statistics (NUTS) made available by Eurostat. The most important i.e. mostly used NUTS level for regional analysis is the NUTS 2 level, which differentiates between 282 regions for the EU25+2+2. The NUTS 2 is meant to be the most suitable to indicate and to illustrate regional development in terms of regions with functional interactions. Therefore it was used by the European Commission in regard of the allocation of structural funds. However, in several countries the NUTS 2 level does not represent functional areas.

Increasing relevance for regional analyses gets the level of NUTS 3 regions. Within the ESPON space 1.329 units belong to this level. Specific of the NUTS 3 is the fact that it is suitable to illustrate the differences of cities and their hinterland, which are hidden on the NUTS level 2. Again, this differs from country to country.

Both the NUTS 2 as well as the NUTS 3 level cover insufficiencies which have influence on the results of regional analysis. The problems base on an incomparability, not only in regard to the area and population size, but also concerning functional relations and interactions which are not considered in all cases.

On the NUTS 2 primarily the metropolitan areas with narrow administrative delineation, limited on the core area, are affected, like Inner London, Brussels or Hamburg. On the other side the region Ile de France contains, apart from Paris, the further functionally interconnected surrounding countryside, too. Therefore a uniform demarcation is not given.

An example helps to explain the challenge for the statistic analysis.

For example - in closely defined metropolitan areas - the GDP per capita is strongly overrated by a commuter surplus. The economic potential in these regions is thus valued higher, than it would be possible with the economically active population. In regions where many commuters live, like e.g. in the Netherlands region Flevoland, the GDP per inhabitant is not representative of the actual regional income. The commuters from the district Lueneburg contribute to the GDP (and thus the GDP per capita) of Hamburg, amounting to 184 per cent of the EU25-average. That is the fourth-highest value among the European NUTS 2-regions behind London (278), Brussels (238) and Luxembourg (234). In contrast to this the region Lueneburg reaches only 80 per cent of the European average value of the GDP per inhabitant, although it shows a prosperity level, which, measured by available household net income, corresponds to the average of Germany.

These methodical problems are commonly recognized since some time and in addition analysed by an ESPON project, identifying the so called Modifiable Areas Unit Problem (MAUP).

Finally it could be said, that the results of the spatial analyses depend on the level at which the spatial entities are observed and on the kind of spatial aggregation which has been adopted.

At the moment there is no real solution for this difficulty. Different ESPON projects discussed the problems and the so called MAUP project (no. 3.4.3) has worked intensively on the issue. For the time being the ESPON has to make the most of the given situation and existing statistical units. But for the future a more appropriate solution has to be found.

## 2.5 Monitoring, indicators and perceptions of policy makers

Concerning the future use of the indicators and envisaged monitoring report it is important to scrutinize what policy makers need and what they expect.

Continuous monitoring of spatial development, mostly based on the analysis of quantitative indicators, is a major tool for policy makers to assess recent development trends, identify problems and communicate needs for action, present the results of "successful policies", and compare general policy values and concepts with actual states and perspectives of the territory. Monitoring reports are often not just "positivistic" mirrors of reality, but also "test grounds" for new policy ideas, located somewhere in the open spaces between academics and politics.

Existing (mostly national or regional) monitoring reports show quite a wide range of possible ways of implementation. They are between comprehensive inventories and thematically focussed studies, between annual abstracts of statistics and lyric textbooks, between public relations and scientific analysis and assessment. This depends, not least, on the authorship, the intended strategic use of the report, the courage and openness to innovation of responsible actors, and, last but certainly not least, on the available resources.

In our project we will have to find out and present a proposal on how an "ESPON continuous territorial monitoring report" could and should look like. It seems that the data situation in Europe, the institutional setting (ESPON network), and the restricted resources available would suggest to strive for a more standardised, indicator based, periodically updated sort of report.

There are some stumbling blocks along the path to such a report to be successfully implemented. We have to see whether we can go round them, mark them with *caution!* Or blow them up. Some of these are the following

- Scientists are used to see indicators as indicators; politicians often see indicators as benchmarks and thresholds.
- Scientists can explain why indicator values are under- / overestimated (like GDP/cap for Hamburg); users might judge this as a misrepresentation of reality.
- Results on different scales answer different questions (for instance, sub-urbanisation or counter-urbanisation).
- Policy makers are interested in the future rather than the past. However, data on the past can give misleading pictures for the future; often (but not always) experts know where these past-future-fallacies are.

## 2.6 The ESPON indicator matrix

The matrix shows the key ideas of policy fields and the thematic orientation of the ESPON projects. It was developed during an intensive discussion process between the ESPON CU, the so called "guiding projects" (ESPON project 3.1 and 3.2) and lead partners from other projects. This process aimed at the identification of a short indicator list sufficient for providing cross-thematic information about European spatial development. The existing matrix is a document agreed by the ESPON Monitoring Committee. Thus, the matrix is the official starting point for project 4.1.3. Naturally the table shows gaps, as not all thematic fields are directly related to all policy objectives. Nevertheless, ESPON project 4.1.3 has not only to verify the current selection of indicators in the matrix but also needs to validate in how far existing gaps need to be filled by additional indicators from outside the ESPON programme. Special attention is turned to the suitability of the indicators for the spatial monitoring process.

The current matrix consists of 28 key indicators which have been classified according to 14 thematic fields (row)and 10 policy objectives (column) and (row). These policy objectives have been grouped to altogether 6 policy concepts (Lisbon and Gothenburg strategies, territorial cohesion, etc) and ESDP policy options. The emerged groups have been chosen as thematic oriented work packages for the verification of the indicators. The identification and specification of new indicators (as described in chapter 3) or the search of existing and appropriate ones from outside the ESPON will be done if gaps exist.

Work packages and aspects deducted from the existing matrix:

*WP 1: Territorial Cohesion*

- Balanced distribution of population, wealth, cities, etc.
- Sustainable settlement structures

*WP 2: Lisbon*

- Assets for global competitiveness
- Innovative knowledge society
- Diversified regional economies

*WP 3: Infrastructure and accessibility*

- Sustainable transport and energy

*WP 4: Gothenburg*

- Healthy environment and hazard prevention

*WP 5: Socio-cultural*

- Socially inclusive society and space
- Diversified cultural heritage and identities

*WP 6: Governance*

- Territorially oriented governance

## Figure 2-1 ESPON Indicator Matrix

| | Balanced distribution of , population, wealth, cities, etc. | Assets for global competitiveness | Innovative knowledge society | Diversified regional economies | Sustainable transport and energy | Sustainable settlement structures | Socially inclusive society and space * | Healthy environment and hazard prevention | Diversified cultural heritage and identities * | Territorially oriented governance * | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Urban development & hierarchy | Rank-size index (by population) | importance/share of major transport hubs (pass and gds) | | | | Primacy rates | | | | | 3 |
| Urban-rural relationships | | | | | | Artificial area development | | Evolution of naturale surfaces | | | 2 |
| Demography | Evolution of population by age group and gender | Migratory balance | | Activity rates by age group and gender | | Day/night time population | | Loss of life expectancy because of air pollution | | | 5 |
| Innovation | | | Patents by field of activity | R&D personnel | | | | | | | 2 |
| ICT | | | Broadband usage | | | | | | | | 1 |
| Hazards | | | | | | | | Hazard risk typology | | | 1 |
| Culture | | | | | | | | | Number of cultural sites | | 1 |
| Transport | Potential time distance to centres of different levels | Multimodal accessibility | | | Intensity of transport flows by mode | | Accessibility by public transport (or just by train – as a proxy) | | | | 4 |
| Agriculture, Fisheries and Rural Development | | | | | | | | | | | 0 |
| Energy | | | | | Energy consumption per type of user and source | | | | | | 1 |
| Governance | | | | | | | | | | | 0 |
| Environment | | | | | | | | Fragmentation index / Ground water quality | | | 2 |
| Social issues | Rank-size index (by household income) | | Population by education level | | | | | | | | 2 |
| Economy | Rank-size index (by GDP) | Number of multinational headquarters | Employed in HI-TEC sector | Added value by economic sector (some specialisation index) | | | | | | | 4 |
| TOTAL NUMBER OF INDIC | 5 | 4 | 4 | 3 | 2 | 3 | 1 | 5 | 1 | 0 | 28 |

**Source: ESPON Project 4.1.3 Terms of Reference - Annex 2**

# 3 Indicators for the monitoring of European territorial development

To form the basis for a continuous European spatial monitoring it is, above all, necessary to identify and specify indicators, which can appropriately describe spatial developments of the European territory. As described in previous chapter 2, such indicators need to fulfil a number of requirements, e.g. in terms of their quality, spatial coverage, spatial level. In order to structure the search for indicators appropriate for spatial monitoring this chapter firstly, shortly specifies the problems of indicator selection, and secondly, outlines a methodology for their identification.

ESPON project 4.1.3 differentiates altogether between six ‘overall spatial concepts’: territorial cohesion, Lisbon, infrastructure, Gothenburg, socio-cultural-issues and governance (see section 2.6). This differentiation has been gained by partially aggregating the larger number of more specific policy concepts. In relation to these concepts huge numbers of indicators can be identified in order to measure all of their aspects. However a large amount of indicators does not necessarily lead to an enriched academic result. In line with that, experiences from different research backgrounds, as well as from the ESPON programme shows, that for the majority of thematic fields it is possible to come up with a challenging number of different indicators.

But, firstly, they are not necessarily of the same quality, and secondly – and which is possibly even more important – all these different indicators do not necessarily provide very focused information. Both policy makers and researchers are especially in need of quite specific and focused information and indicators. To illustrate this, one could for instance take the numerous indicators available for demographic structures and developments. Certainly the very basic indicator of population density is a fundamental concept in order to provide information about settlement structures and their change. But settlement structures as such do not represent a policy concept or objective nor do they contain natural thresholds or benchmarks (see above section 2.5). Thus, in search of first best indicators able to describe European territorial development in relation to policy objectives, for focusing the provided information, it has to be asked, whether it is the population density or some other indicator – or possibly a newly developed combined indicator – which fits best to describe one or other given policy objective in relation to demography.

### Core, key and routing indicators

Besides this challenge to identify the 'best' indicators, this issue is also highly relevant in terms of data maintenance and management. The already massive number of indicators included in the ESPON database – with the perspective of more to come – can not be appropriately in the long term. Thus, a smaller indicator set needs to be specified. In order to identify the 'most important' indicators from a policy perspective, ESPON has already undertaken several efforts, e.g. in the frame of the coordinating projects 3.1 and 3.2. This easily leads to some confusion about the meaning of different indicator sets. For clarification, these indicator sets shall be shortly reviewed here:

- The TPGs isolated the so-called '**core**' indicators from other indicators used in their respective projects. These indicators have been compiled in the 'core indicator list' by the coordinating projects and represent the most important indicators for the respective thematic fields analysed by the TPGs. Altogether roughly 100 such indicators have been identified from a total list of more than 1000 indicators in the ESPON database.
- From this group of indicators, the coordinating project 3.2 selected the so-called '**key**' indicators. These indicators already approach to link the thematic fields with territorial policy objectives. The first draft of this key indicator list resulted in a matrix structure (see above section 2.6) inhibiting presently 28 indicators.

To further nurture confusion, it has to be remembered that, so far, these core and key indicator lists have been exclusively based on indicators provided in the ESPON database. As pointed out in the ToR, within ESPON project 4.1.3 this restriction is removed and indicators used and/or available outside ESPON can be proposed for spatial monitoring if they are useful and contain high explanatory power in terms of the thematic field they represent and the tackled policy objective. Actually, ESPON project 4.1.3 has been explicitly asked to search for indicators from outside the ESPON 'world' as far as indicators so far provided by ESPON are not sufficient. Moreover, the indicators which will come out of result from the work of project 4.1.3 are supposed to go even beyond the meaning of the "key indicators" in terms of representativeness for a certain thematic field. Their function is even more that of a lighthouse for a thematic field, guiding through endless information sources. They can also be understood as an early-warning-system which indicates changes, whenever something unexpected or unforeseen is going on.

Given this new frame, it is useful to assign a new name to such an indicator list to stress its differences to previous indicator list concepts. Since such indicators can descend along the path of search from quite different sources, we call these indicators '**routing**' indicators. Yet, depending on their availability, ESPON project 4.1.3 might have to state for some of these indicators, that they are not readily available for ESPON monitoring purposes. Thus, the identified 'routing' indicators need to be complemented by a wish-list of indicators not appropriately available yet but highly useful. However, these indicators do not materialise out of nowhere. For their specification, and above all for achieving comparable indicator specifications with regard to all ESPON themes and relevant territorial policy objectives it is necessary to elaborate a consistent methodology, which takes account of all the prerequisites these indicators need to comply to.

The corresponding methodology which filters available indicators is described in the following. This is followed by a section on the elaborated indicator sheet, which is to be filled in for all identified 'routing' respectively 'wish-list' indicators. This procedure is necessary, to not only achieve a comparable methodology on the indicator selection but also to obtain comparable information about the finally selected indicators.

## 3.1 Framework for the selection of the indicators

For this general idea: to come to a manageable set of indicators which are really representing all the thematic fields of the project, a multi-level approach is most helpful. At each level a certain filter excludes a number of indicators which do not fulfil the pre-defined filtering criteria. Having gone through certain filtering rounds only a very limited number of indicators remains. Finally, the idea is that this so-called manageable set of indicators consists of a number of appropriate indicators for all the six overall concepts.

By using such an approach the function of these filters is extremely important, therefore the filtering criteria which are used need to be defined accurately.

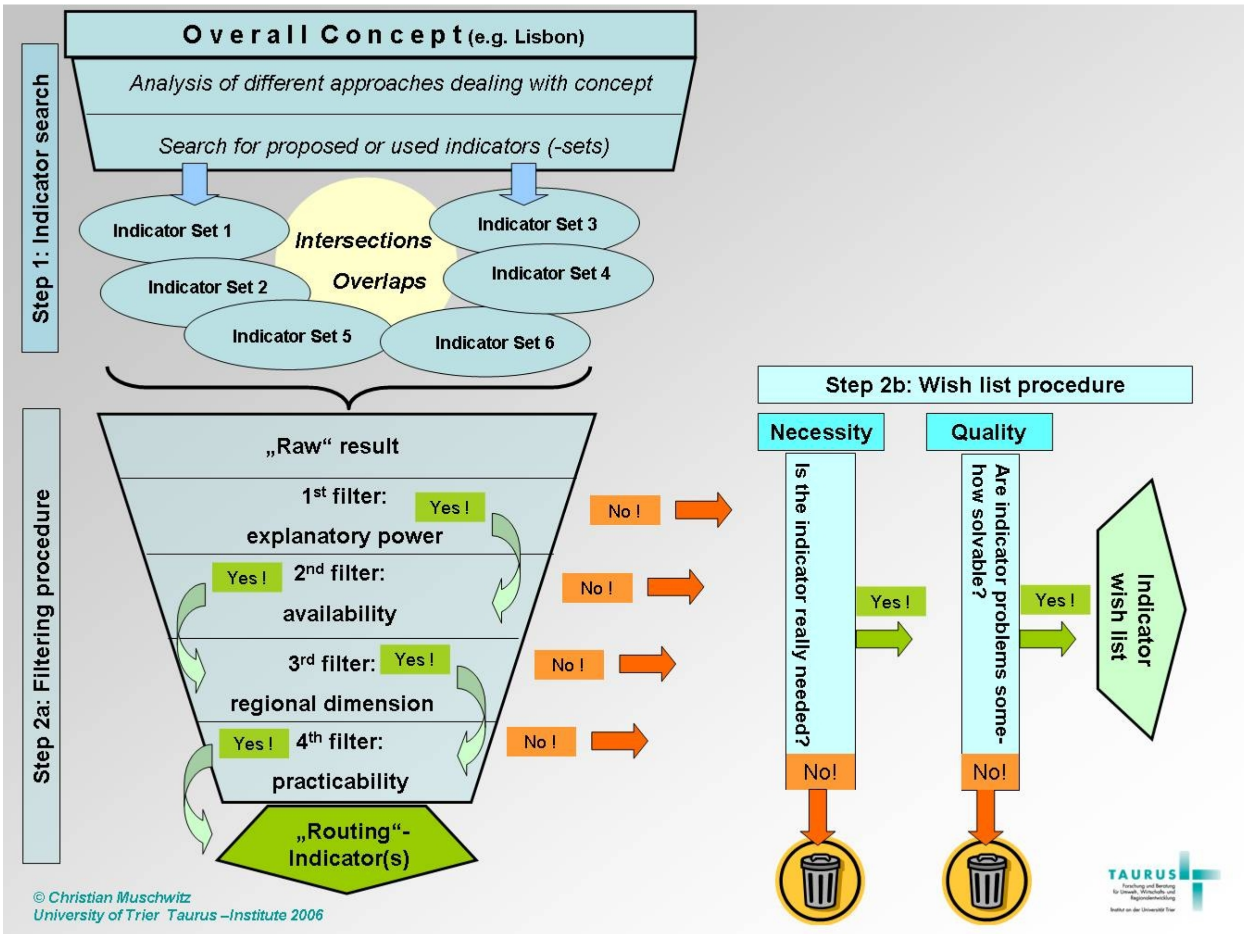
### 3.1.1 Methodology / Filtering criteria

In a first step the specific overall concept (e.g. Lisbon) is searched for sub-concepts and aspects. **This is done by each WP separately.** The search is explicitly not only done including ESPON sources (projects, Data base etc., key+core indicator lists). The search **should** be expanded and **has to** go beyond that by exploring studies and concepts that have been developed by other institutions outside the ESPON community. Nevertheless, because of the limited time frame of ESPON project 4.1.3., it is not possible to deliver an all-embracing and comprehensive monograph. Instead of such a comprehensive approach a random inspection is carried out. All available ESPON sources, European sources such as EUROSTAT or EEA plus several national sources and many important studies may be searched for used indicator sets for the concept in question.

In the next step the chosen sources, research projects, studies or documents which dealt with relevant aspects of the due concept, are analysed in more detail. The collection of this information is followed by a search for possible intersections and overlaps. As a first “raw” result a broad sample of used indicators is extracted.

After this first step the already mentioned "**multi-level filtering process"** starts (see also figure 3-1 below). The indicators are checked one by one whether they comply with the requirements. Only if an indicator successfully passes one criterion, the next criterion will be checked. If at any stage the indicator fails, it is shifted to the so called "**Wish list procedure"**.

**Figure 3-1 Multi-level filerting process and Wish list procedure**




Source: TAURUS-Institute 2006

The criteria of the filtering procedure are:

***1st filter: explanatory power***

The first filter is maybe the most challenging one. Each indicator will be checked for its ability to represent the thematic field it comes from in the best possible way. Therefore the explanatory power must be extremely high. As an example: in the discussion which deals with sustainability the approach named 'ecological footprint' by WACKERNAGEL/REES[1] became famous. In the following scientific discussion this led to the indicator "artifical land coverage" or "land use" as a so called "routing indicator" for sustainability.

[1] Wackernagel, M. and W. Rees. 1996. Our Ecological Footprint: Reducing Human Impact on the Earth. Gabriola Island, BC: New Society Publishers. ISBN 086571312X

### 2nd filter: Availability

The second used filter is the availability of the collected indicators. This is a basic necessity. It is futile to check any other quality criterion if the data is simply not available on a reasonable basis. The meaning of this filter is twofold: Firstly it has a spatial dimension, meaning that the data must be available for EU 27 +2. Secondly there is also a practical aspect included: the indicator data must be obtainable with reasonable resources. The most positive case would be that the data is already part of the ESPON database or can be retrieved quite easily from EUROSTAT or the NSIs.

### 3rd filter: regional dimension

In order to show significant results it is essential to breakdown to at least the European regions. In statistical terms this means NUTS 3 or beyond! Therefore all indicators which do not go beyond NUTS 2 can not be taken on board.

### 4th filter: practicability

Some indicators may be ideal only for mere scientific purposes but lack a clear link to practice. In these cases these indicators will be excluded from this vast amount of indicators. There are also indicators that highlight more or less the same aspect but from a different angle or perspective, in these cases only one indicator is selected

### Routing indicators

If an indicator passes all criteria tests, it enters the list of ‘routing indicators’. The term ‘routing indicator’ exceeds the currently existing definition or main idea of so called ‘core or key indicators’. The major difference is that routing indicators must be able to represent much broader contexts and should be even able to show the tendency of a whole thematic field. Their function is that of a lighthouse, guiding through endless information sources or an early-warning-system that shows whenever something unrequested is going on.

Therefore a smaller number of this type of indicators is necessary respectively must be focused on. Core indicators for one field might sum up to 20 or 30, but routing indicators should not exceed a very limited number of indicators per thematic field, in order to secure the high expectations which they should meet.

### Indicator wish list

If an indicator fails at any stage of the filtering procedure before entering the routing indicator list, it is shifted to the wish list procedure. The first question asked here is whether the indicator is necessary or desirable. If not, it is discarded; if yes, the question needs to be answered whether the problems for which it was discarded in the filtering procedure are solvable at all with the use of reasonable resources. If this seems unlikely, the indicator is ultimately discarded. An example could be the need to use classified information of private companies that is protected by data protection laws. Here it seems unlikely that this information will be revealed unless laws are changed.

The entire process results in two lists. Firstly the so called **"routing indicators list"**, which consists of indicators that fulfil the quality criteria for a constant spatial monitoring. Secondly the so called **"indicator wish list"**, which contains desirable indicators with minor weaknesses that have a high potential to become routing indicators.

If it seems possible to overcome its problems, the indicator enters the wish list of desirable indicators that need more attention in terms of data supply for the indicators. For example it could be possible that the indicator is only available for every other year, more precisely for even years in country X and for odd years in country Y. In this case it seems possible to harmonise the data collection intervals, if one country changes the periodicity of the data collection.

### 3.1.2 Description of data fact sheet and the content

Two different standardized procedures will be introduced to capture both procedures described above: the Filtering Procedure for the routing indicators and the Wish list Procedure for those indicators that have certain shortcomings but should become part of the routing indicator list in the future.

***Data sheet for the routing indicators***

The indicators are based on specific data sets that require a detailed quality assessment. Therefore a comprehensive set of metadata is collected to describe each of the remaining indicator data sets. The metadata is entered into a database form and subsequently automatically processed into the layout of a data sheet which is used as an 'ID card' of the data set describing it in detail and thus facilitating an assessment of the data sets. This procedure can also be seen as a very first step of a regular and standardized spatial reporting.

The following information is used to describe the indicator sets:

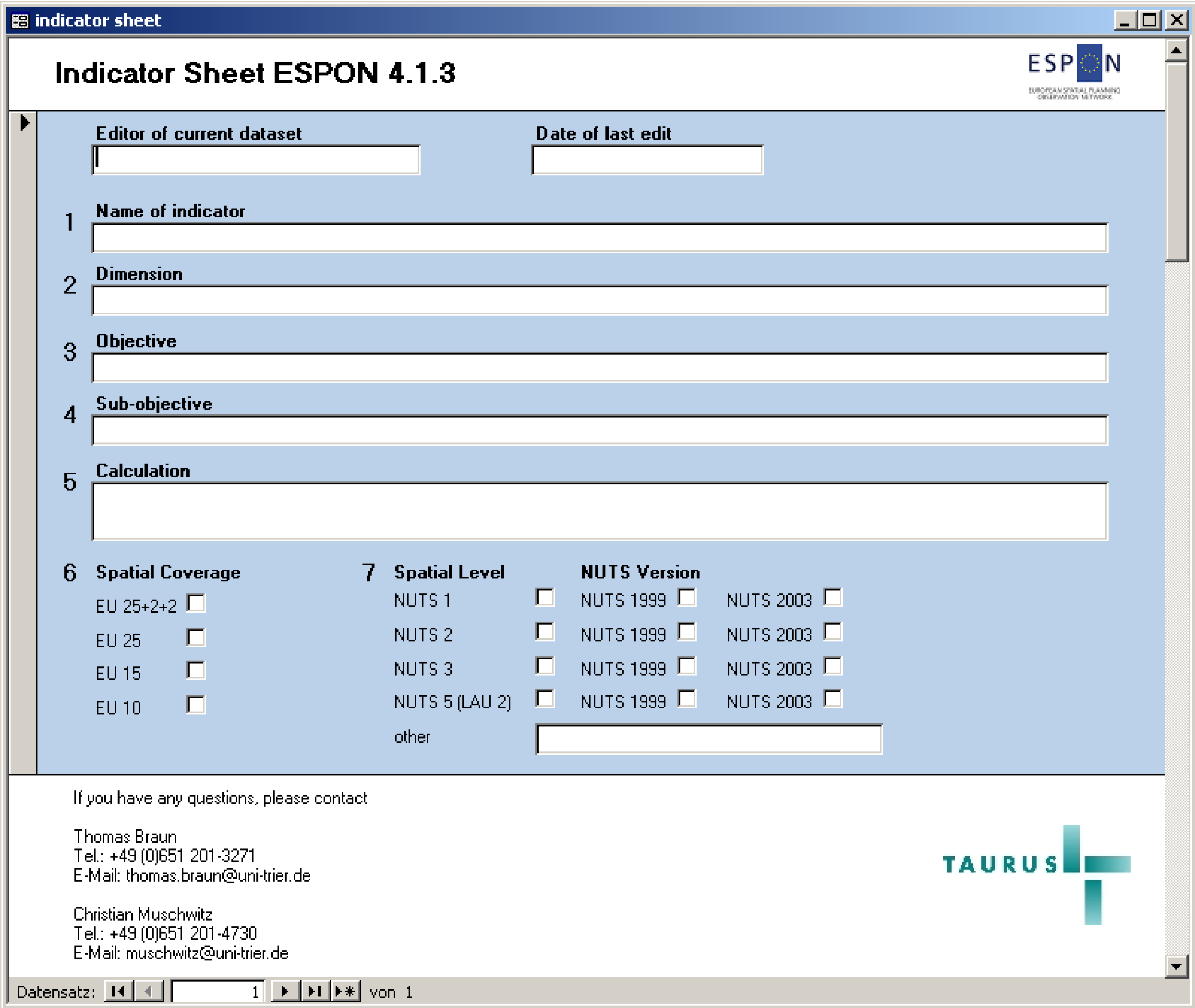
| ***Metadata*** | ***Example*** |
|---|---|
| **Name of the indicator** | Personnel in Research and Development |
| **Dimension**: The thematic field that the indicator set covers | Economic competitiveness and sustainable management |
| **Objective**: The objective that the indicator monitors | Maintaining and improving economic performance and competitiveness |
| **Sub-objective** | Improving innovative activities in the economy |
| **Calculation**: If the data is derived from several basic data sets and not provided as such by statistical sources | Share of persons employed in the research and development sector paying statutory social security contributions in relation to all persons employed paying statutory social security contributions |
| **Informational value**: a narrative description of the usefulness of the indicator | Investments in research and development of new products and in new technologies lead to a future-oriented competitiveness of companies. At the same time, they are a precondition and a guarantee for both, a successful management and, a competitive economy. Maintaining competitiveness again is part of a sustainable economy. Without innovative activity, a nation's economic strength cannot be stable and future-oriented. |
| **Regional distribution**: Narrative description of outstanding regions, showing indicator values both above and below average; can be supported by a map, as far as available | The share of the R&D staff is above-average in agglomerations and bordering regions. The share is especially high in numerous southern German regions and in regions with a special, research-intensive industry such as Wolfsburg, a car industry location. |

<table>
<tr>
<td>Values (national average, minimum, maximum): A table listing the national average value as well as the national maximum and minimum for each of the EU 25+2+2 countries as well as the totals for EU 25+2+2, EU 25, EU 15 (prior to last enlargement), EU 10 (the 10 new Member States), as far as available</td>
<td>
<table>
<tr><th></th><th>Value</th><th>Min</th><th>Max</th></tr>
<tr><td>EU 25+2+2</td><td></td><td></td><td></td></tr>
<tr><td>EU 25</td><td></td><td></td><td></td></tr>
<tr><td>EU 15</td><td></td><td></td><td></td></tr>
<tr><td>EU 10</td><td></td><td></td><td></td></tr>
<tr><td>AT</td><td>4,2</td><td>0,6</td><td>10,3</td></tr>
<tr><td>BE</td><td>7,6</td><td>5,9</td><td>9,2</td></tr>
<tr><td>BG</td><td>0,4</td><td>0,1</td><td>1,4</td></tr>
<tr><td>CH</td><td>16,2</td><td>16,2</td><td>16,2</td></tr>
</table>
</td>
</tr>
<tr>
<td>Spatial Coverage: Is the indicator available for all countries of<br>▪ EU 25+2+2<br>▪ EU 25<br>▪ EU 15<br>▪ EU 10?</td>
<td>Answer is yes or no in each case.</td>
</tr>
<tr>
<td>Time reference / actuality:<br>▪ Is the data for a point in time? (yes/no)<br>▪ Is the data a time series? (yes/no)<br>▪ What are the update intervals? (narrative description)<br>▪ Periodicity: For which years is the data available? (narrative description)</td>
<td></td>
</tr>
<tr>
<td>Spatial level: On which NUTS levels is the data available and which is the NUTS version the data is available for on different level? The data sheet allows for different regions, e.g. Arbeitsmarktregionen in Germany</td>
<td>NUTS 2 (NUTS 1999)<br>NUTS 3 (NUTS 2003)</td>
</tr>
<tr>
<td>Data origin and data source: Where was the indicator found (origin) and who provided the data in the first place (source)?</td>
<td>Origin: ESPON project X.Y.Z<br>Source: Eurostat</td>
</tr>
</table>

| | |
|---|---|
| **Type of data**:<br>▪ *Raw*: unchanged data as originally collected<br>▪ *Survey*: derived from a survey, e.g., opinion polls<br>▪ *Modified*: Original data has been modified for use in the respective indicator, e.g., through classification or z-transformation<br>▪ *Model*: Data that has been re-calculated based on raw or survey data | |
| **Data gaps**: Narrative description of data gaps, e.g., missing years/countries, varying spatial levels | |
| **Comments** | |

The information required for the data sheets is gathered in an Access database. TAURUS developed a database tool that provides a comfortable technique to collect and further process the required information. The project partners enter the information about their indicators in an MS Access database form (see Figure 3-2).

**Figure 3-2 Screenshot of Access database form for routing indicators**



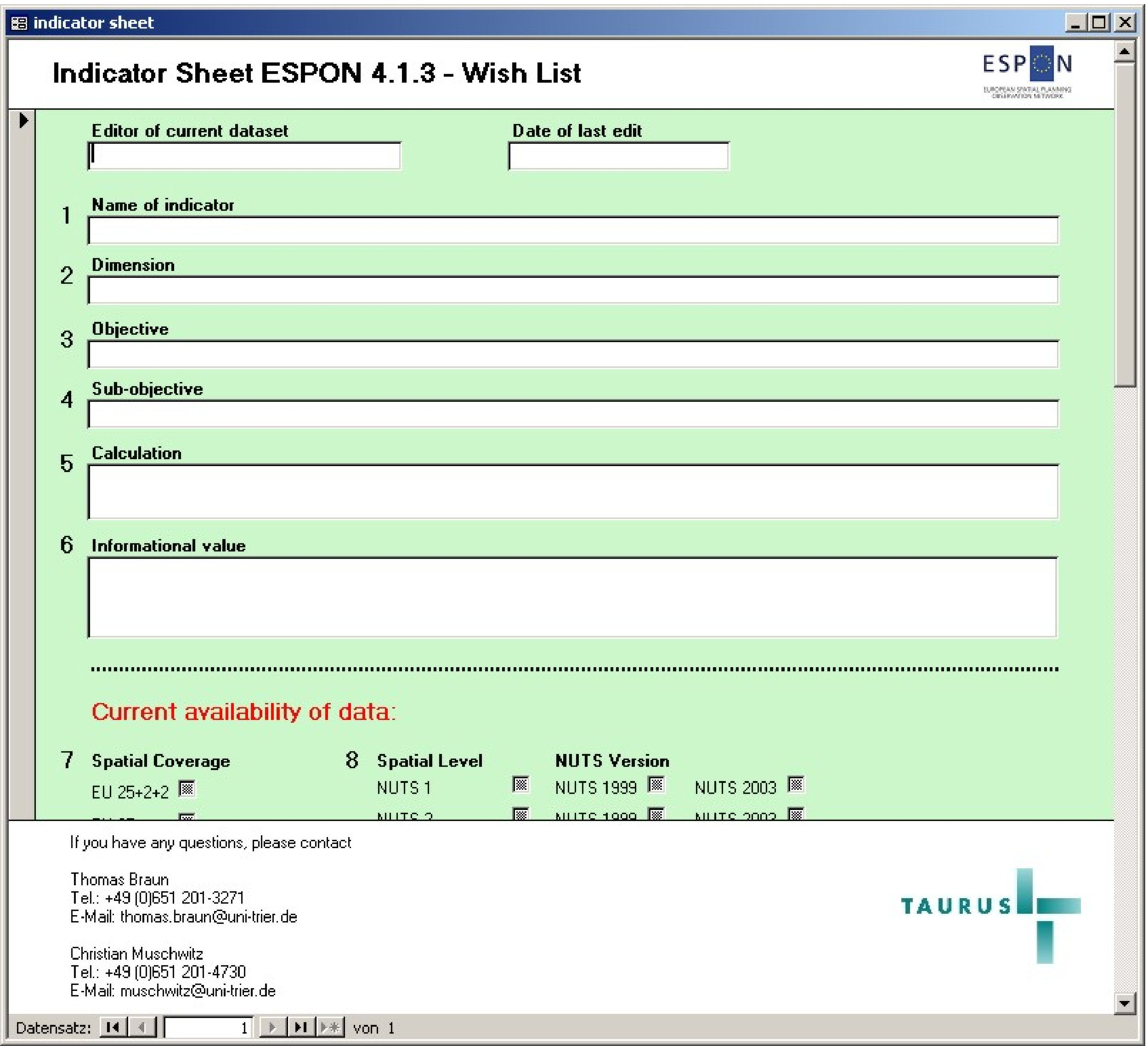

Source: TAURUS-Institute, 2006

This database is then used to automatically generate the indicator fact sheets in a pre-defined layout in MS Word. For further potential applications of this tool please refer to chapter 5.3.

### *Data sheet for the Wish list indicators*

In a second standardized form, the data for the "wish list indicators" is captured and documented. The process is very similar to the one described above, also the sheet looks nearly the same. To avoid any kind of confusion, the Access-input mask is coloured in green (instead of blue) to make the distinction as easy as possible. Thus the major differences can be found by going into detail:

**Figure 3-3 Screenshot of Access database form wish list**



indicator sheet

Indicator Sheet ESPON 4.1.3 - Wish List

ESPON

Editor of current dataset

Date of last edit

1 Name of indicator

2 Dimension

3 Objective

4 Sub-objective

5 Calculation

6 Informational value

Current availability of data:

7 Spatial Coverage

EU 25+2+2

8 Spatial Level

NUTS 1

NUTS Version

NUTS 1999

NUTS 2003

If you have any questions, please contact

Thomas Braun
Tel.: +49 (0)651 201-3271
E-Mail: thomas.braun@uni-trier.de

Christian Muschwitz
Tel.: +49 (0)651 201-4730
E-Mail: muschwitz@uni-trier.de

TAURUS

Datensatz: 1 von 1

Source: TAURUS-Institute, 2006

In this Access sheet each editor has to explain what informational value the data has. This aims at the issue "explanatory power". Therefore it has to be justified why this data set is so important. In the other fields then the status-quo of the indicator is checked and of course the shortcomings have to be described very much in detail. In contrast to the routing indicator sheet, most of the categories here are open questions. This is the reaction to the fact that reasons for the problematic status of an indicator might be multivalent and therefore do not fit very well in closed categories.

The wish list indicator form consists of two parts. At first the general suitability of the indicator is explained, i.e. what does the indicator describe and what is the value of the indicator. In the second part detailed information of the current status (e.g., spatial and temporal coverage) of the available data set is given, which facilitates an assessment of the data gaps and whether these data gaps can be filled using reasonable resources.

This second form covers the following items, the definitions of which can be found in the metadata description table above:

- 1st part (general description)
    - Name of indicator
    - Dimension
    - Objective
    - Sub-objective
    - Calculation
    - Informational value
- 2nd part (status of the available data set)
    - Spatial Coverage
    - Spatial level
    - Regional distribution (describing spatial data gaps)
    - Time reference/actuality
    - Data source(s) and origin of data
    - Type of data
    - Difficulties with the indicator
    - Specific difficulties for the use in ESPON

Eventually, the whole procedure results in two data bases, which can be exploited very easily and show in a comfortable and comprehensive manner the details of both the existing "routing indicators" and the shortcomings of the indicators from the wish list.

# 4 A preliminary choice of suitable indicators

So far, the previous chapters introduced the needs for and a methodology of a careful indicator selection at a general level for ESPON project 4.1.3 and in view of a continuous European spatial monitoring. In the following this shall be even more specified and especially applied with regard to a preliminary selection of indicators providing tentative results.

