

# Ulysses

Using applied research results from ESPON as a  
yardstick for cross-border spatial development  
planning

Targeted Analysis 2013/2/10

Interim Report | Version 14/10/2011



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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.

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## Nomenclature

NUTS: Abbreviation for the Nomenclature of territorial units for statistics. The NUTS classification is a hierarchical system for dividing up the economic territory of the EU for the purpose of collection, development and harmonisation of EU regional statistics.

NUTS1: major socio-economic regions

NUTS2: basic regions for the application of regional policies

NUTS3: small regions for specific diagnoses

LAU: Abbreviation for the Local Administrative Units (LAUs) compatible with NUTS classification.

LAU1: The upper LAU level (formerly NUTS level 4) is defined for most, but not all of the countries.

LAU2: The lower LAU level (formerly NUTS level 5) consists of municipalities or equivalent units in the 27 EU Member States.

SNUTS 1-3: "Similar to NUTS" classification applied in this report for the Russian territories.

SLAU 1-2: "Similar to LAU" classification applied in this report for the Russian local administrative units.

CBA: Abbreviation for cross-border area.

CS: Abbreviation for Case Study.

DFS: Abbreviation for Data Fact Sheet.

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## Foreword

Ulysses is a case study -oriented project aiming to promote the use of ESPON applied results as a yardstick for decentralized cross-border spatial development planning. Within this framework, the present report introduces the advances made so far on two research tasks, namely Task 2.2 - Multi-scale performance analysis and Task 2.3. - Institutional performance analysis. The remaining tasks, concretely Task 2.4 - Integrated analysis and scenarios and Task 2.5 - Conclusions and policy recommendations, have not yet commenced or are at an early stage of development, so no relevant milestones have been achieved for them at this stage. Last but not least, Task 2.1 - Case study coordination is a transversal activity that will be discussed as well on this account.

In any case, the present report contains only a summary on the main findings produced under each of the abovementioned Tasks. For further details on the methodological structure of those activities, as well as on the specificities of each case study, please refer to any of the eight Annexes attached to this report.

## 1. Executive summary

Borders are commonly associated with political, demographical and economic remoteness. Not only are they normally far from the capital city of a given country, but they also function as a territorial discontinuity. In fact, a border sets a barrier on territorial systems through aspects such as transport infrastructures, customs, difficulties in accessing complementary natural resources and labour markets or even linguistics. This barrier means that, from a location theory perspective, economic activities do not tend to agglomerate close to the national borders and public institutions normally have a limited interest in investing in major infrastructures in these areas.

The growing integration of the European region, where many of the traditional barriers of a border are no longer present, should therefore lead to the development of many of the centrally located border regions which could exploit their formerly hindered potential as well to an increase in population and GDP growth along the borders. The integration of the different countries is also being accelerated by the different programs directly focussing on interregional integration, as well as by overall funding mechanisms aiming at reducing the regional disparities.

In this context, Ulysses project aims at analysing the Cross Border Areas (CBA) included in six relevant **Case Studies** (CS) from a quantitative perspective, through a comprehensive multi-scale / multi-thematic analysis regarding their behaviour on demography, polycentricity, urban-rural relationship and accessibility (**territorial profile**). As for those regions included in any of the seven **Data Fact Sheets** (DFS) under examination, a summarised multi-scale / multi-thematic analysis is being performed as well.

The project also makes an attempt in pointing out some of the relations between the abovementioned topics and their regional capacity in achieving the Lisbon/Europe 2020 and Gothenburg Strategy objectives (**territorial performance**), with the underlying assumption that aspects of the territorial layout of the regions are essential in explaining their performance. This analysis has been performed at the EU27 level, in order to find out some regularities, and then the individual scores of each CS where considered according to these regularities.

As the actual position of a border region is a consequence of a complex historical, geographical and political background, this analysis is of course not set to identify an overall pattern on the behaviour of cross border regions. It is more interested in understating how the borders function in different contexts and the impacts of the general challenges it poses. To a certain extent, this focus is determined by the initial design of the project, as a case-study based methodology can essentially be understood as way to evaluate the constitutive diversity of social realities or phenomena.

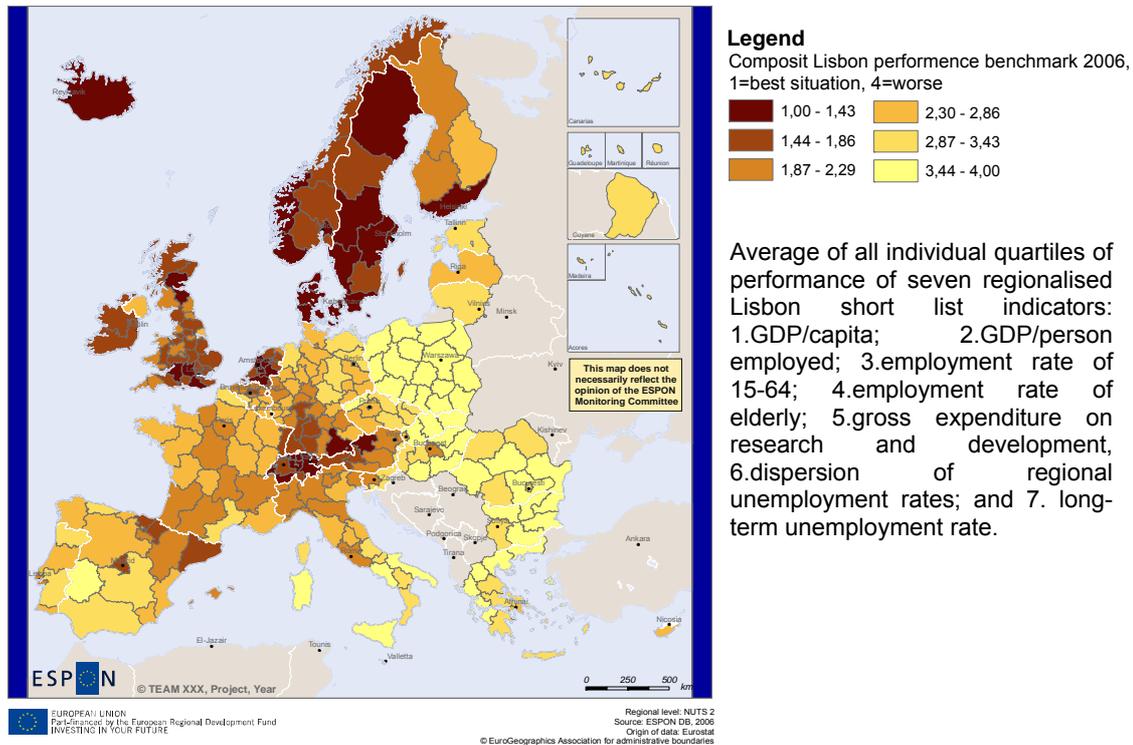
Although the scope of the Ulysses project in general, and the quantitative analysis in particular, does not allow for a thorough and scientifically sound analysis of regional border effects, there are some aspects which can be highlighted from the different case-studies as well as from the factor and regression analysis that was performed at the EU27 countries.

The first one is that the differences in the CBA appear to be very much a consequence of their overall location and not so much of their border position. This means that the central European CBA are performing at a similar level than other centrally located regions and border regions in peripheral countries perform similarly as other peripheral regions. It is also interesting to note that the importance of the central location reaches a point where the economic development of a region is better explained by high population densities and potential accessibilities than by the investment in R&D.

The second one is that, allegedly, the borders keep playing a major role in explaining the behaviour of the different regions, but more by dividing different national realities which keep on being highly relevant in explaining regional disparities. For example, when two countries perform very differently for a given indicator, their border regions are very likely to mimic the national realities, even if they share a large set of characteristics with the border regions on the other side. When referring to performance indicators this shows that, besides the

European effort in promoting territorial cohesion and valuing the regional dimension in policy design (which can be associated with a slight decline in regional disparities across the EU 27 in the last decade), the national level maintains a prime role in regional development.

