

INTERCO

Indicators of territorial cohesion

Scientific Platform and Tools Project 2013/3/2

Final Report

Part A | Executive summary



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.

© ESPON & University of Geneva, 2012.

Printing, reproduction or quotation is authorised provided the source is acknowledged and a copy is forwarded to the ESPON Coordination Unit in Luxembourg.

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 SCHÜRMAN

Spatial Foresight GmbH (Expert)

- Kai BÖHME
- Erik GLØERSEN
- Susan BROCKETT

Introduction

Objectives

The aim of the INTERCO project is to **develop indicators and indices measuring territorial cohesion**. This moving concept of territorial cohesion encloses large issues such as territorial development, structural issues, territorial challenges and opportunities at various geographical levels for different types of regions. Indeed, the aspects of territorial cohesion to be covered and the requirements for the indicators were numerous and very challenging, starting with the definition of the concept to measure.

Territorial cohesion, the impossible definition

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 nurture 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. It is 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.

Based on the observation of these recent policy developments, as well as on the abundant technical and theoretical literature published on the subject, one can rapidly recognize that the concept of territorial cohesion does not fit into one single definition. From the beginning, the INTERCO team embarked in a combined approach linking theoretical and participatory activities to reach indicators that are robust, relevant and usable for the persons interested in territorial cohesion at the European level.

From a fuzzy concept to synthetic presentations of a few single indicators

From more than 600 potential indicators identified in the first phase of the project, the INTERCO process allowed, in a second phase, the filtering and the prioritisation of the indicators, and finally the specification of 32 top indicators organised in 6 territorial objectives. The interaction with stakeholders - by means of workshops and

participations to ESPON events - provided decisive inputs for the final set of indicators.

These indicators are presented as synthetic factsheets (maps, graphs, metadata). They are also delivered as a stand-alone GIS database that will allow for further dissemination to users, in particular for the ESPON Database.

The indicators are designed for the European level (EU27+4), but the analysis is also extended to global and local scales, as well as to EU Candidate Countries and Potential Candidate Countries (Western Balkans and Turkey). The local scale is approached by the more detailed analysis of three case studies - Sydsverige-Eastern DK (Sweden-Denmark), Thessalia (Greece) and Piedmont (Italy).

The indicators

Cohesion indicators : an approach by territorial objectives

In order to cover the multiple views on the concept of territorial cohesion, the INTERCO team has built sets of indicators for the following six main policy-oriented territorial objectives. For each of these territorial objectives, a number of so-called "top indicators" were selected through a participatory process combined with an analytical framework, which in turn helped taking into account data constraints.

- **strong local economies ensuring global competitiveness** : labour productivity, GDP/capita in PPS, overall unemployment rate, old age dependency ratio
- **innovative territories** : population aged 25-64 with tertiary education, intramural expenditure on R&D, employment rate 20-64
- **fair access to services, market and jobs**: access to compulsory school, access to hospital, accessibility of grocery services, access to university, 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, air pollution (PM₁₀ and 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, cooperation degree, *polycentricity index*

Results by territorial objectives

Strong local economies ensuring global competitiveness

For this territorial objective, the four indicators show no general trend towards convergence. The results of our analysis underline mostly stable or increasing disparities among territories, as expected. However, in economic fields, we can note a few positive results towards cohesion. For GDP/capita, there is a slight trends towards convergence for remote areas, but departing from very strong disparities, while the disparities between urban regions or region close to cities remain stable. As for the unemployment rates, though the general trend lately tended towards a slight convergence, it masks another reality: the regions close to cities reduce their rate while the remote areas increase theirs. Labour productivity is the only indicator that shows a remarkable trend towards more convergence, but the data covers only

national levels. Old age dependency ratio demonstrates of an increase in disparities, especially for intermediate and urban areas. It shows no convergence neither in terms of cohesion nor in terms of striving a balanced age structure.

Innovative territories

The results for this territorial objective underline the fact that the employment rate and the tertiary education are not quite linked. There is a general trend of convergence for tertiary education among European countries but a widening gap in regards to employment rates. It appears that the good performances of some regions are made at the expenses of the lagging behind regions. As for the third indicator of this territorial objective, the intramural R&D expenditures, there is no time series available, but the existing data show disparities between high tech regions and rural regions.

Fair access to services, market and jobs

In this particular challenging territorial objective, we expected the result to show great disparities among rural and other regions. The results confirms that access to services is a challenge for European countries within territories as well as between territories as it is underlined in the 5th Cohesion Report. Concerning the analysis of the results focusing on the accessibility potential by air, road and rail, it is rather clear that large disparities still exist for the three modal transportations facilities despite the large effort made by many new Member States to improve their accesibility, and road networks in particular. In many cases, regional disparities are increasing due to the construction of high-level transport infrastructures such as high-speed rail lines or motorways, connecting urban centers with each other and bypassing rural or remote areas. But we can still note a slight trend towards cohesion. As for accessibility potential by rail, if the disparities generally remained stable, they are still high, enlighting the same kind of differences bewteen urban regions and predominantly rural regions. The trend for all Europe shows a widening gap. In contrast, the results for accessibilty potential by air was quite clear with overall trends towards cohesion for all types of region for entire Europe.