This is done by structuring the empirical work along different policy objectives respectively the identified work packages. The latter are based on the matrix of key indicators as it has been introduced in section 2.6 of this report.

Correspondingly, the search for indicators appropriate for European spatial monitoring has been structured in correspondence to the following list of policy concepts and objectives:

*WP 1: Territorial Cohesion*

- Balanced distribution of population, wealth, cities, etc.
- Sustainable settlement structures

*WP 2: Lisbon*

- Assets for global competitiveness
- Innovative knowledge society
- Diversified regional economies

*WP 3: Infrastructure and accessibility*

- Sustainable transport and energy

*WP 4: Gothenburg*

- Healthy environment and hazard prevention

*WP 5: Socio-cultural*

- Socially inclusive society and space
- Diversified cultural heritage and identities

*WP 6: Governance*

- Territorially oriented governance

For each policy objective an introduction explains the concept behind it. Furthermore, a preliminary selection of indicators is presented in detail[1], and a list of used indicators, a short resume and outlook for each work package are given.

The selection of the presented indicators is preliminary and has to be seen against the background of a very tight timeframe for the first interim report. Further

[1] Because of the limited time frame it was not possible for all 6 work packages to get a complete overview on indicators and select a first preliminary range.

discussions on the indicators in the work packages will be enhanced especially during the TPG meeting in August 2006.

The project group is aware, that the style of writing and the content of the WPs is presently not always consistent. Especially these sub-chapters have to be seen as a first approach and the basis for further and deeper discussions. The current stage shows the states quo of the discussions for each WP.

The layout needs further improvements when it comes to the standardised presentation of selected indicators. However, this chapter shows that the project group is on the right track concerning the collection of indicators as well as the detailed description of each selected indicator in a standardised way for the envisaged tentative spatial monitoring report.

### 4.1 WP 1: Territorial Cohesion

#### 4.1.1 Introduction

First of all it has to be mentioned that the original title of this work package , "territorial cohesion", is not seen as a proper one. The concept of territorial cohesion being so large, encompassing nearly the entire indicator matrix, it is proposed to re-baptise this work package to "**cohesive spatial structures**", better reflecting the contents of the two columns of the matrix to be dealt with, i.e.:

- balanced distribution of population, wealth, cities, etc
- sustainable settlement structures

Both of these imply the normative idea that some forms of spatial organisation are better than others and, notably, that a more polycentric distribution of populations, activities and infrastructures is better than a monocentric distribution. This notion is clearly defended in the ESDP which states "Pursuit of this concept [polycentricity] will help to avoid further excessive economic and demographic concentration in the core area of the EU." (European Communities, 1999: p. 20)

Similar ideas can be found in the draft for the Territorial State and Perspectives of the Union (June 2006):

"Polycentric spatial development to balance patterns of vulnerability in Europe are to be aimed at. The taking into account of all aspects of vulnerability (economic, social, and ecological) as considered in integrated vulnerability analyses is to be ensured." (p. 26)

"The aim is to achieve a European-wide net of metropolitan region that covers all of Europe (as far as basic spatial features like a minimum population density allow for this)." (p. 45)

"In many contexts, especially but not exclusively in many new EU Member States, there is an over concentration of development towards the largest metropolitan region, usually the national capital region. Here we need more balanced development in the future. It must be avoided that growth and innovation of metropolitan regions are at the cost of smaller and medium sized cities. On the contrary, strengthening metropolitan networks and strengthening urban networks have to go hand in hand and reinforce each other." (p. 46)

In general, the declared objective on European level under the overarching theme of "territorial cohesion" is to help achieve a more balanced development by reducing existing disparities and avoiding territorial imbalances. The concern is also to improve territorial integration and encourage cooperation between regions.'[2] Hereby the European Spatial Development Perspective (ESDP) and the Guiding

[2] Third Report on Economic and Social Cohesion, 2003, p. 27

Principles for Sustainable Spatial Development of the European Continent (CEMAT) form the basis for the concept. Hence in practical terms the indicators in this part aim at capturing the underlying structure and development (converging, diverging) of territorial disparities. This includes for example economic and social differences across the territory, varying demographic structures, endowment with infrastructure of general interest as well as territorial conditions in terms of sustainable development.

In order to go beyond the general normative idea that cohesive and polycentric development is an aim in itself, it is necessary to see what is underneath these notions and clarify the actual objectives implied. The main aim obviously is well-being, but this is just as vague. To reach a more precise level of description, one can list, amongst others:

- access to services and jobs from any point in the territory
- avoiding negative externalities of excessive concentration of population, traffic, production, etc.
- avoiding excessive disparities in terms of income and wealth, both at a pan-European scale and specifically between neighbouring regions
- a limited use of surfaces and environmental resources for human activities

Indicators in this section should, therefore, respond to these objectives.

### 4.1.2 Methodological aspects

Many of the general aims listed in the previous section can be analysed through existing, often quite simple, indicators. These will, thus, not measure the degree of polycentricity, but rather the spatial distribution of several phenomena linked to different elements of well-being and sustainable development.

However, as polycentricity as such remains a major concept within European spatial policy, we should also identify possible measurements of it. As functional polycentricity is highly complex and difficult to boil down to one or two dimensions, thus remaining a very abstract concept, such a measurement should concentrate on the morphological aspects of a polycentric urban structure. Such an indicator will not have to be updated very often, as the general urban hierarchy does not change very rapidly. It will, on the contrary be of a descriptive character, allowing to then test several approached and hypotheses concerning the advantages and impacts of such morphological polycentric development. ESPON project 1.1.1 has provided a first approach which project 1.4.3 is currently revising on the basis of the remarks received from the MC and ECP network members.

A major issue concerning access to services and (to a lesser extent jobs) concerns the lack of information about the exact location of such services, thus making it currently difficult to analyse time-based accessibility analyses. In other words, it is currently not possible to measure the time citizens need to access the closest hospital, school, administrative centre, financial services, etc, except at very low resolutions, i.e. NUTS 2, which makes them more or less useless. A special effort should, therefore, be made to collect data concerning the exact location of such infrastructures, in order to be able do elaborate such indicators.

Currently investigated indicators (not all completely):

- Basic indicator
  - Population density
  - Age structure
  - Regional income (not GDP – see indicator developed by Axel Behrens from Eurostat discussed in 3.4.2)
  - household income/cap
  - unemployment
  - intra-regional income dispersion
  - regional price index (= cost of living)
- Access to services and jobs
  - density of and time to public (hospital beds, educational and cultural institutions, public administration, etc) and private (different levels of commercial offer) services
  - proportion of long-distance (e.g. >45minutes) commuters
- Sustainability
  - proportion of artificial surfaces
  - artificial surfaces per capita (population) and per Euro (GDP) or its complement population or GDP density in artificial areas
- Morphological polycentricity
  - to be defined on the basis of the results of project 1.4.3

### 4.1.3 Raw List Indicators

## Indicator Sheet: Population density

| | |
|---|---|
| Dimension: | Distribution of population and polycentricity |
| Objective: | Balanced distribution of population |
| Sub-objective: | |
| Calculation: | total population / total area |

**Informational value**

Population density is one of the fundamental spatial indicators, providing information about both potentials (in form of labour force, consumers, etc) and in terms of challenges (agglomeration diseconomies, depopulation, etc);

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| **EU 25+2+2** | 0 | 0 | 0 |
| **EU 25** | 117,8 | 0 | 0 |
| **EU 15** | 121,5 | 0 | 0 |
| **EU 10** | 101,2 | 0 | 0 |
| **AT** | 98 | 21,1 | 3972,9 |
| **BE** | 338 | 40 | 6104,1 |
| **BG** | 70 | 38,1 | 883,2 |
| **CH** | 174 | 26,1 | 5050,6 |
| **CY** | 124,7 | 124,7 | 124,7 |
| **CZ** | 132 | 64,9 | 2388,8 |
| **DE** | 231 | 40,5 | 3968,5 |
| **DK** | 124,7 | 56,7 | 6090,1 |
| **EE** | 31,3 | 14,8 | 120,7 |
| **ES** | 81,5 | 8,8 | 5122,1 |
| **FI** | 17,1 | 2 | 207,9 |
| **FR** | 109,7 | 2,1 | 20494,2 |
| **GR** | 83,5 | 10,4 | 1026,8 |
| **HU** | 109,2 | 55,7 | 3294,1 |
| **IE** | 57 | 27,8 | 1223,8 |
| **IT** | 193,2 | 37,1 | 1223,8 |
| **LT** | 53,1 | 16,8 | 2903,0 |
| **LU** | 172,5 | 172,5 | 172,5 |
| **LV** | 37,5 | 16,8 | 2903,0 |
| **MT** | 1254,7 | 444,5 | 1485 |
| **NL** | 476,9 | 147,5 | 2963,0 |
| **NO** | 13,8 | 2 | 1212 |
| **PL** | 122,3 | 44,7 | 3179 |
| **PT** | 112,8 | 15,5 | 1544,09 |
| **RO** | 91,5 | 30,1 | 8478,1 |
| **SE** | 21,8 | 2,6 | 283 |
| **SI** | 99,0 | 35,5 | 193,5 |
| **SK** | 109,7 | 69,9 | 291,8 |
| **UK** | 243,3 | 6,9 | 9558,2 |

# Indicator Sheet: Population density

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | yearly |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | yes | |
| | | |
| Nuts 5 | yes | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 3,1/3,2 |
| Source | National Statistical Offices (via Nordregio Mountain Study) for LAU2<br>Eurostat for NUTS3 & National Statistical Offices for CH and NO |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | population: number of residents<br>arae: square kilometers |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

CH and Norway are not in the NUTS3 Regio database
For LAU2 it is necessary to collect national data

## Comments

Ideally population density should be surveyed at NUTS5 level in order to allow a more fine-grained picture. This should also allow avoiding issues with "artificial" densities due to large spatial units (cf. case of Austria with large parts of areas in mountanous regions not being inhabitable.

## Indicator Sheet: Household income

| | |
|---|---|
| Dimension: | Wealth and well-being |
| Objective: | Balanced spatial distribution of wealth, low disparities |
| Sub-objective: | |
| Calculation: | Mean income of all households |

**Informational value**

Household income gives an idea of the available income for private households in the region. This obviously only includes direct monetary income and not public services that could be considered an indirect income.

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

# Indicator Sheet: Household income

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | yearly |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | |
| Source | Eurostat, National Statistical Offices |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | data collected differently in each state |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

## Comments

Needs to be treated with care because of national differences in data collection and in taxation levels

## Indicator Sheet: Share of urban fabric

| | |
|---|---|
| Dimension: | Sustainable settlement structures |
| Objective: | Limit urban sprawl |
| Sub-objective: | Limit consumption of natural surfaces |
| Calculation: | Share of urban areas in total surface |

**Informational value**

This indicator should allow the characterisation of urbanisation, and through the use of time series, the evaluation of urban sprawl

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| **EU 25+2+2** | 0 | 0 | 0 |
| **EU 25** | 0 | 0 | 0 |
| **EU 15** | 0 | 0 | 0 |
| **EU 10** | 0 | 0 | 0 |
| **AT** | 0 | 0 | 0 |
| **BE** | 0 | 0 | 0 |
| **BG** | 0 | 0 | 0 |
| **CH** | 0 | 0 | 0 |
| **CY** | 0 | 0 | 0 |
| **CZ** | 0 | 0 | 0 |
| **DE** | 0 | 0 | 0 |
| **DK** | 0 | 0 | 0 |
| **EE** | 0 | 0 | 0 |
| **ES** | 0 | 0 | 0 |
| **FI** | 0 | 0 | 0 |
| **FR** | 0 | 0 | 0 |
| **GR** | 0 | 0 | 0 |
| **HU** | 0 | 0 | 0 |
| **IE** | 0 | 0 | 0 |
| **IT** | 0 | 0 | 0 |
| **LT** | 0 | 0 | 0 |
| **LU** | 0 | 0 | 0 |
| **LV** | 0 | 0 | 0 |
| **MT** | 0 | 0 | 0 |
| **NL** | 0 | 0 | 0 |
| **NO** | 0 | 0 | 0 |
| **PL** | 0 | 0 | 0 |
| **PT** | 0 | 0 | 0 |
| **RO** | 0 | 0 | 0 |
| **SE** | 0 | 0 | 0 |
| **SI** | 0 | 0 | 0 |
| **SK** | 0 | 0 | 0 |
| **UK** | 0 | 0 | 0 |

# Indicator Sheet: Share of urban fabric

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | 10 years |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | yes | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON project 3.1 / 3.2 |
| Source | Corine Land Cover |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | yes | classified satellite (grid) data recalculated into NUTS areas |
| model | no | |

## Data gaps (please describe)

## Comments

## Indicator Sheet: Dependency ratio

| | |
|---|---|
| Dimension: | Population |
| Objective: | Dealing with higher proportions of dependent persons |
| Sub-objective: | |
| Calculation: | Total population/population 20-64 years |

**Informational value**

This indicator informs about the relation of the total population to the population which is potentially active. The higher this ratio, the more difficult it becomes to finance the dependent age groups (if productivity stays the same)

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| **EU 25+2+2** | 0 | 0 | 0 |
| **EU 25** | 0 | 0 | 0 |
| **EU 15** | 0 | 0 | 0 |
| **EU 10** | 0 | 0 | 0 |
| **AT** | 0 | 0 | 0 |
| **BE** | 0 | 0 | 0 |
| **BG** | 0 | 0 | 0 |
| **CH** | 0 | 0 | 0 |
| **CY** | 0 | 0 | 0 |
| **CZ** | 0 | 0 | 0 |
| **DE** | 0 | 0 | 0 |
| **DK** | 0 | 0 | 0 |
| **EE** | 0 | 0 | 0 |
| **ES** | 0 | 0 | 0 |
| **FI** | 0 | 0 | 0 |
| **FR** | 0 | 0 | 0 |
| **GR** | 0 | 0 | 0 |
| **HU** | 0 | 0 | 0 |
| **IE** | 0 | 0 | 0 |
| **IT** | 0 | 0 | 0 |
| **LT** | 0 | 0 | 0 |
| **LU** | 0 | 0 | 0 |
| **LV** | 0 | 0 | 0 |
| **MT** | 0 | 0 | 0 |
| **NL** | 0 | 0 | 0 |
| **NO** | 0 | 0 | 0 |
| **PL** | 0 | 0 | 0 |
| **PT** | 0 | 0 | 0 |
| **RO** | 0 | 0 | 0 |
| **SE** | 0 | 0 | 0 |
| **SI** | 0 | 0 | 0 |
| **SK** | 0 | 0 | 0 |
| **UK** | 0 | 0 | 0 |

# Indicator Sheet: Dependency ratio

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | yearly |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | |
| Nuts 3 | yes | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.1.4 & 3.1/3.2 |
| Source | Eurostat, National Statistical Offices |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

## Comments

# Indicator Sheet: Index of sustainable demographic development

| | |
|---|---|
| Dimension: | Population, Demography |
| Objective: | Dealing with the ageing process |
| Sub-objective: | |
| Calculation: | Life expectancy - medium age |

**Informational value**

This indicator gives a future-oriented vision of regional demographic potentials by relativising life expectancy through the median age

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

# Indicator Sheet: Index of sustainable demographic development

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | yearly |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 3.2 |
| Source | Eurostat, National Statistical Offices |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | for median age |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | yes | life expectancy is a complex indicator calculated from mortality tables by age |
| model | no | |

## Data gaps (please describe)

## Comments

### 4.1.4 Wish List Indicators

## Indicator Sheet: Intra-regional income dispersion

| | |
|---|---|
| Dimension: | Social and territorial cohesion |
| Objective: | Balanced distribution of wealth |
| Sub-objective: | low disparities of income |
| Calculation: | - gini index |
| | - highest income decile / lowest income decile |

**Informational value**

An indicator of intra-regional dispersion of income would give an idea of the intra-regional realities hidden behind aggregated indicators such as GDP/cap or mean household income.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Intra-regional income dispersion

**Time reference / actuality**

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | NUTS 0 |

**Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)**

| | please describe |
|---|---|
| **Origin** | |
| **Source** | Eurostat, National Statistical Offices |

**Type of data (raw data, model output, survey data etc.)**

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | yes | not only mean household income, but household income by quantiles |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

**Difficulties with the indicator**

Currently only aggregated data (total and mean household income) is available, not quantiles

**Specific difficulties for the use in ESPON**

Implies either extensive work of collection from national sources, or a new initiative via Eurostat concerning their existing household income data.

## Indicator Sheet: Regional price index

| | |
|---|---|
| Dimension: | Social and territorial cohesion |
| Objective: | low disparities of income |
| Sub-objective: | qualify income data through price data; measure available purchasing power |
| Calculation: | regional parity purchasing standard<br><br>could be approached through some proxy, such as average house prices, but this does not take into account cultural differences |

**Informational value**

Much of the information concerning regional wealth and household income is currently strongly biased by the absence of regional price indices. Thus the income in metropolitan areas (often more expensive) is often overestimated, and that in rural areas underestimated if one does not take into account the price differences between these regions.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Regional price index

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | yearly |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | based on price of a fixed basket of goods |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

Elaborating a regional PPS would mean an extensive survey work across all of Europe in order to collect representative samples for each spatial unit.

## Specific difficulties for the use in ESPON

## Indicator Sheet: Accessibility in time to public services

| | |
|---|---|
| Dimension: | Acces to services of general interest |
| Objective: | fair accessibility to services for all citizens |
| Sub-objective: | |
| Calculation: | accessibility in time based on NUTS 5 population and location of major public services (health, education, etc) |

**Informational value**

This indicator should allow a general vision of the accessibility to important (not local) services

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Accessibility in time to public services

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | |
| Source | |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | population<br>location of services<br>transport networks |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | time accessibility |

## Difficulties with the indicator

We do not currently have an exhaustive and geo-referenced inventory of major public services.
A lot of services are provided within NUTS5 units, thus limiting the scope of this indicator to major infrastructures (such as hospitals, universities, etc).

## Specific difficulties for the use in ESPON

## Indicator Sheet: proportion of long-distance commuters

| | |
|---|---|
| Dimension: | Employment, Accessibility |
| Objective: | Fait accessibility to jobs |
| Sub-objective: | Limit need for transport |
| Calculation: | Number of actif in a residence area working at more than 45 min. from their residence area / total number of actif by residence area<br><br>or<br><br>Number of actif in a working area living at more than 45 min. from their working area / total number of actif by working area |

**Informational value**

This indicator provides a vision about the adequacy between local provision and demand of jobs. It also allows to evaluate transport needs.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: proportion of long-distance commuters

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | |
| Source | National sources |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | yes | generally results from census data |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Difficulties with the indicator

This indicator depends on (micro-)census data which is not always sufficiently spatialised. Not all countries provide such data.

## Specific difficulties for the use in ESPON

### 4.1.5 Conclusions

Most of the above indicators are fairly straightforward and area quite easily available and updatable. However, some of the most important social indicators (income dispersion, price levels, access to services) are not currently available and imply, therefore, either a serious data gathering effort by ESPON, or lobbying with Eurostat and the national offices in order to convince them to collect them.

One of the main elements of discussion concerning indicators dealing with policy objectives around balanced spatial structures is the way these indicators should be presented. Two possibilities exist:

1) a simple listing / benchmarking of the spatial units based on their local value of the indicator

2) a more complex system attributing relative values to the spatial units resulting from a comparison with their neighbors, their national mean and/or the ESPON space mean.

ESPON provides an approach for 2) through the multi-scalar analysis developed by UMS Riate in project 3.1. This could be used with the idea that it is not the absolute, but rather the relative position of a region which counts when discussing notions such as territorial cohesion and balanced spatial development.

For this theme the selection of indicators will be particularly difficult because of its very wide scope. Its central notion being that of “balanced” spatial structure, all forms of human activity can be studied under this aspect.

### 4.1.6 Next steps

A major issue to be dealt with after this report will be the evaluation of the issue raised above concerning a possible multi-scalar approach to the analysis of indicators of balanced spatial development. We will test different methods and discuss the possible choice with the entire team.

A second major challenge will be the indicator of morphological polycentricity. Here we hope that the combined knowledge of projects 1.1.1 and 1.4.3 will allow us to come to a satisfactory conclusion.

For the rest, the main task will be to go deeper in the evaluation of some of the indicators, and, most importantly, to terminate the data collection in order to allow a cartographic analysis of the results.

### 4.1.7 Sources

The Territorial State and Perspectives of the European Union Document (draft, June 2006). Towards a Stronger European Territorial Cohesion in the Light of the Lisbon and Gothenburg Ambitions. First Draft, Elaborated by the Editorial Group as of 26 June 2006.

European Commission (1999), ESDP - European Spatial Development Perspective.

Towards Balanced and Sustainable Development of the Territory of the EU,

Luxembourg: Office for Official Publications of the European Communities, 87 pp.

ESPON projects 1.1.1, 1.1.4, 1.4.3, 3.4.2, 3.1

## 4.2 Lisbon

### 4.2.1 Introduction

In 2000 the European Spring Council, held in Lisbon, adopted a new strategy for growth and jobs for the whole of the EU. The "Lisbon Strategy" is supposed to offer orientation to member states in dealing with the challenges of an increased pace of globalisation on the one hand and the consequences of an ageing population on the other hand. Through the formulation of various policy initiatives to be taken by all member states the strategy was supposed to be a means in facing the low productivity and stagnation of economic growth in the EU. Within a ten year period, up until 2010, the EU should become "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion"[3].

Competitivness is one of the key terms in the Lisbon Strategy as it involves more than asserting a position in the global market in economic terms. It can be considered as a cross-cutting issue, linked to different sectoral policies. Therefore the Lisbon Strategy emerged as a comprehensive concept, addressing economic, social as well as environmental renewal. Economically, knowledge and innovation are seen as the fundamental motor of European growth and as means to maintain and improve a hold on the global market. Both, public and private investment in research and development determine how well regional economies perform in an integrated global economy. Furthermore, regional competitiveness very much depends on the interrelation between economic strength, innovation potential of the regional economy and the qualification and productivity of the labour forces. These factors make up a region's capital and its response potential to the challenges of increasing competition.

Strong and competitive European regions are vital factors for the achievement of a balanced and sustainable development of the EU territory, as laid down in the ESDP. Some regions are more competitve than others. Depending on the respective regional endowment, policy measures can be applied to strengthen the existing potential and to make up for possible shortcomings. In this way living condidtions are improved which in turn contribute to keeping people in the regions and attracting further investment, possibly increasing the rate of regional employement. Competitive regions in this sense emerge from a sustainable development approach, taking into account economic, social, cultural as well as environmental

---

[3] Council of the European Union (2000): Presidency Conclusions. Lisbon European Council 23 and 24 March 2000. http://www.consilium.europa.eu/cms3_applications/Applications/newsRoom/loadBook.asp?target=2000&bid=76&lang=1&cmsId=347

aspects to produce places that are attractive for people to live, work and spend their leisure time.

The human capital in terms of well educated regional population is another key element of the Lisbon Strategy. The level and degree of qualification is the decisive factor when it comes to employability. Therefore the creation of a knowledge based economy heavily depends on the level of the population's education. The link between the latter and employment is evident, as it is between the educational level and the GDP.

In 2005, after a mid-term review of the strategy's implementation had been conducted, the Commission presented a new approach to the Lisbon Strategy with a stronger focus on growth and jobs. The Spring European Council in that year endorsed the "Integrated Guidelines for Growth and Jobs", a reference document for national Lisbon programmes, which should contribute to an increased ownership of member states. A respective "Community Lisbon Programme" should be developed to cover actions at EU level.[4]

The Lisbon strategy focuses on sustainable economic growth and the creation of jobs in order to enhance and ensure the attractiveness of Europe as a place to invest and work. In this respect, it is an essential component of the overarching objective of sustainable development set out in the EU Treaty: improving welfare and living conditions in a sustainable way for present and future generations. Both, the Lisbon and the Gothenburg Strategy contribute to ensuring this goal. Being mutually reinforcing, they target complementary actions, use different instruments and produce their results in different time frames.

In its' Spring Reports the EU Commission regularly assesses the progress made in achieving the Lisbon goals. This annual review is based on a shortlist of 14 structural indicators that cover the following six domains:

- General Economic Background
- Employment
- Innovation and Research
- Economic Reform
- Social Cohesion
- Environment[5].

[4] Commission of the European Communities (2005): Communication from the Commission to the Council and the European Parliament. Common Action for Growth and Employment: The Community Lisbon Programme. SEC(2005) 981. Brussels.

[5] Eurostat (2006): Structural Indicators.

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1133,47800773,1133_47802588&_dad=portal&_schema=PORTAL

This system of indicators and their regular analysis can be seen as a monitoring system for the thematic areas covered by the Lisbon Strategy. In this respect, there are a lot of similarities to the monitoring of the Gothenburg Strategy (see chapter 4.4).

In addition to the Commission's Structural Indicators, some member states developed their own sets of Lisbon Indicators to be in a position to review their achievements on a national level (e.g. Luxembourg where a "Competitiveness Scoreboard" was developed[6]).

### 4.2.2 Methodological aspects

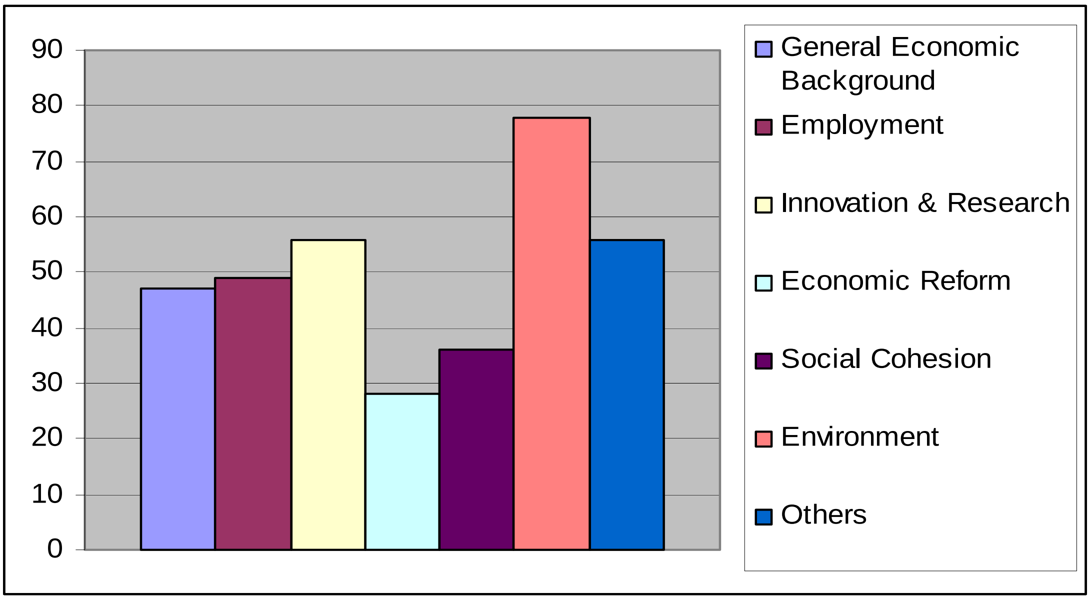
#### List of key indicators

The starting point for the analysis of existing Lisbon indicators was the set of Structural Indicators by the EU Commission. These indicators were confronted with the indicators used in 5 selected ESPON projects (see reference list below) dealing with Lisbon topics. Obviously, ESPON Project 3.3 on the territorial dimension of the Lisbon/Gothenburg Process was a key source of information in this respect. Given the relatively short period of time and the comprehensive tasks to be dealt with to put this Interim Report together, it was not possible to look into national sets of Lisbon indicators and to include them in the analysis.

The indicators from the six different sources were all added into an Excel-sheet in order to be able to detect overlaps or intersections and to get a general overview of the diversity of indicators. At this point in time, we have altogether 350 different indicators covering the six Lisbon domains mentioned above. The following table reveals the distribution of the collected indicators over the six domains:

[6] Presentation by Pierre Thielen, Observatoire de la Compétitivité: "The Luxembourg National Plan for Innovation and Full Employment" given in the framework of an ESPON workshop on 24 March 2006 in Luxmebourg.

**Figure 4-1 Lisbon Indicators**




The largest number of indicators (78) could be found for "Environment", rather than for the economic domains, which are actually the focus of the Lisbon Strategy. However, when adding up the indicators for "General Economic Background" (47) with the ones for "Economic Reform" (28) the economic domain is in fact widely covered by indicators (75). The domain coming out second in numbers of indicators is "Innovation and Research", which reflects the importance this sector is given by the Lisbon Agenda. The category "Others" stands out as including a comparatively large number of indicators. This is due to the fact that at this point in time this category still encompasses quite a number of indicators that could – in a second phase - be assigned to one of the Lisbon domains (see below *Further research*). In general, the discrepancies between the individual number of indicators are not too big.

Analysing the current collection of Lisbon indicators there are some distinct overlaps of the chosen sources in three of the six domains (see table below). A "distinct" overlap can be identified when an indicator is used in four or five of the six analysed sources. However, the table also contains such overlaps, where an indicator only appears in three of the six sources. For the Lisbon domains "Economic Reform" and "Environment" there were only few overlaps (a maximum of two per indicator) which is why these categories were not included in the following table.

**Table 4-1 Selected indicators for Lisbon**

| Lisbon domaine | Prevalent Indicator | No. of occurences in analysed sources |
|---|---|---|
| General economic background | GDP per capita | 5 |
| | Productivity per hours worked | 3 |
| Employment | Employment rate | 5 |
| | Unemployment rate | 4 |
| | Life-long learning - total | 3 |
| Innovation & Research | Gross domestic expenditure on R&D | 4 |
| | Patents EPO | 3 |
| Social Cohesion | Inequality of income distribution (income quintile share ratio) | 3 |
| | At-risk-of-poverty rate before social transfers – total | 3 |
| | At-risk-of-poverty rate after social transfers – total | 3 |
| | Early school leavers - total | 3 |

With reference to chapter 4.4 overlaps with the selected Gothenburg Indicators there can be made out, regarding e. g. economic indicators, employment/social indicators.

The Lisbon indicators included in the table above were then, in a first preliminary and rather rough process, checked against the criteria of the filtering process (i.e. Explanatory power, Availability, Regional dimension, Practicability). On this basis, the team responsible for this work package agreed to drop some indicators that actually showed a large number of overlaps and replace them by others of the complete indicator list. These other indicators, that were eventually included in the indicator sheets represented below were considered to have a better explanatory power and to serve better the purpose of representing a comprehensive thematic field.

### 4.2.3 Raw List Indicators

#### 4.2.4 Wish List Indicators

### 4.2.5 Conclusion / Next steps

As mentioned above, quite a number of indicators that are now categorised as "Others" could be assigned to one of the six domains of the Structural Indicators. The following examples reveal some options in this respect:

- "Financial market integration (convergence in bank lending rates)" could be assigned to the domain "General Economic Background"
- "Active people (No. of active population/population) could be assigned to the domain "Employment"
- "Dependency rate" could be assigned to the domain "Social cohesion"

This regrouping excercise could not be carried out anymore for the Interim Report. But work is obviously going to continue in this respect. Accordingly, the distribution of collected indicators over the six domains is likely to change and so could the number of overlaps.

Furthermore, national sets of Lisbon indicators could still be scrutinised – similar to the approach taken for the Gothenburg Strategy (see chapter 4.4) - and included in the analysis for the final report.

The selection process for indicators to be suggested in the final report still needs to be continued. According to the underlying methodology of the project (see chapter 3.2), the indicators selected at this point in time need to be further tested against the background of the different filtering criteria.

With the Lisbon Strategy being a cross-cutting concept, there will also be a discussion within the TPG, taking into account the results of other work packages that thematically overlap with this work package, particularly the one dealing with the Gothenburg Strategy (see chapter 4.4).

The Lisbon Strategy was complemented by the Gothenburg Strategy one year after it had been endorsed. As a result, there are intersections between the two concepts that also become apparent in the indicators used to assess the respective implementation of each strategy. These overlaps will have to be examined in more detail and decisions will have to be taken on which indicator should be used for which theme or if one indicator could also be used for monitoring two themes.

### 4.2.6 Sources

Commission of the European Communities (2005): Communication from the Commission to the Council and the European Parliament. Common Action for Growth and Employment: The Community Lisbon Programme. SEC(2005) 981. Brussels.

Council of the European Union (2000): Presidency Conclusions. Lisbon European Council 23 and 24 March 2000. http://www.consilium.europa.eu/cms3_applications/Applications/newsRoom/loadBook.asp?target=2000&bid=76&lang=1&cmsId=347

Eurostat (2006): Structural Indicators. http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1133,47800773,1133_47802588&_dad=portal&_schema=PORTAL

ESPON Projects – http://www.espon.eu

ESPON Project 1.4.2: Social aspects of EU territorial development.

ESPON Project 3.1: Integrated tools for European Spatial Development

ESPON Project 3.2: Spatial scenarios in relation to the ESDP and EU Cohesion Policy.

ESPON Project 3.3: Territorial Dimension of the Lisbon/Gothenburg Process

ESPON Project 3.4.2: EU economic policies and location of economic activities.

## 4.3 WP 3: Infrastructure

### 4.3.1 Introduction

**The relevance of infrastructure and accessibility indicators**

Accessibility is the main 'product' of a transport system. It determines the locational advantage of a region relative to all regions. Indicators of accessibility measure the benefits households and firms in a region enjoy from the existence and use of the transport infrastructure relevant for their region. Accessibility indicators can be defined to reflect both within-region transport infrastructure and infrastructure outside the region which affect the region (Schürmann and Talaat, 2000, p. 6). In general terms, accessibility then is a construct of two functions, one representing the activities or opportunities to be reached and one representing the effort, time, distance or cost needed to reach them. The important role played by the transport infrastructure in regional development is one of the fundamental principles of regional economics. In its most simplified form it implies that regions with better access to the locations of input materials and markets will, ceteris paribus, be more productive, more competitive and hence more successful than more remote and isolated regions. In this sense the improvement of transport infrastructure is contributing to the (global) economical competitiveness of a region. Beyond this, it is widely expected that improvements in transport systems also imply cohesion effects in that they should reduce regional disparities. Because transport infrastructure may contribute to both of these two general policy objectives, it is why the enlargement of transport networks is still an issue at stake in many regional development strategies. Although such impacts of transport infrastructure on regional development have been difficult to verify empirically in the past, accessibility indicators are being used to analyse these impacts.

Improvements in accessibility may have several dimensions: they may trigger the (global) competitiveness of a region or of Europe as a whole, but may also contribute to a balanced distribution of population and wealth or improve opportunities for social contacts or cultural interactions, on various spatial levels. Therefore, one may find accessibility indicators in the indicator matrix in both columns labelled “Balanced distribution of population, wealth, cities” and “Assets for global competitiveness”. On the other hand, the absence of high quality transport infrastructures or very distant geographical locations may not always be synonymous with economic backwardness, as the examples of several Nordic regions have shown or as Ireland has shown in recent years. Also a central geographical location is not a sufficient guarantee for economic success, as for instance the Ruhr Area in Germany has experienced throughout the past decades.

To make things even more difficult, the same transport infrastructure project may satisfy different policy goals in conflicting manner. For instance, a new high-speed rail connection linking two agglomeration centres will probably increase the global competitiveness of the agglomerations (and perhaps also of Europe as a whole), but it has overtones of danger because at the same time it may also lead to a more uneven distribution of population and wealth and so may increase disparities between the regions or between the agglomerations and rural areas, if such transport projects are not embedded into a more comprehensive policy package.

In parallel to the rise of the debate about sustainable development, also environmental concerns against a further undamped development of traffic volumes and transport infrastructures were put on the floor, calling for additional transport-related sustainability indicators taking into account energy and land consumption, modal split and accidents.

ESPON project 1.2.1 already tried to link EU transport policies to the three cornerstones of sustainability in the following manner (Table 1):

**Table 4-2 Sustainability and TEN policy aims (Mathis et al. 2004, p. 71).**

| TEN policy aims | Competitiveness | Cohesion | Sustainability |
|---|---|---|---|
| Inducing multimodality | Productivity improvements by better modal specialisation (adaption of each mode to its comparative advantage). | Intermodality in EU hubs will facilitate better accessibility from peripheral areas to larger EU markets. | Potential increase of traffic attracted by environmentally friendly transport modes (e.g. rail in relation to road for medium distance trips in the centre of Europe). |
| Citizens networks (local-regional connections to TENs) | Improvement of access to TENs, making TENs more profitable and facilitating better use of TENs excess of capacity for regional traffic, when feasible. | Accessibility diffusion to larger landlocked areas through regional capillarity. | Land-taking reduction by using existing excess of capacity of different scale networks. |
| Fair pricing | Capacity optimisation on congested TEN links. | Subsidies to peripheral relations can become explicit. | Internalisation of the external costs of transports. |

Accessibility at European level should also be discussed with regard to different transport modes. Generally speaking, accessibility by road can be characterised by a clear distinction between central and peripheral regions, showing the well-known European core-periphery pattern, while accessibility by rail favours central areas but also cities serving as main nodes in the high-speed rail networks. Accessibility by air finally shows a patchwork of regions with high accessibilities surrounded by those with low accessibilities, where low accessibility is also an issue for some regions located in the geographical core of Europe. While for road and rail generally there is a core-periphery pattern at the European scale, similar patterns are replicated at the national level as border regions, coastal regions and islands, and mountainous regions within a country very often also suffer from relative poor accessibilities compared to more central parts or even the capital regions within a country.