The third one is that the border condition seems to be more relevant at the regional than at the local level. This means that, while the position of the total CBA in the national or European context is clearly relevant, the settlement patterns and population growth at the Lau 1 or 2 levels are often indifferent to the border distance.



Map 1 Composite Lisbon performance benchmark 2006

In parallel to the territorial analysis, an **institutional performance analysis** focused on cross-border cooperation and cross-border governance has been developed as well within Ulysses project. Cross-border governance in contemporary Europe mostly means cooperation on the regional level (in particular Euregios), in many cases complemented by partners on the local level (city networks etc.).

The interregional cooperation is embedded within the multi-level governance of the European political system where nation states and the EU are major players. Against this background, the cross-border governance analysis has taken two dimensions into account:

- Firstly, the regional partners are not completely free to develop political activities within cross-border cooperation, but they have to cope with national regulations and frameworks that are hardly to be modified: the overall political architecture of the nation state (e.g. federal vs. central) or the planning system (e.g. land use regulation vs. comprehensive integrated approaches) do play an important role in cross-border governance, too. In some cases, the systems from either side of the border fit quite well, in other cases the differences are large and can hamper efficient cross-border cooperation. – Within Ulysses Task 2.3 we call this the **structural dimension** which means the overall framework that can hardly be influenced by the partners of inter-regional cross-border cooperation.

- Second, inter-regional cross-border cooperation in Europe is established and developed for more than four decades now, and the countless examples are differing largely in terms of activity, continuity, historicity, forms of institutionalization, efficiency etc. These differences are not only to be explained by structural frameworks but also by the success of the regional actors. – Within Ulysses Task 2.3 we call this the **activity dimension** which means the intensity and continuity of cross-border cooperation on the regional level.

Both the structural dimension and the activity dimension have been operationalised by a series of indicators that have been weighted, combined and mapped (for details on the methodology and the data behind see Section 2.1.2 and Annex II).

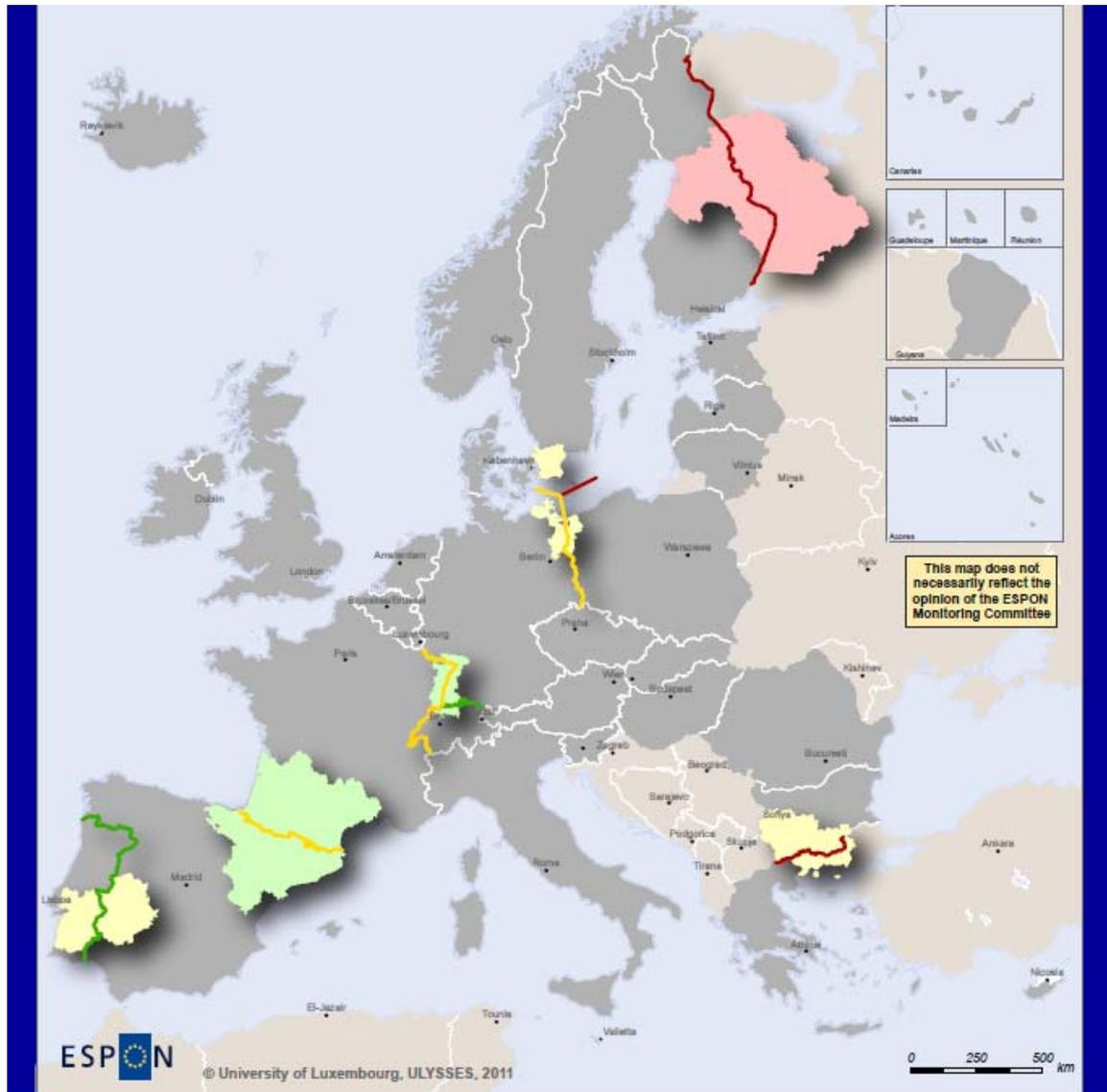
The analysis is based on different sources: As the Ulysses project is an ESPON priority 2 project, existing ESPON data and findings are a primary resource. Moreover, scientific and grey literature has been consulted and information from stakeholders has been a further basis.

Structural Dimension		Activity Dimension	
Domain	Indicator	Domain	Indicator
Political status of the border	EU membership / historicity	Maturity of cross-border cooperation	Interreg III participation
	Schengen status	Historicity of cross-border cooperation in general	Earliest founding date of cross-border cooperation
Physical status of the border	Geomorphology	Institutional thickness in cross-border cooperation	Number of permanent institutionalisations (Euregios, citynetworks, Eurodistricts etc.)
Institutional status: Planning culture	Belonging to planning culture traditions according to different studies	Current activity	Number of EGTCs
Language barrier	Belonging to language families (linguistic distance)	Cross-border spatial development on regional level	Joint tools of territorial monitoring
			Strategic cross-border spatial development documents
		Cross-border transport projects	TEN-T corridors crossing a border in the perimeter of the region
			important cross-border projects on the regional scale in preparation or established (especially rail)

Table 1 Indicators for analysing the institutionalised cross-border cooperation (for details and sources see Annex)

Map 2 below shows the overall picture for the Ulysses regions by visualising the abovementioned indicators: The border effects due to differing political *structures* are mapped, represented by the borders (*lines*) in different colours. The *activity* dimension in

cross-border governance is represented by different colours of the regions themselves (*surfaces*).



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Regional level: NUTS 2 and 3  
Source: ULYSSES, 2011  
Origin of data: ULYSSES, 2011  
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**Character of the border  
(Structural dimension)**

- Barrier
- Interface
- Link

**Character of the cross-border cooperation  
(Activity dimension)**

- Neighborhood
- Cooperation
- Integration

Map 2 Structural Dimension and activity dimension of the Ulysses regions' institutional setting

One has to admit that the map can only show a very synthetic and generalised picture. The results must not be misunderstood in a way that it would evaluate institutional settings from a normative setting; the approach is a purely analytical one.

