ESPON

INTERCO
Indicators of territorial cohesion

Scientific Platform and Tools Project 2013/3/2

Final Report

Part B| Report

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

This report presents the final results of a “Scientific Platform and Tools” Project conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

Information on the ESPON Programme and projects can be found on www.espon.eu

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

This basic report exists only in an electronic version.

.

List of authors

University of Geneva (Lead Partner)

- Hy DAO
- Pauline PLAGNAT
- Vanessa ROUSSEAUX

National Technical University of Athens (Partner)

- Minas ANGELIDIS
- Spyridoula BATZIKOU
- Vivian BAZOULA
- Epameinontas TSIGKAS

Nordregio - Nordic Centre for Spatial Development (Partner)

- Lisa VAN WELL
- José STERLING

RRG Spatial Planning and Geoinformation (Expert)

- Carsten SCHÜRMANN

Spatial Foresight GmbH (Expert)

- Kai BÖHME
- Erik GLØERSEN
- Susan BROCKETT

Table of contents

List of figures

List of tables

B.1. Territorial cohesion, territorial indicators

B.1.1. Challenges of the project

The aim of the INTERCO project was to **develop indicators and indices that can be used to measure territorial cohesion**, but also complex territorial development, structural issues, territorial challenges and opportunities as well as territorial effects at different geographical levels and types of regions.

Indeed, the Project Specification listed many aspects that the INTERCO indicators should cover. From the start, the TPG faced several challenges :

- Many EC and ESPON reports have produced indicators relevant to territorial cohesion. In particular, two ESPON reports, "3.1 Integrated Tools for European Spatial" and "4.1.3 Feasibility study on monitoring territorial development" have provided an overall indicators approach of the European territory : how to provide an added-value to the wealth of information that has been and continue to be produced on territorial cohesion ?
- At the core of these studies, the concept of "territorial cohesion" lacks a unique definition : how to find a shared understanding of territorial cohesion (TC) as well as of the means to achieve it ?
- Given the many aspects mentioned in Project Specification and the fuzziness of the "territorial cohesion" concept, how to define what to measure ?

Furthermore, an interactive approach with the stakeholders was proposed for the selection of the indicators. The inclusion of many voices in the selection of the indicators implies a risk of receiving many different and sometimes contradictory requirements that might not be reconcilable. But this participatory component of the project is necessary to capture the policy demand. It is essential to clarify to whom the results of the project are targeted and the technical capacity and needs of the latter. In our opinion, the results of the project are addressed to three main categories of users / stakeholders:

a) the scientific community of ESPON and other researchers on territorial cohesion analysis and planning;
b) ESPON Coordination Unit, DG Regio, Eurostat and other EC instances;
c) Policy makers at different levels (EU, national and local authorities) and the technical staff of these organisations.

The third category of stakeholders needs a list of TC indicators easily understandable, easily usable and very well related to TA 2020 objectives (as well as to Europe 2020 and other relevant policy objectives).

An additional challenge is the empirical requirement : the TPG had to produce the indicators, not only select and design them. The data constraint is a very important component : data must be available for the relevant spatial and temporal resolution, at the highest possible level of quality. The possibility to update the data with the

lowest possible effort must also be considered for the future exploitation of the indicators.

In brief the INTERCO indicators must be scientifically robust, policy relevant and easy to calculate and to use. Before moving to the methodology of the selection of indicators, theoretical considerations on the territorial cohesion and territorial indicators are presented in the two next chapters.

B.1.2. Territorial cohesion as a multidimensional and political concept

As a cross-cutting territorial dimension of EU policies, territorial cohesion has been a priority in the ESPON research framework from the beginning. Policy documents, actions and funding of the EU during the previous decades have already dealt with territorial issues, but the current crisis and its asymmetric territorial impacts have increased the importance of the territorial approach. As such, it should be at the centre of the new Cohesion policy, which represents the second biggest envelop of EU budget and whose key role in the recovery from the crisis is recognised by the Commission.

The concept of territorial cohesion has been e.g. disseminated by the Green Paper (EC, 2008a), which presented a comprehensive approach and did further foster the debate around its different understandings. Highlighting the rich diversity of European territory, territorial cohesion aims at turning this diversity into an asset for all places, thus ensuring a harmonious and balanced territorial development and contributing to a sustainable Europe. Territorial capital and potential are at the centre of these broad objectives, but the scale and the territory considered may change the way to achieve them. Thus, it appears as a twofold concept with the contradictory objective to increase equity and balance through more diversity as source of comparative advantages.

In a polycentric perspective, the focus is put on the potential of major inter-connected economic centres, seen as urban drivers supporting smart growth and leading to more balanced territorial development through positive diffusion effects. A more inclusive understanding of territorial cohesion points out fair access to services and knowledge through appropriate infrastructures, stating that everyone should have the same development opportunities no matter where he lives. Thus, territorial cohesion can be considered as the territorial dimension of the European social model, taking into account socio-economic disparities at all levels and strengthening both solidarity and competitiveness. Helping specific territories identified in article 174 TFEU belongs to the same tendency, since territorial cohesion in this sense means to enable every territory to find out its own path of development, thanks to its comparative advantages. Innovation, here also, has a key role to play in finding ways of preserving a rich and healthy environment, especially in vulnerable areas. Finally, territorial cohesion is not conceivable without a high degree of cooperation between territories and between actors, at each step of the policy process.

These different issues, linked to several territorial challenges Europe has to face simultanously (global economic competition, ageing, migration processes, population decline in many parts, climate change, energy supply), require coordinated policy responses at different territorial levels, including functional areas. Therefore, territorial cohesion implies not only place-based policies but also real territorial governance.

A first characteristic of territorial cohesion as a policy objective is that it consists of an harmonisation of different development paradigms, namely regional competitiveness, convergence and sustainability (TSP 2011). In line with Europe 2020 Strategy to which it has to contribute, future Cohesion policy will give even more weight to urban issues and specific territories (EC, 2011c), concentrating its efforts to improve competitiveness and efficiency. Thus, territorial cohesion is serving the objectives of smart, inclusive and sustainable growth of the Europe 2020 Strategy and more broadly it can be considered as the territorial dimension of sustainable development. This long-term and global vision includes territorial cohesion in the overarching questions of well-being and progress, i.e. an economic and social well-being that is sustainable (Stiglitz, Sen, Fitoussi, 2009).

Knowing its different facets, its close links to quality of life issues and its temporal dimension, the second key feature of territorial cohesion is that different ways of measuring it are needed. This is why INTERCO project has decided to focus on outcomes and impacts indicators, which are much more able to measure the expected added value of territorial Cohesion policy .

B.1.3. Making the indicators territorial

Territorial cohesion indicators must be different from those elaborated for measuring social/economic cohesion, sustainable development or territorial development. In particular, emphasis should be given to the spatial, i.e. territorial dimension (in a strict sense this condition will exclude all indicators that can only be calculated at national level).

In brief, the indicators can be considered as territorial (and innovative) if :

- they provide **improved spatial resolution**, i.e. they are calculated at subnational level, possibly at NUTS 3 level or below;
- they are based on **intrinsic spatial components** such as distance, area, e.g. the population potential within a given distance;
- they are put in contexts, i.e. they give **some measure of intra-European or inter-regional differences** (e.g. differences to the European mean values, standard deviations);
- they are **calculated by types of areas** (e.g. the urban-rural typology and the typology of metropolitan regions from the ESPON regional typologies);
- they **include a temporal dimension**, i.e. they show trends (directions of change). This is important when territorial cohesion is seen as a process;

- they can be **interpreted in relation to the territorial objectives** expressed in policy documents such as the Territorial Agenda (i.e. having a clear desired direction of change);
- they can be **linked together** logically speaking (through a reasonning), or even ultimately combined into synthetic indicators, in order to provide a coherent multidimensional view on the European territory.

The next sections will present how the indicators of territorial cohesion were selected in the INTERCO project.

B.2. Key analysis

B.2.1. Selecting the indicators

B.2.1.1. General approach

Considering the multiple and evolving viewpoints on territorial cohesion, as shown in the previous section, it was decided to adopt an approach that should:

- cover the main themes relevant to territorial cohesion, both from a policy and theoretical point of view;
- build on existing data and indicators, as much as possible.

The approach is inspired by ESPON Project 4.1.3. It is iterative since it allows for a continuous update of the list of indicators. It is also a mix of **analytical/theoretical** work by the INTERCO team and **participatory** interaction with stakeholders in order to capture their needs.

Figure 3 illustrates the various components of the INTERCO approach. The upper horizontal layer represents the existing indicators, as found in various reports (box 1). The middle part concerns on one hand the **thematic definition of the indicators** (box 2), based on challenges, policy and issues considerations as identified from the literature, the policy documents as well as from the stakeholders points of view. On the other hand it concerns **practical assessment** based on criteria of usability (box 3). The INTERCO territorial objectives (box 4) allow a synthesis of these two aspects and indicators have to measure these objectives. The next layer is the **data basis** for the calculation of indicators (box 5). At the bottom are the final selected indicators (box 6), which must be both **relevant** and **feasible**. If they are not feasible, they move to the wishlist (box 7).

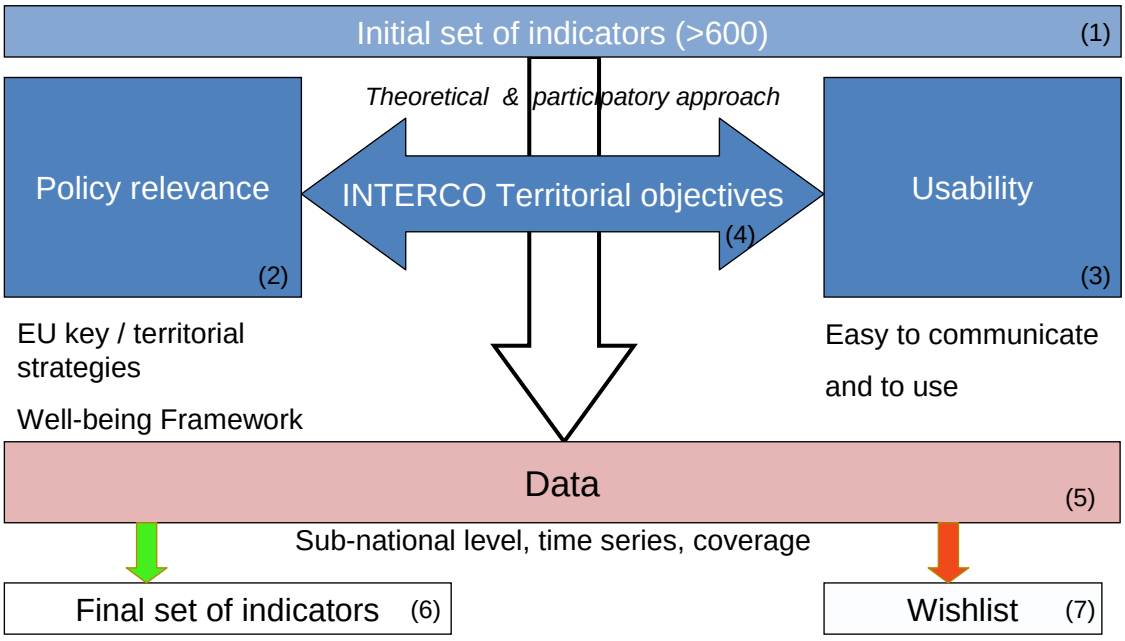


Figure 3. The INTERCO process for the selection of indicators

The several components of the process, boxes 1 to 7, are described below while presenting the criteria for the selection of indicators.

B.2.1.2. Inventory of indicators and data

In the first phase of the project, an initial **inventory of indicators** (box 1) was carried out on the basis of the work done in previous projects as well as on policy initiatives. An analysis of the data situation was also done (box 5), which was subsequently refined for the Interim Report. The indicators in the inventory are grouped according to a thematic and hierarchical (two levels) **classification scheme** based on the ESPON Database thesaurus (Annex 1). This classification scheme is to facilitate the browsing of the indicators, but has no particular meaning in terms of territorial cohesion.

The selection of indicators had to comply with three main constraints.

First, the indicators have to reflect the territorial challenges, policy priorities and issues identified in the Project Specification. They are presented in Table 2 below:

Territorial challenges	Policy priorities	Issues to be measured
Global economic competition: Increasing global pressure to restructure and modernise, new emerging markets and technological development Climate change: New hazard patterns, new potentials Energy supply and efficiency: Increasing energy prices Demography: Ageing and migration processes Transport and accessibility / mobility: Saturation of euro-corridors, urban transport Geographic structure of Europe: Territorial concentration of economic activities in the core area of Europe, and in capital cities in Member States of 2004, further EU enlargements.	Balanced territorial development Strengthening a polycentric development by networking of city regions and cities Urban drivers (large European cities, small and medium sized cities, suburbanisation, inner city imbalances) Development of the diversity of rural areas Emphasis on ultra-peripheral, northern sparsely populated, mountain areas, islands Creating new forms of partnership and territorial governance between urban and rural areas Promoting competitive and innovative regional clusters Strengthening and extending the Trans-European Networks Promoting trans-European risk management including impacts of climate change Strengthening ecological structures and cultural resources.	Population and migration Economic development and potentials Social issues Environmental issues Cultural factors. Balance and polycentricity Urban sprawl Proximity to services of general interest Border discontinuities Geographical specificities Sub-regional disparities (Potential) accessibility Natural assets Cultural assets Land (sea) use issues Territorial cooperation options (urban-urban, rural-urban), etc. Climate change impact Regional competitiveness Territorial opportunities / potentials Innovative creativity Well-being standards, quality of live, etc.

Table 2. Territorial challenges, policy priorities and issues (after the Project Specification)

Those various elements reflect current spatial policy development which takes its origins in ESDP and was then taken up in Cohesion Reports, relevant Commission's communications (EC, 2008a, 2010a, 2010b, 2011a) and Territorial Agenda of 2007. The Territorial Agenda (TA) and its background document (Territorial State and Perspectives of the European Union) have been recently updated, taking into account new phenomena and challenges such as the European crisis and the consequences of last and future enlargements. Thus, TA 2020 identifies six territorial challenges, which are also potentials for development, and six territorial priorities:

Challenges and potentials for territorial development	Territorial priorities for the development of the European Union
Increased exposure to globalisation: structural changes after the global economic crisis	Promote polycentric and balanced territorial development
Challenges of EU integration and the growing interdependences of regions	Encouraging integrated development in cities, rural and specific regions
Territorially diverse demographic and social challenges, segregation of vulnerable groups	Territorial integration in cross-border and transnational functional regions
Climate change and environmental risks: geographically diverse impacts	Ensuring global competitiveness of the regions based on strong local economies
Energy challenges come to the fore and threaten regional competitiveness	Improving territorial connectivity for individuals, communities and enterprises
Loss of biodiversity, vulnerable natural, landscape and cultural heritage	Managing and connecting ecological, landscape and cultural values of regions

Table 3. Territorial Agenda 2020 : challenges and priorities

Knowing that this document represents the most up to date territorial strategy of the EU, our **second constraint** was to look for indicators that can show to what extent European territories are meeting these objectives, which are included in a large extend in INTERCO territorial objectives. It is both a thematic and technical constraint, since indicators have to cover the dimensions contained in these priorities, to measure issues liable to change, to be available at time series in order to show trends and to show a clear direction of change. Moreover, to be considered as "territorial", their data should be collected at low level, i.e. NUTS 3 or below, such as LAU or degree of urbanisation.

Thirdly, indicators should also reflect the close links between territorial cohesion and the goals of Europe 2020 Strategy and Sustainable Development Strategy (SDS), which both include clear mid- and long-term objectives and targets, through headline indicators. Indeed, meeting the interrelated targets of Europe 2020 is seen as a mean of reinforcing economic, social and territorial cohesion, while the reviewed SDS (2009) constitutes the overarching policy framework for all Union policies and strategies. As such, the sustainable, low carbon and low-input economy it advocates has to be taken into account in our indicators selection.