ESPON project 3.1 already tried to summarize the different facets of accessibility, and identified the following components (ESPON 3.1, Final Report Part C, p. 137; see also Wegener et al., 2001, 9):

- *type of area for which accessibility is measured*: region, city (punctual), corridor (linear), other entities (FUAs, islands, mountain ranges etc.)
- *resources to be reached ("mass" term):* population, GDP, acitivities, natural resources, public service facilities such as hospitals, universities, airports etc.
- *modes of transport:* road, rail, air, inland waterways, seaways, ICT
- *means of transport and purposes:* passenger, freight, business, leisure
- *units and scale:* local, regional, continental, intercontinental
- *ways of measurement:* type of networks to be considered, constraints, type of impedance functions, etc.
- *connectivity:* topological relationships, relational aspects

In presence of this complex situation it is clear from the beginning that not only one infrastructure and accessibility indicator is able to capture all aspects of transport in order to monitor all the divergent policy objectives. Thus there is a large variety of approaches to measuring infrastructure systems and accessibility in the geographic and economic literature, which was applied in various studies. Applied indicators range from rather simple endowment indicators (e.g. length or density of motorways, number of railway stations), via travel time or travel costs indicators (e.g. number of cities that can be reach within a certain travel time or cost) towards more complex indicators of the potential accessibility type. In recent years there had already been a number of attempts to classify and compare accessibility indicators in a systematic way (inter alias, Schürmann et al., 1997; Copus, 2001; Geurs and Ritsema van Eck, 2001; Wegener et al., 2001; Spiekermann and Neubauer, 2002; Mathis et al., 2004).

Appropriate infrastructure and accessibility indicators must thus be selected which helps measuring the following policy goals:

- Cohesion (i.e. column 1 of the indicator matrix)
- Global competitiveness (i.e. column 2 of the indicator matrix)
- Sustainability (i.e. column 5 of the indicator matrix)

The appropriate spatial level for the indicators is also interrelated to these three goals: First, they must be able to analyse the position of a region (or a city or any other spatial entity) within Europe as a whole (distance to main markets and to the main economic centres in Europe) (global competitiveness). Second, the relative position of a region (or city) within the national context must be addressed (cohesion). Finally, such indicators should also reflect the transport infrastructure provision and the accessibility patterns within a regional context, i.e. comparing one region with its neighbouring regions or analysing a city´s accessibility within its regional hinterland (cohesion, sustainability).

### Infrastructure and accessibility indicators used in ESPON projects and in other studies

Basically, there are several ways to group and subdivide infrastructure and accessibility indicators. A number of such indicators were calculated in various ESPON projects, while others are being used in the literature and other studies. Following is an overview on the most common infrastructure and accessibility indicators, grouped into the following classes:

- Endowment indicators / infrastructure supply / physical characteristics
- Travel distance, travel time and travel cost indicators
- Accessibility indicators
- Transport flows, traffic volumes and infrastructure usage
- Sustainability indicators

If a particular indicator was also used in any ESPON project, the ESPON subproject is indicated in brackets.

Indicators of transport infrastructure capacity, transport services and network vulnerability as well as infrastructure indicators derived from graph theory as discussed in ESPON 1.2.1 are excluded here as they provide information on individual network links or network nodes and thus can hardly be aggregated to regional level, which is an prerequisite for a spatial monitoring system.

A full discussion of the advantages and disadvantages of the individual indicators in the below list cannot be given here, however, three points may be nevertheless acknowledged: Firstly, all the presented indicators are being widely used in geographical and transport analysis and transport modelling, and by this it is justified to list them. Secondly, each indicator focuses on certain aspects of transport. None of the listed indicators would be able to represent the quality of a transport system entirely, but each indicator tries to depict particular aspects of the transport system. Thirdly, the explanatory power and so the informational value of most of the indicators strongly depends on the spatial level considered. Indicator that may have a high explanatory power at, say, NUTS-3 level may be useless at NUTS-0 or NUTS-1 level, and vice versa. So there is a strong interdependency between the indicator selection and the choice of the appropriate spatial level.

**List of used Indicators**

*(a) Endowment indicators / infrastructure supply / physical characteristics*

- Length/density of roads by road type and region (ESPON 1.2.1)
- Length/density of railways by type and region (ESPON 1.2.1)
- Number/density of commercial seaports and inland ports by region (ESPON 1.2.1)
- Number/density of commercial airports by region (ESPON 1.2.1)
- Number of hospital beds per 100,000 inhabitants (ESPON 1.4.2)
- Length of public transport lines
- Density of public transport stops by region
- Number of secure servers per inhabitants (ESPON 1.2.2)
- Number of telephone access lines (ESPON 1.2.2)
- Mobile telephone penetration (% of households) (ESPON 1.2.2)
- Availability of internet/broadband access (% of households) (ESPON 1.2.2)

*(b) Travel distance, travel time and travel cost indicators*

- Airline distance to geographical centre of Europe or to the centre of gravity of population in Europe
- Travel time (or cost) to educational and social services (hospitals, schools, kindergarten, universities etc.) by fastest mode (ESPON 1.4.2)
- Travel time (or cost) to national capital city by car and train
- Average travel time (or cost) by car to next three cities with more than 100,000 inhabitants (ESPON 1.2.1)

- Average travel time (or cost) by car to all cities with more than 200,000 inhabitants (ESPON 1.2.1)
- Car travel time (or cost) to next MEGA (ESPON 1.2.1)
- Average car travel time (or cost) to all MEGAs (ESPON 1.2.1)
- Car travel time (or cost) to next railway station, motorway entrance, transport terminal or seaport (ESON 1.2.1)
- Travel time to markets by rail and road (weighted by GDP and population) (ESPON 2.1.1)
- Travel time to markets by road or rail (weighted by GDP and population) (ESPON 2.1.1)
- Number of cities accessible within a certain time by mode (ESPON 1.2.1)

*(c) Accessibility indicators*

- Daily accessibility to markets and population by car and rail (ESPON 1.2.1)
- People (or GDP) within certain hours travel time by mode
- People (or GDP) within certain distance ('regional population potential')
- Potential accessibility by air, rail or road to population/GDP (differentiated by means of standardisation) (ESPON 1.2.1)
- Potential accessibility, multimodal, to population/GDP (differentiated by means of standardisation) (ESPON 1.2.1)
- Population within service area of important public infrastructures (in % of total regional population)
- Population within municipalities with less/more than 30 minutes travel time to next city (> 100,000 inhabitants) (in % of total regional population)
- European Peripherality Index

*(d) Transport flows, traffic volumes and infrastructure usage*

- Passenger flows by user type and trip purpose between regions
- Trade and good flows by commodity good between regions
- Total trip-km by mode by trip purpose and region (ESPON 1.2.1)
- Transport of goods by mode, commodity group and region (in tkm)
- Average trip length by mode and region
- Total trips generated by region (ESPON 1.2.1)

- Total trips attracted by region (ESPON 1.2.1)
- Modal split passenger and freight transport
- Level of telecommunication development (ESPON 1.2.2)
- Motorisation rate (car ownership/inhabitants)

*(e) Sustainability indicators*

- Energy consumption by transport (ESPON 2.1.4)
- Land consumption by transport by region (ESPON 3.1)
- Number of persons killed in transport (by mode) (ESPON 1.2.1)
- Number of persons injured in transport (by mode)
- Transport emissions of greenhouse gases by region (ESPON 1.2.1)
- Transport emissions of pollutants by region

The above list is by far not a complete list of all indicators related to infrastructure and accessibility, but it rather already provides an aggregated list of most commonly used indicators. In many studies, various derivates of the above basic indicators have been applied which cannot be listed here entirely.

### Proposed Indicators and Indicator Matrix

The following two tables assign the transport-related infrastructure and accessibility indicators to the indicator matrix, based on the above list of indicators. The selection process as such followed a filtering process, taking into account criteria such as

- explanatory power,
- availability,
- regional dimension (spatial level), and
- practicability.

The proposed core infrastructure and accessibility indicators are presented in the Table 4-3, grouped into ‘wishlist indicators’ and ‘second best indicators’. As some ‘wishlist’ indicators are not yet calculated for the ESPON space (for whatever reason), a second best alternative indicator is presented. If the wishlist indicator is already been calculated for ESPON space both the wishlist indicator and second best indicator are identical. However, *ESPON space* here does not necessarily mean that the proposed indicators were calculated in ESPON projects, but that basically the indicator would be available from any data source for the ESPON space.

**Table 4-3 Proposed wish list and second best transport indicators.**

| Field[1] | Wish list indicator | Second best indicator |
|---|---|---|
| H1 | Average travel time by car to next three regional cities (> 50,000 inh.) | Average travel time by car to next three regional cities (> 100,000 inh.) |
| H2 | Potential accessibility to population, multimodal, ESPON space=100 | Potential accessibility to population, multimodal, ESPON space=100 |
| H4 | Lorry travel times to transport terminals | Connectivity to transport terminals (ICON indicator) |
| E5 | Proportion of households with internet access | Proportion of households with internet access |
| H5 | Modal split passenger transport (car, plane, train) (survey/empirical data) | Modal split passenger transport (car, plane, train) (modelled data) |
| J5 | Final energy consumption by transport (Mtoe) (NUTS 2) | Final energy consumption by transport (Mtoe) (NUTS 0) |
| L5 | Land consumption by transport infrastructure (statistical data) | Land consumption by transport infrastructure (CORINE database) |
| M5 | Number of people injured and number of people killed in transport per inhabitants | Number of people injured and number of people killed by road transport per inhabitants |
| H6 | People within 50 km distance ('regional population potential') | People within 50 km distance ('regional population potential') |
| H7 | Proportion of population living within 30 min of next railway station | Connectivity to rail stations |

[1] *the column 'field' refers to the chequer presented in the next table.*

Two main conclusions can be drawn from the above table:

(1) For a number of indicators the wish list indicator and the second best indicator are identical, which means that the most suitable indicator is already available. For some indicators both are differing, however, in most cases there are no fundamental differences but only small deviations.

(2) Not all fields in Row H and Column 5 of the indicator matrix (Table 4-4) are filled for two reasons: First, for some policy goals it is almost impossible to find appropriate infrastructure and transport indicators (for instance, measuring "Diversified cultural heritage and identities" or "governance" is hardly possible with infrastructure indicators). Second, infrastructure and transport indicators are not available at appropriate scales for pan-Europe.

**Table 4-4 Indicator Matrix and Suggested Key Transport Indicators.**

| | | Balanced distribution of population, wealth, cities | Assets for global competitiveness | Innovative knowledge society | Diversified regional economies | Sustainable transport and energy | Sustainable settlement structures | Socially inclusive society and space | Healthy environment and hazard prevention | Diversified cultural heritage and identities | Territorially oriented governance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Urban development & hierarchy | A | | | | | | | | | | |
| Urban-rural relationships | B | | | | | | | | | | |
| Demography | C | | | | | | | | | | |
| Innovation | D | | | | | | | | | | |
| ICT | E | | | | | **Proportion of households with internet access** | | | | | |
| Hazards | F | | | | | | | | | | |
| Culture | G | | | | | | | | | | |
| Transport | H | **Average travel time to next three regional cities (with more than 50,000) inhabitants by car** | **Potential accessibility to population, multimodal** | | **Lorry travel time to transport terminals** | **Modal split passenger transport (car, plane, train)** | **People within 50 km distance ('regional population potential')** | **Proportion of region population living within 30 min of next railway station** | | | |
| Agriculture, fisheries and rural development | I | | | | | | | | | | |
| Energy | J | | | | | **Final Energy consumption by transport** | | | | | |
| Governance | K | | | | | | | | | | |
| Environment | L | | | | | **Land consumption by transport infrastructure** | | | | | |
| Social issues | M | | | | | **Number of people injured and number of people killed in road transport** | | | | | |
| Economy | N | | | | | | | | | | |

### 4.3.2 Raw List Indicators

## Indicator Sheet: Land Consumption by Transport Infrastructure (CORINE data)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable Transport and Energy |
| Sub-objective: | Environment |
| Calculation: | Proportion of region area consumed by transport infrastructure (road and railways, port areas, airports) in % of total region area. |

**Informational value**

As transport demand of all modes is constantly growing year by year, the land occupied by transport infrastructure is also constantly growing. For some regions the (annual) increase of transport infrastructures is significant, so it is a matter of concern to analyse in which regions and to which degree transport developments take place. Furthermore, it is interesting to analyse the relation between the increase of the settlement areas (or built-up areas) as a whole and the transport areas in particular. The advantage of the CORINE database is that it is able to provide land use indicators for almost all European regions based on a unified overall approach, using the rich set of about 44 land use classes. Through CORINE it is ensured that similar definitions of all land use classes are applied for all countries, thus making results comparable across all regions. Apart from the PELCOM database, CORINE represets the only pan-Europen land use and land coverage data source; however, while PELCOM is focussing on different land coverage categories for open space (without further differentiating built-up areas), CORINE also provides several classes for built-up areas. Today CORINE is available for two points in time (1990 and 2000), enabling the analysis of land use changes over this period using the same data definitions. Since the CORINE data are derived from satellite images, the CORINE database also entails some drawbacks with respect to the data resolution of the base images which has some implications for the explanatory power of

| | Va-lue | Min | Max |
|---|---|---|---|
| EU 25+2 +2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

**Indicator Sheet: Land Consumption by Transport Infrastructure (CORINE data)**

indicators:

The basic scale of CORINE is 1:100 000, with a minimum area of 25 ha for polygon objects to be recognised and a minimum width of 100 m for linear objects to be recognised. So by using these thresholds several areas consumed by (small) transport infrastructures such as roads or railways are dropped and so are not taken account in CORINE. Consequently, the proposed indicator "Land consumption by transport infrastructure" based on CORINE is likely to underestimate the proportion of transport infrastructure on the region area. Alternatively one may derive this indicator based on national statistics (Eurostat´s Regio database unfortunately includes only the length of transport infrastructures by region, but not the area consumed by them), however, in this case it is likely that the definition and classification of different land use classes is differing between the countries.

**Regional distribution**

# Indicator Sheet: Land Consumption by Transport Infrastructure (CORINE data)

### Spatial coverage

| | Yes/No |
|---|---|
| **EU 25+2+2** | yes |
| **EU 25** | no |
| **EU 15** | no |
| **EU 10** | no |

### Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | 10 years (1990 and 2000) |

### Spatial level / regional level

| | Yes/No |
|---|---|
| **Nuts 1** | no |
| **Nuts 2** | no |
| **Nuts 3** | yes |
| | |
| **Nuts 5** | no |

NUTS version:

| | please describe |
|---|---|
| **other** | |

### Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 3.1 |
| **Source** | CORINE 2000 |

### Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | yes | CORINE raster data overlaid with NUTS-3 region boundaries |
| **model** | no | |

### Data gaps (please describe)

French Overseas Departements, Malta, Norway, Acores and Madeira (Portugal), Sweden, Switzerland

## Indicator Sheet: Land Consumption by Transport Infrastructure (CORINE data)

**Comments**
Using CORINE 1991 dataset this indicator can also be calculated for the year 1990. Currently the ESPON database does not include exactly this indicator definition, as transport infrastructure is subdivided in CORINE in three categories (road and railways, airports, port areas). An indicator combining these three categories is not yet calculated in ESPON.

**Indicator Sheet: Potential accessibility, multimodal, to population (ESPON space=100)**

| | |
|---|---|
| Dimension: | |
| Objective: | Assets for Global Competitiveness |
| Sub-objective: | Transport |
| Calculation: | Activities (i.e. population) weighted by a function of travel time. For each origin, the destination activities are summed up based on the assumption that the attraction of a destination increases with size and declines with distance or travel time or travel cost. Here reigonal population is used as destination activity. |

**Informational value**

Accessibility indicators of the potential type belong to the most common and most extensively tested accessibility indicators, as they best describe the relationship between transport systems and regional economic development. Accessibility to population is seen as an indicator for the size of the market areas for suppliers of goods and services, while, alternatively, accessibility to GDP is considered as an indicator of the size of market areas for suppliers of high-level business services. In this, both indicators describe assets of global (economic) competitiveness of a region. As these indicators also take the destination activities (and their spatial distribution) into account, they go far beyond the purely travel time indicators.

The indicator can be calculated for individual modes, but can also be calculated multimodal (as done in ESPON 1.2.1). The basic difference to the modal accessibility indicators is that the multimodal indicators integrate the modal indicators into one overall indicator and so indicate the combined effects of alternative transport modes for each location. As the different modes have different importance in different parts of Europe, it is proposed to use the multimodal indicator.

European-wide multimodal potential accessibility indicators have been calculated throughout recent years in a variety of countries.

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

**Indicator Sheet: Potential accessibility, multimodal, to population (ESPON space=100)**

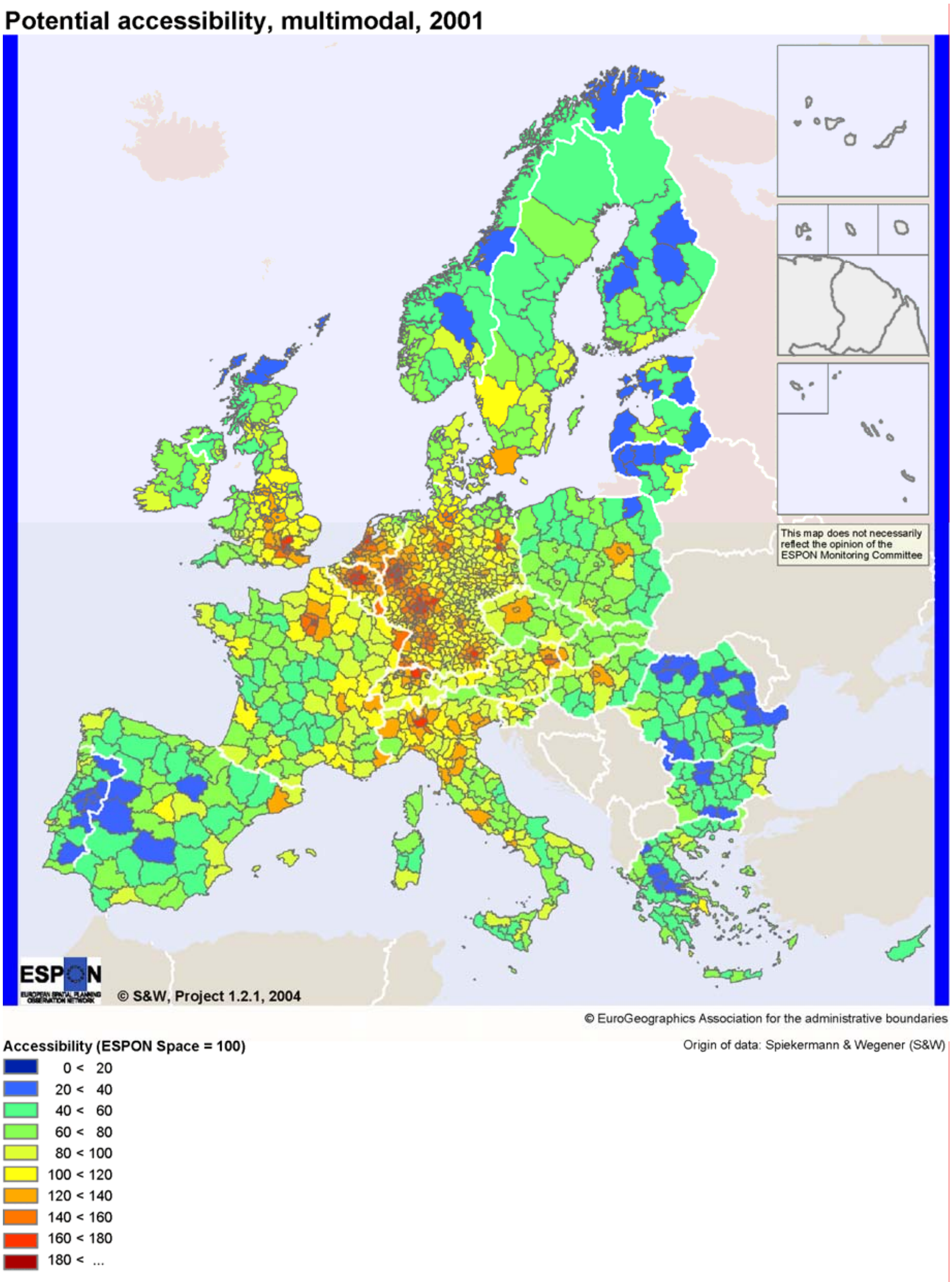
In early years Keeble et al. (1982, 1988) analysed the accessibility of European centres using accessibility of the potential type with GDP as destination activity, and mapped the results in form of contour lines. In a variation, Bruinsma and Rietveld (1992) calculated the potential accessibility of selected European cities to population. Spiekermann and Wegener (1994, 1996) calculated potential accessibility indicators for road and rail on a 10x10km raster basis. Copus (1997, 1998, 1999) developed ‘peripherality indicators’ for the European Commission for NUTS-2 and NUTS-3 regions for road to GDP, where peripherality is considered as the negative notion of accessibility.

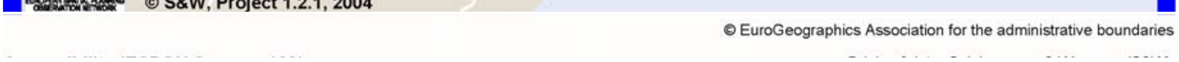
**Regional distribution**

Regions located in the 'blue banana' ranging from London, the Benelux countries, western Germany to northern Italy show highest potential accessibilities. As a tendency, the further away the regions are located from the 'blue banana' the lower the potential accessibility is, with the remarkable exception of those regions with hub airports. In most cases such regions are the capital regions (for instance, Roma, Prague, Vienna/Bratislava, Budapest, Copenhagen/Malmoe, Warsaw). Even in areas with generally poor accessibility far below European average (such as Baltic countries, Bulgaria, Romania, Portugal, Greece, Nordic regions), such regions experience above-average accessibilities (see, for example, Sofia and Bucarest, Riga, Tallin, Lisbon, Helsinki) as the benefit from good flight connections to other parts of Europe.

**Indicator Sheet: Potential accessibility, multimodal, to population (ESPON space=100)**

**Map 4-1 Potential accessibility, multimodal, to population 2001 (Mathis et al., 2004).**




© S&W, Project 1.2.1, 2004
© EuroGeographics Association for the administrative boundaries

## Indicator Sheet: Average travel time to next three regional cities (with more than 100,000) inhabitants by car

| | |
|---|---|
| Dimension: | |
| Objective: | Balanced distribution of population, wealth, cities |
| Sub-objective: | Transport |
| Calculation: | To calculate the car travel time over road network from each raster cell to the next three regional cities with more than 100,000 inhabitants. |

**Informational value**

This indicator relates the density and quality of the transport networks to the spatial distribution of cities. Cities are considered here as functional nodes offering public and private ser-vices, jobs and social contact, shopping and culture opportunities. The better the access to these cities is, i.e. the shorter the travel times to these cities are and so the bigger their service areas is, the more people can benefit from these opportunities. People living in areas located within the service area of more than one bigger city can even select day-by-day which city centre offers the opportunities serving best his needs.

**Regional distribution**

The indicator shows very distinct spatial patterns both at European and national scale. At European scale countries such as Germany, the UK; Italy and the Benelux countries show generally shorter average travel times compared to more peripheral countries such as Portugal, Greece, Ireland or Norway, Sweden and Denmark. On the other hand, all countries also reveal great differences within their territory (for example, coastal areas in Spain and the Madrid region compared to other parts of Spain; or the southern parts of Sweden and Finland compared to the northernmost regions). Both observations reflect (a) the number and spatial distribution of regional cities (> 100,000 inhabitants), but also (b)

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

**Indicator Sheet: Average travel time to next three regional cities (with more than 100,000) inhabitants by car**

the density and quality of the road networks to reach them. Assuming that many public, administrative but also private services and jobs are located in regional and main cities, one can conclude that the accessibility level in many parts of Europe is not sufficient, observing travel times of 2 hours and more.

**Indicator Sheet: Average travel time to next three regional cities (with more than 100,000) inhabitants by car**

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Time reference / actuality**

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

**Spatial level / regional level**

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | no |
| Nuts 3 | no |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | Raster level |

**Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)**

| | please describe |
|---|---|
| Origin | ESPON Project 1.2.1, however, data are not available at the present ESPON database. |
| Source | CITERES |

**Type of data (raw data, model output, survey data etc.)**

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | Indicators calculated based on network model results. |

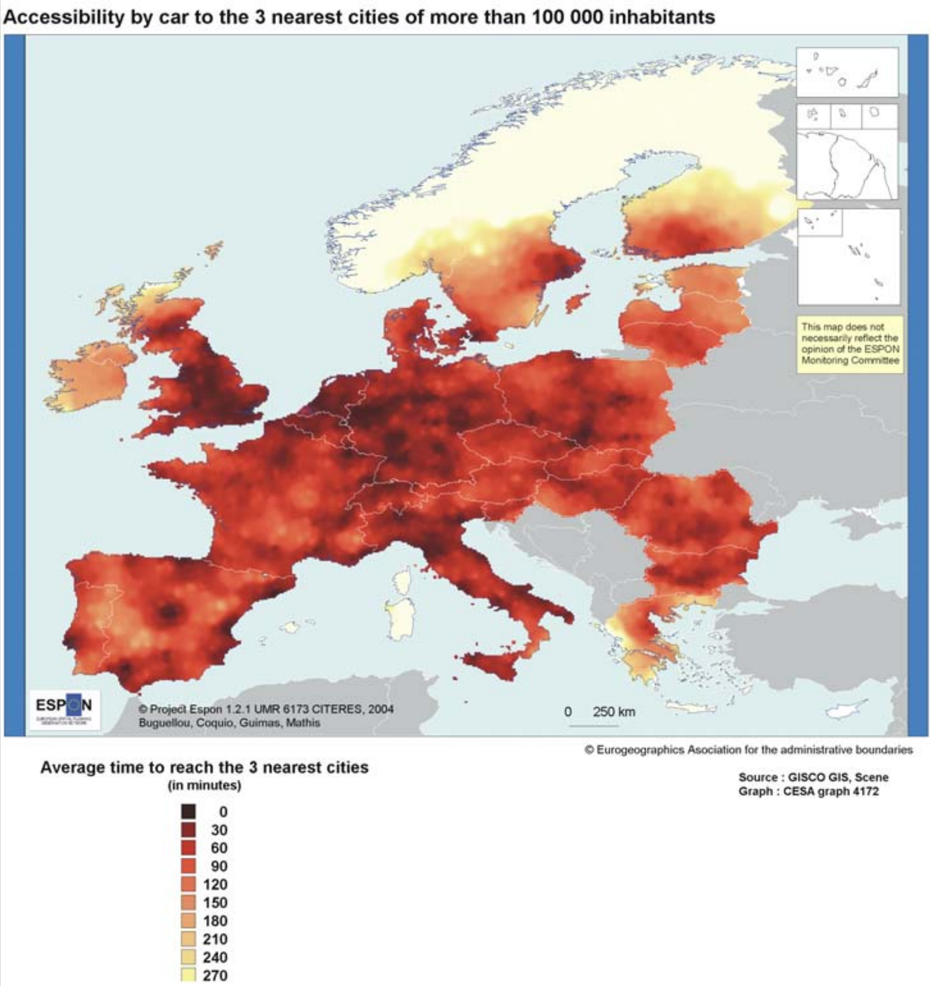
**Data gaps (please describe)**
Cyprus

**Comments**
In ESPON 1.2.1 this indicator was unfortunately not aggregated to NUTS-3 level, thus the indicator is currently not included in the ESPON database. 5-year intervals are sufficient as both the transport

**Indicator Sheet: Average travel time to next three regional cities (with more than 100,000) inhabitants by car**

networks and also the size of the regional cities are not changing significantly year by year, but rather in intermediate time intervals. A city size of about 100,000 inhabitants seems appropriate to take into account the different settlement and city structures in many EU Member States, however, in case of the Nordic countries a lower threshold of about 50,000 would be even more suitable. Alternative indicators: (i) Average travel time to next three regional cities (with more than 50,000) inhabitants by rail; (ii) Travel time by car/rail to national capital city; (iii) Travel time by car/rail to next regional city. The present ESPON database is lacking a travel time indicator to cities, but includes travel time indicators to airports, seaportsd and transport terminals only.

**Map 4-2 Average travel time by car to next three cities of more than 100,000 inhabitants (Mathis et al., 2004).**



## Indicator Sheet: Conmnectivity to rail stations

| | |
|---|---|
| Dimension: | |
| Objective: | Socially inclusive society and space |
| Sub-objective: | Transport |
| Calculation: | Calculation of the travel time by car from each raster cell to nearest railway stations. Afterwards aggregation of the raster travel times to NUTS 3 level weighted by surface. |

### Informational value

Despite the increasing car usage in all European countries, access to and accessibility by public transport has received growing awareness over the last decade both because of environmental concerns and to ensure a best level of mobility for those people that cannot drive by car or cannot use the car for whatever reason (kids and young people, elderly people, handicapped people, unemployed people, low-income households with no or only one car). Based on recent demographic trends in many member states (overaging, migration processes, long-time unemployment etc.), but also because of the heavy congestion of the road networks, it becomes more and more important to strenghen public transport and so to ensure a high quality level of mobility, not only in rural areas but also in the agglomerations. A good access to the respective stations and stops is a prerequisite for this. The present indicator is capturing this access by calculating the travel time by car of each raster cell to the next rail stations. Afterwards, the raster results are aggregated to NUTS-3 levels as weighted average. Areas with long travel times become immediately visible in the map. However, this indicator does not relate the travel time to the population distribution, i.e. nothing is said whether or not areas with good accessibility comply with areas where people live. This is the reason why this indicator is considered as second best indicator.

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

### Regional distribution

The indicator shows very distinct patterns across Europe, but also within national territories.

Regions in the Benelux countries, Germany, southern England, northern France and in Poland show good connectivities to rail stations as the density of stations is rather high. In the contrary, many areas in the Baltic countries, Bulgarie and Romania, in Greece, in rural parts of Spain and Denmark, and in the Nordic countries experience very poor connectivities to rail stations and, in the extreme cases, lack any connectivity at all. In other words, people living in areas with poor connectivity to rail stations cannot opt for trains as alternative modes for transport and thus they have to rely on private cars or buses.

## Indicator Sheet: Conmnectivity to rail stations

### Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

### Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

### Spatial level / regional level

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | no |
| Nuts 3 | yes |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | Raster level |

### Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.2.1 |
| Source | Mcrit, Eurostat |

### Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | Indicator calculated by network model based on shortest route algorithms. Necessary base data are: Transport networks (road, rail) including location of railway stationsl. |

### Data gaps (please describe)

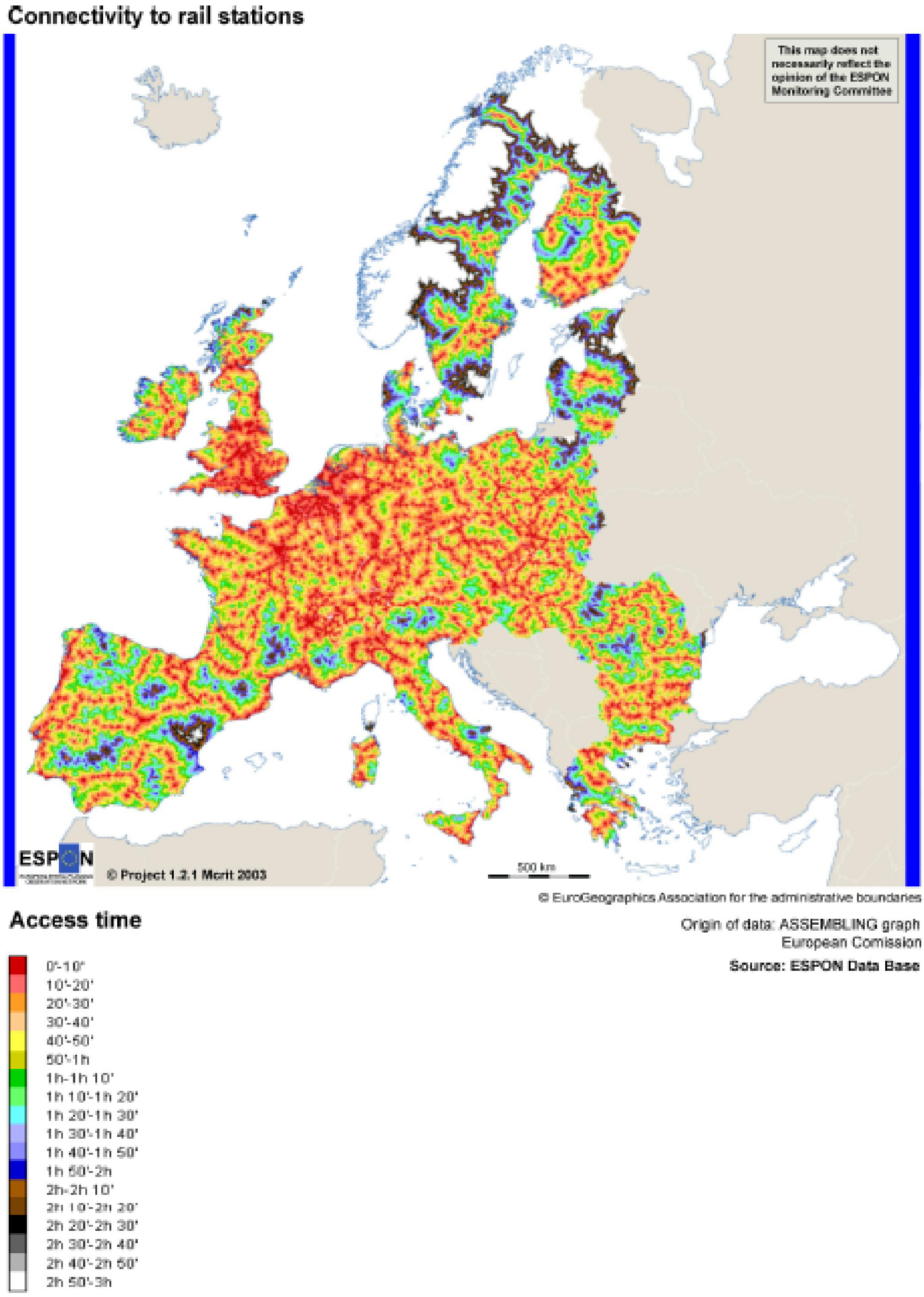
Cyprus, Malta

### Comments

The indicator results highly depend on the quality and completeness of the input data, in particular on the completeness of the rail station data, but also on the accuracy of the road networks used.

**Indicator Sheet: Conmnectivity to rail stations**

**Map 4-3 Connectivity to rail stations (raster level) (Mathis et al., 2004, 229).**



## Indicator Sheet: Number of people injured and number of people killed in road transport per inhabitant

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | Social issues |
| Calculation: | Number of people injured devided by regional population and number of people killed devided by regional population |

**Informational value**

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

## Indicator Sheet: Number of people injured and number of people killed in road transport per inhabitant

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Time reference / actuality**

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | annual |
| periodicity (i.e. available years, please describe): | |

**Spatial level / regional level**

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | yes |
| Nuts 3 | no |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | |

**Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)**

| | please describe |
|---|---|
| Origin | Eurostat Regio Database |
| Source | Eurostat |

**Type of data (raw data, model output, survey data etc.)**

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

**Data gaps (please describe)**

Many data gaps for individual countries for individual years. It is nearly impossible to have a full indicator set for one point in time.

**Comments**

This indicator is dedicated to measure safety issues in transport. It tries to measure the success of policies to reduce the number of people injured or killed in transport, and so can be considered as an indicator for sustainable transport. Unfortunately the time series available in the Eurostat Regio Database is very incomplete, so that it is difficult to obtain a full picture for the ESPON space for one point in time. Moreover, Eurostat only provides information for road transport; similar figures for other modes are not available.