A more detailed description is given in the later chapter on the respective border regions (see Section 3.1.2 and Annex II). However, already at this point, we can draw some conclusions with regard to the European level:

- Some patterns of Map 2 might confirm some well-known characteristics of European borders: the internal EU 15 borders are – from a structural point of view – much more favourable for cross-border governance than – for example – external EU borders or borders with transition states. It is not surprising that the cooperation in the Upper Rhine region is closer than that one in Karelia. However, the map illustrates at the same time that the structural dimension *cannot* be seen in a *deterministic* way. Institutionalised cross-border cooperation does have a considerable *scope of action*. Just to give an example: Though the challenges in the Pyrenees region are not less important than in many other regions, the cross-border institutionalisation has been particularly intensive.
- On the basis of the six regions of the Ulysses project Map 2 shows the *diversity* of borders and border regions in Europe also from the institutional point of view: The structural and the activity dimension have very different values. Obviously, a full equity of these spatial patterns in Europe's border regions is not a reasonable objective, in particular not in the short and medium term. Territorial diversity has to come along with different institutional settings. Tailor made institutions have to face the respective challenges *on the ground*. From the perspective of *territorial cohesion* one has to state that – following the principle of *tailor made strategies* – all regions have to develop their own ways in order to exploit their cross-border potential.
- The pattern also indicates that socio-economic development alone does not determine cross-border governance, neither. For example, both the mountainous area of the Pyrenees and the densely populated Upper Rhine area with a high degree of functional integration show similar patterns in the cooperation schemes, despite all socio-economic differences. The link between socio-economic and institutional performance will be further elaborated in the coming months for the final report of the project.

## 2. Methodology

The following pages present the methodology followed to perform the project tasks both for CS and DFS.

### 2.1. Case studies

#### 2.1.1. Task 2.2. Multi-scale performance analysis

The general aim of Task 2.2 is to do a multi-thematic and multi-scale analysis of the different Cross Border Regions. For this, the regions' behaviour regarding two major dimensions was analysed: territorial profile and territorial performance. The **territorial profile** refers to indicators of the four major ESPON themes (polycentric development, urban-rural relationship, accessibility & connectivity and demography). The **territorial performance** refers to their capacity in achieving the Lisbon/EU 2020 and Gothenburg strategy goals. Besides the individual analyses of each topic, these two dimensions were also subjected to a more detailed analysis in order to identify causal relations between them.

The **main outputs** of this analysis are listed below:

- A territorial profile of each CBA, based on the different themes under analysis;
- An evaluation of the territorial performance based on Lisbon/EU 2020 and Gothenburg objective indicators;
- Analysis of the relations between the territorial performance and the territorial profile;
- Analysis of the most relevant drivers that influence the regions' behaviour regarding the different themes;
- A methodological report that gives a hint on how to interpret the different outputs.

The **main challenge** for this analysis was the quality of the data:

- Information is being collected in many different ways across the countries meaning that, although the amount of data is available for each side of the border is often large, data that is comparable is very scarce;
- The inclusion of regions in countries that are outside the European Union and therefore follow criteria that are far from the European norms (Russia and Switzerland);
- Many of the more complex indicators that were produced for specific ESPON projects have not been updated and are therefore only available for a no longer prevailing NUTS 3 delimitation (1999 or 2003 versions);
- Some ESPON indicators are based on complex methodologies and, as the metadata is not always explicit on the precise procedure, difficult to interpret;
- Often, the ESPON indicators are better suited for an EU wide analysis than for local or even regional scales.

As a consequence of these drawbacks, a set of **contingency methods** have been put in place:

- Search for data in different sources (this was forcibly done to a limited extent, as it is very time-consuming);
- Use of different (but similar) indicators for different regions;
- Use of different geographical units;
- Estimate missing data by means of a function that correlates a missing variable with other variables in a large number of similar regions;
- Adapt the interpretation of the results (interpret results as an indication and not a scientifically sound analysis).
- Procedure

The analysis followed the following steps:

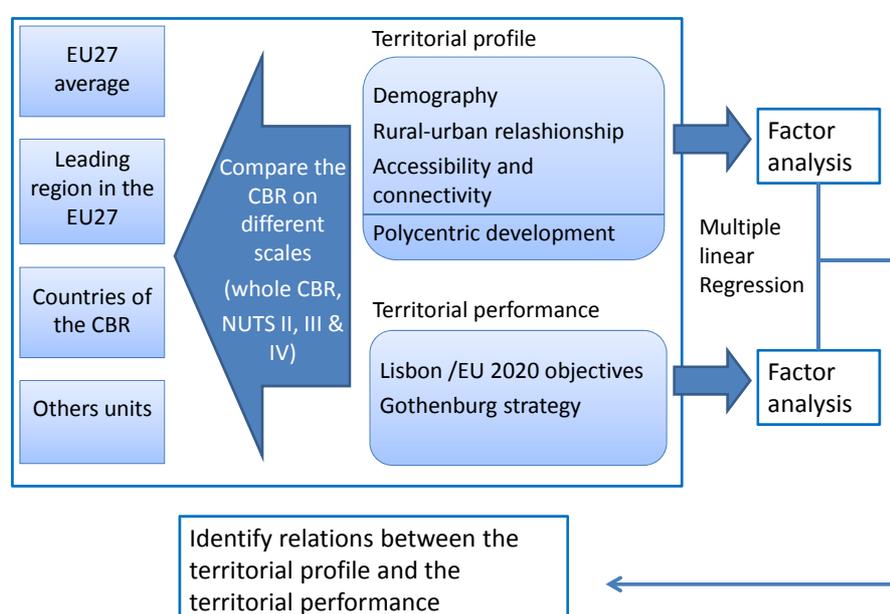


Figure 1 Analytical flows within Task 2.2

The **territorial profile** groups indicators that relate the four major themes of the ESPON. It intends to describe the territorial situation of each CBA in the broader context in a clear and synthetic way. The **territorial performance** groups indicators that can be understood as expressing the regions' capacity to reach the Lisbon/EU 2020 and Gothenburg objectives.

#### *Multi-scale analysis*

For analysing both dimensions, the indicators of each of the CBA were compared on **different scales**: (i) between different NUTS III (and in some cases NUTS II or IV) of the CBA; (ii) between the CBA and the countries to which they belong to; (iii) between different NUTS III (and in some cases NUTS II or IV) of the CBA regions belonging to a different country; (iv) between different NUTS III (and in some cases NUTS II or IV) of the CBA and a reference index that can be established by the EU27 average, the leading region in the EU27, the individual countries of which the CRB are part or any other reference that might be useful to understanding the regions' performance for a specific indicator (for example, regarding total fertility rates, it is useful to evaluate the regions according to the renewal of their population: total fertility rate of 2,1).

The comparison between different scales had two main purposes. The first one was to understand the regions' behaviour in context, as many indicators are not easy to interpret in absolute terms. The second one was to contribute in understanding the effect of the border on the regions' behaviour. For example, a comparison of one side of the border of a CBA to the national average as well as the other side of the border might help to evaluate whether a region's performance is more influenced by its border position or by the realities of the countries it belongs to.

#### *Factor analysis*

The different themes were also be subjected to different statistical analysis in order to identify causal relations between the relative performances of each CBA and the territorial profile, as well as the main drivers behind the different performances.

For this, two different factor analyses were made: one for the territorial profile and one for the performance indicators. These factor analyses were made using data on a NUTS 3 scale for all the EU 27 countries. The polycentricity indicators were excluded, because they are not suited for the NUTS 3 level at which the analysis was performed. Also, and since the intention was to establish a causal relation between general aspects that characterize the regions and their performance, some of the indicators that are typically related to the Lisbon/Europe or the Gothenburg Strategy were included in the first set of indicators. This was the case, for example, for the ESPON climate indicators. These indicators relate the regions' sensitivity to potential climate change (e.g. the amount of flood prone areas) with elements of their spatial layout (e.g. population density, presence/absence of susceptible economic infrastructures). In this sense these indicators do not really reflect a regions capacity in reaching the Gothenburg goals, but are more related to their general exposure which is, to a high extent, a consequence of their geographical position or historic evolution.