Inclusion and Quality of Life

The indicators selected for the territorial objective of inclusion and quality of life show a general trend towards cohesion, except for life expectancy at birth and gender imbalances. Life expectancy at birth remained almost stable and the general range of values is rather small, but variations among countries are completely different. The gender composition of population show a slight overrepresentation of women for the majority of European regions, but the indicator experienced almost no development since 2003. As for life expectancy at birth, there is a clear divide between old and new EU Member States for the indicator Disposable household income ; however, countries with the highest disposable income have also the highest disparities among their regions. We can observe high rates of early school leavers for some countries in 2010, but there is a trend toward cohesion since 2006, thanks to many regions which manage to reduce signicantly their rates and despite some regions experiencing

increases. There are only few countries with balanced unemployment rates across sex, but despite the very high disparities there is a general trend towards cohesion. As for ageing index, many countries reveal only small disparities although there are some remarkable exceptions and specific situation like East Germany.

Attractive regions of high ecological values and strong territorial capital

For this objective, several wished indicators (on renewable energy, biodiversity, natural hazards) could not be analyzed. However, the four indicators available show trends that are generally resulting from high disparities. We can observe distinct spatial patterns across Europe but also significant disparities within countries and clear hot spots in some agglomerations. The desired thresholds (target values or desired direction of change) for all four indicators can only be reached for a small number of regions, although many of them are experiencing no or only marginal impacts from climate change. We can note divergences in the air quality among countries depending on national counter policies. But time series are not available for these indicators and little can be said about convergence, except that the level of pollution is high in most of the places. Soil sealing illustrates the most heterogeneous picture in Europe, with regions experiencing extremely high per capita land takes as compared to others.

Integrated polycentric territorial development

In the absence of a more significant indicator of polycentricity, we chose to emphasize the population potential within 50 km and the net migration rate. The indicator on population potential clearly highlights the main dichotomy between the European core area and the peripheral ones. Though some of the peripheral regions, such as regions in Spain, Greece or Ireland, experienced considerable population gains through migration processes, the main economic centers in Europe also experiences positive net migrations. Therefore, the net migration patterns 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 to by policy makers. As for the cooperation between territories in Europe, we can highlight that the 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.

Data availability, disparities and general trends in convergence for each indicator grouped by territorial objective are synthesised in Table 1:

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 1. 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 

Presentation of the indicators

Indicator presentations by fact sheet

The top indicators of territorial cohesion selected by INTERCO are presented in more details the Scientific Report (chapter **C.3. Indicators presentation**), grouped by territorial objective. First, the territorial objectives and the rationale behind the indicator selection is described. Then, each indicator is presented in a standardised manner, in the form of a fact sheet. Each fact sheet starts with basic information on the indicator, along with an indicator description, followed by a diagram illustrating the minima, mean and maxima values per country for the latest available year. Graphs of convergence are also shown (if available) :

- sigma convergence : evolution of disparities
- beta convergence : trends in relation to states, i.e. revealing possible catching-up process (lagging behind territories should progress better than other ones)

If data are available at NUTS 3 level, convergence graphs by type of region (e.g. metropolitan areas) can be displayed, revealing convergence patterns that contradict the overall EU situation (Figure 1):

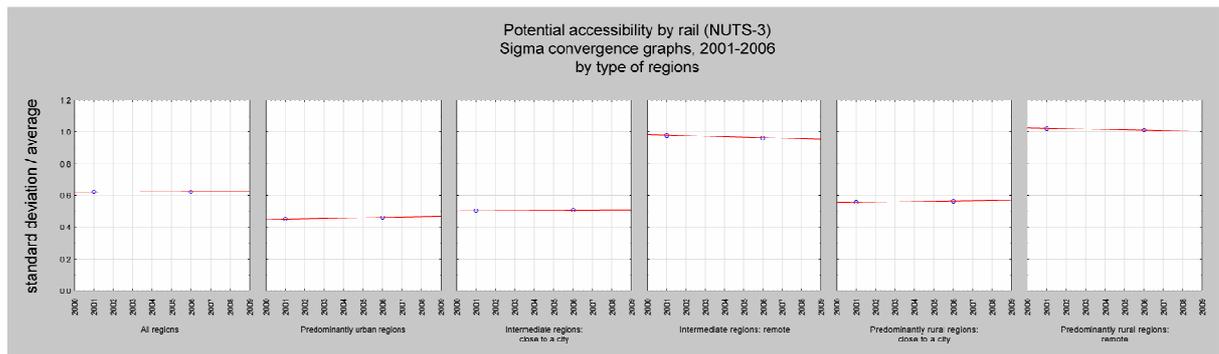


Figure 1. Example sigma convergence graphs by type of region (accessibility by rail)

In the case of accessibility by rail, the overall disparities between regions in Europe remained stable between 2001 and 2006. An analysis by type of region, however, revealed that disparities for urban regions and for predominantly rural regions close to a city increased, but decreased for intermediate remote regions and for predominantly rural remote regions. Remote regions showed the highest disparities as compared to the other types of regions.