# Indicator Sheet: Connectivity to transport terminals (ICON index)

| | |
|---|---|
| Dimension: | |
| Objective: | Diversified regional economies |
| Sub-objective: | Transport |
| Calculation: | Average travel time to next transport terminal. Transport terminals here are defined as motorway entrances, rail stations, airports, seaports, inland ports and intermodal terminals. |

**Informational value**

**Regional distribution**

The highest connectivity is to be found in the more dense urban areas and their metropolitan regions. Coastal regions with good serviced ports show a higher connectivity than some important inland urban areas, as this increases the global utility of the network (ex: Madrid and Barcelona). Finland and Sweden show the lowest connectivity in the EU15.

| | Value | Min | Max |
|---|---|---|---|
| **EU 25+2+2** | 0 | 0 | 0 |
| **EU 25** | 0 | 0 | 0 |
| **EU 15** | 0 | 0 | 0 |
| **EU 10** | 0 | 0 | 0 |
| **AT** | 0 | 0 | 0 |
| **BE** | 0 | 0 | 0 |
| **BG** | 0 | 0 | 0 |
| **CH** | 0 | 0 | 0 |
| **CY** | 0 | 0 | 0 |
| **CZ** | 0 | 0 | 0 |
| **DE** | 0 | 0 | 0 |
| **DK** | 0 | 0 | 0 |
| **EE** | 0 | 0 | 0 |
| **ES** | 0 | 0 | 0 |
| **FI** | 0 | 0 | 0 |
| **FR** | 0 | 0 | 0 |
| **GR** | 0 | 0 | 0 |
| **HU** | 0 | 0 | 0 |
| **IE** | 0 | 0 | 0 |
| **IT** | 0 | 0 | 0 |
| **LT** | 0 | 0 | 0 |
| **LU** | 0 | 0 | 0 |
| **LV** | 0 | 0 | 0 |
| **MT** | 0 | 0 | 0 |
| **NL** | 0 | 0 | 0 |
| **NO** | 0 | 0 | 0 |
| **PL** | 0 | 0 | 0 |
| **PT** | 0 | 0 | 0 |
| **RO** | 0 | 0 | 0 |
| **SE** | 0 | 0 | 0 |
| **SI** | 0 | 0 | 0 |
| **SK** | 0 | 0 | 0 |
| **UK** | 0 | 0 | 0 |

# Indicator Sheet: Connectivity to transport terminals (ICON index)

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

## Spatial level / regional level

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | no |
| Nuts 3 | yes |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | Raster level |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.2.1 |
| Source | Mcrit |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | Modelled indicator by using network/transport models using the Assembling graph. The NUTS-3 level results were disaggregated to raster levell. |

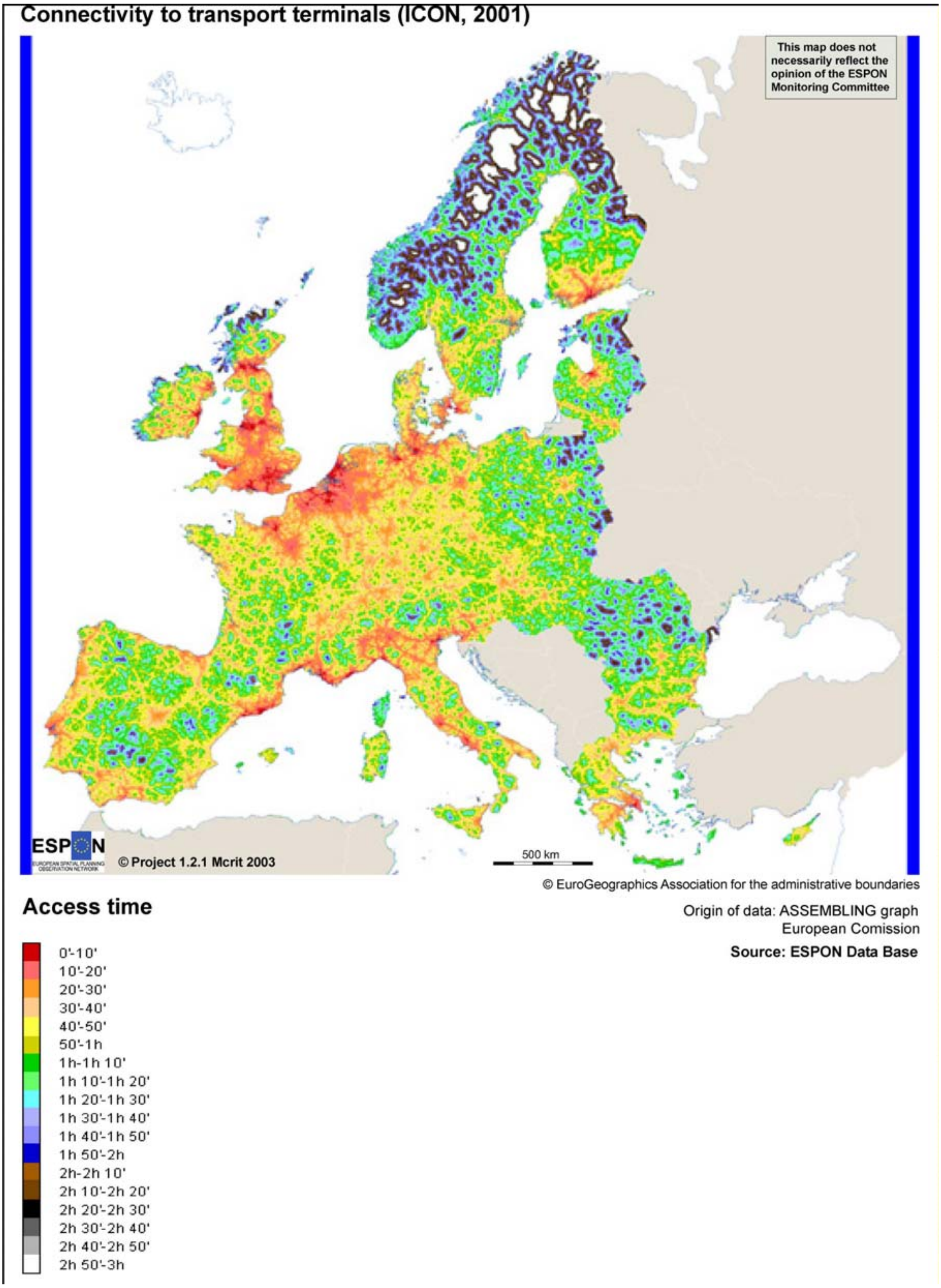
## Data gaps (please describe)

## Comments

This indicator represent the Index of Connectivity to Basic Transport networks (ICON) which measures for a given location the minimum access time by car to the closest transport termianl of a minimum service levels. Here transport terminals are defined more generally as motorway entrances, rail stations, airports, seaports and inland ports, and intermodal terminals. Thus, the index goes beyond a targetet freight transport indicator, which is the reason why this indicator is considered as a second best indicator.

## Indicator Sheet: Connectivity to transport terminals (ICON index)

**Map 4-4 Connectivity to transport terminals (ICON index) (ESPON 1.2.1, Final Report)**



## Indicator Sheet: Final energy consumption of transport (Mtoe) (NUTS 0)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and enegry |
| Sub-objective: | Energy |
| Calculation: | |

### Informational value

This indicator provides information on the development of the final energy consumption in the transport sector by supplying long-time-series data. The indicator takes into account both the traffic volumes (of all modes) (which over the past increased continuously) and the technological improvements towards more frugal motor engines. Whereas the latter aspect is likely to reflect a more general, aspatial development, which can be captured well on national level, the development of transport flows and so of traffic volumes is highly distinct from region to region, which in turn cannot be captured by national indicators. Thus this indicator at national level provides an snapshot picture at a glance with basic information, however, it would be desirable to have a similar indicator at more disaggregated level.

### Regional distribution

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

For full information please see http://www.espon.lu
Co-financed by the European Union through the INTERREG III ESPON Programme.

# Indicator Sheet: Final energy consumption of transport (Mtoe) (NUTS 0)

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | 1990, 1995, 2000, 2002 |

## Spatial level / regional level

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | no |
| Nuts 3 | no |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 2.1.4 |
| Source | DGET, Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | yes | |
| survey | no | |

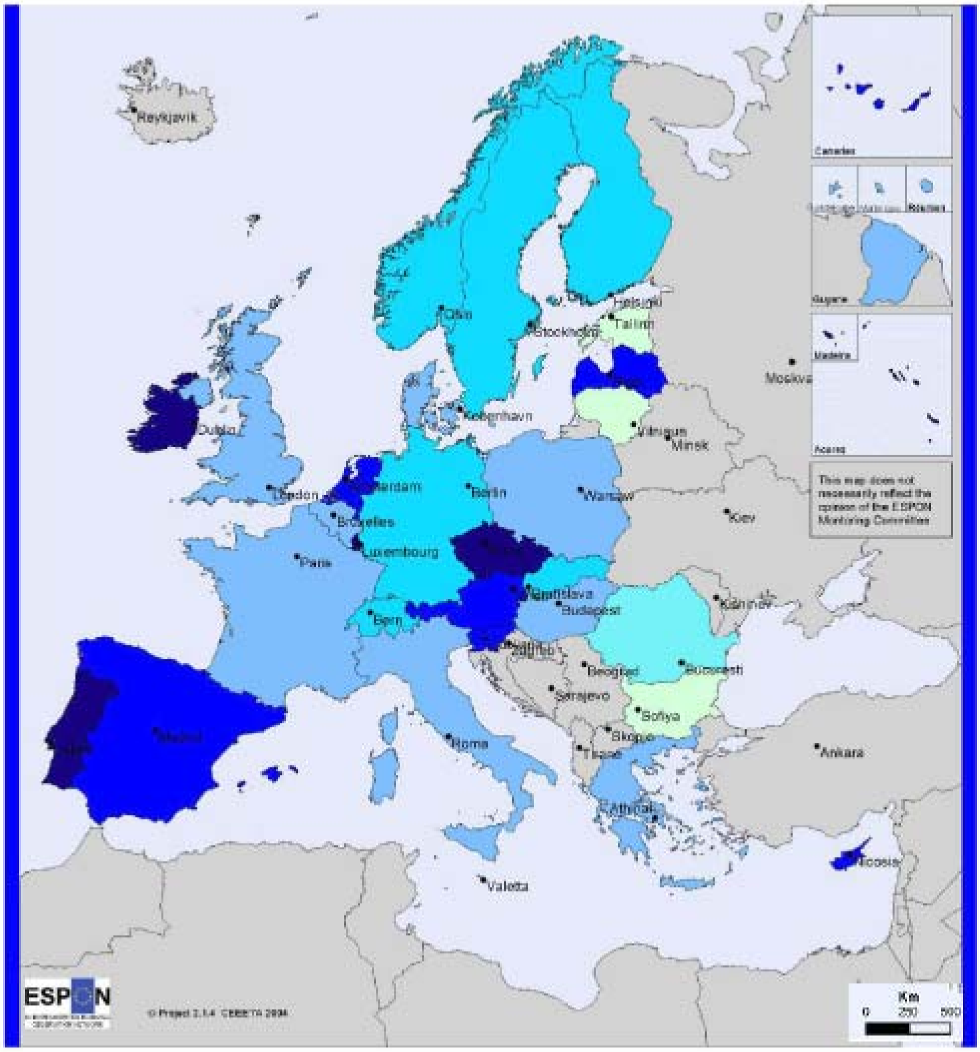
| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

## Comments

## Indicator Sheet: Final energy consumption of transport (Mtoe) (NUTS 0)

**Map 4-5 Variation of final energy consumption in transport by country (1990-2002) (%) (ESPON 2.1.4, Final Report, 25).**




Variation of final energy consumption in transport by country (1990-2002) (%)
- -46 - -18
- -18 - 0
- 0 - 12
- 12 - 28
- 28 - 69
- 69 - 123

© EuroGeographics Association for the administrative boundaries

*Source: DGET, Eurostat*

## Indicator Sheet: Proportion of households with internet access (%)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | ICT |
| Calculation: | Proportion of households with internet/broadband access as share of all households in a region. |

**Informational value**

Although there is still no clear empirical evidence whether ICT tends to decrease or increase transport demand (both for passenger and goods transport), it is undisputed that the ICT sector belongs to the economically most dynamic sectors, and also that ICT puts extremely high demand to logistical chains and so influences the transport system to a high degree. Therefore it is quite important to analyse the access of households and firms to the internet and broadband on regional level. Unfortunately it is difficult to find reliable data at the regional level, however, the data gathered in ESPON 1.2.2 at NUTS-2 level provide a good starting point. As other examples in ESPON 1.2.2 have shown (samples from Finland), it is extremely important to collect data at the most disaggregated level as possible.

**Regional distribution**

The map clearly shows an north-south band of regions with high proportions of households with internet access. Regions with proportions of more than 45 % in a band stretching from Norway and Sweden, via Denmark, Netherlands and Germany to Austria in the south. In addition, some regions in the UK and Ireland also show a high proportion, so as the Helsinki region. Other regions west and east of this band have significant lower proportion of households with internet access, with many parts in Spain, Portugal, Greece, southern Italy, the Baltic countries, Czech Republic and Slovakia having only small proportions of less than 20 %.

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

# Indicator Sheet: Proportion of households with internet access (%)

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | yes |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

## Spatial level / regional level

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | yes |
| Nuts 3 | no |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.2.2 |
| Source | CEIDET |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | yes | estimated figures based on samples derived from surveys |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

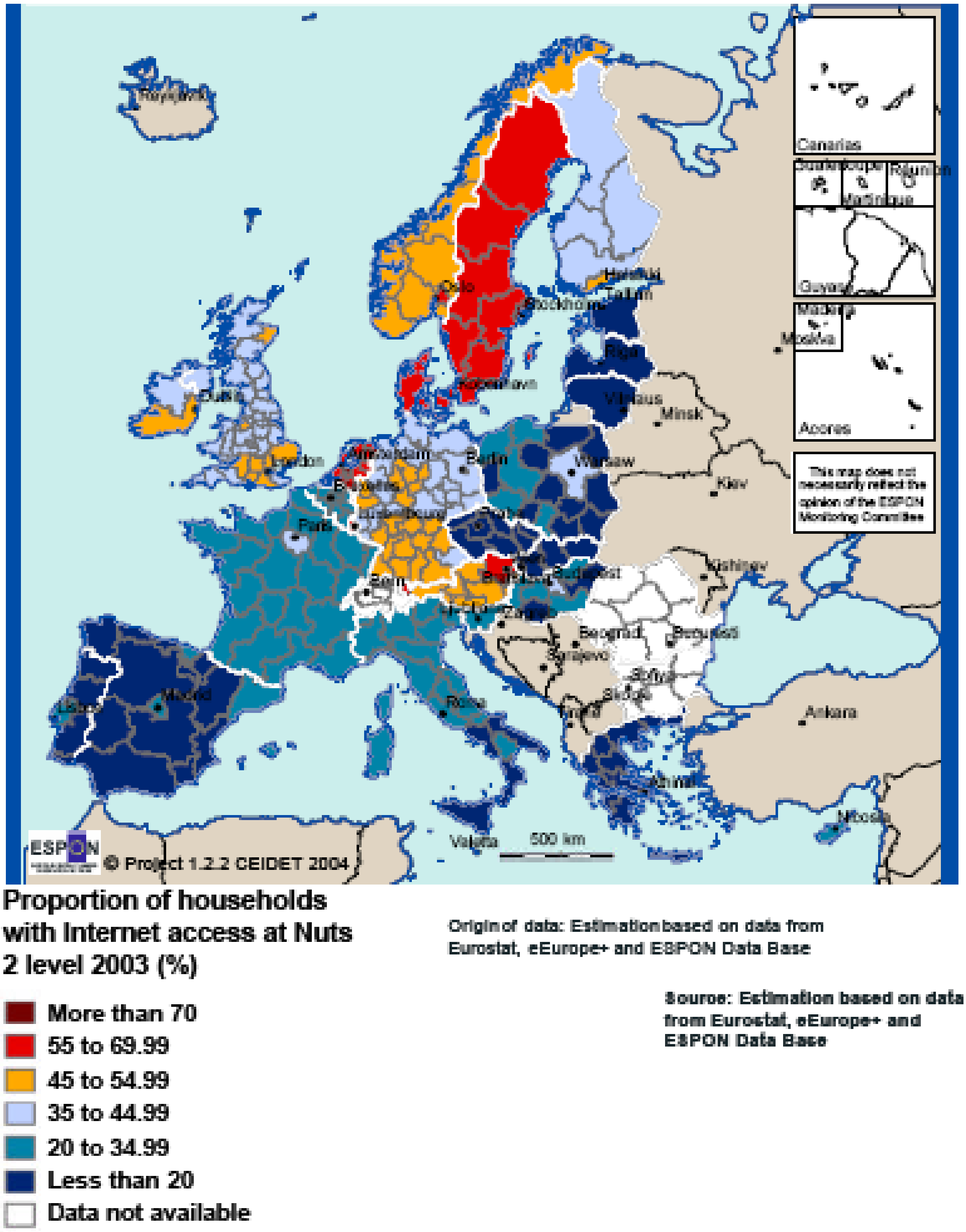
## Data gaps (please describe)

Bulgaria, Romania, Switzerland

## Comments

**Indicator Sheet: Proportion of households with internet access (%)**

**Map 4-6 Proportion of households with internet access (ESPON 1.2.2, Final Report)**



## Indicator Sheet: People within 50 km distance ('regional population potential')

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable settlement structures |
| Sub-objective: | Transport |
| Calculation: | Sumnation of all people living within 50 km airline distance (as the crow flies) from any given origin, standardised at the European average (for ESPON space). |

**Informational value**

This indicator is not only measuring the population of one region, but also the population potential within 50 km. Thus, it provides an indication of the size of the market area for economic activities and for the provision of public services. Unlike the potential accessibility indicator, which can also be interpreted as an pan-European measure of market areas, this indicator focuses on local and regional market areas. Regions with extremely low population potentials are expected to have difficulties to attract firms and private services, but also to maintain public infrastructures (as local and regional demand is missing). For this reason this indicator was used by Nordregio to delimitate sparsely populated areas in the Nordic countries.

**Regional distribution**

The map clearly reveals the 'blue banana' as the area in Europe with the highest population potential, ranging from Liverpool/Manchester and London via Benelux countries, western Germany to northern Italy. Otherwise the national capital regions, and agglomerated areas stand out with high population potentials. On the other hand, not only regions in the Nordic countries, in ther Baltic countries, in Scotland, Ireland and Greece, and on the Iberian Peninsula, as expected, experience low population potentials far below the European average, but also regions in southern and central parts of France, in northern Italy, Switzerland and Austria, as well as areas in Northern Denmak and western Poland suffer from low regional population potentials.

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

# Indicator Sheet: People within 50 km distance ('regional population potential')

### Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

### Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

### Spatial level / regional level

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | no |
| Nuts 3 | no |
| | |
| Nuts 5 | yes |

NUTS version:

| | please describe |
|---|---|
| other | |

### Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | Nordregio, Study on sparsely populated areas |
| Source | RRG |

### Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | yes | Indicator calculated based on statistical population figures for NUTS 5 entities |
| model | no | |

### Data gaps (please describe)

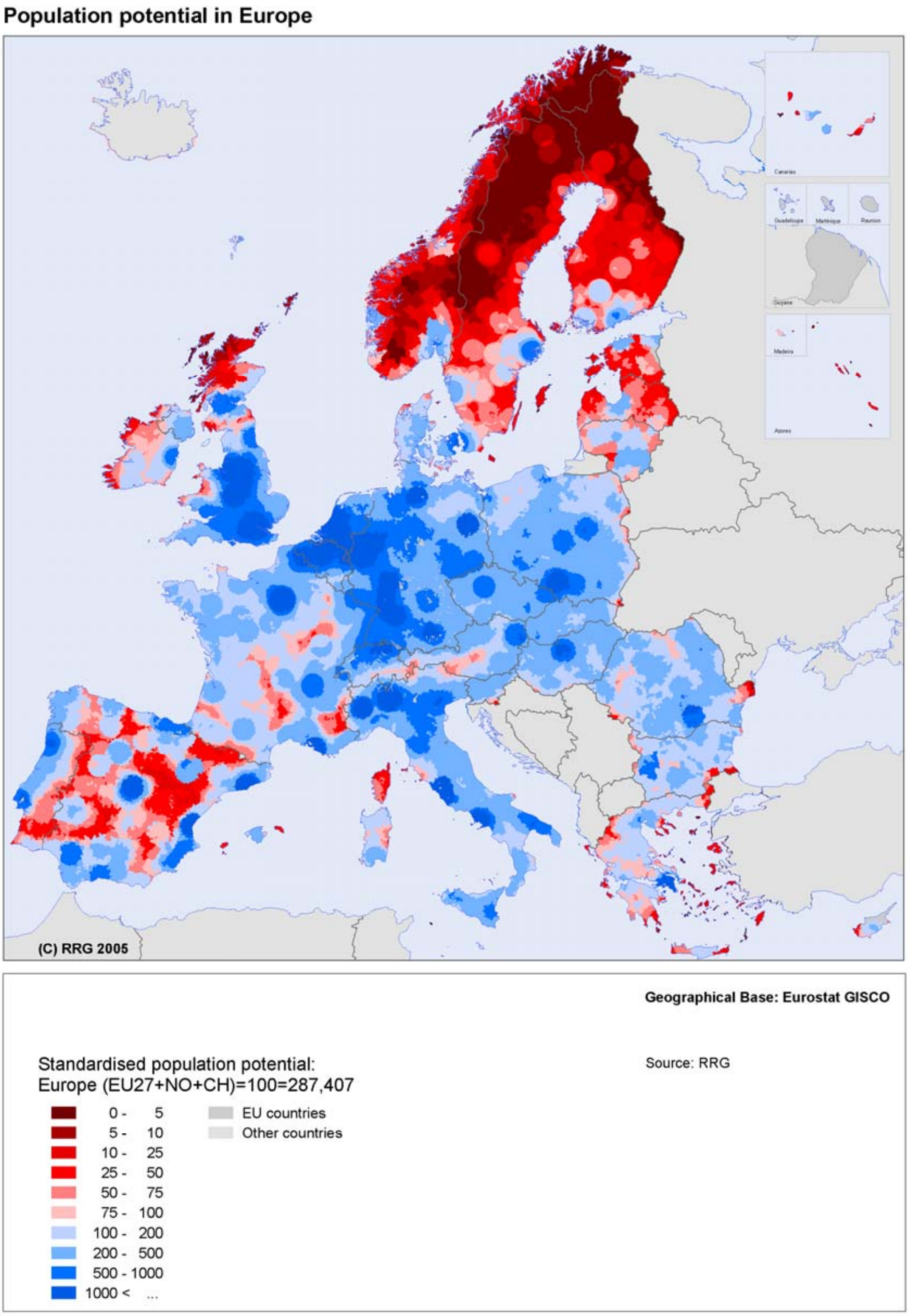
French Overseas Departements

### Comments

For Sweden, Finland and Norway this indicators was even calculated based on 1x1 km raster cells, as population figures for these raster cells were provided by the national statistical offices.

## Indicator Sheet: People within 50 km distance ('regional population potential')

**Map 4-7 Regional population potential within 50 km (Gløersen et al., 2005, 38)**



## Indicator Sheet: Modal split passenger transport (car, plane, train) (modelled data)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | Transport |
| Calculation: | Composite indicator combining the following ESPON indicators: The total number of trip attracted and generated, respectively, for different trip purposes (business, leisure, visit) for the three modes cars, plane and train will first be summed up, and then the shares of the three modes will be calculated and defined as the estimated modal split of each NUTS region. |

**Informational value**

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| **EU 25+2+2** | 0 | 0 | 0 |
| **EU 25** | 0 | 0 | 0 |
| **EU 15** | 0 | 0 | 0 |
| **EU 10** | 0 | 0 | 0 |
| **AT** | 0 | 0 | 0 |
| **BE** | 0 | 0 | 0 |
| **BG** | 0 | 0 | 0 |
| **CH** | 0 | 0 | 0 |
| **CY** | 0 | 0 | 0 |
| **CZ** | 0 | 0 | 0 |
| **DE** | 0 | 0 | 0 |
| **DK** | 0 | 0 | 0 |
| **EE** | 0 | 0 | 0 |
| **ES** | 0 | 0 | 0 |
| **FI** | 0 | 0 | 0 |
| **FR** | 0 | 0 | 0 |
| **GR** | 0 | 0 | 0 |
| **HU** | 0 | 0 | 0 |
| **IE** | 0 | 0 | 0 |
| **IT** | 0 | 0 | 0 |
| **LT** | 0 | 0 | 0 |
| **LU** | 0 | 0 | 0 |
| **LV** | 0 | 0 | 0 |
| **MT** | 0 | 0 | 0 |
| **NL** | 0 | 0 | 0 |
| **NO** | 0 | 0 | 0 |
| **PL** | 0 | 0 | 0 |
| **PT** | 0 | 0 | 0 |
| **RO** | 0 | 0 | 0 |
| **SE** | 0 | 0 | 0 |
| **SI** | 0 | 0 | 0 |
| **SK** | 0 | 0 | 0 |
| **UK** | 0 | 0 | 0 |

# Indicator Sheet: Modal split passenger transport (car, plane, train) (modelled data)

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

## Spatial level / regional level

| | Yes/No |
|---|---|
| Nuts 1 | no |
| Nuts 2 | yes |
| Nuts 3 | no |
| | |
| Nuts 5 | no |

NUTS version:

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.2.1 |
| Source | Mcrit / Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | Indicator at regional level modelled using elaborated transport model. |

## Data gaps (please describe)

French Overseas Departments, Malta, Acores and Madeira (Portugal)

## Comments

Empirical data are not yet available at European scale for disaggregated NUTS levels (such as NUTS-2 or NUTS-3), but empirical data only available as aggregates at country level. This indicator is dedicated to give an indication on how sustainable the choice of mode is in each region, depending on the availability and service quality of rail and other public transport systems, the quality and density of the road network and the motorisation rate, and depending on the availability and range of destinations of airports. It is expected that in the share of rail mode is higher in agglomerations than in rural areas, as areas with higher densities are better suited to offer high-quality railway services compared to low-density areas.

### 4.3.3 Wish List Indicators

## Indicator Sheet: Proportion of population living within 30 min of next railway station

| | |
|---|---|
| Dimension: | |
| Objective: | Socially inclusive society and space |
| Sub-objective: | Transport |
| Calculation: | First, calculation of the 30min isochrones around each railway station and second calculatinon of the number of people living within these isochrones. Afterwards calculation of the proportion of NUTS-3 population living within the isochrones of the total NUTS-3 region population. This calculation implies that the regional population is either available at NUTS-5 level or at raster level, in order to aggregate them to NUTS-3 level. |

**Informational value**

Despite the increasing car usage in all European countries, access to and accessibility by public transport has received growing awareness over the last decade both because of environmental concerns and to ensure a best level of mobility for those people that cannot drive by car or cannot use the car for whatever reason (kids and young people, elderly people, handicapped people, unemployed people, low-income households with no or only one car). Based on recent demographic trends in many member states (overaging, migration processes, long-time unemployment etc.), but also because of the heavy congestion of the road networks, it becomes more and more important to strenghen public transport and so to ensure a high quality level of mobility, not only in rural areas but also in the agglomerations. A good access to the respective stations and stops is a prerequisite for this. Compare to the second best indicator (Connectivity to railway stations), which only measures the travel time to the next station, this indicator also takes into account the proportion of people who live in areas with good access to rail stations. Thus, this wishlist indicator better reflects the spatial distribution of stations in relation to the population.

# Indicator Sheet: Proportion of population living within 30 min of next railway station

## Description of current status of the indicator

### Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

### Spatial gaps

### Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Proportion of population living within 30 min of next railway station

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | |
| **Source** | |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

Indicator has to be calculated at raster level or NUTS 5 level and then has to be aggregated to NUTS-3 level. Disaggregated population figures at raster or NUTS-5 level are required for this analysis. All rail stations must be coded in a database. Furthermore, a dense road network database must also be available to calculate shortest paths from each raster cell/NUTS-5 entity to the next rail stations. Until now such an indicator has, consequently, not yet been calculated for the ESPON space (example: BBR calculated the accessibility to intercity train stations for Germany, BBR 2005 p.131).

## Specific difficulties for the use in ESPON

## Indicator Sheet: Lorry travel times to transport terminals

| | |
|---|---|
| Dimension: | |
| Objective: | Diversified regional economies |
| Sub-objective: | Transport |
| Calculation: | Average travel time by lorry to next transport terminal from each raster cell. Afterwards raster results will be aggregated to NUTS-3 level as weighted average. Transport terminals are defined as intermodal terminals with facilities for the transhipment of trailers, lorries, rail carriages, and semi-trailers from one mode to the other. Thus, transport terminals are constituted by seaports and inland ports, and combined or intermodal terminals. |

**Informational value**

Compared to the second best indicator (Connectivity to transport terminals), this indicator uses a more restricted set of transport terminals (motorway entrances and regular railway stations for passenger transport are, for instance, excluded) and so better represent intermodal facilities for goods transport.

### Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | yes | NUTS 2003 |
| | | |
| Nuts 5 | no | |

**Spatial gaps**

Coastal regions as well as regions along important inland waterways show a good access quality to transport terminals. In this, inland ports serve as gateways for hinterland connections of the big seaports such as Rotterdam or Hamburg. Seaports are particular important for the Nordic countries as gateways for freight transport; however, a clear gradient with decreasing access qualities can also be observed for these countries. Apart from seaports and inland ports, intermodal transhipment terminals are also important for other parts of the countries, such as in Eastern Poland or the transport corridors crossing the Alps (Switzerland, Austria). Over the last years transport terminals became integral part of gloabl logistical chains, with feeder services from/to main seaports or between agglomerations.

# Indicator Sheet: Lorry travel times to transport terminals

### Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | Raster level |

### Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | INTERREG IIIB Baltic Sea |
| **Source** | RRG |

### Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | yes | Average lorry travel times at NUTS-3 level were aggregated from lorry travel time from each 2x2 km raster cell to the nearest transport terminal. |

### Difficulties with the indicator

The set of transport terminals must be properly defined and must be available for the whole of Europe. Reliable database on transport terminals covering the whole of Europe are not available. Furthermore, a detail road network database must be available as well.

### Specific difficulties for the use in ESPON

The indicator calculated in the INTERREG IIIB Baltic Sea project is difficult to use in ESPON as it is calculated for northeast Europe only, i.e. a number of countries are missing: Bulgaria, Cyprus, Greece, Ireland, Italy, Malta, Portugal, Slovenia, Spain, UK.

## Indicator Sheet: Final energy consumption of transport (Mtoe) (NUTS 2)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | Energy |
| Calculation: | |

**Informational value**

This indicator should provide information on the development of the final energy consumption in the transport sector. The indicator takes into account both the traffic volumes (of all modes) (which over the past increased continuously) and the technological improvements towards more frugal motor engines. Whereas the latter aspect is likely to reflect a more general, aspatial development, which can be captured well on national level, the development of transport flows and so of traffic volumes is highly distinct from region to region, which in turn cannot be captured by national indicators. Thus this indicator at national level (see second best indicators) provides an snapshot picture at a glance with basic information, however, it would be desirable to have a similar indicator at more disaggregated level.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Final energy consumption of transport (Mtoe) (NUTS 2)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | 1990, 1995, 2000, 2002 |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 2.1.4 |
| **Source** | DGET, Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | yes | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

As the current indicator is available at country level only, it cannot give any insights into regional deviations and into specific regional patterns. Although some of the aspects influencing this indicator are clearly at national level (for example, such as fuel taxes and other transport costs and taxes, technological development, general transport policies), some other factors are also region-bound such as traffic demand, and the availability and service quality of certain modes of transport. However, as the figures on energy consumption are estimates it is not very likely to have such estimates at regional level.

## Specific difficulties for the use in ESPON

**Indicator Sheet: Modal split passenger transport (car, plane, train) (survey/empirical data)**

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | Transport |
| Calculation: | |

**Informational value**

Compared to the second best indicator, derived from model results, this indicator would be derived from survey and empirical data, assessing the shares of different modes of transport. This indicator should help to assess how automotive-driven a transport system in a particular region is, and what role other modes (rail, air) play. Although it is to be expected that car/lorry mode is dominating in many regions (for many trip purposes), the trains (in agglomerated areas, medium distance business trips) and planes (in Nordic regions, for island region) may also attract a significant share of trips.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Modal split passenger transport (car, plane, train) (survey/empirical data)

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.2.1 |
| Source | Mcrit / Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | Indicator results at regional level modelled using elaborated transport model. |

## Difficulties with the indicator

The available indicator is based on composite model results for passenger transport only, for one point in time. The model results focussed on inter-regional trips, and thus intra-regional trips and short-distance trips are not really taken into account. Consequently, public transport modes other than rail (such as busses and coaches, subway, tram, ferry) and non-motorised modes (walking, cycling) are not considered at all, so as goods transport. As far as passenger transport is concerned, for example in Germany the 'Kontinuierliche Erhebung zum Verkehrsverhalten (KONTIV)' (Continuous Survey on Travel Behaviour) can be used to derive modal split estimates at NUTS-3 level based on sample surveys of households. So far, this survey was conducted in non-periodically in 1976, 1982, 1989 and 2002, allowing to derive time-series comparisons. Potential data sources at European level to derive modal split estimates for European regions is the Dateline project (5th Framework Programme).

## Specific difficulties for the use in ESPON

## Indicator Sheet: Average travel time by car to next three regional cities of more than 50,000 inhabitants

| | |
|---|---|
| Dimension: | |
| Objective: | Balanced distribution of population, wealth, cities |
| Sub-objective: | Transport |
| Calculation: | To calculate the car travel time over road network from each raster cell to the next three regional cities with more than 50,000 inhabitants. Afterwards aggregation of the raster results to NUTS 3 level. |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

**Spatial gaps**

The indicator shows very distinct spatial patterns both at European and national scale. At European scale countries such as Germany, the UK; Italy and the Benelux countries show generally shorter average travel times compared to more peripheral countries such as Portugal, Greece, Ireland or Norway, Sweden and Denmark. On the other hand, all countries also reveal great differences within their territory (for example, coastal areas in Spain and the Madrid region compared to other parts of Spain; or the southern parts of Sweden and Finland compared to the northernmost regions). Both observations reflect (a) the number and spatial distribution of regional cities (> 100,000 inhabitants), but also (b) the density and quality of the road networks to reach them. Assuming that many public, administrative but also private services and jobs are located in regional and main cities, one can conclude that the accessibility level in many parts of Europe is not sufficient

# Indicator Sheet: Average travel time by car to next three regional cities of more than 50,000 inhabitants

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

| | please describe |
|---|---|
| other | Raster level |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON Project 1.2.1, however, data are not available at the present ESPON database. |
| Source | CITERES |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | yes | Indicators calculated based on network model results. |

## Difficulties with the indicator

A city size of about 100,000 inhabitants as used by the second best indicator seems appropriate to take into account the different settlement and city structures in many EU Member States, however, in case of the Nordic countries and also of island regions a lower threshold of about 50,000 would be more suitable. Such smaller cities have, for the regions concerned, important meaning with respect to the provision of public and provate services and infrastructures.

## Specific difficulties for the use in ESPON

**Indicator Sheet: Potential accessibility, multimodal, to population (ESPON space=100)**

| | |
|---|---|
| Dimension: | |
| Objective: | Assets for Global Competitiveness |
| Sub-objective: | Transport |
| Calculation: | Activities (i.e. population) weighted by a function of travel time. For each origin, the destination activities are summed up based on the assumption that the attraction of a destination increases with size and declines with distance or travel time or travel cost. Here reigonal population is used as destination activity. |

**Informational value**

Accessibility indicators of the potential type belong to the most common and most extensively tested accessibility indicators, as they best describe the relationship between transport systems and regional economic development. Accessibility to population is seen as an indicator for the size of the market areas for suppliers of goods and services, while, alternatively, accessibility to GDP is considered as an indicator of the size of market areas for suppliers of high-level business services. In this, both indicators describe assets of global (economic) competitiveness of a region. As these indicators also take the destination activities (and their spatial distribution) into account, they go far beyond the purely travel time indicators.

The indicator can be calculated for individual modes, but can also be calculated multimodal (as done in ESPON 1.2.1). The basic difference to the modal accessibility indicators is that the multimodal indicators integrate the modal indicators into one overall indicator and so indicate the combined effects of alternative transport modes for each location. As the different modes have different importance in different parts of Europe, it is proposed to use the multimodal indicator.

European-wide multimodal potential accessibility indicators have been calculated throughout recent years in a variety of countries. In early years Keeble et al. (1982, 1988) analysed the accessibility of European centres using accessibility of the potential type with GDP as destination activity, and mapped the results in form of contour lines. In a variation, Bruinsma and Rietveld (1992) calculated the potential accessibility of selected European cities to population. Spiekermann and Wegener (1994, 1996) calculated potential accessibility indicators for road and rail on a 10x10km raster basis. Copus (1997, 1998, 1999) developed ‘peripherality indicators’ for the European Commission for NUTS-2 and NUTS-3 regions for road to GDP, where peripherality is considered as the negative notion of accessibility.