To comply with these constraints, INTERCO has developed a theoretical and participatory approach, through the creation of five storylines about territorial cohesion (see below B.2.1.3.), the identification of its key thematic dimensions (see below under B.2.1.4.) and the synthesis of both theoretical and political development into 6 territorial objectives (box 4 – see also B.2.2.)

B.2.1.3. Workshops

The aim of the ESPON INTERCO project was to ensure high usability of the final indicators by policy makers and scientists dealing with European territorial cohesion.

For this purpose two different types of stakeholder workshops have been conducted. A first round of workshops aimed at getting a better understanding of the user demands and potential areas of usage of the indicators. Altogether four workshops have been conducted for this purpose:

- one workshop with the ESPON Monitoring Committee within the framework of the ESPON MC meeting on 16.11.2010 in Liege;
- two workshops with the ESPON Community within the framework of the ESPON seminar of in Liege, 17-18 November 2010;
- one workshop with participants from various domains of policy making on 14.01.2011 in Brussels.

These workshops captured the different understandings of territorial cohesion, mainly by developing various possible storylines of territorial cohesion.

The **storylines** represent different facets of territorial cohesion and reveal the policy debate and contradictory forces at stake. They have been the organising principles of the workshops which aimed to capture the stakeholders' understandings and reactions (see below). They were presented thanks to a short text explaining those five evocative titles:

- Smart growth in a competitive and polycentric Europe
- Inclusive, balanced development and fair access to services
- Local development conditions and geographical specificities
- Environmental dimension and sustainable development
- Governance, coordination of policies and territorial impacts

As they are more prone to debate, they have been updated during the workshops. For example, the environmental dimension was not part of the first set of storylines; we included it after the comments made by stakeholders. They were also a mean to get first ideas of which indicators could be used to illustrate or measure the single facets of territorial cohesion.

Consequently indicators showing whether Europe is moving towards territorial cohesion need to be flexible enough to serve rather different understandings of what territorial cohesion is. Other recurring issues of these workshops were:

- the need for flexible geographies and different levels of detail of geographical information depending on the questions to be assessed. Most prominently was the plea for data at the level of functional regions;
- it has also been debated at several occasions whether the most prominent need is on indicator or on territorial typologies identifying and grouping territories with similar development preconditions for further assessment of performances of comparable territories;
- in many discussions about territorial cohesion, the focus was less on a European-wide picture of a cohesive territory but rather on the different

preconditions for development, growth and contribution to the aims of Europe 2020 in the different areas;

- in addition to the rather strong growth emphasis of the European policy debate at present, the discussion stressed the issue of quality. This concerned the quality of infrastructure and services as well as the quality of life and policy-making;
- when it comes to indicators allowing for measuring the overall state of play of territorial cohesion at European level, the discussions revealed hesitation as to whether such an indicator is meaningful and possible;
- last but not least it has been stressed that the policy makers rather demand simple and useful indicators than complex indicators.

The results of the workshops assessing the demand side and potential future use of territorial cohesion indicators were fed into the work on selecting and developing the most useful indicators carried out by the ESPON INTERCO TPG.

In autumn 2011, one informal meeting and a workshop were organised to discuss preliminary results with potential users. The informal meeting was held in Geneva on 7 September 2011 and provided an important input to the final selection of indicators. The ESPON workshop with a wide range of potential final users was held on 20 October 2011 in Brussels. This workshop was a decisive step in the project work as the potential users provided valuable and partly very detailed comments on the proposed indicators.

All this has been taken on board in the final development stages of the project. Overall, the workshops have been an important part of the project work, allowing the TPG to understand the user perspective of the indicator work and build a bridge between practice and science.

B.2.1.4. An iterative work on the themes to be covered

Refining the themes

During the work done with the storylines, the INTERCO team continued its internal work for the selection of indicators. The results of the first workshops were very useful for that, but what had to be measured was still imprecise. Therefore, after the dead-end situation was reached while trying to cross all challenges, policy orientations and issues between them, we focused on the identification of the major territorial cohesion dimensions to be covered, in order to find indicators closely related. The idea was to take some distance from the storylines and from the formulation of territorial challenges, policy orientations and issues as from the Project Specification, so to isolate the main relevant **thematic dimensions** that could be relevant at each scale and for every territory, no matter its geographical characteristics. These dimensions highlight the common themes shared by challenges and territorial priorities (both of Project Specification and TA). The main dimensions identified are the following:

- Territorial structure
- Connection
- Competitiveness
- Innovation
- Inclusion
- Quality of environment
- Energy
- Cooperation/governance

Their role is to be the crossing points between the relevant themes on one hand, and the issues to be measured and the indicators on the other hand. As such, they constitute a step to the selection of indicators and allow to check if the selected indicators cover all these TC dimensions. TC dimensions and storylines were subsequently merged into six territorial objectives that cover both thematic issues and policy orientations:

- Strong local economies ensuring global competitiveness
- Innovative territories
- Fair access to services, markets and jobs
- Inclusion and quality of life
- Attractive regions of high ecological values and strong territorial capital
- Integrated polycentric territorial development

The process of thematic specification that lead from the Project Specification to the territorial objectives is shown in Figure 4 below:

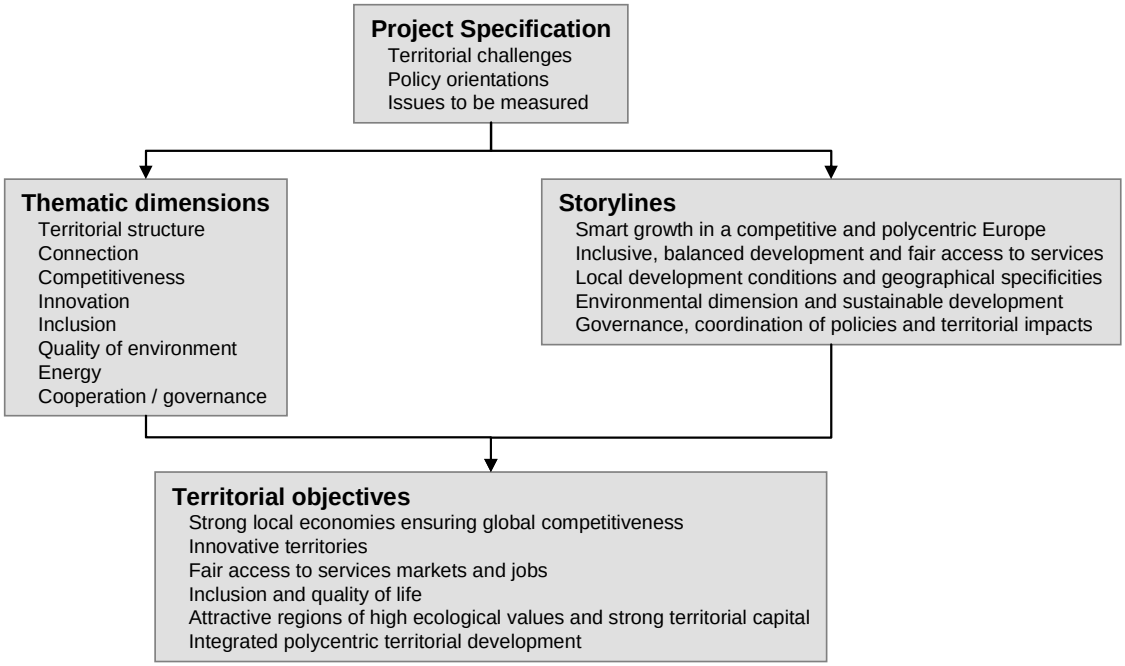


Figure 4. Process to refine the themes of the indicators

Considering other frameworks

Finally, three key theoretical frameworks were also applied to the indicator selection.

The **sustainable development** (SD) framework was used to check that all relevant dimensions of the territory were covered, i.e. environment, society, economy, and their respective interrelations[1]. Figure 5 illustrates this.

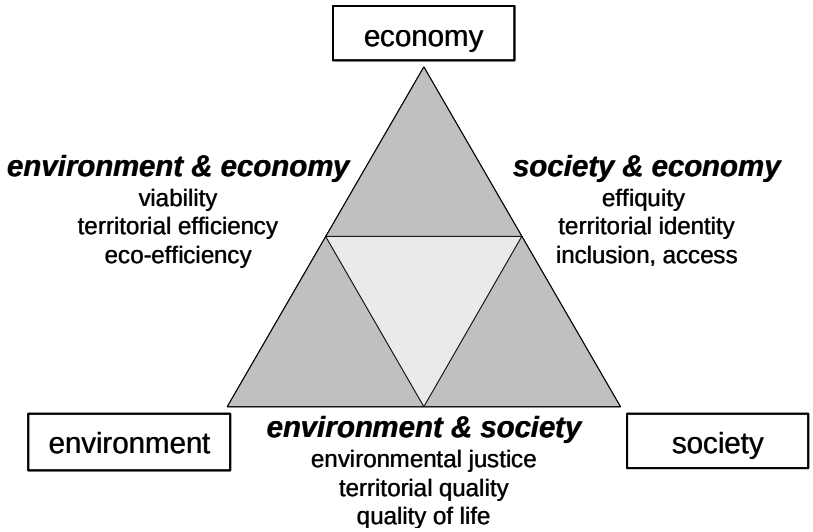


Figure 5. The sustainable development framework

[1] The terms "territorial quality", "territorial efficiency" and "territorial identity" are taken from Camagni et al. (2010); "viability", "environmental justice" and "effiquity" from Da Cunha (2005).

A special attention was also given to the components of **well-being**, as defined in the Stiglitz, Sen, Fitoussi (2009) report:

i. Material living standards (income, consumption and wealth)
ii. Health
iii. Education
iv. Personal activities including work
v. Political voice and governance
vi. Social connections and relationships
vii. Environment (present and future conditions)
viii. Insecurity, of an economic as well as a physical nature.

Thirdly, we also took into consideration the **policy evaluation framework** (Table 4), which offers an interesting categorisation of the level of analysis that indicators allow (e.g. see EEA 2009, Camagni et al. 2010):

Evaluation level	**Example**
Impacts: ultimate, overall goals of policies	Air quality => human health
Effects (outcomes) of policies on their target groups/objects, which will in turn eventually result in impacts	Share and total amount of fossil fuel consumption (to be reduced)
Policy **outputs**: direct results of policy measures	Number of solar panels installed
Policy **inputs**: means put in place for policy measures that have a territorial impact	Government grants for solar panels

Table 4. Policy evaluation levels

The basic idea for using this framework is that indicators should reflect in priority on the territorial impacts of policies. But in our case, it was found difficult to apply this framework straightforward since many policies and policy instruments are concerned directly or indirectly with territorial cohesion. Nevertheless, the indicators were categorised according to this input/output/effect/impact framework, and the focus was put on impacts and effects during the selection of indicators.

Prioritising the indicators

Thanks to this iterative and policy driven selection process, the potential TC indicators were classified into **headline** and **core** indicators (Annex 2), depending on how well they fulfill the criteria. This allowed reducing their number from more than 600 to around 60, but this was still too much. Finally, following recent policy developments (TA 2020, new Cohesion policy) and answering the need of having a small number of simple, meaningful and policy relevant indicators, we identified 6 sets of **top** indicators, corresponding to the 6 territorial objectives they measure (chapter B.2.2. Reasoning scheme for the final set of indicators).

The table below gives an overview all criteria applied for the selection of indicators, knowing that some of them where more strictly applied (hard criteria) than other (soft criteria). In any case, most of selected indicators are the result of a compromise. For this reason, even the indicators of the final sets are not fulfilling some hard criteria.

Hard criteria	Soft criteria
Measure territorial objectives	Cover whole ESPON space
Indicate a clear direction of change	Indicator of outcome and impact
Cover TC dimensions	Cover SD and well-being dimensions
Simple indicator (no composite)	Easy to communicate
Available at sub-national levels	
Available for time series	

Table 5. Criteria applied for the selection of indicators

B.2.2. Reasoning scheme for the final set of indicators

B.2.2.1. The list of indicators

The indicators and indices that the project presents should be able to measure territorial cohesion, complex territorial development, structural issues, territorial challenges and opportunities as well as territorial effects at different geographical levels and types of regions.

Our indicators had to find a way of measuring diverging goals of TC and the means to achieve them, using a few understandable indicators (no complex) that are yet able to represent many policy orientations and thematic issues. This challenge was to be achieved despite the lack of data and the huge number of potential indicators (problem of level and coverage). But the even more problematic challenge to face was to find indicators able to reflect on recent policy development and emerging challenges.

As described earlier, throughout the process of selecting existing indicators to measure territorial cohesion, our research team has been confronted to the multidimensional and undefined nature of the concept of territorial cohesion. This notion appears to be essentially of political nature and therefore to have moving targets regarding the agenda of each political actor. Within this perception, it has been decided to focus on the two main European strategies that should be defining the overall territorial political objectives for the next decade: the Europe 2020 Strategy and the Territorial Agenda 2020.

We have defined a selection of indicators that comply with the different criteria proposed by the TPG and the stakeholders during the project. We have selected 32 territorial indicators (see our definition on page 2) that reflect on the policy objectives, challenges and issues at stake. Having being requested not to build composite indicators, we decided to regroup the selected indicators by territorial objectives.

Therefore, a coherent group of indicators were designed under each territorial objective, which, by linking them one with the other, should represent the aim of convergence for a coherent territorial policy. The research process led to 6 territorial objectives: strong local economies ensuring global competitiveness; innovative territories; fair access to services, market and jobs; inclusion and quality of life; attractive regions of high ecological values and strong territorial capital; and integrated polycentric territorial development. The list of desirable indicators is presented by territorial objective in Table 6.

Unfortunately, these indicators are not all available as for today at the required spatial level and/or for sufficient time series. As a result, it was not possible to calculate some indicators and therefore it was decided to create a wishlist (cf. chapter "**B.4.1. Wishlist**", page 46 for the reasoning supporting the development of this wishlist). A complete indicators table integrating also wishful indicators has been set, hoping that in time these lacking data/indicators will be sufficiently developed in order to better answer the focus.

If the first two territorial objectives seems to be rather well covered by indicators, the third territorial objective would need a further development of the indicators of accessibility. They would not need only to be aggregated by data from national level or subdivided by degree of urbanisation, but rather by raster level or LAU 2 level and then aggregated at NUTS 3, when they actually are available only for a few ESPON regions. The fourth territorial objective is also rather complete, except for the proportion of early school leavers that should be available at NUTS 3 level rather than NUTS 1. However, the fifth one would need a better coverage on mortality, risks and hazards, as well as biodiversity data and renewable energy potential. These three indicators are actually not available at NUTS 3 levels and missing for too many ESPON territories. For the few data available at satisfying level, there are no time series to help analysing convergence. Therefore, using the existing indicators as such would not be relevant for analysis due to the many gaps and differences in scales availability for comparison. However, they are still important as they would depict a number of important dimensions of territorial cohesion, through the indication of natural assets and wealth of each territory. Notably, it will be important to emphasis some aspects of these indicators underlying the environmental challenges that will become more and more acute in the future years. As for the last territorial objective, only the polycentricity index needs to be redefined with new FUAs.

Territorial objectives	Indicators
Strong local economies ensuring global competitiveness	GDP per capita in PPS
	Overall unemployment rate
	Old age dependency ratio
	Labour productivity in industry and services
	Labour productivity per person employed
Innovative territories	Population aged 25-64 with tertiary education
	Intramural expenditures on R&D
	Employment rate 20-64
Fair access to services, market and jobs	Access to compulsory school
	Access to hospitals
	Accessibility of grocery services
	Access to universities
	Accessibility potential by road
	Accessibility potential by rail
	Accessibility potential by air
Inclusion and quality of life	Disposable household income
	Life expectancy at birth
	Proportion of early school leavers
	Gender imbalances
	Difference in female-male unemployment rates
	Ageing index
Attractive regions of high ecological values and strong territorial capital	Potential vulnerability to climate change (ESPON Climate)
	Air pollution: PM_{10}
	Air pollution: Ozone concentrations
	Soil sealing per capita
	Mortality, hazards and risks
	Biodiversity
	Renewable energy potential
Integrated polycentric territorial development	Population potential within 50 km
	Net migration rate
	Cooperation intensity (number of common projects between partners, from ESPON TERCO)
	Cooperation degree (the number of regions cooperating with each other, from ESPON TERCO)
	Polycentricity index

Table 6. Final list of indicators (wish indicators in italic)

The territorial objectives have been designed to better group indicators by set of indicators. They are explicitly linked to TA 2020 and cover also the three dimensions of Europe 2020 Strategy. The indicators assigned to each of these objectives are to

be meaningful not per se, but in relation to each other for the purpose of giving better drive for Cohesion policy. When put all together, the territorial objectives should shape tomorrow's cohesion between diverse territories building a strong, smart and sustainable Europe. We strongly feel that this presentation of indicators allow representing divergence or convergence of territories towards main EU territorial policy priorities, by visualizing the regions that diverge clearly from average, thus helping targetting the policy priorities. This leads to help classifying the regions by results of policy actions, building new typologies. Meanwhile, the set of indicators are flexible enough to follow policy future developments and data availability.