#### *Regression analysis*

After the factor analysis, several multiple regressions were made, having as independent variables each factor of the performance indicators and as dependent variables all the factors of the territorial profile. Essentially, this analysis distinguished the influence of the regions' characteristics on its capacity to develop itself in a sustainable and cohesive way. But this does not mean that the territorial profile and the territorial performance are not relevant per se: the relations between different indicators are not necessarily marked by unique and clear-cut causal relations and relevant indicators of the territorial profile may have no significance to the territorial performance.

For a complete description of the methodology followed within each of topics under analysis, please see Annex I.

### 2.1.2. Task 2.3. Institutional performance analysis

The institutional analysis differentiates two dimensions: On the one hand, the **structural dimension** means the overall framework that can hardly be influenced by the partners of inter-regional cross-border cooperation. The **activity dimension** addresses the intensity and continuity of institutionalised cross-border cooperation on the regional level.

#### Structural dimension

##### *Political Status of the border*

The political status of the border is an important context for regional cross-border development that cannot fundamentally be influenced (see table below for an overview). Firstly, the territorial governance in cross-border regions is strongly influenced by the political status of the border: The historicity and the degree of liberalization play an important role. The indicator “EU membership/historicity” allows categorising the borders into four groups: EU12/15, EU 25/others and external borders. Switzerland is considered as a category of its own as it is a non-member-state, but takes part in the Schengen agreement and is a particular active player in cross-border issues for decades now. These groups are assigned to an ordinal scale; this scale is weighted (factor 2). This categorisation is mainly based on the ESPON projects Typologies (pp. 26ff) and Geospecs (see Interim Report map 13).

Secondly, the status of the Schengen regulations within a border area is an additional framework to the overall political status. In this context, not the complete juridical matter is taken into account but only the travel zone in which border controls of *persons* are phased out. This is in particular an interesting aspect with regard to Switzerland, not being an EU member state, but participating in the Schengen system; it is also of particular relevance for the cases of Karelia and Bulgaria.

##### *Planning system*

Secondly, the political and planning system of each country can be very different to the neighbouring countries. Depending on the differences between the planning systems, the border effects are more or less stronger with regard to territorial development. The indicator for this border effect is if the countries on either side of the borders are considered to be part of the same “planning family” in the existing studies on planning systems. Depending from the perspective, some countries are always considered to be part of the same family, others only in some studies or even in none of them.

These assessments are ‘translated’ into a numerical scale that, again, makes up four categories of more or less strong border effects. As this factor seems to be the most crucial one for territorial development, factor 3 in weighting stresses its influence.

##### *Physical status*

Moreover, the physical status of the border has been taken into account: It is true that physical features do not *determine* political processes; but the fact that – just for example – Poland and Sweden do not share a common land border should not be ignored. This is why three categories differentiate fundamental geomorphological features (sea border, alpine border, and other borders as rivers, low mountains and green borders). These three domains were further combined in a synthesis score that allows saying if the borders function as *separation*, *interface* or even as a *link*. The categorisation is mainly based on the ESPON study from 2006 “ESPON Interact cross-border cooperation” (p. 18 of the final report).

##### *Languages*

Language barriers do not only hinder everyday life and *socio-economic* integration in border areas, but it is also for *political* processes not easy to overcome these barriers. In some regions no linguistic border exists at all, in others the barrier is very high. In this analysis, the language barrier was assessed following the categorisation of language families.

Dimension	Indicators	Quantification	Main Sources	Weighting
Political status of the border	EU membership / historicity	Ordinal scale 4 = EU 12/15 3 = CH 2 = EU 25/27 1 = external borders (NB: highest score country counts)	ESPON Typologies (pp. 26 ff.) ESPON Geospecs (Interim Report map 13)	2
	Schengen status	2 = participating in free travel zone 1 = not participating in free travel zone		1
Physical status of the border	Geomorphology	Ordinal scale 3 = other borders 2 = mountainous (dominant of the high mountains classification) 1 = sea border	EPON Interact cross-border cooperation (18 final report)	1
Institutional status: Planning culture	Being mentioned as member of the same planning culture families in different studies	Numerical scale 0 = strong differentials 0,1-1,0 1,1-2,0 2,1-3,5 = weak differentials	ESPON 2006/2.3.2; Newman 1996; CEC 1997; Nadin/ Stead 2008	3
Language barrier	To what extent is language barriers existing in the area	Ordinal Scale 3 = Same language 2 = Similar language (semi-communication possible) 1 = Very different language	Literature, e.g. Beekes 1995	1

Table 2 Methodology to assess the territorial character of the border (structural dimension)

### Activity dimension

The scheme for the activity dimension takes into account six domains (see Table 2 above). The first four domains address cross-border *cooperation in general*. The next two indicators go beyond cross-border cooperation in general and, instead, address more in detail the policy of *spatial development*. The last two indicators address then the *transport* policy.

#### *Historicity of cross-border cooperation in general*

The importance of the historicity of cross-border cooperation lies in the assumption that a joint experience facilitates to handle current challenges as the mutual trust and knowledge serves as a good basis.

It is true that cross-border cooperation has not begun only in the last years or decades, but that today's situation can only be explained by taking into account the longer history going back to medieval times. This study, however, limits the focus to the post war cooperation, as the technical and institutional setting with regard to multilateral and European regulations can be seen as the relevant era. Thus, the earliest post-war funding date of an interregional cross-border institution is seen as evidence for the historicity of cross-border cooperation.

#### *Maturity of cross-border cooperation*

Without any doubt, cross-border cooperation has fundamentally been influenced by European politics. In particular the INTERREG (A) programmes and the pre-accession funding have

played a major role. The INTERREG programme is based on both a top-down and a bottom-up approach: So even if the overall programme framework is to a large extent defined on the European and multi-national level, the involvement of (border) regions is still a clear sign for commitment and a functioning cooperation. Considering the technical and political challenges to overcome in order to ensure successful Interreg participation, the underlying capacity building is considerable.

The indicator used here is the participation in the Interreg III programme, as elaborated by the ESPON Geospecs project (Interim Report).

#### *Institutional thickness in cross-border cooperation*

'Institutional thickness' is a notion from political and economic geography and describes the presence of many institutions that are involved in a certain thematic and that are located near to one another. Institutional thickness is not only the *outcome* a high and dynamic activity. It is, at the same time, seen as a *precondition* for regional innovation capacity and dynamic development.

The relevant institutions are considered for the overall analysis on the European and regional level, and they are also mapped in a cartographic sense. Showing the respective perimeters does not only illustrate the current situation in an instructive way, but it is also an important basis for the later link to socio-economic analyses.

With regard to cross-border policy, only the cross-border cooperation on the (inter-) regional level is taken into account. This approach leaves out two other kinds of cooperation forms: On the one hand, bi- or multi-*national* cooperation (e.g. the Council of the Baltic Sea States). This form of cooperation is left out as it does not necessarily say a lot about the interregional cooperation, though it might influence the regional development intensively. On the other hand, all programme structures – like in particular ERDF eligibility areas – are not taken into account either. Though these perimeters (like PAMINA in the Upper Rhine or POCTEFA in the Pyrenees) are of high importance, they are linked to a very limited period of time and can change fundamentally. Moreover, the pure existence of eligibility perimeters does not prove automatically intensive cross-border cooperation.

Thus, the *number* of non-temporary cross-border institutions on the regional level is taken as the quantitative indicator for the institutional analysis.

#### *Current activity (EGTC)*

With the indicator for "current activity" this analysis takes into account that cross-border cooperation depends to a large extent on personal engagements and particular constellations in the border areas which can change due to political dynamic etc.

As the indicator for current activity, the number of EGTCs (European Groupings of Territorial Cooperation) is taken. EGTCs have been developed as a governance tool by the European Commission in 2006 (European regulation 1082/2006): After implementation of the respective framework on the national levels (art. 16/17), a series of border-regions have implemented this tool for a large variety of contexts. The EGTCs are high on the European agenda and their adaptation in the different regions demands a considerable effort with regard to juridical clarification and political coordination.