## Indicator Sheet: Potential accessibility, multimodal, to population (ESPON space=100)

### Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | yes | NUTS 1999 |
| | | |
| Nuts 5 | no | |

**Spatial gaps**

Regions located in the 'blue banana' ranging from London, the Benelux countries, western Germany to northern Italy show highest potential accessibilities. As a tendency, the further away the regions are located from the 'blue banana' the lower the potential accessibility is, with the remarkable exception of those regions with hub airports. In most cases such regions are the capital regions (for instance, Roma, Prague, Vienna/Bratislava, Budapest, Copenhagen/Malmoe, Warsaw). Even in areas with generally poor accessibility far below European average (such as Baltic countries, Bulgaria, Romania, Portugal, Greece, Nordic regions), such regions experience above-average accessibilities (see, for example, Sofia and Bucarest, Riga, Tallin, Lisbon, Helsinki) as the benefit from good flight connections to other parts of Europe.

# Indicator Sheet: Potential accessibility, multimodal, to population (ESPON space=100)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 1.2.1 |
| **Source** | S&W |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | yes | Indicator calculated by network/accessibility model based on shortest route algorithms. Necessary base data are: Transport networks (road, rail, air), NUTS-3 region centroids (point layer), population figures (destination activities) at NUTS-3 level. |

## Difficulties with the indicator

---

## Specific difficulties for the use in ESPON

# Indicator Sheet: Number of people injured and number of people killed in transport per inhabitant

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | Social issues |
| Calculation: | Number of people injured devided by regional population and number of people killed devided by regional population |

**Informational value**

In addition to the second best indicator, this wishlist indicator not only keeps track of people injured or killed in road transport but in all modes of transport, including railways, flight transport and shipping. Nevertheless, road transport will remain the main mode to consider.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 2003 |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Number of people injured and number of people killed in transport per inhabitant

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | annual |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | Eurostat Regio Database |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | yes | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

The present indicator available at Eurostat´s Regio database entails two main difficulties: (i) the amount of gaps, (ii) it only contains road transport but not all modes of transport. Thus it is proposed to extend the scope of the indicator to the other modes as well, although road transport remains the most important one.

## Specific difficulties for the use in ESPON

## Indicator Sheet: Proportion of households with internet access (%)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | ICT |
| Calculation: | Proportion of households with internet/broadband access as share of all households in a region. |

**Informational value**

Although there is still no clear empirical evidence whether ICT tends to decrease or increase transport demand (both for passenger and goods transport), it is undisputed that the ICT sector belongs to the economically most dynamic sectors, and also that ICT puts extremely high demand to logistical chains and so influences the transport system to a high degree. Therefore it is quite important to analyse the access of households and firms to the internet and broadband on regional level. Unfortunately it is difficult to find reliable data at the regional level, however, the data gathered in ESPON 1.2.2 at NUTS-2 level provide a good starting point. As other examples in ESPON 1.2.2 have shown (samples from Finland), it is extremely important to collect data at the most disaggregated level as possible.

### Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | yes |
| EU 15 | no |
| EU 10 | no |

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

**Spatial gaps**

The map clearly shows an north-south band of regions with high proportions of households with internet access. Regions with proportions of more than 45 % in a band stretching from Norway and Sweden, via Denmark, Netherlands and Germany to Austria in the south. In addition, some regions in the UK and Ireland also show a high proportion, so as the Helsinki region. Other regions west and east of this band have significant lower proportion of households with internet access, with many parts in Spain, Portugal, Greece, southern Italy, the Baltic countries, Czech Republic and Slovakia having only small proportions of less than 20 %.

# Indicator Sheet: Proportion of households with internet access (%)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 1.2.2 |
| **Source** | CEIDET |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | estimated figures based on samples derived from surveys |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

----

## Specific difficulties for the use in ESPON

## Indicator Sheet: People within 50 km distsance ('regional population potential)'

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable settlement structures |
| Sub-objective: | Transport |
| Calculation: | Sumnation of all people living within 50 km airline distance (as the crow flies) from any given origin, standardised at the European average (for ESPON space). |

**Informational value**

This indicator is not only measuring the population of one region, but also the population potential within 50 km. Thus, it provides an indication of the size of the market area for economic activities and for the provision of public services. Unlike the potential accessibility indicator, which can also be interpreted as an pan-European measure of market areas, this indicator focuses on local and regional market areas. Regions with extremely low population potentials are expected to have difficulties to attract firms and private services, but also to maintain public infrastructures (as local and regional demand is missing). For this reason this indicator was used by Nordregio to delimitate sparsely populated areas in the Nordic countries.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | yes | |

**Spatial gaps**

The map clearly reveals the 'blue banana' as the area in Europe with the highest population potential, ranging from Liverpool/Manchester and London via Benelux countries, western Germany to northern Italy. Otherwise the national capital regions, and agglomerated areas stand out with high population potentials. On the other hand, not only regions in the Nordic countries, in ther Baltic countries, in Scotland, Ireland and Greece, and on the Iberian Peninsula, as expected, experience low population potentials far below the European average, but also regions in southern and central parts of France, in northern Italy, Switzerland and Austria, as well as areas in Northern Denmak and western Poland suffer from low regional population potentials.

# Indicator Sheet: People within 50 km distsance ('regional population potential)'

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | Nordregio, Study on sparsely populated areas |
| **Source** | RRG |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | yes | Indicator calculated based on statistical population figures for NUTS 5 entities |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Land consumption by transport infrastructure (statistical data)

| | |
|---|---|
| Dimension: | |
| Objective: | Sustainable transport and energy |
| Sub-objective: | Environment |
| Calculation: | Proportion of region area consumed by transport infrastructure (road and railways, port areas, airports) in % of total region area. |

**Informational value**

As transport demand of all modes is constantly growing year by year, the land occupied by transport infrastructure is also constantly growing. For some regions the (annual) increase of transport infrastructures is significant, so it is a matter of concern to analyse in which regions and to which degree transport developments take place. Furthermore, it is interesting to analyse the relation between the increase of the settlement areas (or built-up areas) as a whole and the transport areas in particular.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| **EU 25+2+2** | yes |
| **EU 25** | no |
| **EU 15** | no |
| **EU 10** | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| **Nuts 1** | no | |
| **Nuts 2** | no | |
| **Nuts 3** | yes | NUTS 1999 |
| | | |
| **Nuts 5** | no | |

# Indicator Sheet: Land consumption by transport infrastructure (statistical data)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | 10 years (1990 and 2000) |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 3.1 |
| **Source** | CORINE 2000 (EEA) |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | yes | CORINE raster data overlaid with NUTS-3 region boundaries |
| **model** | no | |

## Difficulties with the indicator

The advantage of using statistical data instead of CORINE data is that the obstacles caused by the resolution of the CORINE data could be solved, so that all areas occupied by transport infrastructures are taken into account (even the smallest ones). So, compared to CORINE, the proportion of land consumed by transport infrastrucutres will not be underestimated. A second benefit of using statistical data would be that relevant data would be available annually (or bi-annually), instead of 10-years updating periods as in case of CORINE, thus enabling analysts to keep track of land use developments in much shorter periods.

## Specific difficulties for the use in ESPON

### 4.3.4 Conclusion / Short resume on the proposed key transport indicators

Ten key infrastructure and accessibility indicators are suggested, addressing different policy goals of the indicator matrix. The suggested indicators address policy objectives such as the balanced distribution of population, wealth and cities, as well as sustainable settlement structures. Two further indicators are proposed to measure global competitiveness and diversified regional economies, while four indicators focus (but are not limited to) sustainable transport and energy. A final indicator tries to capture the notion of socially inclusive society and space. Special concern was also given to ensure that the proposed indicators are not overlapping each other (i.e. double-counting same or similar measures).

In case of three out of ten of these key indicators, the ideal indicator already is available (these are: (i) Potential accessibility to population, multimodal, ESPON space = 100; (ii) Proportion of households with internet access; (iii) People within 50 km distance (regional population potential)).

In case of further two indicators one would call for slightly modified indicators. These modifications are to use a threshold of 50,000 instead of 100,000 inhabitants for the indicator “Average travel time by car to next three regional cities” and to replace the CORINE database by statistical data when calculating the “Land consumption by transport infrastructure”.

Similarly, the current ESPON database includes already base data to calculate the “Modal split in passenger transport”, however, as these base indicators were derived from transport model it would be good to replace the data source by surveyed or empirical data. To do this possible pan-European (such as Dateline) or national (such as KONTIV for Germany) alternative data sources still need to be explored.

The currently available ICON index (indicator “Connectivity to transport terminals”) can be used as the second best indicator to describe potentials freight transport, however, it should be replaced by “Lorry travel times to transport terminals”.

The final two key indicators are somewhat problematic. Both address issues of sustainable transport. Currently the indicator “Final energy consumption by transport” is available at country level only; it should be further evaluated whether it is possible to gather this indicator for more disaggregated levels (such as NUTS-2). The indicator “Number of people injured and number of people killed by road transport per inhabitant” is generally already available at regional level (NUTS-2), but with a lot of data gaps in the Eurostat database, so that is hardly possible to construct consistent time series. Apart from this it should further be elaborated whether or not this indicator could be extended to take account of all modes, and not just road transport.

### 4.3.5 Next steps/ Further work until final report

Until the final report the following tasks still have to be done:

- coordination of the proposed indicators with other WPs in order to avoid overlaps, to fill any potential key indicator gap, and to elaborate indicator definitions;
- to take account of any comments and suggestions on the first interim report;
- to make a final decision on the key indicators;
- to add missing maps and statistical information on the selected key indicators;
- to describe the regional distribution of the key indicators and to prepare the indicator presentation for the tentative spatial monitoring report (i.e. to draw policy conclusions from the indicator);
- to develop (technical) recommendations for the integration and for the future update of the key indicators into a spatial observatory.

### 4.3.6 Sources

**Data sources**

The following data sources were eventually used to feed the proposed key indicators:

- ESPON Database (vers. May 2006)
- Eurostat Regio Database
- CORINE 2000 Dataset (EEA 2005)
- INTERREG IIIB Baltic Sea Project
- Nordregio study on sparsely populated areas

## References

BBR – Bundesamt für Bauwesen und Raumordnung (2005): *Raumordnungsbericht 2005.* Berichte 21. Bonn: BBR.

Bruinsma, F.; Rietveld, P. (1992): *Stedelijke Agglomeraties in Europese Infrastruktuurnetwerken.* Werkstukken 27. Amsterdam: Stedelijke Netwerken.

Copus, A.K. (1997): *A New Peripherality Index for European Regions.* Report prepared for the Highlands and Islands European Partnership. Aberdeen: Agricultural and Rural Economics Department, Scottish Agricultural College.

Copus, A.K. (1998): *Peripherality and peripherality indicators*. Paper for the Indicators of Northern Peripherality Workshop. Nordregio, Stockholm, 7 November 1998.

Copus, A.K. (1999): *Peripherality and peripherality indicators*. North. The Journal of Nordregio 10, 1, 11-15.

Copus, A. (2001): From Core-periphery to Polycentric Development: Concepts of Spatial and Aspatial Peripherality. *European Planning Studies* 9, 4, 539-552.

EEA - European Environmental Agency (2005): Corine land cover (CLC2000) 250m – version 06/1999. http://dataservice.eea.eu.int/dataservice/metadetails.asp?id= 188. Copenhagen: EEA.

ESPON 1.2.2 (2005): Final Report.

ESPON 2.1.4 (2005): Final Report.

ESPON 3.1 (2005): Final Report Part C.

Geurs, K.T.; Ritsema van Eck, J.R. (2001): *Accessibility Measures: Review and Applications. Evaluation of Accessibility Impacts of Land-use Transport Scenarios and Related Social and Economic Impacts.* Bilthoven: RIVM.

Gløersen, E.; Dubois, A.; Copus, A.; Schürmann, C. (2005): *Northern Peripheral, Sparsely Populated Regions in the European Union.* Nordregio Report 2005:4. Stockholm: Nordregio.

Keeble, D., Offord, J.; Walker, S. (1988): *Peripheral Regions in a Community of Twelve member states.* Luxembourg: Office for Official Publications of the European Communi-ties.

Keeble, D., Owens, P.L.; Thompson, C. (1982): Regional accessibility and economic potential in the European Community, *Regional Studies* 16, 419-432.

Mathis, P.; Bock E.; Buguellou J.-B.; Coquio, J.; Guimas, L.; L'hostis, Al.; Bozzani, S.; Font, M.; Ulied, A.; Reynaud, C.; Decoupigny, C.; Manfredini, F.; Pucci, P.; Spiekermann, K.; Wegener, M. (2004): *Transport Services and Networks:*

*Territorial Trends and Basic Supply of Infrastructure for Territorial Cohesion.* Final Report ESPON Project 1.2.1.

Schürmann, C.; Spiekermann, K.; Wegener, M. (1997): *Accessibility Indicators*. Berichte aus dem Institut für Raumplanung 39. Dortmund: IRPUD.

Schürmann, C.; Spiekermann, K. (2006): *Accessibility Analysis of the Baltic Sea Region. Final Report (forthcoming).* Study for the BSR INTERREG IIIB Joint Secretariat. Dortmund/Oldenburg: S&W/RRG.

Schürmann, C.; Talaat, A. (2000): *Towards a European Peripherality Index. Final Report.* Berichte aus dem Institut für Raumplanung 53. Dortmund: IRPUD.

Spiekermann, K.; Neubauer, J. (2002): *European Accessibility and Peripherality: Concepts, Models and Indicators.* Nordregio WP 2002:9. Stockholm: Nordregio.

Spiekermann, K.; Wegener, M. (1994): The shrinking continent: new time-space maps of Europe. *Environment and Planning B: Planning and Design* 21, 653-673.

Spiekermann, K.; Wegener, M. (1996): Trans-European networks and unequal accessibility in Europe. *European Journal of Regional Development* (EUREG) 4/96, 35-42.

Wegener, M.; Eskelinen, H.; Fürst, F.; Schürmann, C.; Spiekermann, K. (2001): *Criteria for the Spatial Differentiation of the EU Territory: Geographical Position. Study Programme on European Spatial Planning*. Forschungen Heft 102.2. Bonn: BBR.

## 4.4 Gothenburg

### 4.4.1 Introduction

In 2001 the European Commission agreed upon a long-term EU strategy on sustainable development, commonly known as the “Gothenburg Strategy”. This strategy provides a policy framework for a sustainable development, i.e. to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. The strategy rests on three separate pillars - economic, social and environmental - which need to reinforce one another to ensure sustainable development. The economic, social and environmental implications of all sectoral policies thus need to be examined in a coordinated manner and taken into account when those policies are being drawn up and adopted.

The Gothenburg Strategy adds a third, environmental dimension to the Lisbon Strategy (see chapter 4.2), that initially had a main focus on economic renewal and social issues related to that, i.e. education, employment, social inclusion. It is designed to be a catalyst for policy makers and public opinion, to change society's behaviour. As such, it is built around cross-cutting proposals, measures to achieve long-term objectives and effective preparation and monitoring of policies. Member states are to draw up national strategies for sustainable development and have to review their progress in the field.

The Gothenburg Strategy identifies six unsustainable trends on which action needs to be taken: poverty and social exclusion, the implications of an ageing society (already covered by the Lisbon Strategy), climate change, health, natural resources, transport. The long-term objectives accordingly include (among others) limiting climate change, limiting major threats to public health, food safety and quality, removing threats to the environment posed by chemicals, a more responsible management of natural resources, limiting the adverse effects of transport and reducing regional disparities. These objectives are all in line to a high degree with the overall aims of the European Spatial Development Perspective (ESDP).

In correspondence to these trends and objectives, the Gothenburg Strategy’s aims cover a wide range of topics which can add up to altogether 10 thematic fields. A hierarchical thematic framework was developed on the basis of the policy priorities of the Sustainable Development Strategy. The 10 themes, which may be further developed in the future, are[7]:

1. Economic development

---

[7] A Sustainable Europe for a Better World: A European Strategy for Sustainable Development. COM (2001) 264

2. Poverty and social exclusion

3. Ageing society

4. Public Health

5. Climate change and energy

6. Production and consumption patterns

7. Management of natural resources

8. Transport

9. Good governance

10. Global partnership

In order to be able to monitor the implementation of the political priorities incorporated in the Gothenburg Strategy, a comprehensive list of indicators was drawn up by a group of national experts. The list takes the form of a hierarchical framework of 12 headline indicators (corresponding to the main sustainable development themes identified at European and international level), 45 core policy indicators (corresponding to the key objectives of each theme) and 98 analytical indicators (corresponding to measures implementing the key objectives).[8]

Based on these indicators the EU Commission reviews the progress in implementing the Gothenburg Strategy every two years. In addition, an assessment of the achievements has to be made at each spring European Council. Against this background, the Commission's system of indicators and their regular analysis can be understood as a monitoring system for sustainable development in the EU. However, as with many other thematic areas too, the data availability for these indicators is often a problem and can be seen as the limiting factor in monitoring sustainable development.

Apart from the EU Commission's set of indicators for the whole of the EU, several member states developed their own sets of indicators to be in a position to review their efforts towards a sustainable development within their respective country (e.g. Sweden, Norway, Germany). Within some countries research institutes, regions and/or local authorities developed yet other sets of "sustainability indicators".

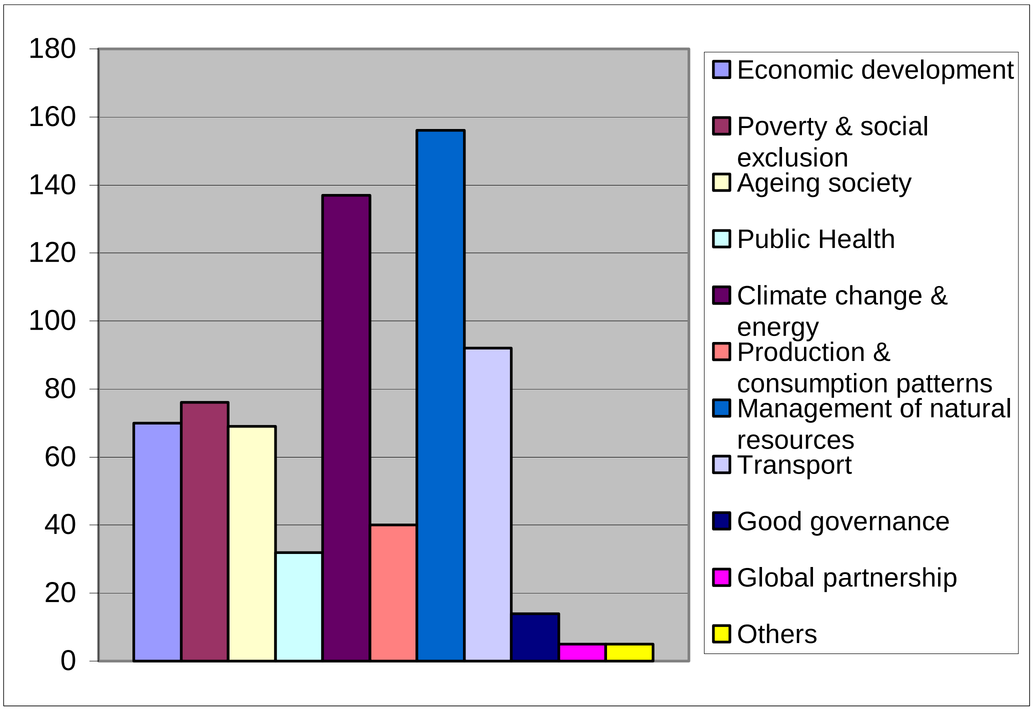
[8] Sustainable development indicators to monitor the implementation of the EU sustainable development strategy SEC (2005) 161

### *List of key indicators*

As there are quite a number of indicator sets to measure and assess the implementation of sustainable developement on different levels, the sources of information for this work package are abundant. Obviously, ESPON Project 3.3 analysing the territorial dimension of the Lisbon/Gothenburg Process, was a key source of information in this respect. As cross-cutting and multidimensional overall concept, the Gothenburg Strategy touches upon a variety of topics. Therefore a large number of other ESPON projects (see list below) were scrutinised for proposed or used indicators that might be appropriate for measuring individual aspects of the Gothenburg Strategy. In addition to the ESPON Programme, we also looked for existing indicator sets and monitoring systems for sustainable development in selected countries (e.g. Germany, Norway, Sweden). All in all we analysed 26 different approaches, most of them dealing with the concept of Sustainable Development, only one specifically dealing with the Gothenburg Strategy. It needs to be pointed out that the majority of approaches (21) are ESPON projects.

The indicators from these different sources were all added into an Excel-sheet in order to be able to detect overlaps and to get a general overview of the diversity of indicators. At this point in time, we have altogether 696 different indicators covering the ten themes of the Gothenburg Strategy. The following figure reveals the distribution of the collected indicators over the ten themes:

**Figure 4-2 Gothenburg Indicators**



Even though the collection of indicators for this work package cannot be considered to be representative, some interesting observations can be made. Those themes, where by far the largest number of indicators could be found for, are “Management of natural resources” (156) and “Climate change and energy” (137). Apparently, the environmental pillar of the Gothenburg Strategy is predominantly covered with indicators. However, this observation does not come as a big surprise, given that the strategy incorporates a range of policy sectors that in themselves are dealt with in separate chapters in this report (e.g. the Gothenburg theme “Good governance” will be more thoroughly analysed in chapter 4.6 on Governance). Furthermore, the Gothenburg Strategy is to be seen as an amendment to the Lisbon Strategy, to which it adds an environmental dimension. Therefore a predominance of indicators in the rather environmental themes seems to be explicable.

In spite of the large number of indicators we compiled, there are only very few overlaps of indicators from different sets. This holds particularly true when comparing indicators from the German sources we looked into with those from the Nordic Council and from Sweden and Norway. Therefore it seems that even though the principles of sustainable development, incorporated in the Gothenburg Strategy, are widely accepted, the indicators to assess the implementation of the concept tend to differ.

Those overlaps that can be identified largely occur within the ESPON Programme, i.e. different ESPON projects make use of the same indicator. Obviously, synergies were used here, which is also within the logic of the programme. In fact, the co-ordinating cross-thematic projects are set up just for this purpose, to evaluate the results of other ESPON projects and integrate them to facilitate drawing conclusions for territorial development.

Going through the collection of indicators for each Gothenburg theme there is often one indicator per theme that seems to be more widely used as others. For some themes, though, there is no one indicator particularly standing out, i.e. in the fields “Public Health”, “Transport”, and above all “Good governance”. The latter theme stands out as being least covered by indicators within the ESPON Programme. Chapter 4.6 on Governance will further expand on this issue. For “Global partnership” no overlaps of indicators from different sources could be made out at all. However, this theme is generally covered by only very few indicators (see figure above). The table below contains the indicators that appeared most often in those Gothenburg categories, where a clear predominance of one or more indicators could be observed.

**Table 4-5 Selected indicators for Gothenburg**

| Gothenburg Theme | Prevalent Indicator | No. of occurences in analysed sources |
|---|---|---|
| Economic development | GDP PPS per capita<br>Labour productivity (GDP/hour worked) | 10<br>6 |
| Poverty & Social Exclusion | Unemployment rate 2000 | 4 |
| Ageing Society | Population by age group<br>Total fertility rate<br>Natural population development<br>Total population development | 6<br>4<br>4<br>4 |
| Climate Change & Energy | Emission of greenhouse gasses in CO2 equivalents and in relation to level of activity (GNP) - broken down on CO2, N2O, CH4, PFC, SF6 / broken down on transport, household, industry | 4 |
| Production & Consumption Patterns | No. of area of organic farms (by crop type (arable crops, horticulture, grassland, other)) | 5 |
| Management of natural resources | Agricultural output per hectare | 4 |

This list of indicators can only be considered as a provisional suggestion at this point in time. Further research towards the final report might bring about some changes.

The Gothenburg indicators included in the table above were then, in a first preliminary and rather rough process, checked against the criteria of the filtering process (i.e. Explanatory power, Availability, Regional dimension, Practicability). On this basis, the team responsible for this work package agreed to drop some indicators that actually showed a large number of overlaps and replace them by others of the complete indicator list. These other indicators, that were eventually included in the indicator sheets represented below were considered to have a better explanatory power and to serve better the purpose of representing a comprehensive thematic field.

### 4.4.2 Raw List Indicators

## Indicator Sheet: Gini-coefficient

| | |
|---|---|
| Dimension: | Socially inclusive society and space |
| Objective: | Maintaining and improving economic equality |
| Sub-objective: | Improving income equality |
| Calculation: | The Gini-coefficient represents the area of concentration between the Lorenz curve and the line of perfect equality as it expresses a proportion of the area enclosed by the triangle defined by the line of perfect equality and the line of perfect inequality. The closer the coefficient is to 1, the more unequal the distribution. |

**Informational value**

The Gini coefficient's main advantage is that it is a measure of inequality by means of a ratio analysis, rather than a variable unrepresentative of most of the population, such as per capita income or gross domestic product. It can be used to compare income distributions across different population sectors as well as countries, for example the Gini coefficient for urban areas differs from that of rural areas in many countries.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | yes |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Gini-coefficient

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | annually |
| **periodicity (i.e. available years, please describe):** | from 1995 |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 1.4.2 |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

missing entities and missing years

## Specific difficulties for the use in ESPON

## Indicator Sheet: Inequality of regional income distribution

| | |
|---|---|
| Dimension: | Socially inclusive society and space |
| Objective: | Achieving economic equality |
| Sub-objective: | Achieving economic equality through wage ajustment in all regions |
| Calculation: | The ratio of total income received by the 20 % of the population with the highest income (top quintile) to that received by the 20 % of the population with the lowest income (lowest quintile). Income must be understood as equivalised disposable income. |

**Informational value**

The indicator provides information about regional income patterns and thereby about the ecomic structure of a region.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

no data available for Switzerland

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Inequality of regional income distribution

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | yes |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | see n. 13 |

| | please describe |
|---|---|
| other | NUTS version 1999 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON project 3.3 |
| Source | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | yes | |
| model | no | |

## Difficulties with the indicator

Data is available for 2003; exceptions: 2002: FR, LV, LT, HU, NL, PL, SI, SE, BG, RO; 2001: IT; 2000: MT

## Specific difficulties for the use in ESPON

## Indicator Sheet: Funds for poverty and aging (regional expenditure in pps per capita)

| | |
|---|---|
| Dimension: | Socially inclusive society and space |
| Objective: | Reducing poverty |
| Sub-objective: | Reducing poverty by public means |
| Calculation: | |

**Informational value**

The indicator provides information about the governmental interest to reduce poverty.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

No data available for BG, CH, CZ, LT, RO

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Funds for poverty and aging (regional expenditure in pps per capita)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | NUTS 0 (version 1999) |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 3.3 |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

Original data are at NUTS 0 level. The regional share of GDP has been used to draw the map at NUTS 2 level

## Specific difficulties for the use in ESPON

## Indicator Sheet: Total migratory balance

| | |
|---|---|
| Dimension: | Balanced distribution of population, wealth, cities, etc. |
| Objective: | Avoiding declining population |
| Sub-objective: | Supporting a positive migratory balance |
| Calculation: | Total migratory balance is calculated by the sum of external migratory balance and internal migratory balance. |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Total migratory balance

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 3.2 |
| **Source** | |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | yes | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Energy intensity of the economy (Gross inland consumption of energy divided by GDP)

| | |
|---|---|
| Dimension: | Sustainable transport and energy |
| Objective: | Achieving sustainable economy |
| Sub-objective: | Reduction of the ratio gross inland consumption of energy divided by GDP |
| Calculation: | Energy intensity is measured as gross inland consumption of energy divided by GDP at constant prices and indiced on 1996. The original unit is<br><br>kgoe (kilogram of oil equivalent) per 1000 Euro. The data is aggregated from five types of energy (coal, electricity, oil, natural gas and renewable<br><br>energy source) and four sectors of inland consumption (production, storage, trade and consumption/use of energy). |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Energy intensity of the economy (Gross inland consumption of energy divided by GDP)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | 1999-2001 |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 3.3 |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | yes | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Greenhouse Gas Emissions

| | |
|---|---|
| Dimension: | Sustainable transport and energy |
| Objective: | Protecting the environment |
| Sub-objective: | Counteracting climate change by reduction of emissions |
| Calculation: | |

**Informational value**

The indicator provides information about the compliance with the Kyoto Protocol.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| **EU 25+2+2** | no |
| **EU 25** | no |
| **EU 15** | no |
| **EU 10** | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| **Nuts 1** | no | |
| **Nuts 2** | no | |
| **Nuts 3** | no | |
| | | |
| **Nuts 5** | no | |

# Indicator Sheet: Greenhouse Gas Emissions

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | 1990, 1995, 2000, 2002 |

| | please describe |
|---|---|
| **other** | NUTS 0 (version 1999) |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 3.2 |
| **Source** | |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Energy inland consumption

| | |
|---|---|
| Dimension: | Sustainable transport and energy |
| Objective: | Reducing energy consumption |
| Sub-objective: | |
| Calculation: | Energy inland consumption is calculated by the consumption of solid fuels, oil, gas nuclear, renewables and others. |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Energy inland consumption

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | 1990, 1995, 2000, 2002 |

| | please describe |
|---|---|
| other | NUTS 0 (version 1999) |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON project 3.2 |
| Source | |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | yes | |
| model | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Municipal waste generated NUTS0*(Population NUTS 2/Population NUTS0)

| | |
|---|---|
| Dimension: | Healthy environment and hazard prevention |
| Objective: | Improving environmental quality |
| Sub-objective: | |
| Calculation: | Municipal waste generated*share of national population |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

Original data are at NUTS0 level. The regional share of population has been used to draw the map at NUTS2 level

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Municipal waste generated NUTS0*(Population NUTS 2/Population NUTS0)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | yes |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | 2002; exceptions: EE, PL 1998; BE 1999; CH, IE,LU, NO, UK 2000; AT, ES, FR, MT, PT, SE 2001 |

| | please describe |
|---|---|
| **other** | NUTS 0 (version 1999) |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 3.3 |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | yes | |
| **model** | no | |

## Difficulties with the indicator

Original data are at NUTS0 level. The regional share of population has been used to draw the map at NUTS2 level

## Specific difficulties for the use in ESPON

## Indicator Sheet: Natural Areas

| | |
|---|---|
| Dimension: | Healthy environment and hazard prevention |
| Objective: | Protecting the environment |
| Sub-objective: | Maintaining and improving connected natural areas |
| Calculation: | |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Natural Areas

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 3.1 |
| **Source** | Corine |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

# Indicator Sheet: Total health expenditure per capita, US$ PPP

| | |
|---|---|
| Dimension: | Assets for global competitiveness |
| Objective: | Increasing life expectancy |
| Sub-objective: | Maintaining and improving medical care |
| Calculation: | |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

No data available for Estonia, Latvia, Lithuania, Malta, Slovenia, Cyprus, Romania, Bulgaria

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Total health expenditure per capita, US$ PPP

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | 5 years until 2000, annually after 2000 |
| periodicity (i.e. available years, please describe): | 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2001, 2002, 2003 |

| | please describe |
|---|---|
| other | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON project 1.4.2 |
| Source | OECD Factbook 2005 |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Practising physicians Density per 1.000 inhabitants

| | |
|---|---|
| Dimension: | Balanced distribution of population, wealth, cities, etc. |
| Objective: | Increasing life expectancy |
| Sub-objective: | Maintaining and improving medical care |
| Calculation: | The number of physicians, general practitioners and specialists (including self-employed) who are actively practicing medicine in public and private institutions. The data should exclude dentists, stomatologists, qualified physicians who are working abroad, working in administration, research and industry positions. Data should include interns and residents, and foreign physicians licensed to practice and actively practicing medicine in the country. |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

No data available for Estonia, Latvia, Lithuania, Malta, Slovenia, Cyprus, Romania, Bulgaria

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Practising physicians Density per 1.000 inhabitants

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | 10 years until 2000, annually after 2000 |
| **periodicity (i.e. available years, please describe):** | 1960, 1970, 1980, 1990, 2000, 2001, 2002, 2003 |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 1.4.2 |
| **Source** | OECD Factbook 2005 - Health Data |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

## Indicator Sheet: Public expenditure on health

| | |
|---|---|
| Dimension: | Assets for global competitiveness |
| Objective: | Increasing life expectancy |
| Sub-objective: | Maintaining and improving medical care |
| Calculation: | |

**Informational value**

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| **EU 25+2+2** | yes |
| **EU 25** | no |
| **EU 15** | no |
| **EU 10** | no |

**Spatial gaps**

No data available for Estonia, Latvia, Lithuania, Malta, Slovenia, Cyprus, Romania, Bulgaria

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| **Nuts 1** | no | |
| **Nuts 2** | no | |
| **Nuts 3** | no | |
| | | |
| **Nuts 5** | no | |

# Indicator Sheet: Public expenditure on health

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | 5 years until 2000; annually after 2000 |
| **periodicity (i.e. available years, please describe):** | 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2001,2002, 2003 |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 1.4.2 |
| **Source** | OECD Factbook 2005 - Health Data |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

### 4.4.3 Wish List Indicators

## Indicator Sheet: Change of the GDP pps per Capita from 1995 to 1999

| | |
|---|---|
| Dimension: | Diversified regional economies |
| Objective: | Diversified regional economies |
| Sub-objective: | Economic development |
| Calculation: | GDP per capita in Purchasing Power Standards (PPS) |

**Informational value**

GDP, and thus per capita GDP, are indicators of a country's total economic activity, and are therefore a way of measuring

and comparing the degree of economic development of countries. GDP is not synonymous with the income ultimately

available to private households in a country. EU Member States are currently adapting their national accounts to comply with

methodological improvements agreed upon internationally.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | yes |
| EU 15 | yes |
| EU 10 | yes |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | yes | NUTS 1999 |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Change of the GDP pps per Capita from 1995 to 1999

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | every year |
| **periodicity (i.e. available years, please describe):** | 1995, 1996, 1997, 1998, 1999 |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON projects 1.1.2, 1.1.3, 2.1.3 |
| **Source** | INE, Eurostat Regio, Norway and Switzerland: National Statistical Offices |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | measurement of national price differences through recalculation in purchasing power parities |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

no final answers to Socio-economic impacts:
Can we identify a stable impact of transport and ICT policies on GDP and economic welfare?
Are there network effects, i.e. is the impact of large policy programmes greater than the sum of the impacts of the development of individual links?
Is GDP per capita sufficient as a measure of regional well-being, or should more meaningful indicators of quality of life be included in the analysis?

## Specific difficulties for the use in ESPON

limited data availability at NUTS3 level

## Indicator Sheet: Population by age group

| | |
|---|---|
| Dimension: | Assets for global competitiveness |
| Objective: | Balanced demographic development |
| Sub-objective: | |
| Calculation: | national population by age groups:<br>share of children (0-14 years/total population),<br>ageing population (65+ years/total population),<br>ageing labour force (55-64 years/20-64 years),<br>labour force replacement ratio (10-19 years/55-64 years),<br>postactive dependency ratio (65+ years/20-64 years),<br>dependency ratio (total population/20-64 years),<br>aged vs. youth (65+ years/15-24 years) at the NUTS2 level.<br>It is also possible to calculate the active population (15-64 years old) at NUTS3-level. |

**Informational value**

To show structural changes (increase or decline) in population for several age groups.

### Description of current status of the indicator

# Indicator Sheet: Population by age group

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | every year |
| **periodicity (i.e. available years, please describe):** | For the old 15 member countries the NewCronos REGIO-database claims to have data at NUTS2-level for the period 1980-2001, and for the candidate countries (all except Cyprus and Malta) claims to have data at NUTS2- and NUTS3-level for the period 1990-2001 |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON projects 1.1.2, 1.1.4, 1.2.3, 3.1, 3.2 |
| **Source** | New Cronos Regio-Database |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

Missing data for different age-groups result in difficulties to calculate the share of the population over the age of 80.
Troublesome that the REGIO-database as well as most of the national statistics offices in the new member countries only publish an agegroup of 70+ years: it is impossible to calculate the share of the total population that is over the age of 80 due to this.
Some entities missing in the UK before 1993, and some entities are missing in Germany for areas in the former DDR for the period before 1991.
No data for Cyprus, Malta, Norway and Switzerland.

## Specific difficulties for the use in ESPON

limited data availability at NUTS3 level

**Indicator Sheet: Socio-demographic performance ratios (ageing, dependency, sex composition, labour market pressure, educational level)**

| | |
|---|---|
| Dimension: | Assets for global competitiveness |
| Objective: | Reducing social exclusion |
| Sub-objective: | |
| Calculation: | Ageing population 65+ years/total population |
| | Ageing labour force 55-64 years/20-64 years |
| | Dependency ratio (total population/population 20-64 years) |
| | Population sex ratio. Number of males per 100 females in the population. |

**Informational value**

Dependency ratio:The ratio between the population considered to be dependent (below 15 years of age and 65 years and over), and the working-age population (15-65 years)

Sex composition ratio: Ratio between men and women in a population. Sex ratio at birth refers to the number of newborn boys per 100 girls.