B.2.2.2. Indicators for territorial objective "Strong local economies ensuring global competitiveness"

Under this nomination, we wish to highlight the policy relevance of our indicators with the TA 2020 and especially the issues covered under priority 4 that states "*Improving local economies through development of local products and markets, business environments, locally-oriented training provision, partial self-sufficiency and building up cohesive and strong local communities*". Moreover, the Europe 2020 Strategy highlights that regions should aim at a sustainable growth through a more competitive economy based on higher productivity. That is why we selected the following indicators to reflect those policies. We also wish to regard them as local challenges to underline local disparities for this dimension. The main outcome of the economic strength of a region is its capacity to produce a high **GDP/capita in PPS**. This indicator purpose is to underline which regions are lagging behind in this matter. However, in order for the regions to be able to sustain a high GDP/capita, especially in the aim of ensuring global competitiveness, we should also reflect on the **labour productivity** which tells us of the robustness of the GDP produced. On the other hand, in the view of a competitiveness policy, the **unemployment rate** is a related indicator showing the main difficulty to reach the GDP goals. Mostly this indicator is often used for regional policies to aim at building a labour market attractive enough and at nurturing GDP. Last but not least, if the GDP/capita is the reflection of a high labour productivity and a good level of employment, its future evolution can be expose to the changes of the structure of demography, especially the **old age dependency ratio**. As a matter of global competitiveness, local economies should be able to integrate in their prevision the evolution of an ageing population as a future necessity to reshape the labour market and sustain high GDP.

- GDP/capita in PPS: gives the value added of each NUTS 3 region. It should be rising, especially for lagging behind regions. To be meaningful for competitiveness, it should be accompanied by a good level of labour productivity.
- Labour productivity per person employed should be rising to reach the objective of competitiveness but should not be accompanied by high levels of unemployment.

- Unemployment rate gives the counter figures for what may restraint GDP/capita and competitiveness for each territories. It is a context indicator that should be declining.
- Old age dependency ratio is a context indicator that is also representing a possible constraint for future GDP growth and competitiveness. It should stay stable.

B.2.2.3. Indicators for territorial objective "Innovative territories"

Innovation is at the centre of current EU strategies for recovery, growth and sustainable development. This fundamental role was already described in the Lisbon Strategy. Being the first flagship initiative of Europe 2020 Strategy, it permeates all fields of European policies and most of territorial cohesion dimensions, as a transversal mean to achieve it. Because knowledge and innovation are seen as drivers of growth, they can help creating and distributing wealth, helping territories to face current challenges. This is central for territories as it trigger them to find their proper way to make good use of their assets. This allows building locally-oriented development strategies based on innovation. For this particular reason, regional and local efforts to assess each strengths and weaknesses are important for the development of innovation strategies on a more national level. Especially, eco-innovation is expected to deliver appropriate response to the need for energy efficiency and low carbon economy, while innovation in the governance process will help rationalising and improving the institutional framework for better territorial governance. Thus, research and development should not be only for top class territories and actors. The main purpose is to foster human capital by building educational capacities in each territory across Europe to promote creativity and innovative capacities in the private sector. In this case, the indicators chosen reflect much more on the political leverage possible such as the **intramural R&D expenditures** which should allow to sustain the **population age 25-64 with tertiary education** and the **employment rate for the 20-64 years-old**.

- Population aged 25-64 with tertiary education should also be rising for the purpose of having more educated people for more innovative capacities.
- Intramural R&D expenditures should be expanding in order to reach the goal of more innovation in a region.
- Employment rate 20-64 is the context indicator for this set of indicators and should be rising.

B.2.2.4. Indicators for territorial objective "Fair access to services, market and jobs"

Though this objective is an overall well-being objective throughout any political document, its territorial dimension is essential as it is indicated in TA 2020 under priority 5: "*fair and affordable accessibility to services of general interest, information,*

knowledge and mobility are essential for territorial cohesion. Providing services and minimising infrastructure barriers can improve competitiveness and the sustainable and harmonious territorial development of the EU". Europe 2020 also focuses on this objective that is needed since "*ensuring access and opportunities for all throughout the lifecycle is essential for territorial cohesion*". In this set of indicators, we chose to select the classical indicators of access to services that were available at this level and joining the purposes of the other territorial objectives to underline lack of services and clearly notify local government to take measures against such territorial discriminations. In that spirit, we selected indicators of educational access such as **compulsory schools** which are more relevant in the European Union framework than access to primary school. But to comply with innovative territories and educational skills, the **access to universities** is certainly one major issue at stake to create more cohesion in tertiary education and therefore to serve the innovative and competitiveness of labour market among the diverse territories. The accessibility for other services will be more completely described in the wishlist as their availability is not yet sufficient for the pertinent spatial level required. Furthermore, the other major issue to best serve access to jobs and market is certainly the connectivity within the territory and among the regions that is represented through indicators of transportation services in place such as **accessibility potential by road, by air and by rail**.

- Access to compulsory schools must certainly be more important and should reach 100% as a political objective per se. It is also a very important component in terms of fair access to jobs. Thus, it also draws the inequalities among regions in terms of business attractiveness to be able to provide an essential educated labour force.
- Access to universities should get easier as it also plays an important role for innovative economy and highly educated population. Thus the spatial level could be seen larger than the access to compulsory schooling.
- Accessibilty potential by road, by air and by rail should be more numerous in regions that are less connected to GDP and labour market for public and private transportation .

B.2.2.5. Indicators for territorial objective "Inclusion and quality of life"

Again, this territorial objective certainly serves an overall objective that is the well-being of population and should reflect the policy direction for erasing social disparities among European territories. This territorial objective is about social cohesion, but inequalities also represents a territorial issue when they reflect on different territorial policies, constraints and assets. TA 2020 mentions under priority 2 that "*territories facing severe depopulation should have long-term solutions to maintain their economic activity by enhancing job creation, attractive living conditions and public services for inhabitants and businesses*". This objective is clearly linked

with the first objective as it is both a result of and an input for a good level of GDP production. This objective is getting in line with the Europe 2020 Strategy's third objective that promote "*an inclusive growth through high levels of employment, a balanced distribution of benefits of economic growth and full use of labour potential*." Specifically, the strategy aims at reducing poverty, promoting gender equality, facing challenge of ageing population and decreasing early leavers from education. For this purpose, the selection of indicators is very much focused on the basic social themes. They are represented by the **disposable household income** to reflect the level of poverty. It is put in balance with the access to good health care given by the **life expectancy at birth**, and the quality of schooling represented by the **proportion of early school leavers**. The inclusion facet will focus more on the inequality of access and the structure of population (contextual indicators) such as **gender imbalances** and **ageing index** to reflect the demographic structures and the **difference in female-male unemployment rates** to ponder the inequality of access given each regional contexts.

- Disposable household income should definitely get higher, with a more rapid growth in region with higher level of poverty, and/or with lower female employment rate (single wage household).
- Life expectancy at birth is desirable to rise, knowing that it should be counter balanced with ageing index: a higher life expectancy at birth reflects a good health system access. However, it should be increasing without misbalancing the demographic structure that have serious impacts on social policies projections. Indeed, the social policies are expected to adapt the evolution of the ageing index by responding with the necessary caring system and pensions system in order to avoid larger exclusion.
- Proportion of early school leavers should be dropping in order to rise the expectation of access to labour market and not be excluded.
- Gender imbalance is a demographic context indicator that should be reduced for the household income to rise, if the difference in female-male unemployment is not too high.
- Ageing index, should stay stable or should allow social policies answering the situation.
- Difference in female-male unemployment rates should be reduced, to ponder inequality of access to income for female (for more inclusion) and to rise the household income.

B.2.2.6. Indicators for territorial objective "Attractive regions of high ecological values and strong territorial capital"

This territorial objective seems at first of crucial importance regarding the local contexts agenda and the policy directives of the main policy documents. Effectively, TA 2020 mentions under priority 5 that: "*We support decentralised, efficient, secure*

and environmentally-friendly production and use of renewable and low carbon energy" and Europe 2020 promotes "*sustainable growth, which means building a resource efficient and sustainable economy. The objective is to decouple growth from energy use by reducing emissions and exploiting fully the potential of new technologies and sequestration possibilities*". However, the level of data collection on such recent directives is not yet enough elaborated to be significant at local scales. Thus, we cannot link properly all indicators one with the others as they are too many missing data for this territorial objective. Notably, the indicators around renewable energy use and potential are of primary importance in this matter, but the level of recollection and the time series are not sufficient to draw an analysis. In the ReRisk project, it has been strongly stated that energy was an issue for inequality among Europan territories, due to economic vulnerabilities, region's dependance and social vulnerrability. The indicator they developed is interesting but there are no time series yet to be able to analyse convergence. The same can be said for biodiversity, which represents the territorial capital and ecological values. It is neither available for all ESPON regions, nor at local levels and most of the case with no time series (like Natura 2000). We have also included the natural risks and hazards in the wishlist and not in the final list of indicators as the data are not available at time series. The ESPON 1.3.1 Project worked on data from 2004 and 2005 based on a delphi method to assess risks. For a convergence analysis, the data is not enough developed through time or in spatial resolution. We strongly wish that in the future time series and avaibility for these indicators, through all territories, should be developed and be included in our database. Despite this, to reflect these issues as best as we could, we selected existing indicators capable of expressing concerns that are considered to be global issue with local impacts, and that need interventions of local government as well as coordination with upper and neighboring areas for a holistic approach in order to have a coherent vision throughout the territories. This is particularly true for the vulnerabilities to climate changes. This indicator, though not complete for all ESPON territories and not available as time series, was chosen as the outcomes of change changes can be potentially devastating for regions. It has been calculated through a new ESPON indicator, the **potential vulnerability to climate change**. The ESPON Climate research allowed representing the social vulnerabilities in the regions exposed to climate changes, including the levels of preparedness of local government and their capacities to respond when confronted to cases of extreme climatic events. On the same matter, we chose more contextualised indicators that are bound to slow changes through policy directives. **Air pollution, through PM_{10} and ozone concentration**, are very representative of the incoherent policies between local levels, when they are managed by administrative bounds though pollution meets no such circulation constraints and have a tremendous impact on public health. Last but not least, the **soil sealing per capita** is supposed to reflect on the land use and therefore impact strongly on the territorial capital. Once again, it should be put in reference to biodiversity data that are not available at the required

spatial level to able us to conduct a consistent analysis with the indicator of soil sealing per capita.

- Potential vulnerability to climate change should be reduced, especially the socio-economic sensitivity to exposure to extreme climatic events by rising GDP, preparedness and caring system. And if possible it should be aiming at lowering the levels of greenhouse gas emissions, pollutants and degradation of environment that increase the degree of risks and hazards.
- Air pollution (PM_{10} and ozone concentration) should definitely be decreasing at the level of WHO and European recommendations within ranges that are not harmful for public health. The policies and regulation should be coherent for each and every territories of ESPON, the emissions being by essence transboundary. Policies are less efficient when conducte by solely few regions.
- Soil sealing per capita should remain stable as much as for the permeability and the chemio-biological properties of land than for the purpose of disposing of a good balance between biodiversity value and well-being of population in a built environment.

B.2.2.7. Indicators for territorial objective "Integrated polycentric territorial development"

This territorial objective is probably the most important one to reach for a truly cohesive European territory. However, once again, existing data are lacking. We have to be aware of the importance of developing better governance and political achievement indicators at local level throughout the entire ESPON area. This objective is strongly recommended through the various documents, notably in the TA 2020**,** priority 1, which states that "*polycentric and balanced territorial development of the EU is key element of achieving territorial cohesion*". They forecast a vision of Europe that would develop "a *Polycentric pattern of the most developed cities and regions*; *encouraging city networks and polycentric development at macro-regional, cross-border and national and regional level;* and *reducing the strong territorial polarisation"*. The reason why it is so important is developed in priority 3: "*Territorial integration and co-operation can create a critical mass for development, diminishing economic, social and ecological fragmentation, building mutual trust and social capital*". These two goals of polycentricity and of cooperation between regions are beginning to be measured. We also should include the polycentricity index as soon as the new definition of Functional Urban Areas (FUAs) will be integrated. In the mean time, we can try to measure it by including the **population potential within 50 km** to best describe the density of population within a radius of 50 km as the crow flies to represent areas of dynamic potential. When compared to **net migration rate,** this will certainly indicate the attractiveness of each of this territories and how they will evolve. This will help policy makers to target better the regions less attractive in terms of demography dynamism. On the other hand,

new ESPON indicators, deveeloped by TERCO project, allows us to measure the capacity of regions to collaborate and cooperate, thanks to the indicator of **cooperation intensity** (number of common projects within INTERREG IIIC) and the indicator of **cooperation degree** (number of region cooperating with each other). It seems to be the best existing indicators to reflect the governance cooperation between territories to reach same political goals and therefore, to run more coherent policies towards cohesion.

- Population potential within 50 km is a contextual indicator that is to be compared to other data to be meaningful, such as net migration rate or access to jobs and market. It represents regions that should remain stable and other that are too populated compared to labour access and opportunities, or too sparsely populated.
- Net migration rate should be used as a context indicator that can counter balance the effect of an ageing population or a too sparsely populated area, or even measure the attractiveness of a territory for the local government to be able to adapt social and economic policies in relation to the demographic situation.
- Cooperation intensity is reflecting on the capacity of a region to collaborate with other regions. The fact that the regions should agree on a large number of common project with others is a sign of a better cooperation and coordination of policies, though it does not reflect the quality of cooperation.
- Cooperation degree reflects the number of regions who are coordinating their effort on similar projects to reach similar policy goals. The more regions that agree on partnership to target the same goal, should enhance coherent policies across European territories. And a large number of territories who are willing to collaborate on one goal, will allow a larger and more efficient outcome.

B.2.2.8. Indicators for world and local scales, Western Balkans and Turkey

Global

While discussions are not (yet) focused on achieving the policy goal of territorial cohesion at the global level, there are several attempts to measure development, sustainable development and quality of life on a world-wide scale. The most pertinent and vigorous examples include the Human Development Index (HDI) to measure wealth, health and education and the World Development Indicators by the World Bank (World Bank, 2012) to help monitor the process towards the Millennium Development Goals (MDGs) which form a blueprint for achieving development world-wide, and in particular alleviating the situation of the most disadvantaged countries.

Other databases in which the global indicators can be found are via UNESCO and the ILO Labour Statistics Database.

Globalisation, like territorial cohesion is a multifaceted notion but the principal underlying idea is the progressive integration of economies and societies according to the World Commission on the Social Dimension of Globalisation (WCSDG) (ILO, 2004). The WCSDG report identifies a number of elements where the EU model has contributed to success in improving living and working conditions. It also mentions that the EU's economic and social model, and the Lisbon Strategy even though they cannot simply be transposed to other parts of the world, contain a number of aspects which may be of interest for global development, especially in terms of the processes which are essential to the achievement of the balance between all the objectives at stake.

Most of the global indicators are only available at NUTS 0, and thus lack an important dimension of territoriality that the EU-level indicators have. Annex 4 presents the INTERCO indicators transposed to the global level, using similar or equivalent indicators.

Local

As defined in the Inception Report, the analysis of territorial cohesion on the basis of the local level takes into consideration the headline indicators defined in the general framework of INTERCO.