It is true that also before the EGTC regulation a series of Governance tools on the European as on the multi-lateral level has supported cross-border cooperation in many ways (e.g. the Council of Europe's *European Outline Convention on Transfrontier Co-operation* from 1980/95, the *Convention of Karlsruhe* from 1996 between Germany, Luxembourg, Switzerland and France).

The particular features of an EGTC is that it

- is applicable in the same way in all European member states;
- is open to all public bodies (local and regional authorities as well as member states);
- can have a strong mandate if assigned by the respective superior levels;

- has a legal personality (i.e. can employ their own staff, can lead a European programme, launch public procurement procedures or conclude conventions with private actors).

As the EGTC tool can only be applied to EU member states, this indicator seems problematic with regard to the Karelia region within Case Study 4 where it cannot be implemented for juridical reasons. This is why any alternative major institutional project would be taken into account alternatively.

The number of EGTCs that are enacted or under preparation is taken as the quantified indicator.

#### *Cross-border spatial development on regional level*

As the Ulysses project is focussing on territorial development, the *spatial planning* policy is of most relevance here. In particular in border regions, territorial development can hardly be driven by economic processes alone, but has to be framed and supported by planning support. Within the structural dimension, we have already taken into account the differences of the national planning *systems*. In this context, the focus lies on the concrete *activities* on the (inter-)regional level. Here, the study takes into account two indicators:

Firstly, the existence joint *tools* for spatial analyses and monitoring – e.g. cross-border GIS projects – is captured. Given the large difficulties with data availability and harmonisation, there is no complete and perfect cross-border GIS, yet. However, some projects have already brought together an interesting basis. These projects are not only a potential tool for later planning procedures, but they also bring together the relevant people on the technical and political level. The existence of tools is captured by a binary quantification (yes/no).

Secondly, the existence of a joint territorial development strategy is taken into account. All cross-border institutions do have some kind of general agreement and in parallel, a series of programming documents for European funding has been elaborated. Some regions, however, go a step beyond the general will for ‘balanced’ and ‘sustainable’ development and have more concrete visions for the spatial allocation of future developments. Here, both the existence and the age of the documents are taken into account.

#### *Cross-border transport projects*

Border studies have shown for many cases that the bottlenecks in transport infrastructure are the most pressing problems. This is true for regions with specific geographical characteristics, but also for regions with high economic development and for border crossing the former ‘iron curtain’. In this study, we take into account two indicators:

Firstly, the number of TEN corridors is a good indicator for the dynamic of the cross-border transport policy. Concretely, the top-30-priorities of the TEN-T policy are taken into account. It is true that TEN corridors are negotiated on the European level mostly between representatives of the member states and also with the Commission. At the same time, TEN priorities are a certain evidence of the capacity to set a certain region on the European agenda. In general, this goes along with a certain support of representatives from the respective regions, so it is a speaking indicator in this context.

Still, the involvement in the TEN networks does not give the whole picture, as TEN connections can also just link metropolises that are outside the cross-border region. This is why, secondly, major transport projects (namely train infrastructure) has been taken into account on the regional level if it had an explicit cross-border dimension. Also for reasons of practicability, local and regional transport projects have not been considered if they do not crossed the border. In some cases, the cross-border effect still might be considerable, but this study does not give the scope to go into depths of many individual projects.

Dimension	Indicators	Quantification	Main Sources
Maturity of cross-border cooperation	Interreg III participation	4 = Long-standing cooperation with a very high or high level of maturity 3 = Long-standing or experienced co-operation with a medium-high level of maturity 2 = Experienced or more recent co-operation with a medium-low level of maturity 1 = More recent co-operation with a low level of maturity	ESPON Geospecs Interim report
Historicity of cross-border cooperation in general	Earliest founding date of cross-border cooperation	4 = 1960-1990 3 = 1991-2000 2 = 2001- today 1 = none	div.
Institutional thickness in cross-border cooperation	Number of permanent institutionalisations (Euregions, city networks, Eurodistricts etc.)	4 = > 3 institutionalisations 3 = 2 institutionalisations 2 = 1 institutionalisation 1 = none	div.
Current activity	EGTC	3 = existing EGTC(s) 2 = EGTC(s) in preparation 1 = no EGTC activity	Committee of the Regions; national and regional sources
Cross-border spatial development on regional level	Joint tools	2 = yes 1 = no	Diverse regional sources
	Joint spatial development document	3 = yes, younger than 2005 2 = yes, from 2000-2005 1 = no, or older than 2000	div. regional sources
Cross-border transport projects	TEN-T corridors crossing a border in the perimeter of the regions	Number	EU DG Transport, TEN-T Executive Agency
	important cross-border projects on the regional scale in preparation or established (esp. rail)	Number	div. regional sources

Table 3 Indicator for the dimension “activity” in cross-border cooperation

#### *Quantifying the qualitative data and representing the results*

In close cooperation with Task 2.4. - Integrated analysis and scenarios, the indicators taken into account are combined for a synthesis analysis and for visualisation and mapping. With regard to the structural dimension, the different aspects have been weighted in order to keep the focus on institutional issues for territorial development. The physical barriers and the linguistic challenges play an important role for every-day cooperation, but they do not determinate institutional choices and settings.

In order to allow a visual and comparable analyses, for each dimension a categorisation has been made either using existing categories from previous studies or making up new ones. The categories are all given a numeric values according to the level of integration in cross-border cooperation. For each case study a data is collected and a numeric value is given for all the dimensions. The synthesis of the axes is made by summing all the scores for each case study.

On basic of the synthesis scores and in connection with Task 2.4 a thematic map has been produced which integrates the two axes (see Map 2). The activity axis represented on the

area/territory of the case study (polygon) and the structural axis represented on the national borders (lines) within the case-study region.

It is worth noting that this methodology can only give a general idea of the territorial governance of the respective regions. Cooperation and its success do not exclusively depend on formal institutions but also on informal, often personal connections. These cannot be assessed in the framework of this ESPON priority 2 project. Similarly, a number of potentially relevant indicators could not have been considered for various reasons; still, the overall framework does lead to a relevant analysis: The main objective of this task 2.3 is to bring together the ESPON information and building the basis for the overall analysis when being linked to the socio-economic in a next step.

## **2.2. Data Fact Sheets**

To date, DFS have experienced a delay due to a number of constraints related to data availability and the physical delimitation of the DFS, which have ultimately lead to the creation of a specific contingency plan. Hence, DFS have not been included in this report.

### *Data availability*

As stated by the Inception Report of Ulysses project (p. 11), DFS ought to be completed relying exclusively on ESPON 2006 and 2013 databases. In this regard, it must be noted that DFS areas face similar challenges related to data availability as those described for CS in Section 2.1.1. In particular, the fact that most DFS areas overlap with the external border of the EU impose tight constraints on data availability.

For this reason it was estimated that ESPON databases alone would not suffice to produce sound DFS descriptions, which was confirmed by a preliminary scrutiny of those databases. Therefore, it was decided to approach the respective stakeholders for filling data gaps as far as possible, similarly to what was done for CS. An Excel file was filled-in for each DFS area including all the information available from ESPON and, to a limited extent, also EUROSTAT databases. Those sheets were sent out to all the stakeholders in June 2011 on a single data request with a triple objective:

- firstly, the appeal aimed at updating those figures for which the involved stakeholders might have more recent data;
- secondly, it sought to collect missing values;
- thirdly, it intended to get any additional data considered relevant by the stakeholders.

Apparently, this request was somewhat problematic for most stakeholders, as it was fairly difficult for them to collect data for those regions within their cross-border areas falling outside their competencies. In part, this was also related to the way in which the CBA were delimited, as explained in the following section.

### *Physical delimitation of the DFS*

In most cases, Cross-border areas included in the DFS are formally composed by a constellation of regional and local administrations belonging to territorial units that are not necessarily comparable from a statistical point of view. For example, one cross-border

cooperation programme might be participated by a group of institutions representing a number of NUTS2, NUTS3 and LAU2 areas, irrespectively of their country of origin.