Labour market pressure ratio: analyses the labour market responses to population ageing and also mentions other socio-demographic changes, especially regarding the contribution of women to future efforts at raising participation in work

## Description of current status of the indicator

**Indicator Sheet: Socio-demographic performance ratios (ageing, dependency, sex composition, labour market pressure, educational level)**

### Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | every year |
| **periodicity (i.e. available years, please describe):** | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999 |

| | please describe |
|---|---|
| **other** | |

### Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 1.1.4 |
| **Source** | New Cronos Regio-Database, various national statistic bureaus, Norway and Switzerland: National Statistical Offices |

### Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

### Difficulties with the indicator

The dependency ratio only tells the ratio between the total population and the number of persons in the age group 20-64. If the female labour force participation rate doubles or triples will have no effect on the dependency ratio, although the number of persons in the work force increases significantly.

### Specific difficulties for the use in ESPON

limited data availability at NUTS3 level

## Indicator Sheet: modal split (passenger and freight)

| | |
|---|---|
| Dimension: | Sustainable transport and energy |
| Objective: | Promotion of use of public transport and alternatives to road transport for freight |
| Sub-objective: | |
| Calculation: | The number of km per person per road by obligated (business) trips has been calculated for all<br><br>NUTS2 of the ESPON space. |

**Informational value**

Modal split is the division of travel into the various transportation modes. Transportation modes include walking, bicycling, transit, and using a vehicle (either as a driver or passenger).

Modal Split or Modal Share are terms used to characterize the proportion or percentage of travel using various modes. When a number is cited it is usually the percentage of travelers using transit.

These indicators relate to various times of day, locations, and segments of travelers.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | yes |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | yes | NUTS 1999 |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: modal split (passenger and freight)

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON project 1.2.1 |
| Source | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

Freight transport: Data are assignment at the Nuts 2 level without Bulgaria and Romania.
Freight rail transport: Data provided by the railway companies being incomplete.
data of flows from main ports and airports and traffics (of freight and passengers) between airports had not been available.

## Indicator Sheet: Accessibility rail / road / air travel and rail / road freight

| | |
|---|---|
| Dimension: | Assets for global competitiveness |
| Objective: | Improving accessibilty |
| Sub-objective: | |
| Calculation: | |

**Informational value**

Accesssibility includes information about travel and freight from an origin to a destination:

- Connection (of a given quality available)

- Travel time under a certain limit

- Generlised cost (weighted sum of all resources consumed which are considered by the user) under a certain limit

- Number of municipalities, which can be reached according to one of the criteria above

- Sum of activities, which can be reached according to one of the criteria above

- Sum of weighted activities (potentials)

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | yes |
| EU 25 | no |
| EU 15 | yes |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | yes | NUTS 1999 |
| Nuts 3 | yes | NUTS 1999 |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Accessibility rail / road / air travel and rail / road freight

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | yes |
| | |
| **updated data (please describe intervals):** | intervall of 5 years |
| **periodicity (i.e. available years, please describe):** | 1981, 1986, 1991, 1996 |

| | please describe |
|---|---|
| **other** | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON project 2.1.1 |
| **Source** | SASI model |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

gaps in the available data

**Indicator Sheet: Urban sprawl (as a composite of three subindicators: Urban Growth (1990 - 2000), Growth of residential areas (1990 - 2000), Growth of Industrial Areas (1990 - 2000)**

| | |
|---|---|
| Dimension: | Balanced distribution of population, wealth, cities, etc. |
| Objective: | Balanced spatial development |
| Sub-objective: | Limiting land use |
| Calculation: | relative growth between 1990 and 2000 |

**Informational value**

Urban sprawl: a term with pejorative implication, refers to the rapid and expansive growth of a greater metropolitan area, traditionally suburbs over a large area. It can be used to describe almost any urban growth.

Urban Growth: reflects the total increment of built up land during the last decade of the 20th century, and thus the degree of land transformation from non-urban (or non-built) to urban and built-up land.

Growth of residential areas: the countries can be grouped into four classes of relative urban growth, ranging from below 0,5 % in dominant parts of the easternmost countries to over 20% in the westernmost states.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | yes |
| EU 15 | yes |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | yes | NUTS 1999 |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Urban sprawl (as a composite of three subindicators: Urban Growth (1990 - 2000), Growth of residential areas (1990 - 2000), Growth of Industrial Areas (1990 - 2000)

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | yes |
| | |
| updated data (please describe intervals): | every year |
| periodicity (i.e. available years, please describe): | 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON project 2.4.1 |
| Source | CORINE, land cover data, Eurostat GISCO |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | yes | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Difficulties with the indicator

## Specific difficulties for the use in ESPON

No data for Cyprus, Malta, Finland, Sweden and remote areas of France and Portugal
Data are not corrected for their actual acquisition dates, i.e. mid of 1990s for several Eastern countries and prior to 1990 for Spain. The data for France spans over a period of 5 years from South to North.

#### 4.4.4 Further research / improvements towards the final report

Some individual indicators can be assigned to different themes, thus the most appropriate assignment for these indicators has to be searched for. The following example helps to illustrate this issue: the indicator “Land use / land use change” was initially put into the “Economic development” theme. However, it might make even more sense to regroup it and put it into “Management of natural resources”. This step could not be finished for the First Interim Report and will be carried out within the weeks to come. The number of overlaps, though, would not change by this regrouping exercise.

Moreover, some individual indicators within one theme might be combined to one single indicator, as they basically deal with the same issue, e.g. individual indicators for the different Kyoto gasses could be merged to one indicator, measuring all Kyoto gasses.

Another field of further research is the revised Gothenburg Strategy[9], that was only released on 9 June 2006. While the majority of themes is retained, some of them just renamed or amended with some sub-themes, two themes were taken off the list. The review thus incorporates the following seven themes:

1. Climate change and clean energy (previously “Climate change and energy”)
2. Sustainable Transport (previously “Transport”)
3. Sustainable Consumption and Production (previously “Production and consumption patterns”)
4. Conservation and management of natural resources (previously “Management of natural resources”)
5. Public Health (unchanged)
6. Social inclusion, demography and migration (previously “Poverty and social exclusion” and "Ageing society")
7. Global poverty and sustainable development challenges (previously “Global partnership”)

No longer included are the previous themes “Economic development” and “Good governance”.

As a consequence, for the further work on this work package, we would no longer focus on the themes that are no longer part of the revised Gothenburg Strategy. However, as these themes are still dealt with in other work packages of the project, the indicators we extracted from different approaches may still be used there. Since “migration” was included as a new sub-theme in the revised Strategy we will do

9 Council of the European Union (2006): Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy.

some additional research in this respect to have the sub-theme represented in indicators, as far as possible.

Obviously, the selection process for indicators to be suggested in the final report still needs to be continued. According to the underlying methodology of the project (see chapter 3.2 et seq), the indicators selected at this point in time need to be further tested against the background of the different filtering criteria.

With the Gothenburg Strategy being a cross-cutting concept, there will also be a discussion within the TPG, taking into account the results of other work packages that thematically overlap with this work package. This goes particulary for the work package on the Lisbon Strategy (see chapter 4.2).

**Challenges encountered**

As mentioned on several occasions throughout this chapter, the Gothenburg Strategy is intrinsically multi-sectoral. On the one hand, this offers the opportunity to make use of a large pool of existing indicator sets. On the other hand, as outlined above, the simple fact that there is an abundance of indicators to cover this subject does not necessarily mean that the same indicators are repeatedly applied, i.e. there are surprisingly little overlaps. Consequently, a first selection of indicators is not as simple as might have been expected at the outset in view of the supply of indicators.

Furthermore, the indicators we found are defined on and for different spatial levels. So it still remains to be seen which indicators can eventually be proposed for a territorial monitoring system of the ESPON territory.

### 4.4.5 Next steps

Some individual indicators can be assigned to different themes, thus the most appropriate assignment for these indicators has to be searched for. The following example helps to illustrate this issue: the indicator “Land use / land use change” was initially put into the “Economic development” theme. However, it might make even more sense to regroup it and put it into “Management of natural resources”. This step could not be finished for the First Interim Report and will be carried out within the weeks to come. The number of overlaps, though, would not change by this regrouping exercise.

Moreover, some individual indicators within one theme might be combined to one single indicator, as they basically deal with the same issue, e.g. individual indicators for the different Kyoto gasses could be merged to one indicator, measuring all Kyoto gasses.

Another field of further research is the revised Gothenburg Strategy[10], that was only released on 9 June 2006. While the majority of themes is retained, some of them just renamed or amended with some sub-themes, two themes were taken off the list. The review thus incorporates the following seven themes:

1. Climate change and clean energy (previously “Climate change and energy”)
2. Sustainable Transport (previously “Transport”)
3. Sustainable Consumption and Production (previously “Production and consumption patterns”)
4. Conservation and management of natural resources (previously “Management of natural resources”)
5. Public Health (unchanged)
6. Social inclusion, demography and migration (previously “Poverty and social exclusion” and "Ageing society")
7. Global poverty and sustainable development challenges (previously “Global partnership”)

No longer included are the previous themes “Economic development” and “Good governance”.

As a consequence, for the further work on this work package, we would no longer focus on the themes that are no longer part of the revised Gothenburg Strategy. However, as these themes are still dealt with in other work packages of the project, the indicators we extracted from different approaches may still be used there. Since “migration” was included as a new sub-theme in the revised Strategy we will do some additional research in this respect to have the sub-theme represented in indicators, as far as possible.

Obviously, the selection process for indicators to be suggested in the final report still needs to be continued. According to the underlying methodology of the project (see chapter 3.2), the indicators selected at this point in time need to be tested against the background of the different filtering criteria.

With the Gothenburg Strategy being a cross-cutting concept, there will also be a discussion within the TPG, taking into account the results of other work packages that thematically overlap with this work package. This goes particularly for the work package on the Lisbon Strategy (see chapter 4.2).

[10] Council of the European Union (2006): Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy.

**Challenges encountered**

As mentioned on several occasions throughout this chapter, the Gothenburg Strategy is intrinsically multi-sectoral. On the one hand, this offers the opportunity to make use of a large pool of existing indicator sets. On the other hand, as outlined above, the simple fact that there is an abundance of indicators to cover this subject does not necessarly mean that the same indicators are repeatedly applied, i.e. there are surprisingly little overlaps. Consequently, a first selection of indicators is not as simple as might have been expected at the outset in view of the supply of indicators.

Furthermore, the indicators we found are defined on and for different spatial levels. So it still remains to be seen which indicators can eventually be proposed for a territorial monitoring system of the ESPON territory.

### 4.4.6 Sources


Bund-Länder-Arbeitsgemeinschaft Nachhaltige Entwicklung (BLAG NE):

Erfahrungsbericht Indikatoren. (verabschiedet von der 65. Umweltminister-konferenz am 3. und 4. November 2005 in Rostock) http://www.blak-ne.de/dateien/dat_nr356_1.pdf

BBR: Zielindikatorenkatalog nachhaltiger Entwicklung http://www.bbr.bund.de/raumordnung/raumbeobachtung/uebersicht.htm

Council of the European Union (2006): Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy.

Sustainable development indicators to monitor the implementation of the EU sustainable development strategy SEC (2005) 161

Council of the European Union (2001): A Sustainable Europe for a Better World: A European Strategy for Sustainable Development. COM (2001) 264

Nordic Council of Ministers (2002): A Nordic Set of Indicators. Will we achieve our Objective? http://www.norden.org

Presse- und Informationsamt der Bundesregierung (2004): Perspektiven für Deutschland. Unsere Strategie für eine nachhaltige Entwicklung. Berlin http://www.bundesregierung.de/Content/DE/__Anlagen/perspektiven-fuer-deutschland-kurzfassung,property=publicationFile.pdf

Statistics Norway: NOU 2005:5 Simple signals in a complex world – Is Norway sustainable? http://www.ssb.no/english/magazine/art-2005-03-03-01-en.html

Statistics Sweden, Swedish Environmental Protection Agency (2001): Sustainable Development Indicators for Sweden – a first set 2001. http://www.scb.se

ESPON Projects – http://www.espon.eu

ESPON Project 1.1.1: The role and specific situation and potentials of urban areas as nodes in a polycentric development.

ESPON Project 1.1.2: Urban-rural relations in Europe.

ESPON Project 1.1.3: Enlargement of the European Union and the wider European perspective as regards its polycentric spatial structure.

ESPON Project 1.1.4: The spatial effects of demographic trends and migration.

ESPON Project 1.2.1: Transport Services and networks: Territorial trends and basic supply of infrastructure for territorial cohesion.

ESPON Project 1.2.3: Spatial aspects of the Information Society

ESPON Project 1.3.1: The Spatial Effects and management of natural and technological hazards in general and in relation to climate change

ESPON Project 1.3.2: Territorial trends of the managment of the natural heritage.

ESPON Project 1.4.2: Social aspects of EU territorial development.

ESPON Project 2.1.1: Territorail impacts of EU Transport and TEN policies.

ESPON Project 2.1.3: Territorial impact of CAP and Rural Development Policy.

ESPON Project 2.1.4: Energy services, networks and territorial impacts of EU energy policy.

ESPON Project 2.1.5: Territorial impacts of EU fisheries policy.

ESPON Project 2.2.1: Territorial effects of Structural Funds.

ESPON Project 2.2.3: Territorial effects of Structural Funds in Urban Areas.

ESPON Project 2.3.2: Governance of Territorial and Urban Policies.

ESPON Project 2.4.1: Environmental indicators: Territorial trends in environment and impacts of EU Environment Policy

ESPON Project 3.1: Integrated tools for European Spatial Development

ESPON Project 3.2: Spatial scenarios in relation to the ESDP and EU Cohesion Policy.

ESPON Project 3.3: Territorial Dimension of the Lisbon/Gothenburg Process

ESPON Project 3.4.2: EU economic policies and location of economic activities.

## 4.5 WP 5 Socio-cultural indicators

This section deals with the two policy goals “Socially inclusive society and space” as well as “Diversified cultural heritage and identities”.

Starting point have been the existing indicators suggested to depict these two long term territorial goals. So far only two indicators in the thematic fields of “Culture” (for diversified cultural heritage and identities) and “transport” (for socially inclusive society and space) have been put forward. These two indicators have – in a first attempt – been checked in terms of plausibility and availability. Then further indicators have been identified and checked in order to complete the indicator matrix for these two policy fields. The following section describes this process and tries to reveal the logic and rationale behind the selection and checking of the suggested core indicators in this field.

### 4.5.1 Introduction into the topic

The definition of the two rather heterogeneous policy fields – socially inclusive society on the one hand and diversified cultural heritage on the other hand – causes some problems. The two ESPON projects dealing with these issues – i.e. ESPON 1.4.2. “Preparatory Study on Social Aspects of EU Territorial Development” and ESPON 1.3.3. “The Role and Spatial Effects of Cultural Heritage and Identity” – had the same problem when pinning down these issues to a simple picture and definition.

#### 4.5.1.1 The socially inclusive society:

The range of this policy field is rather wide – as could be easily seen at the range of topics to be covered in the ESPON 1.4.2. project – covering aspects such as housing, education and training, employment and income distribution, and access to social services, services of general interest and mechanisms of public transfer. The heterogeneity of these topics on the one hand their complex inter-linkages on the other hand made it quite difficult to come forward with a single unambiguous definition and in due course with simple core indicators picturing all aspects at the same time.

Within this policy field the research concentrates on the following issues:

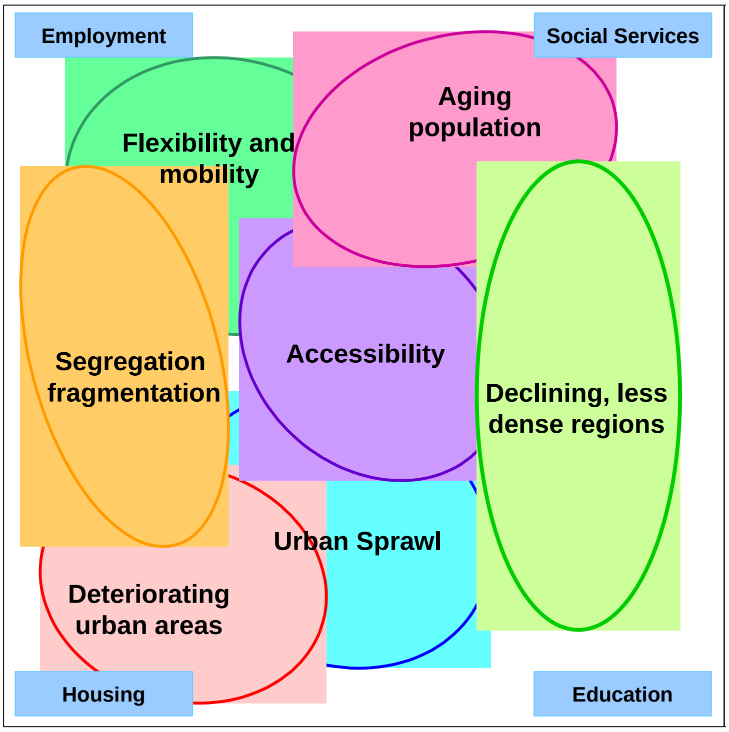
- **Poverty and social exclusion** as one (or the) main question, which is standing behind mechanisms of public transfers.
- **Social services and expenditures**: As an indicator, social expenditures depict the offer of social services and are therefore an important descriptive indicator in this field.
- **Health care,** which is stated to be one of the most important questions within the area of social services (together with employment/income distribution and education/training).
- **Employment/ unemployment:** Employment (resp. unemployment) is a core issue on the political agenda in Europe since by the early 1990s unemployment throughout Europe has risen to unprecedented levels and concern over the economic well-being of less-skilled workers and tackling long term unemployment have become prominent policy contents. Still there is hardly any other socio economic phenomenon which is so strongly debated and so weakly embedded in sound economic theory than unemployment and employment policies.
- **Income distribution/ income disparities:** The topic of income disparities certainly is a special issue related in many ways to labour markets but also to other social policy aspects Moreover income disparities – or to put it in a neutral way the differences in household income within a specified economy – are a political issue in a bizarre way: On the one hand social cohesion in the sense of equal welfare distribution is a high political goal → see e.g. Third Report on Economic and Social Cohesion; 2003. On the other hand disparities within economies as well as among countries and regions increase and pose the question of the efficiency of measures which aim at equal welfare distribution (see e.g. the discussion about the support of the growth poles in Europe vs. the support of regions lagging behind).
- **Housing**: there are dynamic processes in the housing systems of the EU 25+2+2 that can be captured via exploring their territorial manifestation, e.g. through housing market developments, housing investment, and quality of housing supply. The broad range of topics being relevant for the current policy and scientific discussions (e.g. employment, urban development) indicate that housing research is related to numerous social aspects and social and economic processes co-determine the territorial processes of housing.
- **Education and Training:** Education has been given the mission of ensuring the acquisition of skills and competences that are closely linked with the access to job opportunities. This dynamic process comprehends several interrelated dimensions. On one hand, it is associated with the human capital dimension at

an individual level, by determining a person's socioeconomic situation and consequently his/her standard of living, which generally impacts the social sphere. On the other hand, it has an economic dimension, since these skills and competences strongly influence the levels of productivity, innovation and economic growth. These two dimensions are also linked to a third one, which has to do with the states' capacity, or lack thereof, to provide social protection to its citizens, namely by guaranteeing the access to the various levels of education, free of cost and with a broad regional coverage, thereby promoting social cohesion.

When trying to link those aspects and find thematic clusters ESPON 1.4.2. has listed the following societal-territorial trends, which are embedded in between the policy fields listed above (see Figure 1):

- Social-territorial segregation / fragmentation
- Aging population
- Access to jobs, housing and educational and social services
- Flexibility and mobility
- Urban sprawl
- Deteriorating urban areas
- Declining, peripheral regions

**Figure 4-3 thematic clusters within the policy fields socially inclusive society**



These thematic clusters will have to be borne in mind when identifying affective core indicators in this field.

#### 4.5.1.2 Cultural Heritage and Identity:

This policy field suffers even more than the socially inclusive society from the difficulty to select a meaningful list of components of cultural heritage and identity, building upon existing, practicable and measurable categories. ESPON project 1.3.3. has tried hard to do so and did come forward with the following list of cultural heritage and identity components:

- **Monuments:** historical buildings and sites; most countries do have national or regional registers of the cultural heritage subdivided by typology
- **Protected cultural landscapes and conjuncts**: this category focuses on the interaction of different cultural elements and on their spatial pattern. These assets have composite nature and occupy a large area in the space, so that it is not possible to pinpoint them to an exact location. They are subject to different levels of protection; data is available from national lists
- **Museums and galleries**: collections of movable, tangible heritage grouped in a man-made exhibition space (museum or gallery).
- **Events**: they provide a "symbolic" backbone for the very recognition of the physical cultural markers of the heritage. Cultural events may be conceived as an explication of the cultural idiosyncrasy of a territory, stretching in range from the celebration of traditional folklore to the increasing multiculturalism of metropolitan cities.
- **Cultural diversity**: Languages, religions, ethnic groupings, social structures are expressions of the local identity. The selection criterion for these assets should be the existence of spatial expressions and effects, which need to be visible, traceable and measurable.
- **Cultural professionals**: i.e. the share of population employed in cultural industries – thus depicting how far cultural heritage helps to generate regional revenues
- **Cultural infrastructure and organisations**: this category includes elements which contribute to the forwarding and transmission of the heritage: institutions and organisations which are not to be considered cultural heritage per se but reflect the will of a community to further, share and promote their cultural heritage thus defining their identity; e.g. theatres, cinemas, public libraries
- **Intellectual capital**: that is the extension of the capacities on which the region can count to further its heritage and identity or else, to dynamise it and valorise. This capital consists in universities, high levels of quality of life within a region.

- **Cultural excellence**: This data regards cultural components classified uniformly over the EU territory as part of networks of excellence in specific fields of cultural activity – e.g. European Theatre Convention, European Capitals of Culture, UNESCO world heritage sites.

As could be easily seen from this list the main challenge has been to translate all these components into reasonable and measurable indicators. The results of ESPON 1.3.3. may be debateable in this respect: only very few aspects have been able to be depicted without bias and unambiguously on the regional level. Only for the culture related jobs and to some extent the number of monuments complete and reliable pictures on the NUTS 3 level for the entire ESPON space were drawn.

### 4.5.2 Raw List Indicators

## Indicator Sheet: accessibility by public transport (rail)

| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | maintaining and improving the access to social services at central places by the wide public |
| Sub-objective: | providing equal accessibility in the space |
| Calculation: | either calculated by travel time or potential accessibilty in the form of infrastructure endowment indexed via the EU 29 average |

**Informational value**

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 101,3 | 78,94 | 128,37 |
| BE | 191,5 | 148,82 | 217 |
| BG | 36,5 | 32,91 | 38,11 |
| CH | 143,39 | 121 | 164,45 |
| CY | 4 | 4 | 4 |
| CZ | 91,6 | 82,97 | 106 |
| DE | 159,6 | 106,38 | 215,8 |
| DK | 56,4 | 36 | 80 |
| EE | 25,2 | 18 | 32 |
| ES | 31,1 | 3,35 | 55,63 |
| FI | 12,9 | 6,31 | 19,39 |
| FR | 101,0 | 3,35 | 198,07 |
| GR | 18,5 | 4,39 | 28,2 |
| HU | 66,5 | 54,66 | 78,8 |
| IE | 23 | 18,48 | 26,61 |
| IT | 79,0 | 10,42 | 26,61 |
| LT | 26,9 | 17 | 26 |
| LU | 166 | 166 | 166 |
| LV | 22,25 | 17 | 26 |
| MT | 9,0 | 9,08 | 9,08 |
| NL | 169,7 | 126,23 | 207,99 |
| NO | 8,5 | 3,35 | 15,52 |
| PL | 75,2 | 49,49 | 93 |
| PT | 16,3 | 3,35 | 26,74 |
| RO | 42,5 | 35,4 | 47,88 |
| SE | 23,6 | 4 | 54,59 |
| SI | 73 | 61 | 87 |
| SK | 79,39 | 65,49 | 93 |
| UK | 101,2 | 18,5 | 166,92 |

# Indicator Sheet: accessibility by public transport (rail)

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | 2003 |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 2.4.2. RCE indicator set |
| Source | EUROSTAT |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | Indexed by EU average |
| model | no | |

## Data gaps (please describe)

## Comments

## Indicator Sheet: Number of cultural sites

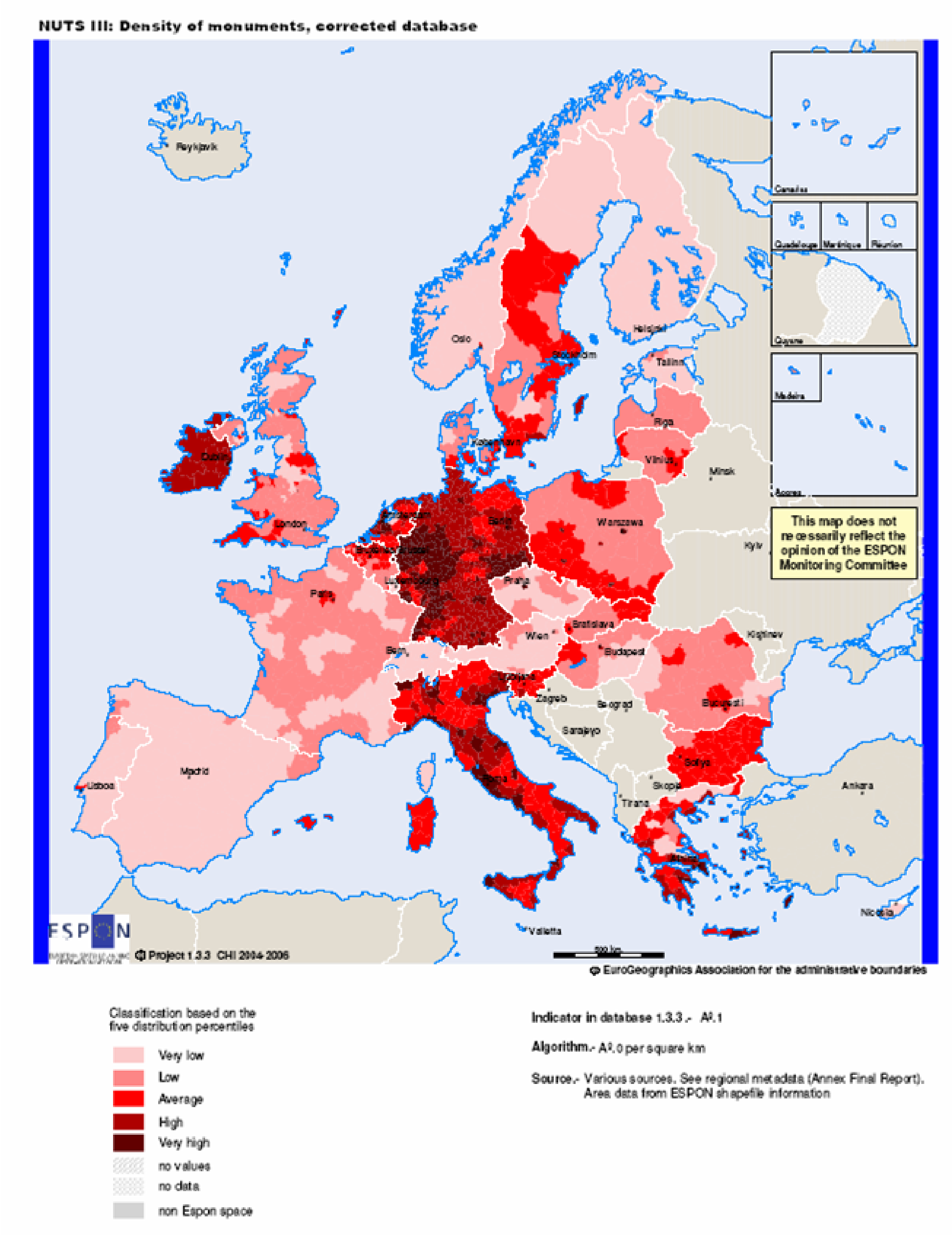
| | |
|---|---|
| Dimension: | Diversified cultural heritage and identities |
| Objective: | maintaining of markers of European history and identity |
| Sub-objective: | Improving the regional potential for tourism and creative industries |
| Calculation: | Number of registered monuments and sites in national lists, weighted by the number of "excellence" resources - or same approach of calculation but normalised by square km |

**Informational value**

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

## Map 4-8 Density of Monuments (NUTS III), corrected data base



# Indicator Sheet: Number of cultural sites

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | |
| periodicity (i.e. available years, please describe): | 2003 |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.3.3. |
| Source | various national data sources |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | absolute numbers |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

## Comments

the results seem quite biased by the fact that only publicly owned monuments are counted + the counting procedure seems to be differing from country to country, which could not be completely outweighted by the calibration of data by the weighting by the number of "excellence" resources

## Indicator Sheet: Unemployment rate

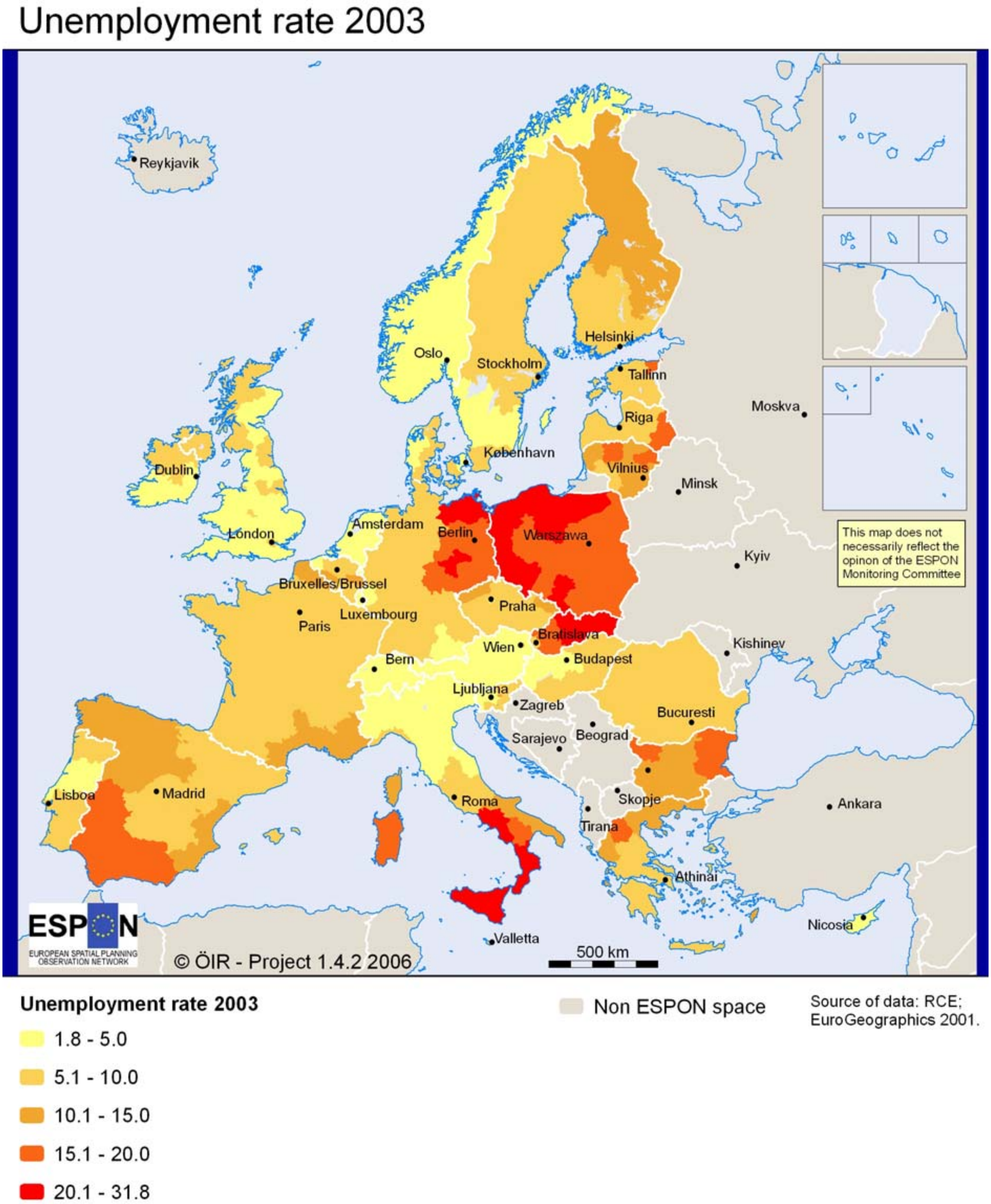
| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | maintaining and improving the household income equally in the space |
| Sub-objective: | maintaining an equal distribution of population/ enabling people to sustain their social environment |
| Calculation: | Unemployment rate represents unemployed persons as a percentage of the economically active population |

**Informational value**

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| EU 25+2+2 | 0 | 0 | 0 |
| EU 25 | 0 | 0 | 0 |
| EU 15 | 0 | 0 | 0 |
| EU 10 | 0 | 0 | 0 |
| AT | 0 | 0 | 0 |
| BE | 0 | 0 | 0 |
| BG | 0 | 0 | 0 |
| CH | 0 | 0 | 0 |
| CY | 0 | 0 | 0 |
| CZ | 0 | 0 | 0 |
| DE | 0 | 0 | 0 |
| DK | 0 | 0 | 0 |
| EE | 0 | 0 | 0 |
| ES | 0 | 0 | 0 |
| FI | 0 | 0 | 0 |
| FR | 0 | 0 | 0 |
| GR | 0 | 0 | 0 |
| HU | 0 | 0 | 0 |
| IE | 0 | 0 | 0 |
| IT | 0 | 0 | 0 |
| LT | 0 | 0 | 0 |
| LU | 0 | 0 | 0 |
| LV | 0 | 0 | 0 |
| MT | 0 | 0 | 0 |
| NL | 0 | 0 | 0 |
| NO | 0 | 0 | 0 |
| PL | 0 | 0 | 0 |
| PT | 0 | 0 | 0 |
| RO | 0 | 0 | 0 |
| SE | 0 | 0 | 0 |
| SI | 0 | 0 | 0 |
| SK | 0 | 0 | 0 |
| UK | 0 | 0 | 0 |

**Map 4-9  Unemployment rate 2003**



# Indicator Sheet: Unemployment rate

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | annually |
| periodicity (i.e. available years, please describe): | partly starting 1990, 1999, 2003 |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.4.2.; ESPON 3.1. |
| Source | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

## Comments

there is still the problem of harmonisation of definitions within the generally harmonised concept of unemployment (e.g. the amount of persons in training schemes, early retirement schemes); besides there is a growing extent of misinterpretation of this indicator in terms of household income --> the social phenomenon of the "working poor" is disguised by low unemployment rates.