The analysis at the local scale required the compilation of data at LAU 1 and/or LAU 2 levels resulting in a set of selected local indicators relevant to the project calculated for three specific case studies (Sydsverige-Eastern Denmark, Piedmont and Thessalia). However the difficulties founded when trying to get available and comprehensive data at the local level constitute a major constraint as there isn't for example a centralised database containing indicators at LAU level at a European scale. The process of collection and harmonisation of data at this level becomes challenging since often it is necessary to track the indicators among several sources of data in each individual case study area. Limitations were found especially when looking for INTERCO headline indicators at a local level associated to thematic sub-categories on energy, poverty, environment, quality of life and governance categories. However other INTERCO headline indicators in the sub-categories of population, employment and education were feasible to be included in the analysis. Therefore a set of selected and available local indicators in these categories is calculated for the three mentioned local case studies (See Annex 5, Annex 6, Annex 7).

Western Balkans and Turkey

A first objective of this research was to assess the availability and quality of data for the indicators which better reflect the territorial cohesion in the Western Balkans countries and Turkey. Thus, interested stakeholders could extend their territorial

analyses in these countries, at least for the main facets of territorial cohesion. To this end, we have used the indicators selected in INTERCO as top as well as the headline and core ones[4].

The data assessment showed that there are **available data at sub-national level** (NUTS 2 or NUTS 3 – which could be aggregated at national level) **for seven final indicators** and for two others there is data **only at national level.** Regarding the headline indicators there are available data at sub-national level for nine indicators while for two other there are only country level data. Finally, there are data at national and/or sub-national level for a small number of core indicators.

As the necessary data at sub-national level for the Potential Candidate Countries (PCC): Albania (AL), Bosnia and Herzegovina (BA), Serbia (RS) and Kosovo under UN Security Council Resolution 1244 (XK) are scarce, we have examined only six indicators: GDP rate, GDP dispersion and unemployment rate, ageing index, life expectancy and population density. Therefore, we have not made a complete analysis of TC at this level. Inversely, we have analysed in more depth these few TC indicators in order to see if the additional results bring important insights regarding the TC patterns at national and sub-national level (NUTS 2-3) as well as on the differences between these two last. This comparison complements the results of the sections of the project which refer to the entire ESPON space and to the local level.

B.2.3. Analytical framework

Analysing the development of the ESPON space towards territorial cohesion is not only a question of selecting the approproate indicators, but also a question of the applied analytical framework. The analytical framework needs to account for both the territorial and temporal dimension of cohesion. The territorial dimension looks at disparities between regions at a given time, while the temporal dimension looks at the development of these disparities over a certain time period. Disparities at a given time should be minimal among Europe's regions, which can be analysed by applying statistical measures. Existing disparities should furthermore decrease over time, ideally towards a certain threshold or target value. In order to assess observed temporal dynamics whether these developments contribute to cohesion, one needs to know the desired direction of change of each single indicator. Sometimes a decrease in indicator performance is desired, sometimes an increase or a stabilisation over time. If possible, the temporal dimension (‘trend’) should be analysed over a period of ten years.

The analysis framework for territorial cohesion assessments needs to reflect both these dimensions (Figure 6): territorial disparities at a given time can be analysed by using standard statistical measures such as minimum/maximum values, standard deviations, Gini index, or by more complex approaches like spatial auto-correlation analyses (e.g. Moran's I), regression analyses or construction of typologies. The

[4] The second objective of this research, the analysis of the territorial cohesion pattern in these countries, is examined in the section B.2.3.

temporal dimension in its easiest form is implemented by simple change detection (differences for two points in time expressed in absolute or relative terms) and by detecting the change direction (trends). The disadvantage of simple change detections between two points in time is that it is subject to the selection of the two points – often change patterns differ significantly if two different reference years are chosen.

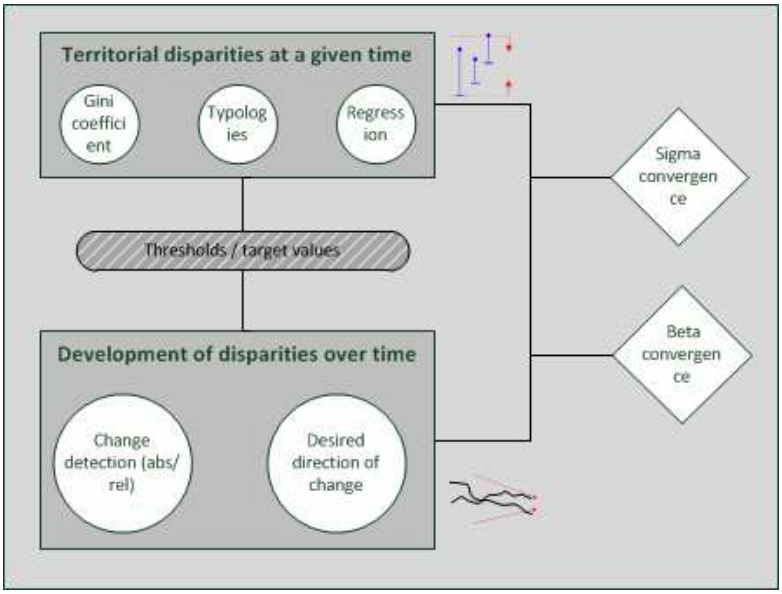


Figure 6. INTERCO analysis framework for territorial cohesion

It is also crucial to identify a so-called *desired direction of change* for every territorial cohesion indicator. Ideally this direction of change is linked with a *threshold* or *target value* that is set to reach for entire Europe, or for individual subsets of regions. Such target values cannot be deduced from statistics, but need to be the outcome of a political discussion process.

The INTERCO analysis framework applies sigma and beta convergence measures to analyse both the territorial and temporal dimensions in single statistical measures.

- The **beta convergence** is the correlation between states and trends to analyse whether badly performing regions catch up faster than good performers. Even though the indicator development over time may lead to a certain level of convergence, it is furthermore necessary to assess whether this development leads towards a desired direction, or whether the observed direction is, for different reasons, not desired.
- The **sigma convergence** measures applied at regional level calculates how regional disparities evolved over time. The disparities are calculated using the standard deviation of NUTS values divided by the average of the same values (in order to compensate for changes in average values over time). It must be noted that beta convergence is a condition for sigma convergence (reduction

of disparities can only occur if territories lagging behind are able to catch up others).

The above statistical measures are applied on an indicator-by-indicator basis. In reality, however, one can often observe that one indicator might develop into a certain direction (for instance, towards convergence), while another indicator developed into the opposite direction (see Table 7). An obvious solution to this problem is to group the individual indicators by ‘themes’ or by ‘dimensions’ and to look whether all indicators under a particular theme develop into the same direction. This approach is followed in INTERCO. The themes of INTERCO are the territorial objectives (see Chapter B.2.2.1. The list of indicators). More information on the calculation and presentation of the indicators is provided in the Scientific Report, chapter C.2.3. Calculation of the indicators).

From this analytical framework one can derive certain (technical) requirements that an indicator candidate needs to fulfill in order to become a territorial cohesion indicator (see chapter "B.1.3. Making the indicators territorial", page 6 for more information):

- indicators must be available at a high spatial disaggregation; ideally at NUTS 3 level or below (LAU 2, raster);
- indicators must be available as time series (at least over the last ten years; not just only for two points in time);
- indicators must be available for entire ESPON space;
- there should be no data gaps for individual regions or years;
- one must be able to define a desired direction of change;
- optionally, a target value or threshold should be available.

A summary of the data availability for the top indicators is provided in Annex 3.

In order to allow for a comparative illustration of the territorial cohesion indicators (the list of territorial cohesion indicators finally selected is presented in page 17), the INTERCO project furthermore developed so-called indicator fact sheets along with a standardised map template (see chapter "C.5.3. Mapping and cartography", page 158 for more information).

B.2.4. Key findings at the European level

The analysis of the selected indicators with view on territorial cohesion revealed large differences between the territorial objectives, but also between indicators of the same objective. Wherever data availability allows it, sigma and beta convergence plots were generated in order to analyse the temporal dimension of cohesion, in addition to the cartographic analysis of the present state. The following paragraphs summarize the main findings of the indicator analysis by territorial objective. The full results including metadata and maps can be found in Chapter C.3. of the Scientific Report.

Strong local economies ensuring global competitiveness

Over all four indicators under this objective, there is no general trend towards convergence. While GDP per capita and unemployment rates only reveal slight positive effects, opposite negative developments can be observed for the old age dependency ratio. Only labour productivity showed clear trends towards cohesion, albeit measured at national level.

The indicator ***GDP per capita*** revealed quite distinct developments of disparities, with slight increase until 2001 for all type of regions, and slight trend of convergence afterwards. As desired, results show that trend of convergence in remote regions (intermediate and rural) was highest, while disparities in urban regions or regions close to a city remained stable.

For all European regions, a slight trend towards convergence of ***unemployment rates*** could be observed over the recent past (2006-2009). Even though this overall trend of convergence is appreciated, there is no harmonious trend of convergence for all rural regions, as desired, since only those rural regions close to a city reduced disparities in unemployment, while during the same period disparities for remote rural areas increased. For urban regions, including the old industrialised ones, disparities remained.

Despite slight convergence trends in the ***old age dependency ratio*** for rural regions, increases in disparities for intermediate and urban regions led to an overall increase in disparities. Thus, the desired direction of change is not met, neither in terms of cohesion trends as a whole nor in terms of striving for a balanced age structure.

For ***labour productivity***, remarkable trends toward cohesion at national level could be observed with least performing regions catching up faster than good performing ones. Thus, the indicator moved into the desired direction of change.

Notwithstanding the recent development trends, big disparities among regions for GDP per capita and unemployment rates still remained stable, while disparities for the old age dependency ratio is lowest, followed by labour productivity (at NUTS 0).

Innovative territories

Concerning ***tertiary education***, convergence trends towards cohesion at regional level could be observed since lagging regions developed stronger than those who were already good performers; differences within countries are rather small compared to the difference between countries, revealing fundamental differences in the national education systems.

Due to poor data availability, no time series analysis was possible for ***intramural R&D expenditures***. Great disparities still exist even within high-tech regions and rural regions within countries, but there are obvious big gaps still existing between the old and the new EU Member States.

Gaps in ***employment*** widened since 2007, because good performing regions improved their employment rates at the expense of lagging regions, which

experienced a further fall in employment, making existing disparities permanent between the East European and South European countries on the one hand, and the remaining parts of Europe on the other hand.

Overall results for this objective show that there is no automatism in improving levels of tertiary education and employment rates. It looks quite the opposite, trends of convergence for one indicator does not necessarily imply the same development trends for the other indicator. For entire Europe, this led to a convergence in tertiary education, but to widened gaps in employment rates.

Fair access to services, market and jobs

Access to services has become a clear challenge during the last decade. Given the current demographic and economic trends, ensuring a minimum access to services such as compulsory schools, primary health care, hospitals, universities, etc. becomes a real challenge in rural and sparsely populated areas and in areas with other physical constraints (mountains, islands etc.). Partly up to 40% of the population is facing severe access problems to such services, as the 5th Cohesion Report revealed. There are not only big disparities between countries, but also within countries between urbanized, intermediate and rural regions.

Large disparities of ***accessibility potential by road, rail and air*** exist, and continue to exist in the European Union (Spiekermann and Schürmann, 2007). New transport infrastructures built between 2001 and 2006 were not able to change the overall European spatial patterns with good, moderate and low accessibility (Spiekermann and Schürmann, 2007, 25), even though in the process of EU enlargement, many new EU Member States significantly improved their road networks, and thus improved their relative position. When looking at rail, the improvements of road accessibility in the new Member States were counteracted by the implementation of high-speed rail networks, linking city centres with each other.

Insofar regional deficits in competitiveness based location still remain; in different types of regions disparities even increased due to the construction of high-level transport infrastructures such as high-speed rail lines or motorways, connecting urban centres with each other and bypassing rural or remote areas. The design of the trans-European transport networks (TEN-Ts) outline plans obviously has a bias towards improving the competitiveness of European agglomerations on the expense of increasing disparities between rural and remote regions and highly-accessible urban centres.

A detailed look at the transportation modes revealed that for the ***accessibility potential by road***, one can observe a moderate trend towards cohesion across all regions between 2001 and 2006; however, the development was quite heterogeneous for different types of regions: while disparities for predominantly rural remote regions increased, and stagnated for urban regions, disparities decreased for all other types of regions. Disparities remained stable in this time period for the indicator ***accessibility potential by rail***, again with quite distinct developments for

different types of regions. While disparities for urban regions and for predominantly rural regions close to a city increased, there was a clear trend towards convergence for intermediate remote regions and for predominantly rural remote regions. The trend for all Europe shows a widening gap. Results for the ***accessibility potential by air***, in contrast, was quite clear with overall trends towards cohesion for all types of regions for entire Europe.

Inclusion and quality of life

Disparities for most indicators under this objective remained stable over the last decade, except for the ***proportion of early school leavers*** and the ***difference in female-male unemployment rates.*** For the first one**,** a clear trend towards convergence could be observed since 2006 for the entire ESPON space. Many regions with high proportions of school leavers managed to reduce these rates significantly, but there were also some regions experiencing increases. For the second, there is an interesting north/south pattern with higher female unemployment rate in the Mediterranean countries plus France, Poland, Czech Republic and Slovakia, while higher unemployment rates for men can be observed in Scandinavia, Baltic States, Ireland, UK, Germany, Bulgaria and Romania. There are few countries with balanced unemployment rates across sex, but disparities within countries are decreasing, especially after 2004.

Disparities for the indicators ***life expectancy at birth*** and ***gender imbalances*** remained almost stable, though at a low level. There has been almost no significant development since 2002 (LEB) and 2003 (gender imbalances). Differences within countries remain small for life expectancy, but differences between countries are quite high, whereas almost all of them experience a slight overrepresentation of women.

As for the ***ageing index*****,** we can notice a general trend towards cohesion and many countries revealing only small disparities. There are however remarkable exceptions like Germany, Spain, Portugal, Greece or Italy which show great disparities between their regions for this indicator.

Attractive regions of high ecological values and strong territorial capital

The desired thresholds for all four indicators under this objective can only be reached for a small number of regions, although many regions are experiencing no or only marginal impacts of climate change. As for ***PM_{10} pollutions***, many regions in Europe still have rather high concentrations, even though differences within a country are rather low. In case of ***Ozone concentration*** the analysis revealed that the number of days with concentration exceedances is quite low for most European regions with some exceptions, reflecting measures already implemented over the last decade for improving the air quality; however, some countries like Italy, Romania or Bulgaria still have to improve their air quality levels. ***Soil sealing*** illustrates the most heterogeneous picture in Europe, with regions experiencing extremely high land take,

and other regions with very modest land take rates per capita. Territorial disparities are extremely high within the countries, as well as between them, which leads to a spatial pattern more diverse than for the other three indicators

So from a territorial cohesion perspective, the indicator on ozone concentration already presents the smallest spatial disparities, followed by PM_{10} and potential vulnerability to climate change, while soil sealing still yield very high disparities.

Integrated polycentric territorial development

There are significant disparities still existing for all four indicators under this objective. The indicator ***population potential*** clearly highlights the main dichotomy between the European core area ('blue banana') and the peripheral ones. In areas outside the European core area only selected urban regions show above-average population potentials, while the other regions perform significantly below European average. A change in these patterns is unlikely to occur in the short run, even though some of the peripheral regions, such as regions in Spain, Greece or Ireland, experienced considerable population gains through migration processes. But since the main economic centres in Europe also experiences positive ***net migrations***, it is rather unlikely that areas outside the blue banana can significantly catch up. Nevertheless, the net migration patterns again highlight the tremendous negative population trends in the new Member States, in the Nordic countries, in Eastern Germany and Northern France, which need to be paid attention by policy makers.

Smaller countries like the Baltic States, Slovakia, or Slovenia already engaged over proportionally in ***international cooperation*** projects – by that trying to gain (or at least keep) knowledge in the countries as an instrument counteracting even further negative demographic trends.