Accordingly, for practical reasons it was agreed with the Association of European Border Regions (AEBR) to include in the analysis only NUTS3 areas (or equivalent regions outside the EU), notwithstanding if those zones were formally (i.e. institutionally) members of the cross-border cooperation scheme or not. To put it in different words, whenever an inferior statistical unit, either LAU1 or LAU2, is officially involved in the cross-border cooperation program, the entire NUTS3 region where it belongs has been included in the analysis, irrespectively of the formal engagement of that specific NUTS3 area in the cooperation scheme. However, in order to ensure that all the proposed demarcations were correct, the stakeholders were requested to validate those delimitations.

As it has been said before, this demarcation principle caused some complications for some of the involved stakeholders, who had to deal with additional problems related to data acquisition for specific areas that fell outside their direct competence and scope. For this reason, the demarcation principle, as well as the criteria followed by the TPG for data collection, was clarified by the AEBR through a communication sent to all stakeholders on 30 August 2011.

#### *Contingency plan*

As a result of the abovementioned difficulties, a comprehensive contingency plan has been developed to deal with all those issues. This plan pivots around two main axes:

- In response to data scarcity, the TPG will propose to the stakeholders a new simplified data request that will ease data collection. Accordingly, a new Excel file will be delivered to each stakeholder for completion. The file will include only those indicators considered indispensable for a minimum coherent composition of the DFS. For exemplary reasons, a finalised DFS for Friuli-Venezia-Giulua CBA will be annexed to the data request, so that stakeholders will have a clear reference on the kind of input that the TPG needs for completing the DFS.
- In response to the delimitation issue, a new validation round will be initiated with the involved stakeholders in parallel to the data request, similarly to the one performed before.

In case this plan fails, DFS will be completed relying exclusively on the data available from public sources and framed under the regional delimitation already presented to the stakeholders.

### **3. Interim results**

The following section presents the most relevant findings achieved to date by Ulysses project:

#### **3.1. Case studies**

As far as CS are concerned, the project has achieved the expected interim results on due time without major incidents to report. To date, communication flows between CS representatives and TPG members has been fluent. On this basis, the final orientation of the respective analyses conducted for each area were discussed with all stakeholders during a series of bi-lateral meetings organised from April to July 2011. As far as possible, all research topics and general suggestions made by the stakeholders were taken into account by the TPG.

In this regard, the vast majority of stakeholders expressed particular interest for one or more specific issues that could be framed under the thematic coverage of Task 2.2, namely:

- Cross-border polycentric development and patterns of urban-rural relationship
- Levels of accessibility and connectivity within the area
- Effects of demographic change
- Performance of the cross-border area in relation to Europe 2020 and Gothenburg Strategies

Only the CS representative from the Upper-Rhine area proposed an additional dimension, specifically cross-border research and educational potentials, which was found by the TPG as compatible, relevant and supported by data. In some other cases it has been impossible to align the specific interests of the concerned stakeholders with (comparable) data at CBA level.

All these issues have been discussed in the CS accounts annexed to this report (see Annexes 3 to 8). These documents will be validated with the stakeholders during bilateral meetings to be held in the following weeks. A summary of the most relevant findings achieved for each CS is presented below:

##### **3.1.1. Task 2.2. Multi-scale performance analysis**

The following pages present the most relevant findings achieved so far for each case study in relation to the multi-thematic / multi-scale performance analysis:

##### **Case Study 1 – Upper-Rhine cross-border area (France-Germany-Switzerland)**

The Trinational Metropolitan Area Upper Rhine is located centrally in Europe, in the northern part of Switzerland, eastern part of France and south-western part of Germany with the River Rhine as its natural border between these three countries and consists of five Swiss NUTS3 units, two French NUTS3 units, and 16 German NUTS3 units. With 6.076.678 inhabitants in

the year 2009, the CBA is a very densely populated cross border region with a strong economy.

### *Demography*

Although being a border region, the indicators used show a high attractiveness of the CBA: besides positive natural growth on the Swiss and French side, the CBA could steadily gain population by migration and hence has an overall positive population growth. This indicates a strong labour market, especially in the Swiss NUTS3 units of the CBA, with a high share of incoming commuters from France and Germany.

The population by age as well as the dependency ratios show a successful policy of the French government regarding families, as the overall as well as local fertility are much higher compared to the national as well as local level of Switzerland and Germany.

### *Polycentric Development*

Polycentricity is a core phenomenon in the analysis of the cross-border Upper Rhine Valley. The main Functional Urban Areas (FUAs) within the German-French-Swiss Oberrhein conference are Basel in the South, Strasbourg-Kehl in the centre and Karlsruhe in the North. They are embedded in several neighbouring and surrounding FUAs. These FUAs of different levels build the polycentric structure of the Upper Rhine Valley.

### *Urban-rural relationships*

Trying to express the relationship of urban and rural areas in the CBA Trinational Metropolitan Area Upper Rhine, a typology for characterizing how urban or rural a region is was created. It characterizes predominantly rural, intermediate and predominantly urban areas. The spatial unit of the NUTS3 level was too rough to apprehend the details of the area, as a lot of urban cores lie within a bigger surrounding predominately rural area.

The economic situation of the rural areas concerning agriculture is, in comparison to other European regions, strong and has a relatively solid added value. This is due to concentration on winery and arable crops. The area used for agricultural use however is shrinking on an average level.

The available data does not allow getting an insight in conflicts of land use. Due to topographical circumstances agglomeration takes place in the plain Rhine valley. Urban development and agriculture have to share the most valuable soil, so there are conflicts which cannot be described with the data.

A closer look with more detailed data would allow a better understanding of the area and its characteristics. So far no evaluation of interaction between rural and urban areas can be performed.

### *Accessibility and connectivity*

The Upper Rhine Valley is a very well connected cross-border region in the centre of Europe. Various important European destinations are readily accessible through motorways or high-speed rail. Three regional airports and the neighbourhood of important international air traffic hubs provide excellent accessibility of worldwide destinations. Numerous road crossings of the River Rhine and the national borders make commuting to the neighbouring countries on a daily basis very attainable for almost every citizen in the area. However, other aspects of the transportation network, such as intra-regional connectivity of public transportation, hinder the effective cross-border usage of common infrastructure.

### *Gothenburg and Lisbon / Europe 2020 strategy*

The CBA has a quite strong economy which can be seen by the GDP per capita; most of the NUTS3 units of the CBA are above the national and EU averages. Especially the urban centres have a high GDP per capita, which also holds for the French NUTS3 units, though due to their size no further differentiation can be made. In the economic development the CBA could steadily increase GDP per capita and the number of employees, although it is falling behind the reference area of Greater London. The results of this analysis has to be handled with care, as the “economic bubble” of the finance sector resulted in high growth rates in the financial sectors without a similar growth of the industry and further services.

Also unemployment rates are very low, especially in the Swiss and German NUTS3 units of the CBA. These low unemployment rates as well as high GDP rates may be due to a relative high share of high and medium tech enterprises in the CBA.

### *R&D potential*

The CBA Upper Rhine Valley offers a great potential for cross-border research and educational activity. Regarding the cooperation potential by road accessibility, a well integrated and connected cross-border region appears. Depending on the sector of the research activity, the regional distribution of the clusters may vary a lot. The sector of life sciences gathers around Basel, while the social sciences are mainly situated in Freiburg. Other fields of research are more evenly distributed over the CBA. Due to the excellent cross-border accessibility by road, the border plays only a minor role even though it's still visible. More important prove to be the differences between the densely populated and high developed plain in the centre of the region and the more rural low mountain ranges which flank this plain. Whereas the CBA offers great accessibility by road, the poor regional accessibility in cross-border public transportation might be an issue, since especially educational commuting is highly dependent on public transportation.

### *Factor analysis*

The Factor Analysis validates the results of the previous chapters, putting them into relation to the involved countries of the CBA and all NUTS3 units in Europe.