## Indicator Sheet: Health care / hospitals

| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | maintain and improve the access to health care regionally |
| Sub-objective: | maintaining of basic qualities/ services which form the basis of regional societal development |
| Calculation: | number of hospital beds per 100 000 inhabitants |

**Informational value**

**Regional distribution**

| | Value | Min | Max |
|---|---|---|---|
| **EU 25+2+2** | 0 | 0 | 0 |
| **EU 25** | 0 | 0 | 0 |
| **EU 15** | 0 | 0 | 0 |
| **EU 10** | 0 | 0 | 0 |
| **AT** | 0 | 0 | 0 |
| **BE** | 0 | 0 | 0 |
| **BG** | 0 | 0 | 0 |
| **CH** | 0 | 0 | 0 |
| **CY** | 0 | 0 | 0 |
| **CZ** | 0 | 0 | 0 |
| **DE** | 0 | 0 | 0 |
| **DK** | 0 | 0 | 0 |
| **EE** | 0 | 0 | 0 |
| **ES** | 0 | 0 | 0 |
| **FI** | 0 | 0 | 0 |
| **FR** | 0 | 0 | 0 |
| **GR** | 0 | 0 | 0 |
| **HU** | 0 | 0 | 0 |
| **IE** | 0 | 0 | 0 |
| **IT** | 0 | 0 | 0 |
| **LT** | 0 | 0 | 0 |
| **LU** | 0 | 0 | 0 |
| **LV** | 0 | 0 | 0 |
| **MT** | 0 | 0 | 0 |
| **NL** | 0 | 0 | 0 |
| **NO** | 0 | 0 | 0 |
| **PL** | 0 | 0 | 0 |
| **PT** | 0 | 0 | 0 |
| **RO** | 0 | 0 | 0 |
| **SE** | 0 | 0 | 0 |
| **SI** | 0 | 0 | 0 |
| **SK** | 0 | 0 | 0 |
| **UK** | 0 | 0 | 0 |

# Indicator Sheet: Health care / hospitals

## Spatial coverage

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | sometimes annually/ sometimes in a 3-year interval |
| periodicity (i.e. available years, please describe): | from the year 1992 |

## Spatial level / regional level

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.4.2. |
| Source | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Data gaps (please describe)

Finland, Portugal, Slovenia, UK; for some countries only NUTS 0 is available

## Comments

The single countries submit data to Eurostat on the basis of a gentleman´s agreement - thus the quality of overall data availability suffers

### 4.5.3 Wish List indicators

## Indicator Sheet: Household income (as disposable household income)

| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | maintaining and increasing an equal distribution of household incomes in the space |
| Sub-objective: | maintaining a social fabric over the entire EU space, which is able and willing to earn their living |
| Calculation: | Final consumption expenditure per household and per adult equivalent as an average for the population broken down by several cross-sectoral variables |

**Informational value**

The household income regarded by spatial distribution will deliver information about the social fabric of a region/ country. If adjusted to purchasing power it may reveal more about social disparities in space than the risk of powerty rate or the GDP/ capita (as an economic output indicator)

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Household income (as disposable household income)

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | depending on the membership of countries to the EU 1988 (10MS), 1994 (15MS), 1999 (15MS+12candidates) |
| **periodicity (i.e. available years, please describe):** | |

| | please describe |
|---|---|
| **other** | NUTS 0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 1.4.2. |
| **Source** | Eurostat - |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | surveys carried out by the NSI using their own methodologies |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

data of different years is not compatible due to methodological changes

## Specific difficulties for the use in ESPON

## Indicator Sheet: Gini coefficient of household incomes

| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | maintaining and improving an equal distribution of income in the space |
| Sub-objective: | preventing social segregation and maintaining a good regional mix of social groups in society |
| Calculation: | extent of household income disparities within one region; percentage of divergence between a Lorenz curve and an absolute equal distribution horizontal curve |

**Informational value**

Even better than the household income (adjusted to PPP) this indicator would provide information about social segregation and the getto building within a region. Moreover - combined with accessibilty indicators the reasons such seggregation could be detected and tackled.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

not for all MS available for all years

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: Gini coefficient of household incomes

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | annually but with national gaps |
| **periodicity (i.e. available years, please describe):** | from 1995 |

| | please describe |
|---|---|
| **other** | NUTS0 |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 1.4.2. |
| **Source** | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | |
| **survey** | no | under EU-SILC responsibility for the fieldwork at NSI |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

only available at national level!

## Specific difficulties for the use in ESPON

## Indicator Sheet: social spending

| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | maintaining and improving the minimum standard of living for specific groups of society |
| Sub-objective: | maintaining the fabric of a society, preventing seggregation |
| Calculation: | sum of public social spending and private social spending per region (without expenditures for education) |

**Informational value**

the amount of social spending in a society/ a region may be seen as measurer for the amount of people in need (either by poverty, ageing, illness etc.). This information regarded in a spatial context provides important information on regions lagging behind, "hot spots" of social deficits etc.

### Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

national data only

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

# Indicator Sheet: social spending

## Time reference / actuality

| | data is available as |
|---|---|
| **data for a point of time:** | no |
| **a time series:** | no |
| | |
| **updated data (please describe intervals):** | for two non fixed years |
| **periodicity (i.e. available years, please describe):** | second half of the 1990ies |

| | please describe |
|---|---|
| **other** | 27 OECD countries |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| **Origin** | ESPON 1.4.2. |
| **Source** | OECD - society at a glance |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| **raw** | no | in monetary units |
| **survey** | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| **modified** | no | |
| **model** | no | |

## Difficulties with the indicator

only available at national level, and not for the entire ESPON space

## Specific difficulties for the use in ESPON

## Indicator Sheet: Employed persons by highest level of education attained

| | |
|---|---|
| Dimension: | socially inclusive society and space |
| Objective: | checking of the positive correlation of high levels of education and high activity levels |
| Sub-objective: | spatial orientation where to find concentrations of highly educated persons unemployed - guiding of the work force over space |
| Calculation: | employed persons with tertiary (primary,...) education - (change over time in %) |

**Informational value**

this indicator provides information on the efficient employment of the workforce in the space. It helps to dedect imbalances between a highly educated work force and potential underemployment of this resource.

## Description of current status of the indicator

**Spatial coverage**

| | Yes/No |
|---|---|
| EU 25+2+2 | no |
| EU 25 | no |
| EU 15 | no |
| EU 10 | no |

**Spatial gaps**

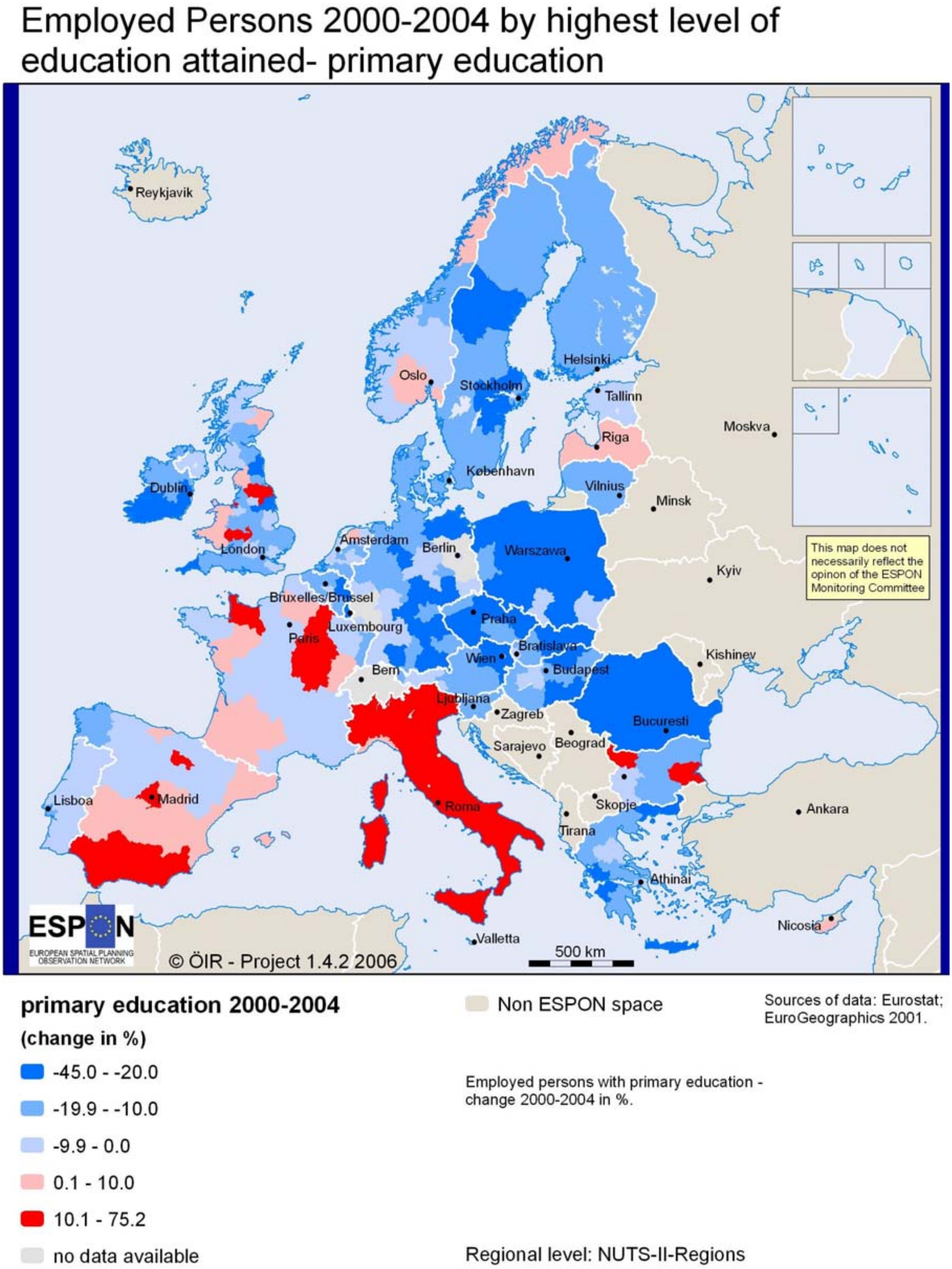
allmost for all NUTS 2 regions except for Swizzerland and some gaps for specific education levels (see maps)

**Spatial level / regional level**

| | Yes/No | Version |
|---|---|---|
| Nuts 1 | no | |
| Nuts 2 | no | |
| Nuts 3 | no | |
| | | |
| Nuts 5 | no | |

**Indicator Sheet: Employed persons by highest level of education attained**

**Map 4-10 Employed Persons 2000-2004 by highest level of education attained- primary education**



# Indicator Sheet: Employed persons by highest level of education attained

## Time reference / actuality

| | data is available as |
|---|---|
| data for a point of time: | no |
| a time series: | no |
| | |
| updated data (please describe intervals): | annual (sometimes depending on the date of access to the EU) |
| periodicity (i.e. available years, please describe): | 2000 - 2004 |

| | please describe |
|---|---|
| other | |

## Data source(s) and origin of data (ESPON subtask, institution, statistics etc.)

| | please describe |
|---|---|
| Origin | ESPON 1.4.2. |
| Source | Eurostat |

## Type of data (raw data, model output, survey data etc.)

| | Yes/No | if yes, describe: |
|---|---|---|
| raw | no | |
| survey | no | |

| | Yes/No | describe modification and if basic data is necessary: |
|---|---|---|
| modified | no | |
| model | no | |

## Difficulties with the indicator

some data gaps ar eto be found regionally, the information value may be debateable.

## Specific difficulties for the use in ESPON

### 4.5.4 Conclusion

In this first attempt of finding key indicators we took a rather pragmatic and reality-driven approach. Starting point have been the two suggested indicators in the two policy fields. We have tried to check their plausibility by cross checking their use in the two ESPON studies and other policy related indicators sets. As both of them were to be found reliable in this respect we decided to keep those two indicators in the matrix for the time being.

The second step has been to add additional indicators along the x-axis of the indicators matrix (i.e. along the socio-economic, environment and culture related fields of spatial monitoring on the basis of ESPON projects).

#### 4.5.4.1 The Socially inclusive society:

Starting point has been the evaluation of the Laeken Set of Social Indicators

The Laeken Set of Social Indicators which can be considered as a comprehensive set of indicators which found a remarkable way through the different requirements of policy monitoring. It consists of the following 18 indicators:

- Indicator 1a : At-risk-of-poverty rate by age and gender
- Indicator 1b : At-risk-of-poverty rate by most frequent activity and gender
- Indicator 1c : At-risk-of-poverty rate by household type
- Indicator 1d : At-risk-of-poverty rate by tenure status
- Indicator 1e : At-risk-of-poverty threshold (illustrative values)
- Indicator 2 : Inequality of income distribution S80/S20 quintile share ratio
- Indicator 3 : At-persistent-risk-of-poverty rate by gender (60% median)
- Indicator 4 : Relative at-risk-of-poverty gap
- Indicator 5 : Regional cohesion (dispersion of regional employment rates)
- Indicator 6 : Long term unemployment rate
- Indicator 7 : Persons living in jobless households
- Indicator 8 : Early school leavers not in education or training
- Indicator 9 : Life expectancy at birth
- Indicator 10 : Self defined health status by income level
- Indicator 11 : Dispersion around the at-risk-of-poverty threshold
- Indicator 12 : At-risk-of-poverty rate anchored at a moment in time
- Indicator 13 : At-risk-of-poverty rate before social transfers by gender
- Indicator 14 : Inequality of income distribution Gini coefficient
- Indicator 15 : At-persistent-risk-of-poverty rate by gender (50% median)

- Indicator 16 : Long term unemployment share
- Indicator 17 : Very long term unemployment rate
- Indicator 18 : Persons with low educational attainment

As could be seen from this list the Laeken indicators show the following characteristics: Nine are monetary indicators based on incomes data (mainly panel data from the European Community Household Panel - ECPH), five are indicators of Labour Participation (mainly based on the European Labour Force Survey), two are indicators reflecting formal job qualification and two are health indicators

Although heavily relying on income indicators the Laeken set do use both – imminent and probabilistic – indicators as well as individual and regional indicators. The non-monetary indicators cover only some aspects of social exclusion (as long term unemployment or qualification) and some regional indicators as life expectancy at birth. Non monetary but imminent individual indicators are only excluded by a health self-assessment.

On a regional level, the quality of the Laeken set suffers heavily by the non-availability of income data. But without income data, the Laeken set cannot anymore be considered as appropriate in measuring poverty nor social exclusion. The ESPON 1.4.2. project has thus come to the following conclusion:

**Poor European data availability social-territorial issues on NUTS3**

Due to the decentralised responsibility for the legislation that lies within the Member States, the availability of European-wide, harmonised data on a regional level (NUT2 or NUTS3) for social issues is rather poor.

Within the ESPON project 1.4.2. indicators of various European and international sources and databases have been analysed. More than 230 indicators have been identified as relevant for social-territorial issues. However, about 80% of all these social indicators are only available at national level, e.g. all OECD data and lots of UN-data.

Moreover, the data from the Urban Audit are just available for selected cities, not covering the territory of EU 25+2+2. They are therefore only usable to a very limited extent for analyses within the ESPON-space .

All in all, out of the huge database investigated, only 32 indicators were available at NUTS2 throughout Europe . (Just about 1/6 exist also on NUTS3 level.) Amongst the 32 indicators:

- 21 are related to “employment and income distribution”
- 4 are related to "social services”
- 3 are related to “housing and territorial development”
- 4 are related to “education and training”

European wide regional (NUTS2) data are rather rare. Only in the field of employment there exists a rather good date base. All in all the data situation demonstrating interrelationships between social aspects and territorial development is rather poor. Data about the territorial accessibility of educational and social institutions are missing at regional level. So the improvement of the data-situation and a creative approach concerning the elaboration on indicators will be essential for any future empirical, data driven analysis of social issues and territorial development at regional level throughout Europe.

We therefore just added two more indicators to the matrix – i.e. unemployment rate and Health care/ hospital beds per 100 000 inhabitants. This is just a first tentative approach to fill the matrix – in the coming months we will have to check these indicators and maybe add some more, which depict other aspects of socially inclusive society and space.

#### 4.5.4.2 Cultural Heritage and Identity:

Here the situation has been even worse. As mentioned above the ESPON project 1.3.3. provided very little data on the NUTS 2/3 level which could be seen as key information for a European spatial monitoring scheme. It will be one of the main tasks to look for additional indicators in this field – probably stemming from other sources.

### 4.5.5 Further research / improvements until the final report

The main tasks for the final report will be:

- Presentation and discussion of these first preliminary results within an expert group thus valorising the results and adding possible new indicators
- Completing the indicator matrix by continuous checking of additional indicators available from other sources than the two ESPON studies in this field (e.g. echi → i.e. European Community Health Indicators)
- Adding newly identified key indicators to the matrix by providing the data sheets

### 4.5.6 Sources


- Bulletin of Housing and Building Statistics for Europe and North America, 2004
- ESPON database: http://intranet.espon.eu
- Housing Statistics in the European Union (1991 ongoing); last edition of 2004

- Eurostat, Data on Population and Social Conditions/Living Conditions and Welfare/Income and Living Conditions/Non-monetary Poverty and Exclusion/Housing
- Eurostat/Urban Audit, dataset for National, Larger Urban Zone (LUZ, "functional urban region")
- Förster and Mira D'Ercole (2005), "Distribution de revenus et pauvreté dans les pays de l'OCDE", à paraître, OECD, Paris. OCDE (2004), Statistiques de la population active, 1983-2003, Paris
- Labour Force Statistics: 1984 – 2004, 2005 Edition
- OECD Education Online Database
- OECD Employment Statistics. Society at a Glance: OECD Social Indicators – 2005 Edition
- OECD Factbook 2005, Economic, Environmental and Social Statistics
- OECD: Society at a Glance: OECD Social Indicators – 2005 Edition.
  OECD (2004), Benefits and Wages, in Förster and Mira D'Ercole (2005), "Income distribution and poverty in OECD countries in the second half of the 1990s", OECD Social, Employment and Migration Working Papers, forthcoming, OECD, Paris
- Study programme in European spatial planning: Theme 1.3: Indicators for social integration & exclusion, final report, October, 1999. – Source identified: Eurostat
- UN-Habitat: Global Urban Indicators to measure the progress of the implementation of the Habitat Agenda (selection) and Indicators to measure implementation of Habitat Agenda

## 4.6 WP 6: Territorially oriented governance

### 4.6.1 Introduction

Good governance is widely considered as being fundamental for economic growth and political stability. Within this field, the theme of territorially oriented governance touches a relatively new scientific field, in which the attempts for measuring or monitoring the related development in space have been very limited so far. This is why the definition of the term 'territorially oriented governance' is still to be discussed. In addition, empirical approaches to the measurement of governance show the difficulty in developing appropriate indicators and gaining valid data (see e.g. Court, Hyden and Mease, 2002). Due to the different spatial levels under consideration once territorially oriented governance is to be measured, this problem is even aggravated.

Within the ESPON 2006 Programme it is the ESPON Project 2.3.2 which dealt with territorial governance issues. The extensive final report to this project impressively shows the difficulty in finding 'the' key indicator which could provide a comprehensive but simultaneously precise picture of achievements in territorial governance of a region, a state or a transnational territory. In addition, governance issues are not easily dealt with in a quantitative way but are based on numerous qualitative – and partly quantitative – observations, which are considered jointly in order to gain a comprehensive overview. To further complicate the search for governance key indicators, different spatial levels as well as a variety of policies need to be distinguished and cannot be easily aggregated to one single or very few indicators.

Against this background, in ESPON project 4.1.3, the work package dealing with the identification of governance indicators has a somewhat different structure as compared to the work packages dealing with other territorial objectives and themes. Since the matrix of themes and policy objectives developed by the ESPON Programme (see chapter 2.6) does not yet suggest any related indicators, this work package cannot verify suggested indicators but needs to start with some considerations on the definition of territorially oriented governance and its main aspects, and a brief review of indicators developed and used in the ESPON project 2.3.2 and outside ESPON.

Due to the specific nature of governance issues and the lack of proposed and adequate indicators, also the second sub-task (search for indicator gaps) has a somewhat different focus than in the other work packages of this ESPON project. Here, it is necessary to shortly review the relation between the governance theme and different policy objectives. This also includes the differentiation of spatial ESDP objectives relevant for the analysis of governance related achievements, for territorially oriented governance shall support the spatial objectives of the ESDP.

In a first step, a methodology for an assessment of territorially oriented governance at different spatial levels will be developed by using the efforts made by ESPON project 2.3.2. This is to be further elaborated and will possibly be demonstrated on the basis of few selected examples for the final report and the tentative Spatial Monitoring Report.

### 4.6.2 Definition and understanding of territorially oriented governance

**Governance** can be understood as 'an emerging political strategy' for nation states (or territories) in order to adapt to changes by supplementing formal authority with an increasing reliance on informal authority (see Pierre 2000, p.2). This process or transition entailed the emergence of new forms of participation and cooperation, within different political fields as well as on different spatial levels. Within this tendency, the state's (or official territory's) representatives are considered as one group of actors among others, who, at the most, will take on a management role.

Governance does not stand in opposition to government, but is related to it in a complementary way. While the term *government* refers to the formally and hierarchically organized procedures and structures of the state, *governance* incorporates the relevance of 'new actors' and their procedures of involvement in the political scene (see also ESPON 2.3.2 FR, p.23). Government therefore does not show a retreat in these developments, but can rather act as a catalyst operating within this newly emerging multi-level structure of cooperation and relations among actors (see also Kujath/Dybe/Fichter 2001, p.10).

Primarily, governance focuses on procedures of problem-solving, conflict-mediation and decision-making. Some basic principles have been summarised and accepted by the Commission of the European Union (see White Paper p.10), as principles of good governance in general:

- *Openness*: Are relevant processes concerning spatial policy implementation publicly discussed, is decision-making transparent? Are decision and policy contents understood by the general public? (Degree of active communication within the process of territorial governance and the decisions it takes).
- *Participation*: Are all relevant actors of the policy chain included in the processes of policy conception and implementation? (Degree of empowerment and involvement of a wide range of actors).
- *Accountability*: Can (public and private) actors be held accountable for spatial policy implementation and are the roles of the different actors clear? (Degree of taking responsibility by the involved actors in implementing spatial development issues).

- *Coherence*: Are policies of different sectors and different spatial levels coherent in terms of objectives but also responsibilities etc.? (Degree of consistency within the complex system of sectoral policies affecting the same territory).
- *Effectiveness:* Are policies effective and timely, delivering what is needed on the basis of the ESDP objectives on the respective territorial level of decision and implementation? (Degree of delivering regional/local needs on the basis of territorial objectives)

Other principles describing governance are transparency, sustainability, subsidiarity, equity or effectiveness, civic engagement or cooperation (see ESPON 2.3.2, FR, Annex B, p.27). Since most of them partially express similar notions as the five principles named above, they will not be considered as additional principles within the analyses of this project.

***Territorially oriented*** governance consists of those procedures, applied to political activities with a strong territorial focus like spatial planning or regional policy. It presents the way in which roles and responsibilities are distributed among the different government levels and other involved actors, and describes the related processes of negotiation and consensus building within the territorially oriented political fields.

Additionally to this definition, territorially oriented governance can be considered as having a very specific character drawn from the object itself, the territory (see 2.3.2, FR, p.32). Two territorial aspects can be depicted, both having an influence on the particular design or character of governance.

Firstly, the type or level of a territory (e.g. a state, a region within a state, a specific city or a transnational area) plays an important role. Depending on this type of setting, different political structures exist as a precondition for governance processes, and diverse aims and necessities significantly shape the governance procedures that can possibly emerge.

Secondly, it is the considered territory itself, the specific nation, region or locality that gives territorial governance an individual character. For instance, the specific state or nation can considerably shape the governance structures emerging in its territory. The histories of political culture, the traditions of the society, but most of all the underlying structures of the national political systems themselves strongly affect the governance structures and processes.

The example of Germany shows that, within its federal structure, the metropolitan regions do not dispose of much political power of action. Additionally the German corporatist institutional system poses barriers for international interaction with more liberally oriented systems. For metropolitan regions in Germany this means, that they often have to develop territorial governance structures with a specific character aiming at overcoming such barriers (see Kujath/Dybe/Fichter 2001, p.12). The specific governance structures resulting from national preconditions like the one described are simultaneously important for all considered spaces of action, be it the national, regional or transnational level.

### 4.6.3 Spatial ESDP objectives and territorially oriented governance

According to these rather complex considerations, certain forms of territorially oriented governance can also support or hinder the fulfilment of territorial political aims. As an example, the even spread of ICT in rural areas can be reinforced by a type of governance that is characterised by a relatively high level of local decision-making and involvement of local actors, and thus allowing for individual action appropriate for the respective area (as shown in ESPON 1.2.3, see example Germany (regional case study Tuttlingen)). In this case, a governance form showing lower fulfilment of the principles of good governance could have had quite a different effect. With less openness towards local involvement and lower participation of various actors in the region the real needs of the local population and economy could not have been that well detected and incorporated. A much less effective spread of ICT would have been the consequence.

In the context of the relation between governance and spatial objectives, EU territorial governance constitutes a special case, since it focuses on the impact of EU policies with their declared aim of strengthening spatial cohesion within the EU (see 'The territorial state and perspectives of the EU', draft, p.5). At the same time, EU territorial governance itself, as the whole complex of interactions among different actors and different interests on a territorial level, can be considered as part of the territorial cohesion process (see also ESPON 2.3.2, Exec. Summary, p.11).

Next to the broad aim of spatial cohesion, also other objectives of European spatial policy are pursued by territorial governance processes, such as supporting sustainable spatial development or stimulating innovative economic activity.

For the purpose of this project, especially the ESDP objectives specified for the achievement of a polycentric spatial development and new urban-rural relationships are relevant. Once the criteria for good governance and the 'measurement' of governance achievements are established for the different respective spatial areas considered in this field of ESDP objectives, they can be more easily applied to the other spatial objectives in relation to infrastructure and knowledge access as well as the management of natural and cultural heritage. Thus, this project needs to consider the different types of territories for which territorially important policies are implemented, in order to elaborate the relevant governance criteria for them.

The relevant territories distinguished in the ESDP are related to the following objectives

- Polycentric and balanced spatial development in the EU – This objective is related to the European (macro) level and calls for cross-sectoral policy integration and cooperation on transnational level. From a governance perspective, transnational and cross-border regions represent the relevant territories for which governance criteria need to be defined.
- Dynamic, attractive and competitive cities and urbanised regions – This objective specifically focuses on urban areas, whether they are metropolitan, other functional urban areas and even smaller towns and cities. Therefore, FUA and MEGA regions represent a specific type of region for which governance criteria are needed, since these regions are in the focus of urban policies. In order to promote integrated urban development strategies, again, governance criteria need to consider the coordination between different sectors of urban policies.
- Indigenous development, diverse and productive rural areas – This objective tackles micro-level policies, since rural areas are anything but homogeneous across the EU. Local and regional conditions, characteristics and requirements are of particular importance for these regions' development. For the development of diversified development strategies of rural areas as well as the intensified cooperation with small and medium-sized towns in rural areas, specific governance structures and processes are needed, which can significantly differ from those of other types of territories.
- Urban-rural partnership – This policy objective refers to the relation between different types of territories and is thus directly linked to governance issues at again another scale compared to the aforementioned territories. The ESDP already states a couple of preconditions for successful urban-rural relationships, namely
    - equality and independence of the partners;
    - voluntary participation in partnership;
    - consideration of different administrative conditions;
    - common responsibility and common benefit,

  which need to be further supplemented by specific criteria for such relationships.

With the exception of rural regions ESPON project 2.3.2 also differentiates between all of the above types of territories in its approach towards a territorial governance model (see next section). As mentioned before, due to the particular importance of national conditions for governance structures and processes, the national level needs to be considered as well. This implies a differentiation of altogether five types of territories and relations, for which governance criteria need to be developed, in order to get as close as possible to governance key indicators.

### 4.6.4 Appropriateness of governance indicators developed by ESPON project 2.3.2

ESPON project 2.3.2 developed different sets of indicators in order to 'measure' different aspects of territorially oriented governance. The TPG utilised qualitative indications for specifying multi-level and horizontal governance and multi-level governance relationships. This qualitative information was standardised by means of varying scaling systems. These varying scaling systems automatically imply that different indicators gain varying weights. Such a compilation of a complex indicator appears arbitrary and – when summed up – does not contain any information about a territory's specific governance performance, i.e. a medium overall value can be due to generally medium performance or to rather high values for some governance aspects which are accompanied by relatively low values for other aspects. As a consequence of this aggregative method, the countries of the ESPON space, with few exceptions, score around medium values for horizontal and vertical governance structures and relationships, thereby not providing a high explanatory content.

To overcome the analysis limited to country levels for the whole ESPON space, ESPON project 2.3.2 also introduced a quantitative assessment. This assessment consisted of a simple aggregation of a small number of regional structure and performance indicators to a synthetic indicator. Besides an indicator on the civil society all utilised indicators referred to general employment, economic and spatial issues not directly linked to governance (see ESPON project 2.3.2 FR, p.176). Consequently, these indicators can neither provide an indication of the regions' governance approaches at different spatial levels nor in different types of territorial relations (e.g. regional, trans-national, rural-urban etc.). In addition, rather than a numerical addition of standardised indicators, only their scaling in relation to the respective average values was applied, which implies further simplification and easily inhibits assessment biases. Therefore, the applied quantitative indicators – with the possible exception of the Eurobarometer indicator on civil society aspects – do not appear to be particularly useful in search for governance key indicators.

In their national overviews ESPON project 2.3.2 also considered the principles for 'good governance' as mentioned in the Commission's White Paper (2001) as well as some additional principles e.g. by the United Nations. At national level these principles were reviewed in a qualitative assessment, indicating, whether either of the principles has been on the political agenda, is being realised etc.. Thereby, no distinction between the levels of the realisation of these principles was conducted, nor were they applied to different spatial levels but the national level.

Finally, and possibly in combination with the White Paper Criteria for 'good governance', the most promising approach in search for governance related key indicators can be found in ESPON project 2.3.2's approach towards a territorial governance model. In this approach the TPG distinguishes criteria of vertical coordination, horizontal coordination, involvement, participation and territorialised actions. The listed criteria specify the content of each category and can be related to the principles of good governance. Furthermore, this approach includes the link between these criteria and different types of territory, since it can be assumed, that not all criteria are equally relevant for different types of policies in different territories (see also section 4.6.3).

### 4.6.5 Methodological approach for the measurement of territorially oriented governance

Several institutions have started to develop possible sets of indicators for measuring governance in a variety of contexts, among them the World Bank (see http://www.worldbank.org/wbi/governance/govdata/) or the United Nations University (see e.g. Court, Hyden and Mease, 2002). These examples as well as the previously discussed results of the ESPON project 2.3.2 prove that the work done so far is valuable but not sufficient for the purpose of ESPON project 4.1.3., as it does not offer indicators, which could serve as key indicators at different spatial levels. In order to overcome this problem, the TPG of ESPON project 4.1.3 aims to further develop the existing approaches into a coherent and comprehensible methodology for 'measuring' territorially oriented governance for different territories.

As done in the aforementioned approaches, the exploration has to start with a determination of principles that give a comprehensive description of good governance structures and procedures. Here, the five principles of good governance as in the White Paper will serve as a starting point.

In a second step, these principles need to be filled with more specific criteria (e.g. participation: actors involved) in order to make them more concrete and tangible.

Within this step, and in advancement to the discussed approaches, these specific criteria need to be chosen and adjusted in a way that they can be utilised for all different territorial levels. This specific approach of structuring and filling the principles with criteria according to the various spatial levels represents the distinctive challenge for ESPON project 4.1.3.

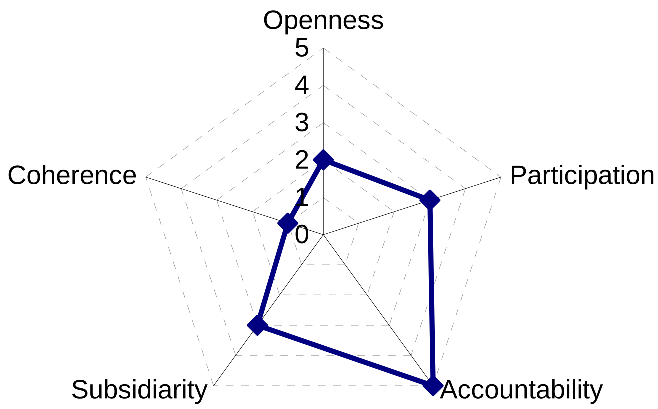
The selection of different spatial levels for territorially oriented governance, as already discussed in section 4.6.3, will by and large follow the typology of territories developed in ESPON 2.3.2. The territories and fields of spatial relations for ESPON 4.1.3 include:

- transnational/cross-border regions
- FUA and MEGA regions

- urban-rural relationships
- rural regions
- national level

After the development of criteria, that qualitatively describe governance structures and procedures on the respective levels in the best possible way, the application of these criteria for monitoring or measuring will be tested. Although it is clear that good governance according to the principles cannot only be measured in quantitative terms, possibilities have to be investigated to standardise these criteria, and to develop scales uniformly applicable to all criteria. The aim of these analyses will be to capture the development of different types of territorially oriented governance in scaled models. The example below shows the envisaged model.

**Figure 4-4 Scaling good governance**




Scaling the principles from 0 for criteria which are not fulfilled at all to 5 for very well fulfilled criteria

This scaling could then allow for monitoring and comparison of different forms of territorially oriented governance. Exemplary for the different spatial levels, this project aims at testing the developed approach on one or two examples, as far as sufficient empirical data are available.

### 4.6.6 Development of general criteria for good governance

In this chapter the attempt is made to fill the general principles of good governance with more detailed criteria, thereby especially taking account of the territorial dimension. The World Bank already followed a similar approach of categorizing criteria when establishing a structure to monitor governance on a global scale (see Kaufmann et al 2005). While some overlapping may exist, other principles where used in that case for the closer description of governance. Furthermore, the criteria nominated by the World Bank mainly focus on national governance developments, and are therefore insufficient or partly inadequate to detect governance on different spatial levels within the European territory. Hence, the effort will be made in this project to find different criteria that are relevant for the ESPON space and adoptable for the various spatial levels.

An additional distinction has to be made here, namely between criteria describing the underlying structures and preconditions for good governance, and criteria for the processes of governance themselves. Similar differentiations have been made in the approaches of the United Nations University (see Court et al 2002, p.4) as well as by ESPON project 2.3.2 (see ESPON 2.3.2, FR, p.44). Some of those preconditional aspects are often influenced again by the impact of governance activities, thus have to be considered as non-static features.

As mentioned earlier, especially the given structures and characteristics at the national level provide an important framework for possible governance actions and are therefore largely responsible for the emergence of different types of governance in those countries. An overview on a possible typology of governance forms in the European states is given in Table 4-6.

**Table 4-6 Typology of national governance**

| | | **State Organisation (institutional framework)** | |
|---|---|---|---|
| | | Unitarian | Federal |
| **Rules of Transaction (institutional arrangements)** | Liberal | Type (1): Unitarian-liberal governance structure GB | Type (4): Federal-liberal governance structure I |
| | Corporative | Type (2): Unitarian-corporative governance structure NL | Type (5): Federal-corporative governance structure D, A, B, CH |
| | Integrated | Type (3): Unitarian-integrated governance structure F, L | |

Source: Kujath et al (2001b), p.37

The various national preconditions include for instance (see also FR 2.3.2, p.81ff):

- Level of institutionalisation of political system
- constitutional background for territorial associations
- existence of national agencies/councils for spatial development
- emphasis on horizontal coordination (yes/no)
- barriers/catalysts for partnership formation and cooperation
- political stability
- self-regulation of society

Further criteria on preconditions (a) and description of governance processes and actions (b) are listed in the following overview for the five principles of good governance, and should be understood as a basis for further discussion within this project. The different backgrounds of the criteria are mentioned in brackets.

### Openness

To detect features of the principle of openness, criteria have to be found to assess the communication of policies among the different actors. Of special relevance as enabling the development of a good openness of governance structures is the transparent character of the formulated territorially oriented policies, and the availability of information on policies and actions. A high openness itself can be described by aspects of communication practices, and further by the understanding and acceptance of policies and governance actions among the public.

| | |
|---|---|
| a | - transparency of government policy (World Bank)<br>- availability and transparency of information (White Paper) |
| b | - understanding of policies among the public (White Paper)<br>- active communication (White Paper)<br>- official acceptance of governance concepts and principles (ESPON 2.3.2)<br>- transfer of competences (ESPON 2.3.2) |

### Participation

Important preconditions for intensive participation are formed by the underlying structures of actors and their relations, for instance the system of administration or the typical characteristics of decision-making processes. Another aspect of great relevance can be the capacity of different actors to hear, to listen to other opinions, or the room that is given to hearings within policy development processes and actions.

Participation itself is characterised by the inclusion and cooperation of various and – most significantly – the relevant actors with their respective interests. In order to develop good governance structures, it is of high importance that actors of both vertical as well as horizontal levels are included – always depending on their relation to the issue at hand.

| | |
|---|---|
| a | - structure of different official actors (administrative levels) (ESPON 2.3.2)<br>- capacity to hear (ESPON 2.3.2)<br>- experience with participation processes (ESPON 2.3.2), e.g. labour force participation<br>- structure of decision-making processes (IRS)<br>- financial incentives for participation (IRS) |
| b | - typology of actors involved (• rights-holders (citizens), space-holders (residents), knowledge-holders (experts), share-holders (owners), stake-holders (beneficiaries and victims), interest-holders (speakers), status holders (representatives) (see Schmitter 2002, p.51 ff)<br>- agreements (formal/informal) (ESPON 2.3.2)<br>- empowerment of actors (IRS)<br>- involvement of variety of diff. interests (vertical as well as sectoral (ESPON 2.3.2)<br>- asking for participation (on core/side object) (ESPON 2.3.2)<br>- voluntary participation (ESPON 2.3.2)<br>- overall e-government contact of SMEs (EUROSTAT, see ESPON 2.3.2)<br>- existence of regular multi-level meetings (ESPON 2.3.2)<br>- forms of cooperation between diff. gov. actors (ESPON 2.3.2)<br>- formal (institutionalized)/informal cooperation (ESPON 2.3.2)<br>- vertical/horizontal coordination and cooperation (ESPON 2.3.2) |

## Accountability

In order to facilitate structures of good governance, certain conditions have to be fulfilled that give a clear and precise basis for judicial proceedings. In other words, the responsibilities and legal roles of the different actors in the territorial governance processes have to be defined. This includes the allocation of power concerning decisions on spatial development as well as their financial interrelations and dependencies.