At level of the territorial objectives, convergence trends over the past decade were strongest for the objective of ***"Strong local economies ensuring global competitiveness"***; however, disparities are still medium and high. Indicators for measuring ***"innovative territories"*** perform heterogeneously, with tertiary education showing convergence trend, while for employment disparities even increased. Indicators under the objective ***"Fair access to services, market and job"*** still show the highest existing disparities over all indicators; insofar there is no fair access to markets for all people in Europe. Only accessibility potential by road and air indicator slight trends towards cohesion, while for the accessibility potential by rail in contrary existing gaps seem to become permanent. Indicators on ***"Inclusion and quality of life"*** yield the smallest existing disparities for demographic aspects (gender imbalance, ageing ratio, life expectancy) , but these small differences are stable over time. For the other more socio-economic indicators; disparities are medium to very high (for the difference in female-male unemployment rates), with generally clear trends towards cohesion. Existing disparities for all indicators under the last two objectives, i.e. ***"Attractive regions of high ecological values and strong***

territorial capital" and ***"Integrated polycentric territorial development"*** are significant (medium, high and very high); due to a lack of data, time series analyses could not be generated for these two objectives.

From a methodological point of view, the developed analytical framework (Chapter B.2.3.) proofed to be applicable and successful in revealing the existing spatial disparities and territorial cohesion trends in Europe. The combined approach of state analysis (i.e. existing disparities) and trend analysis (i.e. cohesion as a process) should be followed in future studies on territorial cohesion. Also the further regional differentiation into urban, intermediate and rural regions was promising since for some indicators this distinct approach uncovered interesting heterogeneous developments. The successful analytical framework poses additional pressure on the question of data availability (see wishlist, Chapter B.4.1.). Unfortunately, the trend analysis could not be performed for all selected indicators due to a lack of data; also, the differentiation by type of regions could only be done for indicators available at NUTS 3 level. Thus, from the point of view of considering ESPON as a spatial observatory, there is demand to collect data at NUTS 3 level and as time series. So far both requirements cannot be met for all selected indicators. Insofar the developed analytical framework can only provide first ideas of what could be done if all indicators would be available at NUTS 3 level and for several points in time.

Data availability, disparities and general trends in convergence for each indicator grouped by territorial objective are synthesised inTable 7:

Indicator	Spatial resolution	Years available	Disparities *(1)*	Trend *(2)*
Strong local economies ensuring global competitiveness				
GDP per capita in PPS	NUTS 3	1997-2008	high	
Unemployment rate	NUTS 3	1999-2009	high	
Old age dependency ratio	NUTS 3	2000-2010	medium	
Labour productivity in industry and services	NUTS 2	2007	n.a.	n.a.
Labour productivity per person employed	NUTS 0	1995-2010	medium	
Innovative territories				
Population aged 25-64 with tertiary education	NUTS 2	2008-2010	medium	
Intramural expenditures on R&D	NUTS 2	2007	high	n.a.
Employment rate 20-64	NUTS 2	1999-2009	small	
Fair access to services, market and jobs				
Access to compulsory school	NUTS 0, degree of urbanisation	2008	very high	n.a.
Access to hospitals	NUTS 0, degree of urbanisation	2008	very high	n.a.
Accessibility of grocery services	NUTS 0, degree of urbanisation	2007	very high	n.a.
Access to university	(SILC data)	2007		n.a.
Accessibility potential by road	NUTS 3	2001, 2006	very high	
Accessibility potential by rail	NUTS 3	2001, 2006	very high	
Accessibility potential by air	NUTS 3	2001, 2006	high	

1: Disparities: StDev / Avg = 0-0.2 small disparities; 0.2-0.4 medium disparities; 0.4-0.6 high disparities; >0.6 very high disparities

2 : Trends towards cohesion: strong trend towards cohesion  ,

trend towards cohesion  , disparities remained stable , widening gaps 

Indicator	Spatial resolution	Years available	Disparities *(1)*	Trend*(2)*
Inclusion and quality of life				
Disposable household income	NUTS 2	1996-2007	medium	
Life expectancy at birth	NUTS 2	2000-2008	small	
Proportion of early school leavers	NUTS 1	2000-2010	high	
Gender imbalances	NUTS 3	2000-2009	small	
Difference in female-male unemployment rates	NUTS 2	1999-2010	very high	
Ageing index	NUTS 3	2000-2010	small	
Attractive regions of high ecological values and strong territorial capital				
Potential vulnerability to climate change	NUTS 3	2011	high	n.a.
Air pollution: PM_{10}	NUTS 3	2009	small	n.a.
Air pollution: Ozone concentrations	NUTS 3	2008	medium	n.a.
Soil sealing per capita	NUTS 3	2006	very high	n.a.
Mortality, hazards and risks	n.a.	n.a.		
Biodiversity	n.a.	n.a.		
Renewable energy potential	n.a.	n.a.		
Integrated polycentric territorial development				
Population potential within 50 km	NUTS 3	2008	very high	n.a.
Net migration rate	NUTS 3	2007	medium	n.a.
Cooperation intensity	NUTS 2	2008	high	n.a.
Cooperation degree	NUTS 2	2008	medium	n.a.
Polycentricity index	n.a.	n.a.		

Table 7. Territorial objectives and top indicators - territorial cohesion analysis

1: Disparities: StDev / Avg = 0-0.2 small disparities; 0.2-0.4 medium disparities; 0.4-0.6 high disparities; >0.6 very high disparities

2 : Trends towards cohesion: strong trend towards cohesion  , trend towards cohesion  , disparities remained stable , widening gaps 

B.2.5. Other scales

Territorial cohesion: extension to Global Level

The inclusion of the global scale is made to enhance our understanding of the processes occurring within Europe by framing them in broader, global perspective.

An important aspect when approaching territorial cohesion at several scales is the element of 'multiscalarity' which refers to the fact that the degree of cohesion can fluctuate according to the scale it is applied. Spatial disparities at for example the national level may be masked if the analysis is up-scaled to the EU or global level or down-scaled to regional or local levels (Davoudi, 2007). Another example is presented by Schön (Schön, 2005) when referring to socio-economic developments in which cohesion between the EU Member States increases while disparities between regions are constantly growing. The multiscalar dimension of territorial cohesion is already present when looking at territorial development policies: the quest for territorial cohesion is framed between the inter-national (e.g. with policy initiatives taken by the EU or the World Bank) and the multi-national (e.g. with similar policy initiatives taken within many countries across the world). In his seminal work on globalisation, Taylor, which suggests adopting a three scale approach (urban, nation, global) to human geography, takes the angle of the global as 'the scale of reality', which derives from a materialist position centred on the world economy. He also claims that the global is the 'ultimate scale', the one that 'really matters' (Taylor, 1982).

In general many of the INTERCO indicators for territorial cohesion are also relevant for understanding patterns of development at global level, even if the global indicators are only available world-wide at NUTS0 level (see Annex 4 "INTERCO Indicators at Global Level"). All of the indicators within the set of **strong local economies ensuring global competitiveness** are available globally, although there are some important substitutions and proxies used, i.e. both the World Development Index and the Human Development Index no longer define wealth in terms of GDP per capita in PPP; rather, both of these indices have gone over to GNI per capita in PPP. The indicators for **innovative territories** and **inclusion and quality of life** are also highly relevant and mainly available in some form at the global level. However, most of the indicators that have more uniquely European territory characteristics, such as the accessibility indicators in the category **fair access to services, markets and jobs** concerning accessibility to services and potential accessibility by road, rail and air are not directly available at global level. Rather there are related indicators for travel time to major cities. This does not mean that they are not relevant outside of Europe, but rather that they are measured in different forms than accessibility by territory, such as per capita within a larger spatial setting such as the entire country. Likewise, the indicators for **attractive ecological regions**, while highly relevant in a global setting, are generally systematically captured in other ways outside of the industrialised countries. The indicators measuring number and density of cooperation projects under the objective **integrated polycentric territorial development** have

no direct equivalents at the global level. As well, the indicator “population potential within 50 km” has no real equivalent at global level, population density rather stands to some degree in for this.

Comparing the INTERCO indicators for territorial cohesion in Europe clearly shows the added dimension that territoriality plays in territorial cohesion compared to social and economic cohesion, which are more easily understood at the non-European/global level. While Europe is surely a forerunner in advocating and developing territorial cohesion indicators at sub-national scale, there may be opportunities to ‘export’ the territorial cohesion concept and policy goal to other parts of the world.

Territorial cohesion: extension to Local Level

For the local level of INTERCO, the main **aim** was to enable the characterisation of local situations by conducting an evaluation of the indicators defined in the framework of the project, testing them through case studies at LAU level. The implementation of the case studies has taken the form of ‘zoomed-in’ analysis employing an analysis of disparities within a NUTS 2 or 3 region(s) in a selection of countries. So, the **objective of the case studies** (see Annex 5, Annex 6 and Annex 7) was to locally explore the indicators defined in the framework of the project as a way to characterise local situations.

From this scope, it has been required at first to assess the **availability of data** at LAU levels for an appropriate set of limited in number indicators, i.e. the headline indicators defined at the project level. It has been shown that data availability of indicators at LAU level is much poorer compared to other scales, concerning diversity of data sources, differences in time periods measured, incomplete data, etc.

The few indicators for which there was data available were defined as those **feasible indicators** (in the sub-categories of population, employment and education) and were then calculated for the specific case studies.

The analysis of the feasible indicators has shown that higher spatial inequalities exist when going beyond the traditional NUTS 3 level of study. As it has been observed in the specific case studies, territories which seem to have certain level of spatial disparities in the traditional NUTS 3 level of analysis register other degrees of disparities/inequalities at a local level.

It has been shown that this concerns at first the diverse settlement patterns and, more in general, the different types of the ESPON urban-rural typology. Also, it has been observed that even when NUTS 3 indicators data are compared to those at NUTS 2 level, new differences emerge regarding the types of other ESPON territorial typologies, i.e. regarding the metropolitan, the mountainous, the island, the coastal and the industrial decline typologies. Among others, as a first illustration, the local level analysis enabled us to identify that weak performing local areas are not restricted to peripheral or rural sparsely populated areas but low performing local examples are also found in central regions around major urban centres (i.e. Öresund

region: along the Öresund Strait in the hinterlands of Copenhagen, Malmö-Lund or Helsingborg). Sometimes these areas are called “inner peripheries”. As another illustration, the local level analysis in Thessalia has shown that important disparities among diverse types of mountainous, island and coastal areas emerge –which was not perceptible at NUTS 3 level. See Annex 5, Annex 6 and Annex 7 for the complete case studies.

In a more general way, it was observed through the analyses at LAU level of the case studies that important new insights can be brought regarding TC patterns at NUTS 3 level as well as differences between regions at this scale.

Additionally to this it was of interest to identify indicators available in the local case studies that do not exist at the EU regional level but that might be of interest for the other levels in the framework of territorial cohesion. That is geographically specific local indicators as examples to support the fact that local areas do possess a diversity of local specificities. However examples as such were also difficult to find.

Summarising, the work on case studies at LAU level has proven the existence of another territorial layer/level of study additional (and complementary) to the traditional NUTS 2-3 scales, where more complex territorial patterns exist but are imperceptible in the traditional way of displaying indicators on the basis of the ’regional’ scales. Further on, the case studies have shown that the local level could enhance the dialogue between different scales that increasingly overlap temporally and spatially; it could serve as a complement to other scales, as a contributor to decipher the complexity of territorial cohesion.

Western Balkans and Turkey

We have started from the general hypothesis that there is a **TC pattern** (a substantial degree of homogeneity) for the Candidate Countries and Potential Candidate Countries (CC/PCC) which differs clearly from that for the entire EU. Specifically, EU27 could be divided into three or four distinct territorial parts (depending on the hypotheses and the methods used) on the basis of clearly different levels of competitiveness, for instance: higher, moderate and lower levels of competitiveness. The literature approach of the economic performance features of the CC/PCC provided us arguments on the existence of a TC pattern for the entire territory of CC/PCC (total of the countries) which is similar to the EU east one but clearly less performing compared to the latter.

Further on, the specific analysis of the different TC dimensions on the basis of indicators at country level, have consolidated the above literature results, as for the majority of the TC dimensions.

Inside the total area of the CC/PCC, TC inequalities per country are pronounced.

Regarding mainly competitiveness, Croatia (HR) and Turkey (TR), which are candidates to join EU, are equally performing with the two “weaker” EU east countries: Romania and Bulgaria. Montenegro (ME) and Serbia (RS) perform less in economy than HR and TR and present also similar values regarding indicators of

several other TC dimensions. FYROM (MK), Bosnia (BA), Albania (AL) and Kosovo (XK) are even less developed and present a relative homogeneity regarding several TC dimensions.

Regarding the **sub-national level**, the CC: HR, ME, MK and TR produce already data which are in line with the specifications of Eurostat. In opposition, there is lack of respective data for the PCC. Therefore, these countries should gradually be in line with Eurostat specifications (including NUTS division) concerning an important number of themes interesting TC. They should produce data corresponding by first priority to the final and by second priority to the headline and core indicators of INTERCO.

In this frame, the results at sub-national level are relatively poor for the entire CC/PCC area.

The conceptual and technical/statistical analyses on the basis of the final and headline/core indicators of INTERCO constitute also a test of both the selection of the final and headline/core indicators and the methods to use these indicators in order to approach territorial challenges and TC policy priorities. Because of the lack of data for the PCC**,** the results of this test were satisfactory for the most regarding the country level and satisfactory at a medium degree for the sub-national level which constitute a more crucial component of the territorial aspect of cohesion. However, interesting answers for the actual territorial challenges and the implementation of TC policy priorities were given; these answers go to some extent beyond the answers given by the existing literature which has not exploit enough systematically the TC indicators. Furthermore, more general deficiencies in the exploitation of TC indicators analysis regard also the study of the CC/PCC area. We do not know the impact of each indicator 'translating' a specific aspect of each TC dimension on this dimension. Further on, we do not know the weight of each TC dimension to the TC seen globally.

Finally, the analysis, using several types of statistics of variation (min/max, mean, standard deviation and coefficient of variation) at NUTS 3 level of the CC/PCC has shown larger gaps between NUTS 3 units than those detected at country (NUTS 0) level, as all the ranges of results at NUTS 3 level for all of the indicators used were larger than the ones registered by country figures. The coefficients of variation (which are the more appropriate statistic for this issue) are clearly higher at NUTS 3 level, implying therefore a broader level of complexity of the indicators at this level. These results are very similar with those found for the local case studies which enables us to consolidate the conclusion that analyses at a higher than the NUTS 3 level could not bring 'really territorial' results regarding cohesion.

B.2.6. GIS database / GIS tools

The INTERCO project developed a set of tools and the INTERCO GIS database to support work with the territorial cohesion indicators. The INTERCO database as well as the tools are provided on CD-ROM/DVD, which accompanies the Final Report (see Annex 9).

The database itself, as well as all tools, require the use of ESRI´s ArcGIS software with versions 9.3 or 10.x.

Apart from the GIS database, the CD-ROM/DVD includes the following support tools:

Scripts

Supporting scripts that help generating the territorial cohesion indicators, or help processing the input data to illustrate the final selected indicators. Scripts are written in Python, VBA or AML programming languages, or are developed by using the Model Builder in ArcGIS. Scripts are not generated for all indicators but only for those where needed.

Maps

All territorial cohesion indicators mapped in the Final Report are available as stand-alone maps in PNG raster file format or in Adobe Illustrator (AI) vector graphics format for immediate view and processing in other software environments. Maps in PNG or AI format can also be used by non-GIS users who can import the maps into reports or presentations without the need to use ArcGIS.

Layer files

Layer files are produced, which are referenced in the ArcMap map templates, and which provide the symbology of map features. Layer files store only symbology of a layer, but not the geometries.

Excel files

All input data for the indicator calculation, as well as all indicator outputs, are provided as Excel files, in addition to the ArcGIS geodatabase. By that, non-GIS users can work with the data or indicators without the need to use a GIS. The Excel files are provided in standard ESPON Excel file format, including metadata documentation.

Documentation

A metadata documentation (see an overview in Annex 10) as well as the user manual for the INTERCO geodatabase and all the GIS tools are provided.