These graphs are followed by the indicator map, which also includes the sigma convergence graphs for the entire Europe, if available.

Indicator presentation for each territorial objective concludes with a short summary highlighting the main findings and focusing on the indicator developments (trends towards cohesion or towards increasing disparities).

Synthetic presentations

Different synthetic ways to better communicate territorial cohesion at a glance by territorial objective have been explored. Figure 2 is an example of a simple representation of the level of disparities for the first territorial objective. In principle, all indicators should be computed at the same spatial resolution and for the same years of reference (in the example below, 3 indicators are at NUTS 3 level, one at NUTS 0 level). At present time, it is not possible to comply with this principle for all territorial objectives due to the heterogeneity in data availability (see Table 1).

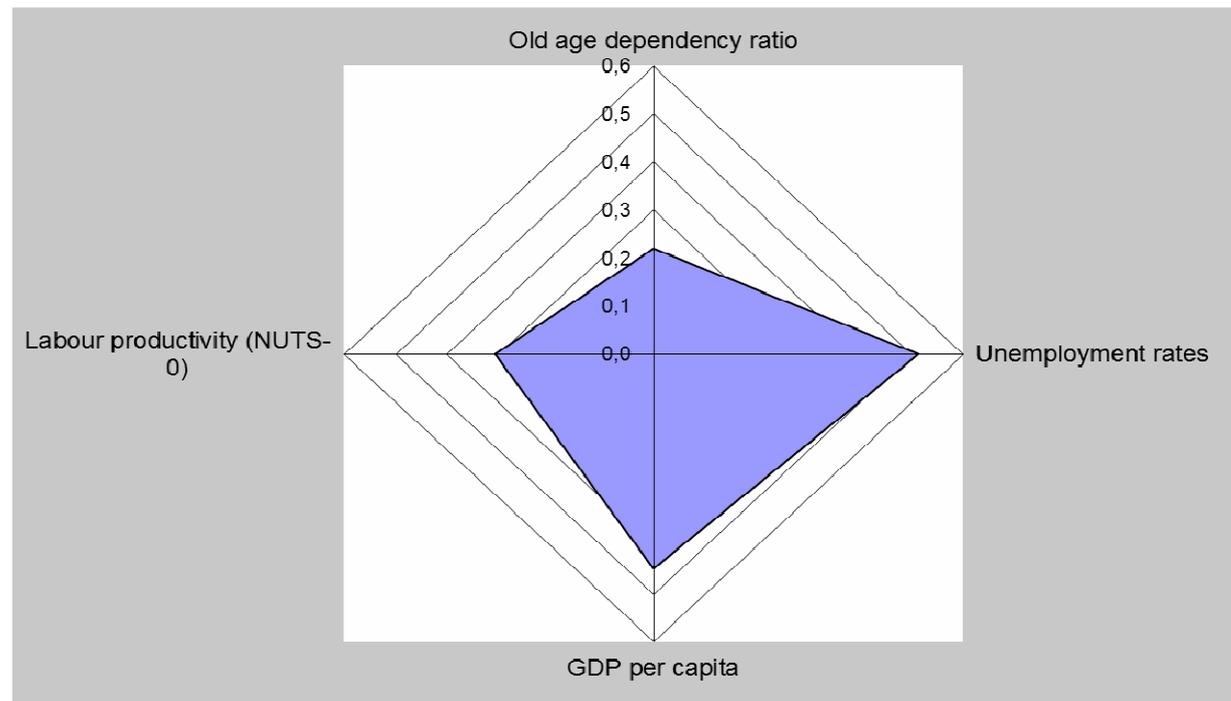


Figure 2. Level of disparities for 4 indicators under territorial objective "strong local economies ensuring global competitiveness" (St. dev. / Mean)

Interpretation : the smaller the blue area, the smaller the disparities

Conclusions

32 top indicators for 6 territorial priorities

After two years of research, the INTERCO project has selected 32 top-indicators which 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, but these small differences are stable over time; there has only be little development over the last years, except for the proportion of early school leavers and the disposable household income, where one could observe 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. This is why we cannot tackle that 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 governments 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 projects. 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 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 in 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 policy.

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