Criteria of accountability further on describe the dynamics within this field, the changes initiated by new governance processes regarding the allocation of power among different administrative and spatial levels.

| | |
|---|---|
| a | - freedom of association (World Bank)<br>- independence of judiciary (World Bank, UNU)<br>- extent of financial dependence of local government on central government (ESPON 2.3.2)<br>- existence of constitutional regions and respective executive offices (ESPON 2.3.2)<br>- existence of national territorial chambers (ESPON 2.3.2)<br>- location of spatial planning powers (ESPON 2.3.2<br>- trust in parliament (World Bank)<br>- accountability of public officials (World Bank) |
| b | - changes in formal government in the direction of governance (ESPON 2.3.2)<br>- devolution of powers to 1st tier local authorities (ESPON 2.3.2)<br>- centralisation/decentralization/devolution (ESPON 2.3.2)<br>- quality of definition of roles (White Paper)<br>- adaptation of processes, raising reliability (IRS)<br>- bargaining (real/shadow) (see Scharpf 1991) |

## Coherence

Criteria for the principle of coherence illustrate whether different governance actions follow the same territorial development perspective, no matter on what administrative or spatial level they are generated or which sector is most strongly involved. An already stable coordination between authorities and certain consistency in policies can be valuable preconditions for good coherence within governance processes.

| | |
|---|---|
| a | - stable coordination among diff. public authorities (ESPON 2.3.2)<br>- policy consistency (World Bank) |
| b | - intersectoral coordination (ESPON 2.3.2)<br>- existence/formation of a spatial vision shared by and representing all sectoral policies (ESPON 2.3.2)<br>- coherence of policies at different levels (vertical subsidiarity) (ESPON 2.3.2)<br>- coherence of diff. policies (sectoral) (horizontal subsidiarity) (ESPON 2.3.2) |

## Effectiveness

Last but not least, it is the effective implementation of policies that plays a major role as a characteristic of good governance. The attributes and qualities of the given system on the regarded spatial level remarkably influence the development of effectiveness in territorially oriented governance processes.

| | |
|---|---|
| a | - effectiveness in state structure (World Bank)<br>- effectiveness of the executive (World Bank)<br>-quality of bureaucracy (World Bank, UNU)<br>- level of qualification and learning capacity of the population (IRS) |
| b | - ability of state to respond to problems effectively, implementing policies according to needs (World Bank)<br>- effective integration of available financial resources (ESPON 2.3.2) |

As can be seen, there is no single indicator, which could describe either of the principles appropriately without being misleading. Thus, the production of a qualitative description of territorially oriented governance, taking account of different detailed aspects, will not yet be feasible for the Spatial Monitoring Report. It will have to be discussed, to which extent this policy field shall still be included in the report. Further improvements of the methodology regarding the monitoring of territorially oriented governance could then be envisaged for the next report.

### 4.6.7 Sources


Commission of the European Communities (2001): European Governance. A White Paper, Brussels.

Court, J., Hyden, G., Mease, K. (2002): Assessing Governance: Methodological Challenges. United Nations University, Tokio (www.unu.edu/p&g/wga/publications/wgs-discussionPaper2.pdf)

ESPON Project 2.3.2, Final Report, Draft version (2006)

European Union (2006): The territorial state and perspectives of the European Union', draft version (http://www.bmvbs.de/Anlage/original_963699/The-Territorial-State-and-Perspectives-of-the-European-Union-Document-First-Draft.pdf)

Kaufmann, D., Kraay, A., Mastruzzi, M. (2005): Governance Matters IV: Governance Indicators for 1996–2004. Draft Version, World Bank, Washington, D.C. (http://www.worldbank.org/wbi/governance/pubs/govmatters4.html)

Kujath, H.J. /Dybe, G. /Fichter, H. (2001a): 'Europäische Verflechtungen deutscher Metropolregionen und ihre Auswirkungen auf die Raumstruktur des Bundesgebietes.' Endbericht (Kurzfassung). Erkner.

Kujath, H.J. et. al.(2001b): Europäische Verflechtungen deutscher Regionen und ihre Auswirkungen auf die Raumstruktur des Bundesgebietes. Final Report, Study for Federal Ministry for Transport, Building and Housing. Erkner.

Pierre, Jon (2000): Introduction: Understanding Governance. In: the same (ed.): Debating Governance. Oxford, p.2

Scharpf, Fritz W. (1991): Die Handlungsfähigkeit des Staates am Ende des zwanzigsten Jahrhunderts. In: Politische Vierteljahresschrift 32 (4), p. 621-634

Schmitter, Phillippe C. (2002): Participation in Governance Arrangements: Is there any reason to expect it will achieve “Sustainable and Innovative Policies in a Multi-Level Context”? In: Grote, Jürgen R., Gbikpi, Bernard (ed.): Participatory Governance: Political and Societal Implications, Opladen, p.51-69

# 5 Towards a spatial monitoring report

The philosophy of continuous spatial monitoring is to measure and analyze spatial phenomena and keep information about regional disparities and their development.

Therefore spatial monitoring can pursue two different goals and address target groups. On the one hand, spatial monitoring is an instrument that can be used in order to evaluate the success of politics and give basic information if the targets were reached and to spot ongoing deviation. On the other hand, spatial monitoring is the necessary basis for spatial analytical work. Insofar spatial monitoring provides the basis for applied scientific research. Moreover spatial monitoring can deliver prognosis information about future developments. Therefore such a monitoring, if applied correctly can also be used to carry out necessary and reasonable forecasts.

The main element of spatial monitoring are the used concepts and their indicators. While the concepts compose the different thematic fields the monitoring system is dealing with, the indicators are needed to measure, compare and evaluate the specific spatial development. Statistical data about regional development are the basis of such a spatial monitoring.

When thinking about the basic attitude of a spatial monitoring, two main strands are likely to be differentiated:

1. An elaborated precise and highly complex scientific monitoring system, which consists of a huge amount of concepts and even more indicators per concept. All available indicators can be taken on board, as long as it is possible to feed them back into the system and to verify or falsify them somehow. A lot of different aspects per concept are measured and no predominant indicator is selected.
2. A policy-orientated spatial monitoring in an lean way and which consists also of all necessary thematic concepts, but includes only a limited number of "routing -indicators" per concept. Such a more slimmed monitoring obviously needs a selection of the most important indicators which have to be confronted with the problems and targets of spatial policies.

For the exercise here, the second option will be selected. Just because the already existing ESPON results can be interpreted as a well-elaborated spatial monitoring system, due to the enormous wideness of spatial themes, which are covered and the satisfying results available from the projects so far.

The challenge of this projects is to guide a more general spatial policy-related process, targeting to support the discussion of territorial issues. This could not be done with the complete range of spatial information as this would make the data too complex, nor would it allow to identify fast and easy territorial trends. Therefore the characterisation of the main challenges and the key factors in the context of territorial cohesion and spatial development needs a selection of a smaller number of indicators. A limited list of indicators related to a territorial agenda - comparable to the elaboration of the short list of indicators related to the Lisbon/Gothenburg agenda - seems appropriate (see chapter 4).

One of the most important preconditions is the fact that the indicators of the monitoring system cover the whole ESPON area and that the statistical data have to be updated in short periods, mostly annually. Furthermore the selection of the indicators for a continuous spatial monitoring of the European territory has to be a cautious and gentle process, subject to revision and adaptation. When policy aims are revised and / or new knowledge on specific issues is produced it has to be decided if changes are really necessary and useful.

Finally, the spatial monitoring report should include a wide thematic range of indicators for different spatial contexts. Therefore it will be created alongside the matrix agreed by the ESPON MC (see chapter 2.6) as well as on the proposals of the thematic oriented TPG's. The result is a list of ”core” or "routing indicators" which are thought to define the most relevant spatial indications of structures and trends as well as to represent the main tendency of the different thematic fields included.

As for national territories also a European wide spatial monitoring is necessary. Especially for researchers, politicians and other decision makers such a monitoring gives evidenced based information and has to be seen as a tool supporting the decision making processes.

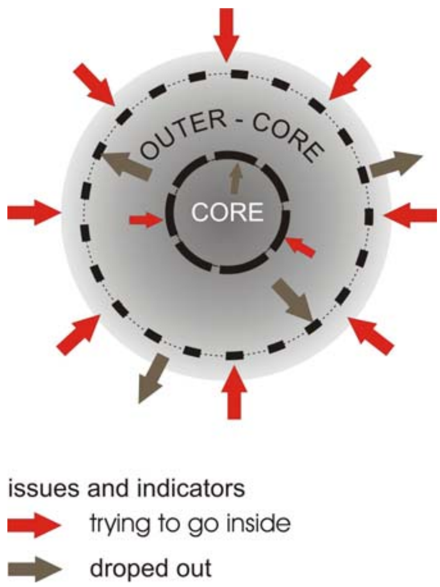
The tentative monitoring report which will be part of the final deliveries of the project 4.1.3 should be used for further deliberation on a model for sequential monitoring reports published within certain periodicity.

## 5.1 Continuous assessment of territorial development trends in relation to territorial policy objectives

As for national territories also a European wide spatial monitoring is necessary. Especially for researchers, politicians and other decision makers such a monitoring gives evidenced based information and has to be seen as a tool supporting the decision making processes. Thus a permanent, well structured and good organised basis is without alternative. Besides, monitoring not only asks for a comprehensible content but also for the possibility to realise it continuously. Only by means of continuous monitoring it will be possible to easily recognise territorial trends and to put them in relation to territorial policy objectives.

The experience in various countries which already conduct a continuous spatial monitoring for a long period of time show that various basics are more or less the same. The selection of topics and thus the selection of indicators is fundamental. When selecting topics and indicators for the monitoring, first the essentially basic and ever lasting issues are of high importance (demography, urban-rural, transport…). That includes information which is always needed and unrelated to shifting political priorities. These form the more or less untouchable core of such a monitoring. Around this (permanent) core some varying aspects are situated. This includes newly arising themes or themes that are of vital interest just for a certain period of time. Most likely these are politically and spatially related issues that are not all the time in the focus of the professional discussion.

**Figure 5-1: Continuous evaluation of issues and indicators as a sound basis for spatial monitoring**




First of all it has to be clarified what should be monitored or assessed and why. In a second step follows the question on which issues are relevant enough to find their way into the outer core and maybe into the core of the system. This is not an easy decision. This obviously provokes certain difficulties. Too many issues automatically imply a high number of indicators which could easily ‘inflate’ the system. This would of course lead to a decreasing practicability of the monitoring. A good monitoring requires a lean structure to fit the needs of the users. Another problem can be seen in a uncontrolled and excessive adding and dropping out of certain issues. Very daily political changes could provoke such tendencies. But of course these tendencies hinder a good spatial monitoring from being stabile and reliable. A monitoring therefore should be based on long-term observations. Concluding it has to be ensured that the basis of spatial monitoring, which can stand the reality, has to be ‘reduced to the max’ and must be protected against too many and too deep outside interventions. A very careful handling is necessary, otherwise a continuous assessment is not possible. So the more serious and meaningful the monitoring is programmed at the beginning, the longer it will last.

For a continuous assessment of territorial development trends the procurement of data is very important and strongly connected to above discussion. The solution on how to get the indicators and relevant data could be solved in various ways. Transnational project groups, as the existing ones, could be one solution and one type of source. If data is available on the market or freely available from other European agencies and needs no further elaboration, it could be bought or asked for and included directly into the system.

## 5.2 Most appropriate indicators for spatial monitoring – tentative results

In correspondence to the envisaged structure of the tentative European spatial monitoring report (see previous section), it is necessary to differentiate the indicator selection accordingly. So far, the work done by the thematic WPs of ESPON project 4.1.3 is strongly related to the second part of the monitoring report, as the indicators' identification is closely linked to current policy objectives. These WPs are not designed to contribute to the first part of this monitoring report. Instead, and according to the ToR, for this more principal part of the monitoring report very basic indicators will have to be employed, which will be similar to those utilised in various national reports. Due to the state of the art of the project, in the following it will be exclusively focused on the appropriate indicator selection for the second part of the European spatial monitoring report.

The indicators so far proposed by the thematic WPs mostly refer to static data rather than dynamic data. Thus, at present, the development of spatial structures is not accounted for, although this also matters for continuous spatial monitoring as well. Otherwise it would be difficult to come properly recognise territorial developments which are politically relevant for one or other reason. This the more, if indicators considered in the reports are adjusted from time to time.

Already at the present stage, the search for appropriate monitoring indicators has by for not been restricted to ESPON sources. Instead, several thematic WPs have also made use of other sources as well. Examples for other sources for the identification of indicators and/or data are given in table 5-1.

**Table 5-1 Indicator and data sources reviewed for indicator selection and description**

| | |
|---|---|
| INTERREG IIIB BSR | Nordregio (special study) |
| Eurostat Regio Database | World Bank |
| CORINE 2000 Dataset | EEA |
| Various national sources on sustainability | Various national sources on Lisbon and Gothenburg strategy |
| United Nations University | |

At present also the quality of indicators varies widely. Some indicators appear to be of a very specific character (e.g. location of multinational headquarters) while other tend to be much more general (e.g. population density). Especially for the latter type of indicators it will have to be investigated in how far they are actually appropriate in relation to policy objectives or are of such basic character, that they should be included in the first part of the spatial monitoring report. Similarly, proposed indicators also vary strongly in terms of their complexity. While most suggested indicators are quite straight forward (e.g. proportion of households with internet access) and easy to understand other indicators are highly complex (e.g. potential accessibility to population, multimodal). The latter can be difficult to comprehend and to maintain over time, thus possibly leading to information losses etc. as compared to simpler time series indicators. To improve coherence, comparability and comprehensibility of the proposed indicators further discussions will be conducted within the TPG. However, this does not imply, that all indicators have to be similarly simple or complex. Always it will have to be searched for the 'best' solution taking account the needs for appropriate indications (see also section 2.5 above).

Besides above differences, also the extent to which a careful selection of indicators has been possible to conduct varies considerably between the different WPs. This is due to the extremely limited time prior to the preparation of this interim report, as mentioned earlier in the report. The actual stage of the thematic WPs depends very much on the availability of appropriate work done within and outside ESPON. As a consequence, for some thematic fields it has already been possible to propose indicators filling gaps in the indicator matrix as is was provided as a starting point, while for other the review process is not yet finished.

These varying achievements are also mirrored in the specificity of the so far proposed indicators. Some indicators tend to be more focused in terms of their linkages to policy objectives and thematic fields mentioned in the matrix than others. In the remainder of the project duration it is certainly possible to achieve further improvements in this context. However, in some cases this observation should also give rise to the completeness and accuracy of the given matrix. Thus it can be asked, whether it is necessary to add new columns or especially lines? Or is it useful to join one or the other field or even column or line? These questions will be subject to further discussions within the respective thematic WPs as well as at the upcoming project meeting.

The current stage of indicator selection is depicted in below table. This table does not only include the newly proposed indicators but also presents the indicators as they were included in the initial version of the indicator matrix as a starting point for ESPON project 4.1.3. At this intermediary stage of the project this has been done for transparency reasons and for supporting discussions on indicator selection within the TPG. These initial indicators are in clear fields of the table. In the shaded fields the table contains the so far identified routing and wish-list indicators. Of these the wish-list indicators are listed in italics. In order to simplify references to the individual matrix fields an additional line, assigning numbers (1 to 10) to the policy objectives, and an additional column, giving letters (A to N) to the themes, have been implemented.

## Figure 5-2 new, extended matrix

| | | Balanced distribution of population, wealth, cities | Sustainable settlement structures | Assets for global competitiveness | Innovative knowledge society | Diversified regional economies | Sustainable transport and energy | Socially inclusive society and space | Healthy environment and hazard prevention | Diversified cultural heritage and identities | Territorially oriented governance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 6 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 |
| Urban development & hierarchy | A | Rank-size index (by population)<br>*Polycentricity indicator to be developed*<br>*Urban sprawl* | Primacy rates<br>*% of land used for settlements and traffic infrastructure* | Importance/share of major transport hubs (pass. & gds) | | | | | | | |
| Urban-rural relationships | B | *Accessibility of services*<br>*Balance of commuters* | Artificial area development | | | | | | Evolution of natural surfaces | | |
| Demography | C | Evolution of population by age group & gender<br>Population density<br>Dependency ratio<br>*Index of sustainable demographic development*<br>*Total migratory balance* | | Migratory balance<br>*Population by age group*<br>*Different socio-demographic performance ratios* | | Activity rates by age group & gender | Day/night time population | Loss of life expectancy due to air pollution<br>*Life expectancy at birth*<br>*Ageing labour force*<br>*Average exit age from labour fource*<br>*Unemployed below 25*<br>*Temporary work* | | | |
| Innovation | D | | | *Life-long learning*<br>*Science & technol. graduates*<br>*Patents EPO* | Patents by field of activity | R&D personnel | | | | | |
| ICT | E | | | | Broadband usage | | Proportion of households with internet access | | | | |
| Hazards | F | | | | | | | | Hazard risk typology | | |
| Culture | G | | | | | | | | | Number of cultural sites<br>Number of cultural sites (monuments) | |
| Transport | H | Potential time distance to centres of different levels<br>Average travel time to next three regional cities *(with more than 50,000 inhabitants)* by car | People within 50 km distance ('regional population potential') | Multimodal accessibility<br>Potential accessibility to population, multimodal<br>*Rail / road freight* | | *Lorry travel time to transport terminals* | Intensity of transport flows by mode<br>Modal split passenger transport (car, plane, train)<br>*Modal split by freight*<br>*Road share of inland freight transport % of ton-km* | Accessibility by public transport<br>Regional accessibility by public transport (rail)<br>*Proportion of reg. pop. living within 30 min of next railway station* | | | |
| Agriculture, fisheries and rural development | I | | | | | | | | | | |
| Energy | J | | | | | | Energy consumption per type of user & source<br>Final Energy consumption by transport<br>*Energy inland consumption*<br>*% or renewable energies in total energy production*<br>*Use of renewable energy in relation to electricity cons.*<br>*Aver. Energy efficiency for pass. & freight transport*<br>*Energy use per gross value added*<br>*Share of electricity from renewable energy to gross electricity consumption*<br>*Final energy demand* | | | | |
| Governance | K | | | | | | | | | | |

| | | Balanced distribution of population, wealth, cities | Sustainable settlement structures | Assets for global competitiveness | Innovative knowledge society | Diversified regional economies | Sustainable transport and energy | Socially inclusive society and space | Healthy environment and hazard prevention | Diversified cultural heritage and identities | Territorially oriented governance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 6 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 |
| Environment | L | | Share of urban fabric<br>Land cover replaced by built-up area 1990-2000<br>Usage of land | | | | Land consumption by transport infrastructure<br>*Greenhouse gas emissions* | | Fragmentation index / ground water quality<br>*Municipal waste generated*<br>*Population NUTS 2 / Population NUTS0*<br>*Natural areas*<br>*Area of untouched forest*<br>*Total greenhouse gas emissions*<br>*Protected areas for biodiversity: Habitat Directive*<br>*Vulnerability* | | |
| Social issues | M | Rank-size index (by household income)<br>Household income / capita<br>*Intra-regional income dispersion*<br>*Regional PPS*<br>*Practising physicians per 1 000 inhabitants*<br>*National development assistance as % of GNP*<br>*Official development assistance* | | *Total health expenditure per capita in US $ ppp*<br>*Public expenditure on health* | Population by education level | *Employed persons by highest level of education attained* | Number of people injured and number of people killed in road transport | Health care / hospital beds per 100 000 inhabitants<br>*Social spending*<br>*Inequality of regional income distribution*<br>*Funds for poberty and ageing (reg. exp. In pps per capita)*<br>*At-persistent-risk of poverty rate*<br>*Early school leavers*<br>*Child poverty*<br>*Private & public social spending*<br>*Working mothers* | | | |
| Economy | N | Rank-size index (by GDP)<br>*Household income*<br>*Gini-coefficient of household incomes*<br>Location of multinational headquarters<br>*Consumption per capita*<br>*Household budget survey* | *Proportion of long-distance commuters* | Number of multinational headquarters<br>*Employees in %*<br>*Labour productivity per hour worked*<br>*Inflation rate*<br>*Purchasing power indices*<br>*Labour costs*<br>*Total employment rate*<br>*Birth rate of enterprises*<br>*Survival rate of enterprises* | Employed in high-tech sector<br>*Gross domestic expenditure on R&D as % of GDP* | Added value by economic sector (some specilisation index)<br>*Change of GDP per capita from 1995 to 1999*<br>*National (firm) aids % of GDP* | Energy intensity of the economy (gross inland consumption of energy divided by GDP)<br>Energy intensity of the economy | Unemployment rate / change of unemployment rate over time<br>*Gini-coefficient*<br>*Part-time employment*<br>*Jobless households*<br>*Total long-term unemployment rate* | | | |

Besides the proposals for the individual matrix fields, the table also includes a rather fundamental change, as it suggests to join the two policy objectives considered in the WP on territorial cohesion. It turned out, that a differentiation between the respective policy objectives is somewhat difficult in terms of indicator selection. This finding is depicted by the dotted vertical line between the respective two columns, of which the latter has been shifted for graphical reasons.

The work which has been done so far on indicator selections inhibit some overlaps, since the thematic WPs dealt with intersecting lines and columns. In some cases this led to indicator proposals by more than one of the WP groups. Examples for such matrix fields are H7 and N1. Such overlaps will have to be solved by means of discussions between the involved WP partners. Due to the time limits, it was not possible to do this prior to the submission of the interim report. In addition, only such an overview as in the adjusted matrix makes these overlaps visible.

In the various matrix fields one can find both complementing as well as alternating proposals. In some cases the initially suggested indicator has been more specified (e.g. field C1). In other cases the originally recommended indicators experienced rather slight adjustments in details of their formulation (see e.g. field H1). For again other indicators the originally proposed ones have been principally verified by the TPG. This holds especially for the listed indicators with a bold frame. Finally, there are also some indicators (like some in fields H5, J5 and L5), for which routing and wish-list indicators vary only slightly in terms of their 'best' source and collection.

With regard to the indicator 'number of multinational headquarters' it should be noted, that it has also been suggested by the TPG, however, with reference to another policy objective. Similar alternate assignments also occur elsewhere in the table and need to be further investigated. This once more emphasises the ambiguity of some indicators. At the same time, such findings can also be used to clarify which indicators might be particularly useful to serve more than just one purpose or policy objective. The identification of such indicators can support a streamlined spatial monitoring, by reducing the number of necessary indicators. At the same time, the different meanings of such indicators need to be pointed out carefully when applied in a spatial monitoring report.

As mentioned above, several former gaps (e.g. field H6 and M4) have been filled, although the TPG is aware, that it does not aim at filling in every single field but should only add indicators where this is useful. These preliminary findings and changes in the matrix will serve for further discussions within the project group and with the CU in order to come to an even more elaborated indicator matrix by the end of the project. With regard to some themes and policy objectives, once again, it might be necessary to reduce the numbers of indicators e.g. by developing clear and transparent indexes or other selection processes. These discussions will also have to include some still occurring matrix gaps which apparently need some more considerations. Apparently, gaps are still prevalent for the thematic fields of agriculture, fisheries and rural development as well as governance. Connected with the latter also for the policy objective of territorially oriented governance no indicators have been proposed so far. The reasons for these gaps in the indicator matrix, however, differ between the respective themes and need to be focused upon in the August project meeting.

With regard to governance or territorial oriented governance, in the context of above matrix, it needs to be discussed, whether for a continuous spatial monitoring it is reasonable to include the regional level by means of a qualitative approach, since quantitative indicators for this level are not considered to be appropriate. This gives rise to two alternative approaches for spatial monitoring. Firstly, it could be rational to exclude governance issues from such a continuous monitoring. In such a case, it was sensible to consider territorial governance issues separately. Or secondly, the question has to be raised, whether it is useful to include governance issues on national level only in a spatial monitoring report. The latter would represent an approach similar to that largely taken by ESPON 2.3.2

## 5.3 Possible tools of supporting a sequential reporting

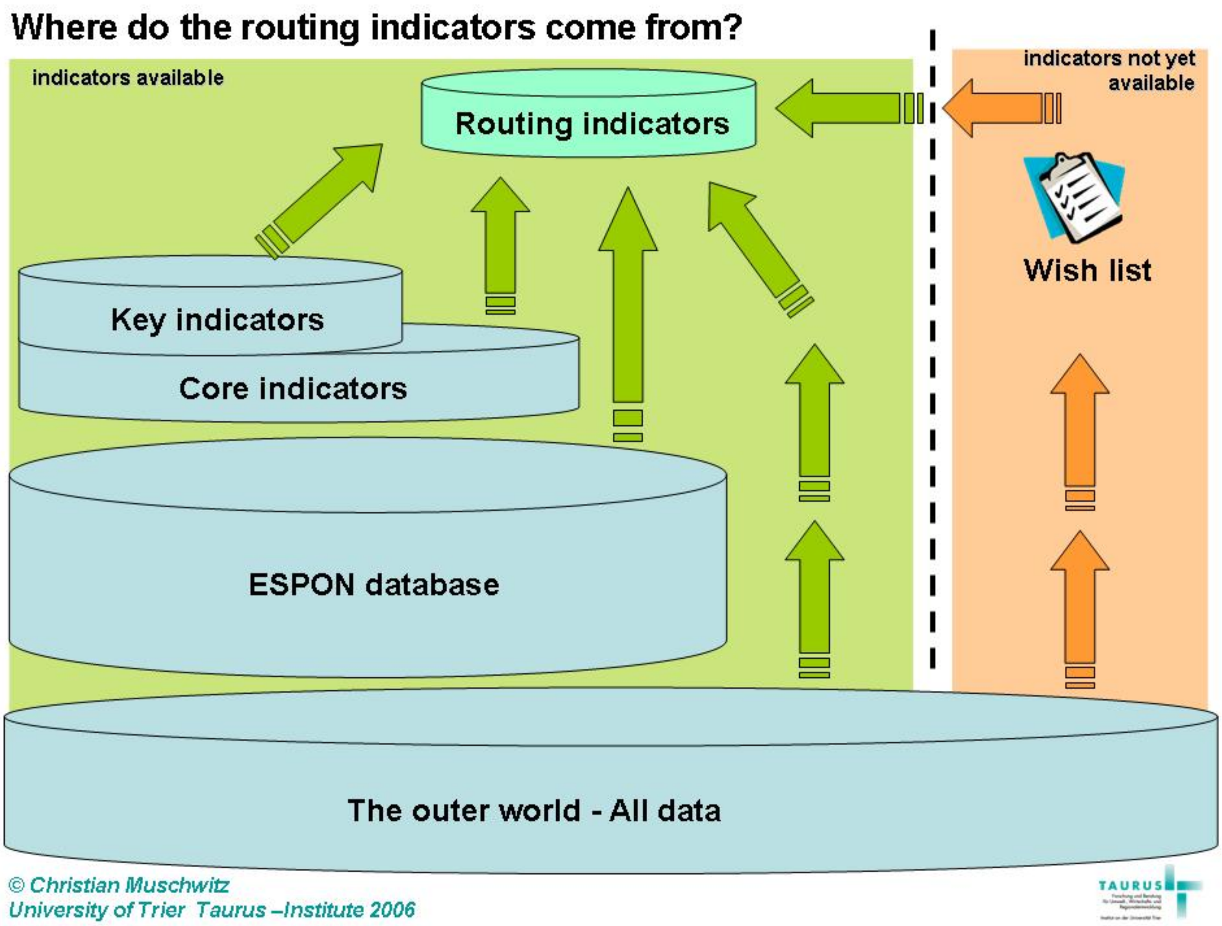
Chapter 3.2.2 described the content of the data fact sheet that is used to collect metadata on the respective indicators. Since this information is not gathered in a pure text format but in a database, this tool allows more practicable applications. Potentially all tools and interfaces to other software that exist for MS Access databases can be applied. In the context of spatial monitoring a linkage can be made to Geographic Information Systems (GIS). GIS are based on two databases: a Spatial Database, containing geometric information on the location (coordinate systems), shape, and interrelationships of map features for the spatial representation, and an Attribute Database containing the information that is to be shown through the map features.

The database tool for the data fact sheets can easily be further developed and adopted to the requirements of a GIS Attribute Database. A multitude of automatically generated maps is possible. Maps could show the general availability of the indicator in the ESPON countries as well as the spatial level they are available on. With the current design of the database the national average values that are collected in the data fact sheet can be translated into maps, showing these values for each country. In any case, this is not meant as a substitute for the ESPON database which provides a vast amount of data on much more disaggregated levels. However, it should eventually be technically possible to connect the final ESPON 4.1.3 routing indicators to the ESPON Web-GIS, thus allowing users to create their own maps from the indicator sets similar to the

*Informationen und Karten zur Raumentwicklung* (INKAR) published annually by the BBR.

The routing indicators will form a sub-set of the key and core indicators, which are themselves a sub-set of the ESPON database (see figure 5-3 below). Routing indicators adopted from other sources than the ESPON database may enter the routing indicator list and should subsequently also become part of the ESPON database. It should then be possible to easily adopt the data of the routing indicators into the ESPON Web-GIS.

**Figure 5-3 Origin of routing indicators**




Source: TAURUS-Institute, 2006

Since the national means, minima and maxima are collected in the indicator form, another possible application could be the automatic generation of span diagrams using these values of the database as an input to MS Excel.

In general this tool is open for many more potential applications as it is, depending on the demand of the future sequential reporting. Furthermore, adjustments can be easily made to incorporate further information on the indicators.

## 5.4 Draft outline of the envisaged monitoring report

The project is asked to compile a so-called tentative spatial monitoring report. Regarding its content and thematic outline this report should be based on the experiences made and proposals elaborated within the thematic work packages (see chapter 4) and the synoptic indicator matrix proposed in the tender (see chapter 2.6).

The structure of the matrix is also the base for the general outline of the report. It will concentrate on sectoral orientated themes (part I) as well as on policy fields and objectives (part II).

The report will consist of a standardised part based on automatically produced indicator sheets (see chapter 4) and part on the interpretation and summary of results. Thus a clearly structured and understandable report will be produced. This simple approach facilitates a continuous publication of monitoring results.

Part one of the report will be thematically oriented. This part can be interpreted as the one on "ever lasting" and continuous issues of spatial importance and monitoring. It will contain the basic demographic and socio-economic regional information of the EU territory. Therefore it will not serve only for the monitoring report but also for different other important documents and reports by the EU. This should allow an examination and deeper evidence in respect to economic and social cohesion. Concerning structural funds orientation it will serve and support the discussion about Objective 1 and 2. Thus it relates to less favoured regions and labour market and employment.

The second part of the tentative report will focus more on the development of relevant policy fields and objectives, i.e. the territorial dimension and long term spatial policy objectives. It will particularly concentrate on the aspect of territorial cohesion. The territorial dimensions will be considered on the basis of a synoptical grouping of the sectoral policies (lines of the matrix) and the policy orientations and thresholds (columns of the matrix). For the matrix, please see chapter 2.6.

The introduction, executive summary, the resume at the end of part I, II and the overall resume will be non-standardised chapters giving room for interpretation and recommendations.

The following table of contents for a tentative version of a spatial monitoring report is a first idea and outline based on the Terms of Reference for the project 4.1.3.

Table of contents:

- *Executive summary*
- *Introduction*
    - aims and objectives of the report
        - methodology
        - approach and guiding questions
        - selected indicators
- *Part I: Current structures and territorial dynamics (sectoral oriented themes)*
        - current structures and situation of the European territory using main socio-economic and demographic indices (including maps)
            - demography
            - economy
            - social issues
        - territorial dynamics within Europe and its regions
        - resume
- *Part II: Development of relevant policy fields and objectives*
        - Territorial cohesion
        - Lisbon
        - Infrastructure
        - Gothenburg
        - Socio-Cultural
        - Governance
        - resume
- *Part III: Resume*
        - Resume
        - Spatial challenges encountered
- *Annex: Detailed information on each indicator* (source, years, calculation, etc. etc.)

# 6 Resume and Outlook

## 6.1 Resume

The report fulfils the requests of the Terms of Reference. Furthermore it introduces for reader who is not familiar with the issue into a general discussion and step by step approaches the challenges of availability and homogeneity connected with questionable quality of existing data. It examines complex indicators versus simple indicators and the again and again cropping up debate on qualitative and quantitative indicators. Further it introduces the question, which statistical unit or standard is appropriate for the survey to analyse and represent current structures and territorial dynamics as well as the development of relevant policy fields and objectives. As for all ESPON Projects also for the project 4.1.3 the current statistical units are NUTS II/III. But the TPG points out that for the future, a more appropriate solution has to be found.

One of the big challenges is to bring different expectations concerning a spatial monitoring, from the point of view of policy makers and scientist together. The further development of the given matrix (see chapter 5.2) shows that it is possible to aim for the same objective.

The TPG developed a first framework for the monitoring of the European territorial development. For the approach the restriction using only ESPON indicators is removed by the ESPON Programme and indicators used and/or available outside ESPON can be proposed for spatial monitoring, if they are useful and contain high explanatory power in terms of the thematic field they represent and the tackled policy objective. Thus, the existing ESPON indicators, but also possibly a newly developed combined indicator could serve. Given this new frame, it is useful to assign a new name to such an indicator list to stress its differences to previous indicator list concepts. These indicators are now called '**routing**' indicators. The identified 'routing' indicators need to be complemented by a wish-list of indicators not appropriately available yet but highly useful. The Wish list indicators are those that have certain shortcomings but should become part of the routing indicator list in the future.

The TPG presents furthermore tools for the identification and selection of the right indicators. Concerning the developed tools it has to be stated that the project is on the right track. Improvements are obviously necessary and will be done, but the tools already proved their practicality. Furthermore, the tools allow more practicable applications. Potentially all tools and interfaces to other software that exist for MS Access databases can be applied. In the context of spatial monitoring a linkage can be made to Geographic Information Systems (GIS). In general this tool is open for many more potential applications than it is used for until now, depending on the demand of the future sequential reporting. Furthermore, adjustments can easily be made to incorporate further information on the indicators.

Preliminary selected indicators, which should be further discussed, are presented along six policy concepts. This six concepts are a combination of key ideas of policy fields and the thematic orientation of the ESPON research projects. Basis for the development was the “matrix” (see chapter 2.6). The matrix provided by the ESPON Programme consists of 28 key indicators which have been classified according to 14 thematic fields (row) and 10 policy objectives (column). These policy objectives have been grouped by the project 4.1.3 to altogether 6 policy concepts (Lisbon and Gothenburg strategies, territorial cohesion, etc).

As requested the TPG presents the prerequisites and approach towards a tentative spatial planning report. The philosophy of continuous spatial monitoring is for the TPG to measure and analyze spatial phenomena and keep information about regional disparities and their development. The work on the careful selection of indicators (chapter 4) has to be seen as an indispensable preparatory work for the spatial monitoring. The project favours a policy-orientated spatial monitoring in a lean way, which consists also of all necessary thematic concepts. A first outline is given and the philosophy behind it is described (see chapter 5). It is a timeless solid structure which recognises territorial trends and to put them in relation to territorial policy objectives. Latter can change and thus it is designed in a way that it can react in a very flexible on changes in policy objectives.

In general the work realised until now shows that the project is on the right track, even if gaps exist and technical solutions need improvement. For the short period of time the project is ongoing it has made a huge step forward.

The search for indicators has not been similarly successful for all policy fields. Clear inequalities and inconsistencies in the status presented can not be ignored. However, e.g. the discussion on appropriate routing indicators for “Governance” shows, that in some cases deeper discussions within the project group, but also with the CU have to be on the agenda for the rest of the project's lifetime. For other policy fields a lot of indicators are listed in this report already. Here it is now important to go through a very intensive selection process. This will be done within the project's work packages and during the meeting of the whole project group in August 2006 in Bonn.

## 6.2 Outlook

The work on the interim report showed that there have to be necessary improvements. This concerns on one hand side technical aspects. On the other hand side overlappings and unsuitable indicators have to be avoided. Also the structure and content of the tentative spatial planning report has to be further developed. The present report serves as the basis for the improvements.

The project team will concentrate until the rest of the project life time and until the delivery of the final report on:

| time | task / issue |
|---|---|
| until Oct. 2006 | - improvement of the layout for the standardised indicator sheets |
| until Oct. 2006 | - improvement of the access indicator forms |
| until Oct. 2006 | - final careful selection of routing indicators*<br>o discussion and agreements on indicators within the TPG<br>o discussion and agreements on indicators with the CU |
| Aug. 2006 | - TPG meeting |
| Sep. 2006 | - participation in the ESPON TPG lead partner meeting in September 2006 |
| Oct. 2006 | - delivery of the final version of the scientific working paper, including recommendations on future data collection |
| Oct. 2006 | - delivery of the final version of a tentative spatial monitoring report |
| Nov. 2007 | - Presentation of results – ESPON Seminar in ESPOO, Finland |

* - discussion about the proposed indicators among the WPs
- harmonise existing differences
- mutiple suggestions have to be rejected, to avoid overlaps
- indicator gaps have to be filled (if possible)
- indicator definitions have to be elaborated(if possible)
- develop a final decision on the routing indicators
- clear suggestions have to be made on how to draw policy conclusions from the indicator work of the spatial monitoring