Cartography

All MXD files necessary to produce the indicator maps are provided. The MXD files can be used to re-produce the indicators, change individual maps, or to export the maps in different raster or vector graphic formats. The MXD files were created by using ArcGIS version 10.

Section C.5. "GIS Data & Tools" provides detailed descriptions on the GIS tools developed.

B.3. Links to other ESPON projects

The INTERCO project has integrated a lot of material produced by other ESPON projects during all phases of the project, from the first compilation of indicators to the implementation of those finally selected. The other ESPON projects, either from the 2006 or 2013 Programme, were used in different ways. Sometimes we took simply data and indicators, sometimes the whole report was a great basis for understanding a particular facet of territorial cohesion or the method to calculate indicators. In the Inception Report we provided a review of ESPON projects used for the inventory of indicators (Inception Report, Annex 1). Nevertheless we did not include all of them again in this Final Report, since most of the indicators were integrated in the ESPON Database, from where we took also many elements.

The table below summarises what we took from other projects and how the material was used in INTERCO.

ESPON project(s)	Material used	How integrated in INTERCO
1.1.1 Polycentric Development	Definition of polycentricity; Polycentricity index.	The polycentricity index is used for the objective of integrated and polycentric Europe but will be put in the wishlist in waiting of the new FUAs definitions.
1.2.1 Transport Trends	Indicators of potential accessibility by road and rail. Update of Selected Potential Accessibility Indicators.	Indicators of accessibility to population by different modes are considered as crucial indicators for territorial cohesion.
1.3.1 Natural Hazards	Analysis of risks and methods to collect data on risks and hazards	Used to review the indicators on mortality, hazards and risks
3.1 Integrated tools for European Spatial Development	Synthesis of ESPON projects ; spatial analysis tools.	Use of all the tools put at disposal by this project (MAP, GIS, database)
4.1.3 Monitoring Territorial Development	Indicators hierarchy and policy links ; method for indicator selection (inspiration).	Used to browse and classify indicators
ESPON Database 2013	Indicators database ; categories and sub-categories ; TtOYS coding system.	Used for the integration of all indicators of our inventory, their classification and codification.
CLIMATE	Potential vulnerability to climate change.	Used for the territorial objective “Attractive regions of high ecological values and strong territorial capital” to underline that global issue with local impacts requiring interventions of local government as well as coordination with upper and neighboring areas for a holistic approach to have a coherent vision throughout the territories

(continued on next page)

ESPON project(s)	Material used	How integrated in INTERCO
DEMIFER	Demographic data and informations on Piedmont and Thessalia	Used to complete data for the analysis of case studies (Piedmont and Thessalia, in annex 6 and 7)
FOCI	Case study on Piedmont Urban system.	Data used for the case study on Piedmont in annex 6
GEOSPECS	Development of the extension of the ESPON Database by additional data on specific types of territories and regions gathered within the project.	Used for its extension of local and territorial analysis and indicators in ESPON database
KIT	Territorial dimension of innovation and knowledge economy.	Used for Innovative territories objective notably for indicators of innovation and investments
RERISK	Analysis of vulnerabilities in regards to access to energy and energy potential (photovoltaic and windmill)	Used to review the indicators of renewable energy potential
TEDI	Political and theoretical framework for turning diversity into strength; main territorial evidences.	Used to understand territorial cohesion and to identify specific challenges of these territories and find appropriate indicators
TERCO	Degree and intensity of cooperation (2 indicators).	Used for the objective “Integrated polycentric territorial development”
TIPTAP	Macro-criteria of territorial impact (territorial efficiency, quality and identity).	Used for multi-dimensional approach of territorial cohesion and related indicators
TRACC	Regional indicators of transport accessibility.	Used for the “Fair access to services, market and jobs” objective to measure accessibility by road, air and rail

Table 8. Linkages with other ESPON projects

B.4. Further work and research

B.4.1. Wishlist

Indicator of biodiversity

As for today, a wealth of biodiversity data have been collected at the global scale (see e.g. the Global Biodiversity Information Facility (GBIF) or the UNEP World Conservation Monitoring Centre (UNEP-WCMC)), but they are very much linked to national levels. When talking about the different databases that exist we can note that they are either on very specific issues (protection sites, habitats or species) or covering country wide areas. Some countries have better data at a more practical level for our use; unfortunately they are only few of them. Some indicators can be desegregated to be used at sub-national levels but not enough of them to cover all ESPON territories and be significant for territorial cohesion.

The closest database we could be using for European data is Natura2000. This database represents well the difficulty we face to measure biodiversity. First of all, it has be done only for one year, and not all regions or countries will update the data. Therefore we do not have time series about it. The second challenge lies in regards to the biodiversity data themselves. Natura 2000 is a descriptive database representing endangered species and protected areas, hence only indirectly measuring the quality of biodiversity. Though we can assert that protected areas are designated so because they are of some value, it does not represent the level of biodiversity in a given territory.

Actually, such an indicator should be built in a composite way, in order to be able to represent if territories are very biodiversitied or not. That also leads to have agreement on what is taken into account when talking about biodiversity: state and evolution of biological diversity (biomes, habitats and ecosystems, trends in abundance and distribution of species, coverage of protected areas, change in status of threatened species, trends in genetic diversity); the sustainable use of resources (sustainable management in protected areas, proportion of products issued from sustainable resources, ecological footprint); integrity of ecosystems and ecosystems goods and services (quality of water connectivity/fragmentation of ecosystems, health and well-being of communities, biodiversity for food and medicine, trophic integrity of ecosystems); status of traditional knowledge, innovations and practices; status of access and benefit sharing; status of resources transfers.

If those indicators exists for some countries and can even be disaggregated at sub-national level, there are not available for every European territories, nor complete through time series. Recommendations should be addressed to the European Environment Agency (EEA) that a synthetic and updatable indicator on the quality of biodiversity should be made available.

Indicator of renewable energy potential

The indicator of renewable energy potential is of first importance given the territorial objectives for Europe and for the future shape of economic policy as well. We did not select them for the actual final list of indicators because of the spatial level they are collected at.

The energy efficiency indicator is only be available at national level and does not reflect territorial real energy use as not enough countries distinguish the imported products from consumption and production in national databases. Therefore it is a very imprecise indicator of energy efficiency. As for the use of renewable energy, data does only scarcely exist. However, we can access data for the production of renewable energy. In the ReRisk project, it has been strongly stated that energy was an issue for inequality among Europan territories, due to economic vulnerabilities, region's dependance and social vulnerrability. This indicator is interesting but there no time series yet to be able to analyse convergence or not. They notably provided data at NUTS 2 on windmill potential and photovolataic production potential for ESPON territories, but data only for 2010. We really hope that for this particular territorial indicator, data collection will improve and will allow to have an indicator that will be updated through time and will be available at more local levels.

Indicator on mortality, hazards and risks

The ESPON 1.3.1 produced a 2004-2005 risk assessment based on a delphi method for identifying and weighting hazards and vulnerability factors. For a convergence analysis as envisaged by INTERCO, data with higher temporal and spatial exist.

The most recent and global analysis of risk from natural hazards is the "Global Assessment Report on Disaster Risk Reduction 2011" by the UN International Strategy for Disaster Reduction (ISDR)[5]. This report provides an in-depth analysis of risk states and trends using global and local datasets.

The report applies a theoretical and stastical framework that distinguishes exposure, vulnerability and risk for both human and economic elements at risk. In the context of INTERCO exposure (number of persons or economic values exposed) and risk (expressed in potential number of killed people and economic losses) would be of high interest (Figure 7).

A webmapping interface (http://preview.grid.unep.ch/) allows the users to access data on exposure, vulnerability and risk for several hazard types (cyclones, droughts, earthquakes, floods, tsunamis, landslides, fires, volcanic eruptions).

The publicly available data is provided by country or as raster layers at a spatial resolution of 1/12th of degrees (about 10km at the equator). In order to make these datasets usable at NUTS 3 level, a feasibility study on the aggregation of data must be done carefully : is the spatial resolution of the raster data sufficient for calculating values (sums) by NUTS 3 units ? How to calculated a multi-hazard indicator? If risk (expected human or economic losses) can be added, this might not be the case for

[5] http://www.preventionweb.net/english/hyogo/gar/2011/

exposure data : been exposed to a flood has not the same consequences as if to a cyclone, therefore exposures to different hazard types cannot be simply summed up.

Nevertheless, it is suggested that these freely accessible datasets are further explored.

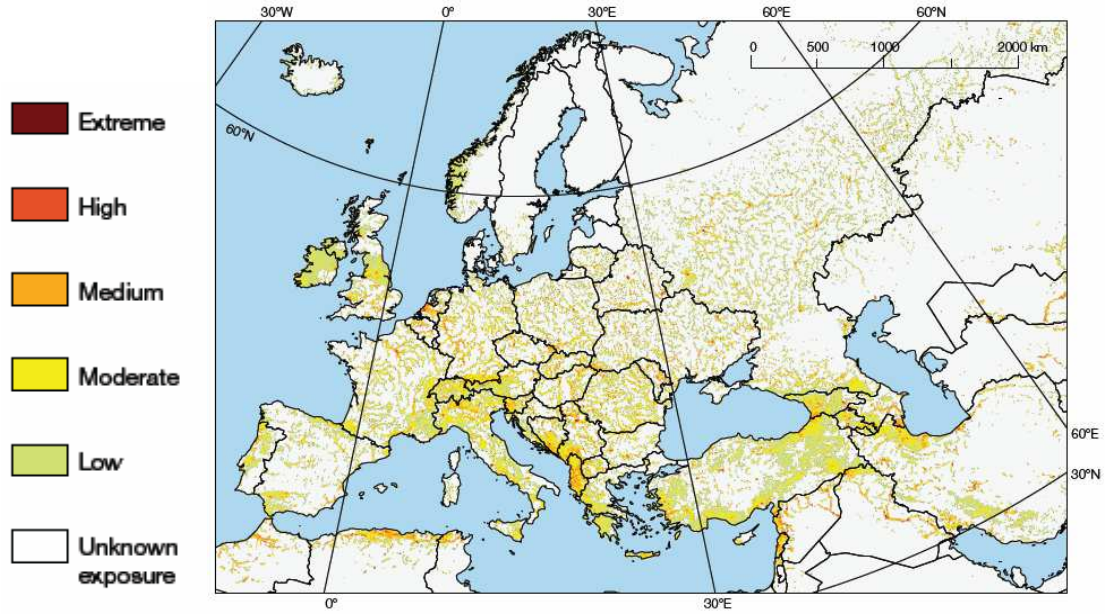


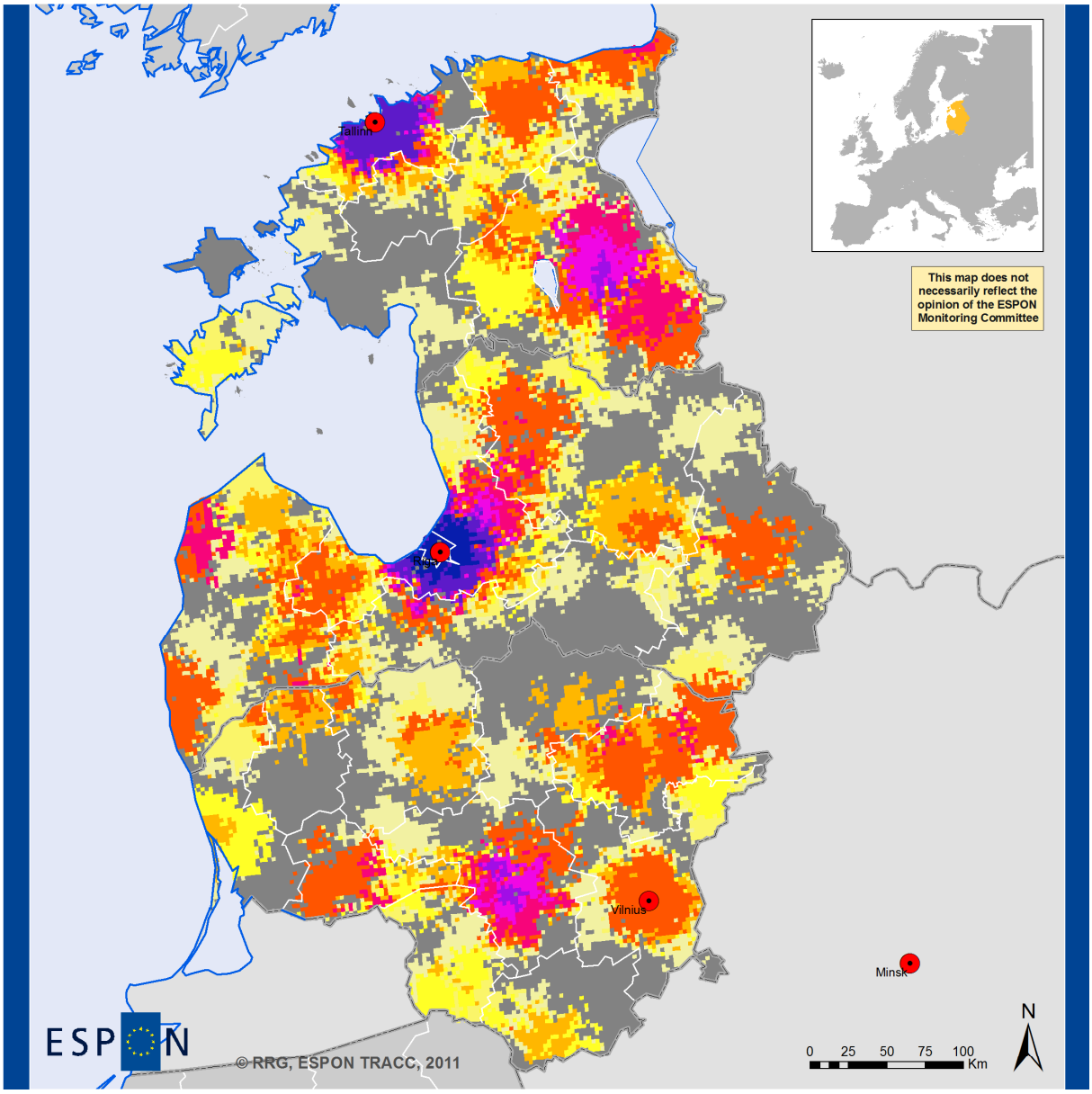
Figure 7. Mortality risk from tropical cylcones, floods and landslides

Indicators on access to services

Traditionally accessibility indicators were defined and calculated as potential accessibility to population or to GDP. Recently, due to negative demographic trends in large parts of Europe (outmigration, over aging), access to services and the political issue of maintaining adequate levels of public service provision gained increasing importance. European-wide accessibility indicators reflecting such challenges properly, are, until today, only poorly available. Indicators on access to several services from SILC survey provide aggregated data at national level (though subdivided by degree of urbanisation), but conceptually these indicators represent the personal perception rather than the actual de-facto accessibility pattern at a site. ESPON TRACC already tries to overcome such deficits by calculating innovative accessibility indicators to the following services (ESPON TRACC, Interim Report, XIII; Spiekermann et al., 2011):

- Access to Health Care Facilities (Travel time to nearest hospital)
- Availability of secondary schools (Number of schools within 30 minutes travel time)
- Potential accessibility to basic health care (Potential accessibility to general practice surgeries)

As a preliminary example, Figure 8 maps the indicator on availability of secondary schools in the Baltic Sea case study.



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

Source: RRG GIS Database, 2011; OSM, 2011
Origin of data: ESPON Databank Project, 2010/2011
© EuroGeographics Association for administrative boundaries

Baltic States Case Study
Availability of secondary schools (2.5x2.5 km raster grid)
Number of schools within 30 min car travelt ime

1	6 - 10	31 - 50
2	11 - 15	51 - 64
3	16 - 20	Areas > 30 min from next school
4 - 5	21 - 30	

Figure 8. Raster indicator on availability of secondary schools for Baltic Sea case study (tentative working map taken from ESPON TRACC project; input data still need to be finalized)

The approach is to calculate the road travel times from each raster cell or each municipality (LAU 2) to the nearest facility of its kind; after that the travel times will be aggregated (averaged) to NUTS 3 level. Unfortunately, due to the high data demand and large computation times at raster level, ESPON TRACC calculates these indicators not for the entire ESPON space but for seven case study regions only (case studies regions are: Euram, Spain; Northern Italy; Bavaria, Germany; Czech Republic; Poland; Baltic States; Finland).