Once more, the analysis confirms that the CBA belongs to the stronger regions in Europe regarding economy, unemployment, environmental conditions etc. In this analysis data from Switzerland is missing, but the proximity of the French and German NUTS3 units to Switzerland is important for their (economic) performance as a high share of employees chose to live in France or Germany and work in Switzerland because of higher wages and lower taxes there.

What had to be excluded from the analysis are non-quantitative factors, nevertheless playing a crucial role for the attractiveness of a region: the Upper Rhine is well known for culture, landscape, warm summers, attractive cities, etc. Choosing the place of domicile, these factors are important for a lot of people (as long as the working conditions are met).

## **Case Study 2 – Working Community of the Pyrenees cross-border area (Andorra-France-Spain)**

The Working Community of the Pyrenees Cross Border Area is produced by the 686.7 km borderline length between Spain (ES), France (FR) and Andorra (AD). The Working Community of the Pyrenees CBA is located at the North-Eastern part of Spain and the Southern part of France. It comprises of six NUTS2 administrative regions twenty nine NUTS3 administrative regions (*provincias* in the case of Spain and *départements* in the case of France). With 20.115.885 inhabitants in 2009, its density is over corresponding countries and EU27 values.

### *Demography*

Although being a border region, the indicators used show a high attractiveness of the CBA.: besides positive natural growth, the CBA (and also the confining NUTS3 regions as a whole) could steadily gain population by migration and hence has an overall positive population growth. However, it is worth mentioning that in more than half of the NUTS3 regions within the CBA, deaths exceed births in the analysed period. Four out of the nine confining NUTS3 regions show negative natural increase. A closer look onto the evolution of net migration, shows a steady decrease of net migration since 2005, and a significant drop in 2008. Negative trend migration (2008 value is lower than 2000 value), common to all NUTS3 regions but one (Tarn-et-Garonne – FR628), is accompanied by a drop in 2008 in every NUTS3 region in the Spanish sector. For the first time in the analysed period, emigrants exceeded immigrants in a significant way in Barcelona (ES511) in year 2008, as it occurred in Gipuzkoa (ES212) and Bizkaia (ES213).

Fertility rates and dependency ratios show a successful policy of the French government regarding families. But still, fertility rates in the three French NUTS2 regions within the CBA are below the French average and the vast majority of regions at NUTS3 level within the CBA are more old age dependent than their corresponding county average.

### *Polycentric Development*

The distribution of the urban population in the area is centrifugal in respect to the Pyrenees mountain range. The urban system on the French side of the CBA is more polycentric than the Spanish one, essentially due to the absence of a clearly dominant FUA such as Barcelona. Focusing only on the confining NUTS3 regions, the Spanish sector seems to rely on a denser network of medium and small-sized towns and cities and makes this area more polycentric than the French sector.

The distribution of the GDP per capita over the FUAs reinforces the primacy of Barcelona. Comparing the population and the GDP distribution of the FUAs, it is worth mentioning that some large Spanish FUA outstrip French centres in the GDP rank-size distribution. French FUAs have more service-oriented economy, while the Spanish FUAs seem to rely more on manufacturing and construction sectors.

### *Urban-rural relationships*

Those regions to both side of the border, where the main water channels are found, are the most agriculturally oriented regions according to the overall surface. From 1990 to 2006, most regions within the CBA lost agricultural surface at a sustained pace, particularly within both sides of the border. This trend is more meaningful in those areas that are more urbanised and under steady structural transformations. The economic trend observed in relation to the agricultural sector suggests a decreasing weight of primary activities in relation to the economy as a whole, both in terms of GVA and employment.

### *Accessibility and connectivity*

There is not much information available about regional accessibility, especially about internal accessibility. In alternative, this analysis relies on set of proxy indicators mainly related to physical accessibility and internet connectivity at European level. Cataluña (ES51) appears to be the most connected region according to both variables.

Accessibility by road clearly shows that the Spanish sector of the CBA is comparatively much more isolated from European core areas than French regions. In terms of rail accessibility, those regions that have performed best are Spanish provinces instead of French departments. Concerning air accessibility, those areas ranked on top of the distribution are the most urbanised regions with international airports within their boundaries. The most urbanised areas are ranked highest also in multimodal accessibility. Road density proved to be much higher to the French sector of the CBA, while the rail system seemed to be slightly more developed on Spanish regions. Connectivity between Spain and France through the

Central Pyrenees is quite a complex issue. Rail lines are not coincident in some cases, and using high capacity roads is only possible on the most Western and Eastern extremes, where the most of the commercial and passenger exchanges take place. Broadband penetration and internet usage is above the European average in all NUTS2 regions within the CBA.

#### *Europe 2020 strategy and Gothenburg goals*

There are different (and diverse) capacities to contribute to innovation, growth and Employment across the CBA NUTS 3 level units.

In terms of environment and energy, the CBA as a whole is above the EU average in soil sealed areas per inhabitant, below the EU average regarding ozone concentration exceedances, shows good capacity for urban waste water treatment and shows significant percentage of NATURA 2000 areas. It also shows good values in solar energy resources, and minor and middle sensitivity to climate change regarding physical, social, economic and cultural aspects in general terms.

The disparities on both sides of the border within the CBA concerning GDP per capita indexed to the leading region, are weakened if attention is paid onto the confining NUTS3 areas. This way, just two regions out of the ten confining ones are classified as “less developed”. The catching up analysis illustrates the outstanding position of NUTS3 level units such as Gipuzkoa could reach leading GDP rates in 38 years time.

Social disparities within the CBA exist but not very pronounced, although it is worth mentioning the situation of Rousillon-Languedoc, which is the weakest in all the variables analysed in this chapter (i.e. long –term unemployment rate, youth unemployment rate, etc).

Midi Pyrenees outstands clearly in total investment in Research and innovation, with 4,15% in 2004, followed by Languedoc Rousillon with 2,08% in the same year and País Vasco and Navarra with 1,98% and 1,94% respectively in 2009. At the current recession time, the current number of patent applications decreased markedly in both sides of the border. Regions in the Spanish side of the border employ significantly more persons in high and medium tech manufacturing activities than in the French side.

#### *Factor analysis*

The results of the factor analysis provided an enlarged picture of the Pyrenees CBA Spain and France (data for Andorra was missing) by comparing it to national averages, to other European cross border regions and to other European NUTS3 regions. In the light of the results, it can be said that the Pyrenees CBA is characterized by few areas (Barcelona and its surroundings; Vizcaya) that outperform the others economically, not only in the level of CBA but also when compared to other European regions. These economically well performing regions are more industry intensive but at the same time they comprise as important service sector concentrations and are rather well connected. As mentioned, this held true only in case of very few areas of the whole CBA, whereas the rest of Pyrenees CBA yield to average performance when rest of the European regions are considered but however most of these regions were among the well performing regions in their countries.

A closer look to the results of factor analysis also reveals some important differences between the Spanish and French cross border areas. For example, French Pyrenees CBA shows much higher concentration of public administration work than its counter part in Spain. French part of the Pyrenees CBA also demonstrates much higher demographic dynamism level than the Spanish regions, but in national level is not among the most dynamic regions in France. In any case, when compared to other areas of Europe, the Pyrenees CBA is in general characterized by relatively high levels of immigration.

Majority of the regions belonging to Pyrenees CBA are among the leading areas when research, development and innovation intensity is considered. This finding together with rather high level of immigration may imply that there are large expectations for future economic growth in this area.

In general, it can be said that the results of the factor analysis provide value-added in terms of validating the findings of the detailed thematic chapters.

### **Case Study 3 – Greece-Bulgaria cross-border area**

#### *Demography*

The CBA extends at the NE part of Greece and the S part of Bulgaria, consisting of three administrative regions: Yugozapaden (BG41), Yuzhen tsentralen (BG42) and Anatoliki Makedonia, Thraki (GR11). CBA's total population represents approximately 0.85% of EU27 population, decreasing during the latest decade by 4.3%, due to both natural causes and net migration. Xanthi and Sofia stolitsa are the only areas of the CBA experiencing population growth, at even higher rates than EU27 growth rate. Increase in former area is attributed to net migration, while in the latter area to natural increase. Population decrease is mostly attributed to the low mean fertility rate recorded in the CBA.