Other studies for individual regions picked up the ESPON TRACC approach by developing it further not only to calculate travel time indicators, but from there to derive indicators of percentage of population living within a certain travel time to the next facility. Such advanced indicator definitions even more respond to policy questions. A recent study applying this kind of accessibility indicators, for instance, was a study on mountain areas in southern Norway (Arnesen et al., 2010) conducted for the Norwegian Ministry of Local Government and Regional Development. Here, the percentage of population living within 30 minutes, 45 minutes and 60 minutes car travel time to airports, hospitals, stations, and universities were calculated at LAU 2 basis, where the travel time itself were calculated at raster level, and grid population data has been used as well (Figure 9 for the travel times; Figure 10 for the population percentages).

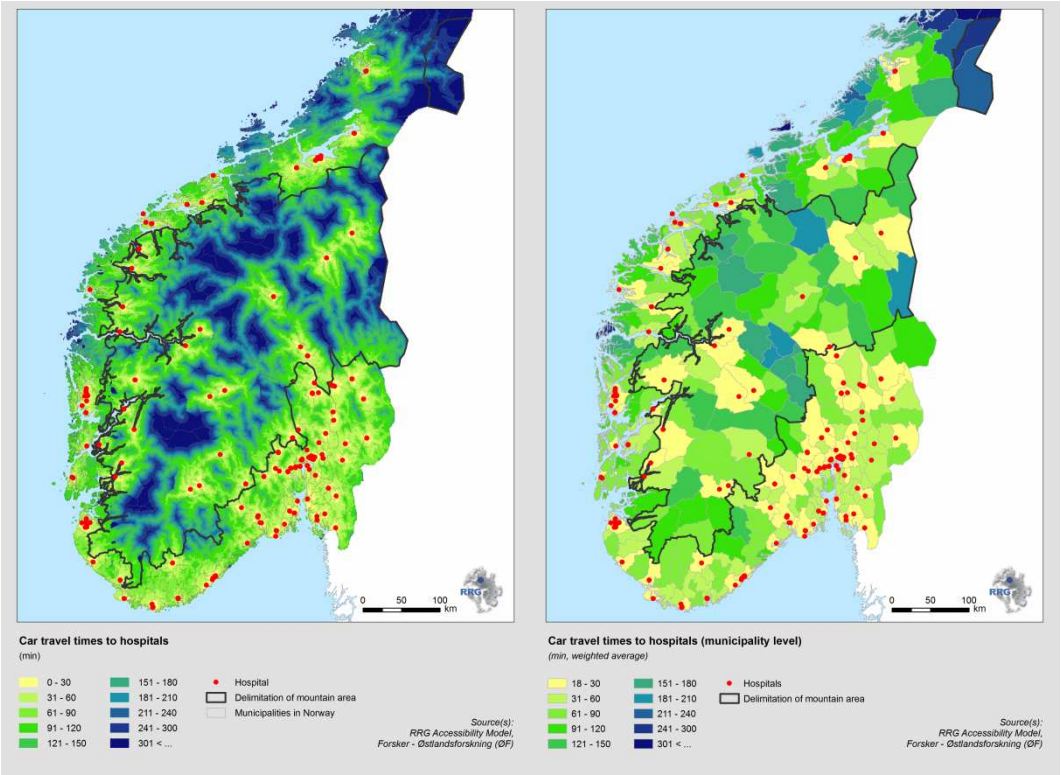


Figure 9. Car travel times to next hospital in southern Norway: Raster (left), municipalities (right) (Arnesen et al., 2010, 61; 66)

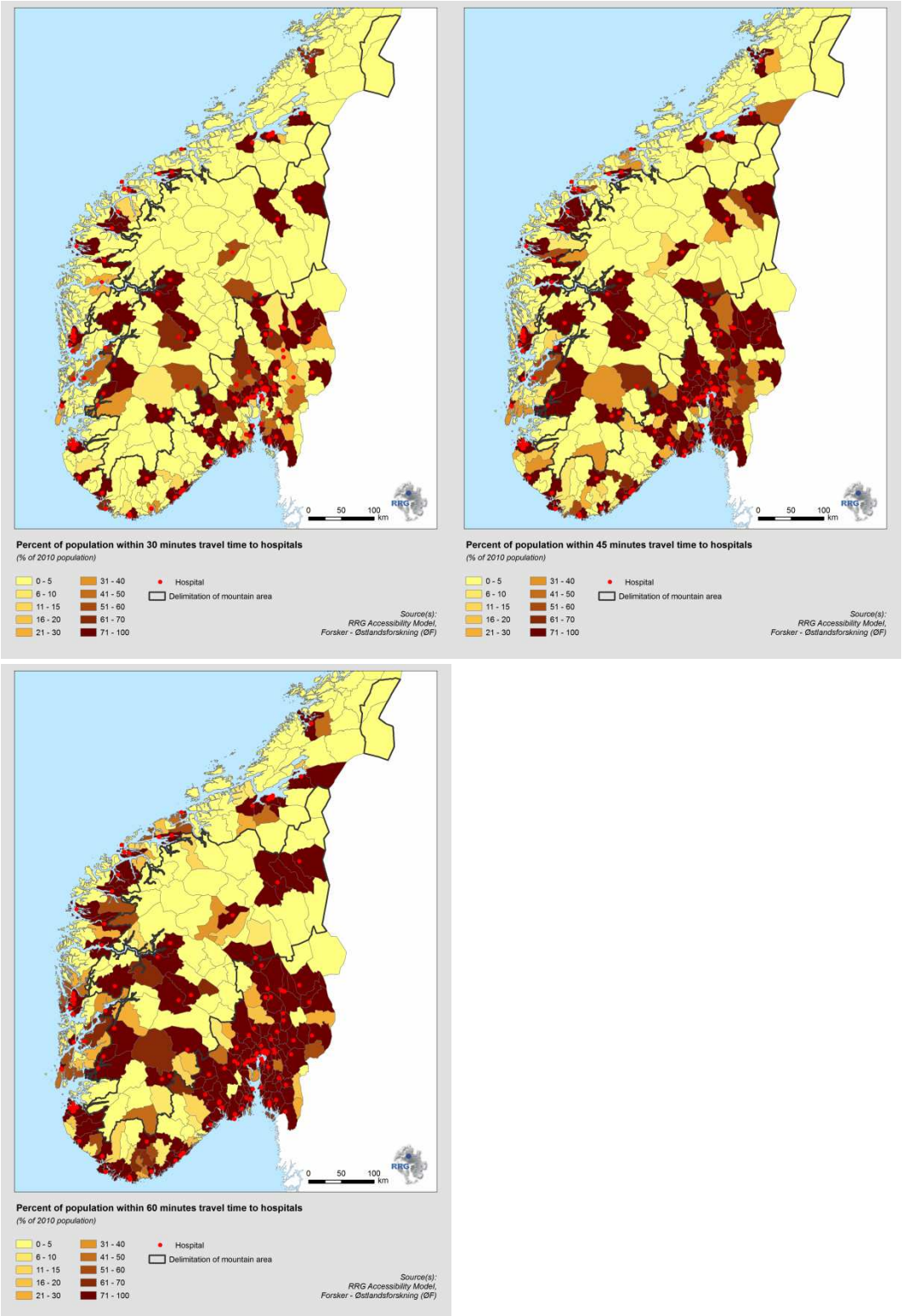


Figure 10. Percentage of population within certain travel times to hospitals in Southern Norway: 30 min (top left), 45 minutes (top right), 60 minutes threshold (bottom) (Arnesen et al., 2010, 71)

Based upon these examples, the following recommendations for the ESPON programme in relation to indicators on access to services can be given:

- to extend the initial ESPON TRACC approach to entire ESPON space;
- to further develop the travel time indicators into policy-relevant indicators such as percentage of population at LAU 2 level suffering from poor access to individual public services;
- to support projects to calculate indicators below NUTS 3 level at LAU 2 or raster level;
- to develop a standard grid (raster) system for the entire ESPON space which allows calculation of such accessibility indicators; for example, an appropriate raster resolution could be 2.5 x 2.5 km. The EEA population grid raster could be taken as basis for such a raster system;
- to develop a rasterised population database for this raster system; and
- to launch projects that aim at establishing a GIS database for entire ESPON space on public facilities that are deemed crucial for daily life, such as health sector (hospitals, surgeries, pharmacies), education sector (primary schools, secondary schools, universities), or transportation and logistics sector (railway stations, airports, ports, transport terminals, freight villages).

Indicators on polycentricity

A first index of polycentricity was produced by Klaus Spiekermann and Michael Wegener as part of the ESPON 1.1.1 project. Spiekermann and Wegener considered European urban systems from three perspectives:

- Rank-size relationships, with one combined indicator based on two measurements. First, a weak difference in population size between the two most populated cities would indicate a higher degree of polycentricity, as there would be two major nodes that would offset each other. Second, a rank-size curve with a weak slope would indicate that there are limited contrasts between main regional nodes and small and medium-sized towns.
- Geographical spread of towns and cities, measured by dividing the territory in Thiessen polygons built around each of the 1595 Functional Urban Area (FUA) centres the ESPON 1.1.1 project had identified in Europe. The Gini coefficient of the areas of these polygons is considered to reflect the degree to which cities are spread out on the territory. A low coefficient would indicate an equal distribution, corresponding to a high degree of polycentricity.
- Levels of accessibility, considering that an urban system with limited differences in this regard would be more polycentric. This index was based on two measures: First, by calculating the Gini coefficients of levels of accessibility of cities; second, by calculating the slope of the regression line obtained when comparing accessibility levels and demographic mass.

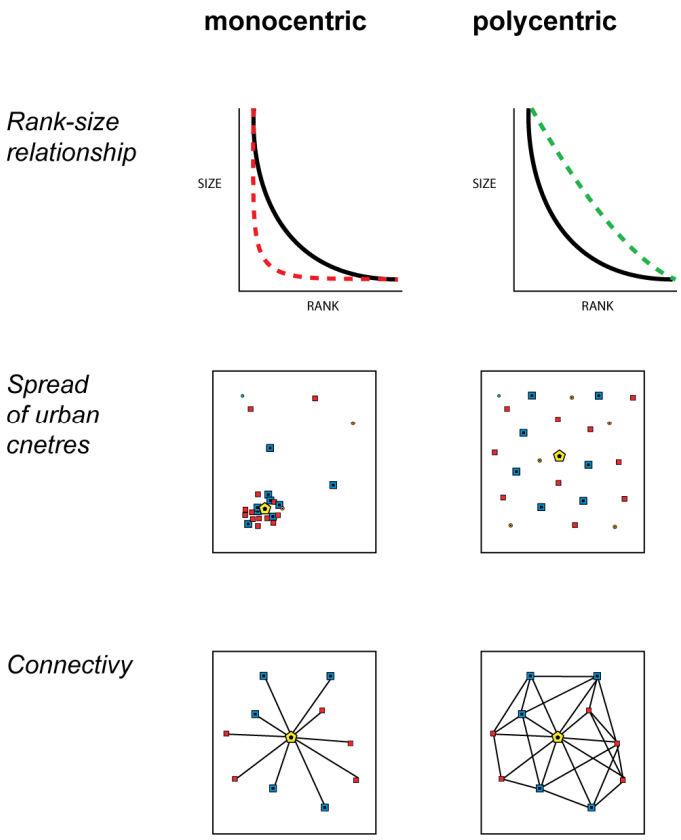


Figure 11. Principle of measurement of polycentricity

This method was applied at the NUTS 0 and NUTS 1 levels. The responses were mixed. On the one hand, the index based on rank-size relationships confirmed well-known patterns, opposing typical monocentric countries such as Greece, Ireland, Latvia and France and polycentric ones such as Germany, the Benelux coountries, Poland and Slovakia. When considering the spread of cities and towns on the territory, on the other hand, surprising results occurred as France appeared quite polycentric, while Italy and the Netherlands where described as tending towards monocentricity. Similar surprising outputs were obtained when one considered levels of accessibility. The overall conclusion is that the measurement of polycentricity is complex, as an urban system may be characterised by a number of factors of polycentricity, e.g. regularly arranged cities, without necessarily functioning in a polycentric way. Only comparisons of the population of cities seem to efficiently reflect the polycentric or monocentric functioning of urban systems, as this is a synthetic measure resulting from a wide range of social, economic and political processes.

The ESPON 1.4.3 project therefore reverted to a measurement of polycentricity focusing exclusively on population sizes. Their method is described in the following way:

"Our index is computed on the basis of a simple and purely morphological methodology (as approached by the proxies of population data). We have used the cardinal ranking of the following indicators:

- *Part of the main FUA in the total population of the country*
- *Part of the main FUA in the population of the whole set of FUAs with more than 250 thousands inhab.*
- *Part of the main FUA in the population of the whole set of FUAs with more than 50 thousands inhab.*
- *Standard deviation of the population of the FUAs with more than 50 thousands inhab.*
- *Average of the differences between the ranked populations of the FUAs until the threshold of 50 thousands inhab.*

The value of each of these five indicators has been distributed on a scale bounded from 100 (the highest value for the indicator) and 0 (the lowest one). The arithmetic average of these seven indicators gives the cardinal global index (Table 1). We stress that we compute here (the proxy of) an exclusively morphological index of polycentrism, and not a measure of functional polycentrism, decisional functions appearing to be much more concentrated in most countries than the urban populations."

The ESPON 1.4.3 team also had to note that "the sole surprise arising from [the resulting] ranking regarding a qualitative knowledge of the European urban patterns is the position of Hungary, which appears a priori to be very monocentric due to the weight of Budapest". There is in other words not much added value to be gained from measuring polycentricity.

However, the ESPON 1.1.1 project also produced an alternative measurement of polycentricity, considering the number of cities and towns that could be reached within a maximum generally accepted daily commuting distance of 45 minutes from each European municipality. The underlying idea is that in areas with access to more than one urban node, a certain degree of polycentric functioning may more easily develop as cities compete to attract commuters and companies. This type of approach focused on the territorial organisation of the smaller towns and cities, while the previous measures mainly reflected patterns in the upper end of the urban hierarchy.

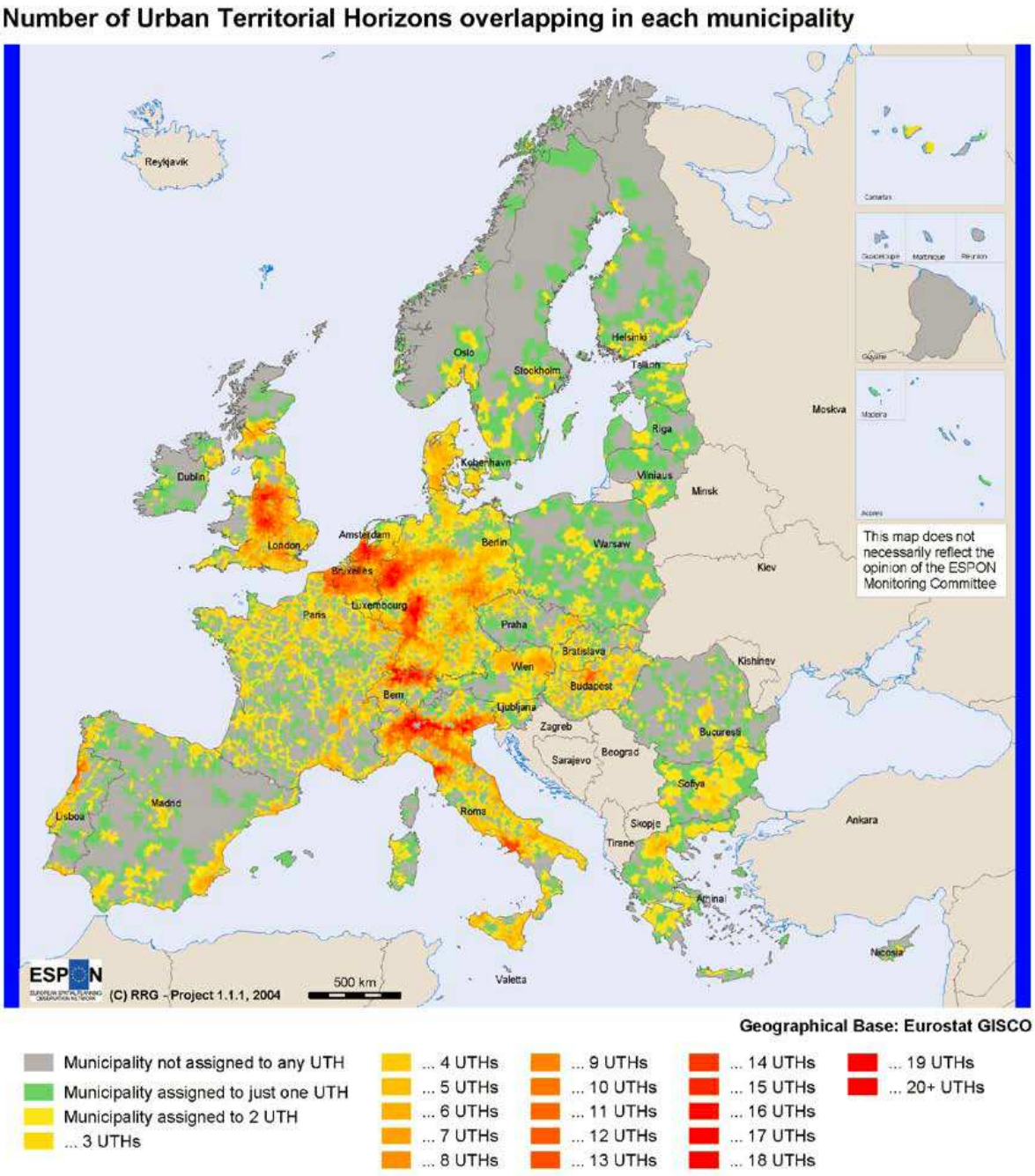


Figure 12. Number of FUA centres accessible within a generally accepted maximum daily commuting time of 45 minutes

This latter type of measurement can be difficult to synthesise in the form of an index at the NUTS 3 or NUTS 2 levels. Additionally, the ESPON FOCI and ESPON Database have produced alternative delineations of Functional Urban Areas rendering all the previously described measures obsolete.

It should also be noted that neither ESPON 1.1.1 nor ESPON 1.4.3 could identify a significant relationship between measures of polycentricity and economic or environmental performance, respectively measured through GDP and CO_2 emissions by unit of GDP. From this some of the authors concluded that the objective of polycentric development formulated in European policy document was not necessarily well-founded. However, one may also hypothesise that these forms of quantifications of polycentricity did not reflect the political ambition of polycentricity in an appropriate way. When analysing the discourse on polycentricity, one finds that political stakeholders wish to promote the emergence of more nodes that are capable or taking initiatives and stimulating development processes, and not necessarily making urban centres more homogenous and more equally distributed[6]. It is not within the scope of this project to produce alternative measurement that would reflect the degree of achievement of these ambitions.

General wishes

As it can be seen from the general indicator overview (Annex 3), the statistical data from Eurostat and from other organisations are, unfortunately, only available for different spatial levels, such as NUTS 3, NUTS 2 or even NUTS 1.

Not only from the perspective of territorial cohesion, but also for general spatial observatories, it would be needed to get all data at the finest spatial level, i.e. at NUTS-3 level. Harmonised data availability at NUTS-3 level would:

- improve analyses of trends towards territorial cohesion;
- provide better options for correlations or other advanced statistical analyses.

Thus, recommendations should be addressed to all statistical offices in the EU Member States and in ESPON space to collect the data only at NUTS 3.

B.4.2. Extended exploitation of the indicators

The main aim of INTERCO is to offer to stakeholders interested in EU TC an appropriate tool allowing them to better approach actual weaknesses (and strengths) of European territories in relation to the territorial objectives of the EU policies, starting from the older priorities of the ESDP and focusing on the very recently agreed priorities of the Territorial Agenda 2020 (in relation to the Europe 2020 priorities and targets).

From this scope, the creation of two sets of indicators restricted in number - “top” indicators (Table 6) and headline/core indicators (Annex 2) well addressed to the

[6] Gløersen, Erik (2012) *La Finlande, la Norvège, la Suède face au projet d'une Europe polycentrique - La centralité à la marge de l'Europe*, Rennes : Presses Universitaires de Rennes.

“territorial” aspects of the cohesion and covering TC through all territorial levels as well as all the dimensions (facets) of the TC is undoubtedly of great importance.

Interested stakeholders could use indicators going beyond the national and “regional” approach of the territories. They could use these sets of indicators as a sound basis for the different kind tailor made analyses of the TC challenges, policy development and policy impact studies.

Each stakeholder could use different methods of exploiting the INTERCO indicators sets. Apart from the category of stakeholders that are familiar with the multitude of methods of exploiting indicators in innovative research on TC, the majority of stakeholders are interested to have in hand a collection of simpler methods (recommendations, advices) on how to exploit TC indicators.

Ideas for potential extended uses of the INTERCO indicators are presented in the Scientific Report, chapters "C.3.7. Further ideas for analyses" (page 123).

B.4.3. Communication plan

The ESPON INTERCO project has run in total six workshops targeting interested stakeholders and the ESPON community. These workshops have been an important working tools but also part of the project’s communication of this work and progress made.

Through its participative approach the ESPON INTERCO project has created some expectations towards the final results. Therefore it is envisaged to disseminate the results as widely as possible as soon as the projects is finalised and the final report has been approved.

In general three different target groups can interested in the results and therefore the project has categorised its dissemination activities as to whether they target (a) other ESPON projects, (b) policy oriented stakeholders, or (c) the wider scientific community.

ESPON projects	Policy stakeholders	Scientific Community	Dissemination activity
X	**x**	**x**	**ESPON seminar in Aalborg (13-14 June 2012)** At the next ESPON seminar the lead partner of the ESPON INTERCO project will present the final results to the ESPON community, if ESPON so wants.
X	**x**	**x**	**Report on ESPON website** The most important dissemination tool is the publication of the Final Report on the ESPON website, which makes the report available to a wider public.
X	**x**	**x**	**Indicator fact sheets** Chapter C3 of the Final report is structured in that way, that it easily can be split into single indicator fact sheets. The TPG would like to encourage the ESPON CU to not only publish the report but also the single indicator fact sheets that can be extracted from this chapter.
x	**X**	**x**	**ESPON Map of the month** To raise awareness about the results of the projects, the TPG would like to see one of the INTERCO maps as ESPON Map of the Month and would support the CU in the preparation of the necessary files.
	X		**Update for workshop participants** As soon as the Final Report has been approved, Spatial Foresight will inform the participants of the stakeholder workshops organised on 14.01.2011 and 20.10.2011 in Brussels.
x	**X**	**x**	**Nordregio News** Once the Final Report has been approved, Nordregio envisages to inform about the results of the project in its Nordregio News.
		X	**Website of the University of Geneva** Once the Final Report has been approved, the University of Geneva will inform about the results of the project on its website.
		X	**NTUA website** Once the Final Report has been approved, NTUA will inform about the results of the project on its website.
x		**X**	**Scientific papers** Various members of the TPG have ambitious scientific aspirations and will use the ESPON INTERCO results for scientific papers and publications.
		X	**University teaching** Various TPG members are involved in university teaching about territorial development and will in this context also disseminate ESPON INTERCO results.

X = main target group
x = additional target group

Conclusions

32 top indicators for 6 territorial priorities

After two years of research, the INTERCO project has selected 32 top-indicators wich are structured along 6 territorial objectives. They aim at reflecting both the thematic and policy dimensions of territorial cohesion (see chapter **B.2.2.1. The list of indicators**).

The conduct of the project highlighted interesting challenges and difficulties to reach its objectives, to develop indicators and indices that can be used to measure territorial cohesion.

The main results show that there is no general trend towards convergence in all ESPON territories. At level of the Territorial objectives, convergence trends over the past decade were strongest for the objective of ***"Strong local economies ensuring global competitiveness"***; however, disparities are still medium and high. Indicators for measuring ***"innovative territories"*** perform heterogeneously, with tertiary education showing convergence trend, while for employment disparities even increased. Indicators under the objective ***"Fair access to services, markets and job"*** still show the highest existing disparities over all indicators; insofar there is no fair access to markets for all people in Europe. Only accessibility potential by road and air indicator slight trends towards cohesion, while for the accessibility potential by rail in contrary existing gaps seem to become permanent. Indicators on ***"Inclusion and quality of life"*** yield the smallest existing disparities for demographic aspects (gender imbalance, ageing ratio, life expectancy) , but these small differences are stable over time. For the other more socio-economic indicators; disparities are medium to very high (for the difference in female-male unemployment rates), with generally clear trends towards cohesion. Existing disparities for all indicators under the last two objectives, i.e. ***"Attractive regions of high ecological values and strong territorial capital"*** and ***"Integrated polycentric territorial development"*** are significant (medium, high and very high); due to a lack of data, time series analyses could not be generated for these two objectives.

Recognising the complex and dynamic nature of territorial cohesion

Territorial cohesion is a very rich concept, fostering a lot of theoretical reflexions while in constant redefinition by the political framework. Indeed, its inherent multidimensionality adds difficulties to the understanding of the concept of territorial cohesion. Moreover, as shown by the current policy debates, it is also a moving concept. The definition of territorial cohesion is very much linked to policy directives and objectives that is why we cannot tackle ththeat subject without understanding fully the different documents produced by European policies. Therefore, we sketched the indicators out of the Territorial Agenda 2020 and Europe 2020 that guided us through our discussions. The recurrent updates of the policy objectives and documents had forced us to take a flexible attitude in the course of the project,

rendering the current results more in line with the future shape of Europe, but also more adaptable if any changes should take place in the future as well.

The idea of a flexible and adaptable set of indicators must be considered as a positive input for the users of ESPON Database. This implementation would need to be achieved by clearly making the distinction between data - that can be organised using a thematic thesaurus - and indicators that would be selected data linked to specific facets of territorial cohesion (e.g. the territorial objectives identified by the INTERCO project). Conversely, these territorial aspects - in our case, the territorial objectives - should serve as entry points to the database. This type of well-thought, policy-oriented entry points might be more understandable, relevant and usable than thesaurus categories for any user interested in territorial cohesion.

Recognising the political and contradictory nature of territorial cohesion

Another benefit of the INTERCO project is its interaction and proximity with the actors that are directly engaged in territorial cohesion. It appeared very soon that territorial cohesion could embrace large and various definitions among our group of researchers, but among policy makers as well. This not-so-easy-to-define concept led to numerous discussions about the multiple dimensions to be considered. Our objective was to build a few simple indicators, yet significantly covering a wide and complex notion. Thus, a participative process - made of several workshops and questionnaires - enabled the TPG to capture the concrete demands from policy makers. However, the striking main result of these participative processes was to underline the divergence of the requests of policy makers among themselves as well, reflecting the ambiguous meaning of territorial cohesion and its related political objectives. It was a real challenge for the TPG to respond to these demands in a coherent manner. For instance, the minutes of the workshops revealed a clear rejection, by the vast majority of the stakeholders, of composite indicators, when the building of composite indicators was one of the primary requests of the call. The differences of needs from local governements and systemic actors were also an interesting challenge to answer.

Considering the changing and heterogeneous views on territorial cohesion, it would be interesting to develop participatory tools (websites, electronic fora, etc.) through which local people can develop their own definitions of territorial cohesion and their own measures of it. Such approaches have been used, e.g. in developing sustainability indicators in countries like USA and Canada.

Building on ESPON knowledge

An important part of the project was to build upon previous ESPON project. The originality of such a project in this context is the possibility to access a large database and to build upon previous results of researches conducted on the same subject or close themes. For example, the research conducted by ESPON Climate or by GEOSPECS, or KIT, ReRisk, gave us new and innovative data that could be added to complement more classical indicators. In that sense, ESPON allows a fruitful

collaborative approach among its project teams, an approach that must be continued in the future. For a project like INTERCO which is at the crossroad of all discussions and practices in the European Union, it was very helpful to be able to rely on numerous previous researches that a specialized institution like ESPON had helped conducting.

Data gaps

However, despite this existence of this large database, we have to admit that our research is not as complete as we would have liked it to be. The utter idealistic indicators lists should have included a lot more data that would have allowed us to compare and link better the indicators. Since the composite indicators were not desired by the stakeholders, we had to find another way of managing linkage between indicators. The research then led us to build sets of indicators. Though, the current image of the 6 territorial objectives is not yet satisfactory as it is lacking some very core indicators (4 out of the 32 top indicators had to be put a wishlist). For instance in the 5th territorial objective (Attractive regions of high ecological values and strong territorial capital) has actually only the pollution indicators and soil sealing per capita, leaving territorial capital aside in the final results. Two objectives that are of first importance for this territorial objective, as well as for the European policy, are the biodiversity state and the progression of renewable energy production and consumption. However, to be able to incorporate those indicators for territorial purposes, they should exist for all territories and at regional (NUTS 3) if not at local levels. As for today, the data were leaving too many gaps in terms of territory covers as they are available only at national level and not for all countries yet. We could have used national data that exists, but they were not satisfying in the analytical framework we used. Moreover, when time series are not available, how could we analyse convergence? It is therefore very difficult to draw conclusive lessons from this set of territorial indicator. The same problem occurs for several other indicators (see annex 3. Top indicators-data availability).

The official data collection is not yet fully adjusted to the newest political priorities and we are strongly urging the data providers to make the missing data available for the researchers and the policy-makers, if not for the general public. INTERCO recommends to Eurostat and EU member countries to collect the respective data regularly (time frequency to be defined) at least at NUTS 2 level, preferably at NUTS 3, otherwise by relevant territorial typologies (e.g. degrees of urbanisation, urban/rural regional types, etc.). This should help reaching the political targets of the latest development of the European cohesion strategy.

Policy indicators versus contextual indicators

We also had to deal with some more restrictive requests from practical policy demands. Stakeholders often set the focus on indicators that would enable them to measure the concrete results of their political actions, i.e. on subjects on which they can have a direct influence.

For that reason, indicators such as on life expectancy were criticised because they could not be linked to immediate actions or policies; even though a desired direction of change was identified (life expectancy should in principle increase).

But more descriptive - contextual - indicators that are reflecting the complexity of the various situations in Europe (e.g. population density) were also dismissed because they could not be associated to a desirable direction of change, to a specific policy objective.

Yet, the overall image of territorial cohesion would benefit from these contextual indicators that could help interpreting the performances of territories in relation to their specific conditions (demography, climate, remoteness, etc.). As a matter of fact, it is difficult to focus only on policy indicators ignoring the general contextual factors that are indirectly linked. The linkages between the contextual and policy-oriented indicators in way that is meaningful for territorial cohesion, is a task that is conducted in other ESPON project such as GEOSPECS. INTERCO had the mandate to provide a European-wide picture of a territorial cohesion. Other projects can deepen the INTERCO results by studying in more details the different preconditions for development, as well as the particular contributions to the aims of Europe 2020 and TA 2020 in the different types of areas.

Well-being as the ultimate impact of territorial cohesion

The focus on measuring concrete policy results, very useful for policy makers, must be balanced by a reminder of what should be the ultimate goal of any policy action, i.e. the well-being of the population. Well-being is another fuzzy concept difficult to influence directly, but in our view it is clear that territorial cohesion, along with sustainable development, should be considered as means for well-being and progress. Therefore, indicators on territorial cohesion should also, if not primarily, reflect on the impacts of European policies, which include the improvement and reduction of disparities in well-being over time for all territories in Europe.

www.espon.eu

The ESPON 2013 Programme is part-financed by the European Regional Development Fund, the EU Member States and the Partner States Iceland, Liechtenstein, Norway and Switzerland. It shall support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory.

ISBN 978-2-919777-10-5