Although fertility rate gradually increases over the latest decade, its value appears significantly lower than the corresponding EU27 rate. Anatoliki Makedonia, Thraki exhibits the highest fertility rate in the CBA, of similar order to the EU27 value. At the same time, the area depicts an over-aging behaviour, having higher aged-population share as compared to the young population of the CBA. Population distribution is rather similar to the EU27 mean value, but shows strong disparities among NUTS3 areas, with higher population densities near urban conglomerates. Along well-established transportation axes, the border seems to attract population, affecting its density and growth patterns. On the contrary, newly opened crossings do not seem to affect borderline settlements.

#### *Polycentric Development*

Sixteen Functional Urban Areas exist in the Greece – Bulgaria CBA, with Sofia (stolitsa) being the main urban centre dominating the region. Over the years, Sofia's population primacy appears increasing, although the CBA exhibits a rather polycentric pattern in its population distribution. Overall, the population primacy of Sofia over the rest FUAs of the CBA is rather moderate and significantly lower than the corresponding Athens and Thessaloniki primacy over Greece and Voreia Ellada, respectively. On the other hand, Sofia's economic primacy over the remaining CBA is weak to moderate, implying a more polycentric economic development over the cross-border territory.

When examining the settlements' relative distance and structure over the CBA, it occurs that most areas are considered as polycentric over their region of influence, and only Sofia, Pernik, Plovdiv, Asenovgrad and Pazardzhik could be characterised as monocentric. Accessibility characteristics of the CBA suggest that most FUAs exhibit limited accessibility changes, as a result of population change. Again, Sofia is the dominant FUA in terms of accessibility over the remaining CBA, with all other areas displaying a rather homogeneous pattern.

#### *Urban-rural relationships*

Urban-rural analysis involved the identification of CBA's NUTS3 areas according to population density, urban-to-rural population shares, employment and GVA produced by the primary sector and land type coverage. Population density decreases over the latest decade, due to strong depopulation, with projections forecasting that by year 2020 the CBA would be considered as a 'strongly rural area'. Sofia stolitsa is the only 'strongly urban area' of the CBA while Plovdiv the only 'moderately urban area'.

Over the last five years a gradual increase in urbanism has occurred in the CBA, mostly shown by the sharp decrease of population employed in Agriculture, Forestry and Fishing sector and its produced GVA. Anatoliki Makedonia, Thraki shows the highest drop in these

indicators, following the general national trend. This 'urbanization' tendency of the CBA is also accompanied by a subsequent transformation of agricultural areas into artificial areas.

Following the existing Eurostat typology on urban-rural characterization, Sofia stolitsa (BG411) is classified as a 'Predominantly Urban Area'; Kyustendil (BG415), Pernik (BG414), Plovdiv (BG412) and Haskovo (BG422) as 'Intermediate Areas', and all remaining regions as 'Predominantly Rural Areas'. According to ESPON 1.1.2 typology the whole Anatoliki Makedonia, Thraki (GR11) and the regions of Blagoevgrad (BG413), Smolyan (BG424) and Kardzhali (BG425) are areas of 'Low Urban Influence and Low Human Intervention'; Haskovo (BG422), Pazardzhik (BG423), Sofia (BG412) and Pernik (BG414) are characterised as areas of 'Low Urban Influence and Medium Human Intervention', while Sofia stolitsa (BG411) and Plovdiv (BG412) are considered as areas of 'High Urban Influence and High Human Intervention'.

#### *Accessibility and connectivity*

Accessibility and connectivity analysis was performed aiming to determine the general accessibility levels of the Greece – Bulgaria CBA according to the various transportation modes, i.e., road, rail and air, as well as multi-modally. potential accessibility by road of Yugozapaden (BG41) and Yuzhen tsentralen (BG42) (34.38 and 32.56, respectively) appeared significantly higher than that of Anatoliki Makedonia, Thraki (GR11, 21.6), although the latter shows strong infrastructure improvement. Sofia stolitsa (BG411), Plovdiv (BG421) and Haskovo (BG422) acquired the highest potential accessibility by road indices, while Evros (GR111) and Drama (GR114) the lowest.

A similar pattern to road accessibility was also shown in the potential accessibility by rail index. Sofia stolitsa (BG411) and Pernik (BG414) show the highest potential accessibility score, while Evros (GR111), Kardzhali (BG425) and Kyustendil (BG415) demonstrate the lower values. Yugozapaden (BG41) depicts the higher potential accessibility by air, almost double than that of Anatoliki Makedonia, Thraki (GR11) and Yuzhen tsentralen (BG42).

The multimodal index of Yugozapaden (BG41) appeared significantly higher than the remaining area. Rodopi (GR113) and Kyustendil (BG415) experienced the strongest accessibility improvement, mostly attributed to rail accessibility upgrading. Improvement in the remaining Yugozapaden seems related to air accessibility change. Intermediate improvement is seen in the remaining Yuzhen tsentralen (BG42), mostly attributed to rail and air accessibility changes. Finally, only Kardzhali (BG425) showed an opposite behaviour, due to negative change in road and rail accessibility indices and the limited air accessibility improvement.

#### *Gothenburg and Lisbon / Europe 2020 strategy*

The territorial performance of the Greece – Bulgaria CBA according to the Lisbon/Gothenburg indicators was examined, focusing on the sectors of economic growth, employment, research and innovation, economic reform, social cohesion and the environment. Indexed GDP per capita analysis revealed that the CBA could be characterised as 'less developed to very laggard region', scoring at the low level rankings of EU27 areas.

Convergence analysis demonstrated that Kavala (GR115), Xanthi (GR112) and Evros (GR111) are 'non-converging areas', in terms of GDP per capita trends. Kyustendil (BG415), Rodopi (GR113) and Drama (GR114) are considered as 'slow converging areas', while Sofia stolitsa (BG411), Pernik (BG414) and Smolyan (BG424) are considered as 'steady catching-up areas'.

Employment in the CBA seems distributed rather evenly among all NACE economic activities, exhibiting a slight annual rise of 0.73% over the last decade. This increase seems attributed to the construction and the financial and real estate sector. The reduction in the employment in the primary sectors is apparent. Wholesale and retail trade, tourism and transport sector, among with the financial and real estate sector are the higher contributors to CBA's GVA. Construction and public administration services increased their shares over the latest decade.

Social cohesion indicators, as total, long-term and youth unemployment rates are generally higher than the corresponding mean EU27 values. Similarly, the Population at Risk of Poverty Index is well above the EU27 level, and only infant mortality seems comparable to the correspondent EU27 standard. All social cohesion indicators gradually improved during the 1997-2008 period. After 2008, due to the global financial crisis, all indicators degraded sharply, returning back to the 1997 levels.

#### *General conclusion*

Territorial profile analysis revealed that the lack of central CBA's location over the EU27 space is a major disadvantage. Demographic trends are negative, mostly due to natural causes rather than immigration rates. Trade, tourism and transport are the main economic sectors supporting local CBA's economy. Anatoliki Makedonia, Thraki (GR11) could be identified as a public administration centre of the CBA, in terms of employment and the GVA produced. The area lacks investments in the R&D sector, while appears as rather sensitive to climate change and environmental risks. Territorial performance analysis of the CBA indicated that the area suffers from high unemployment (especially in Anatoliki Makedonia, Thraki) and limited economic development, showing a strong convergence tendency of all Bulgarian areas. Overall, area's poor economic performance seems related to its low centrality, the exaggerated public administration sector, the low R&D investments and the limited demographic dynamism.

#### **Case Study 4 – Karelia (Russia-Finland) cross-border area**

Euregio Karelia is a cross-border region situated on the Finnish-Russian border area and it has a total area of 270,624 km<sup>2</sup> and a total population of 1324918 inhabitants. Euregio Karelia is formed out of three Finnish NUTS 3 level regions; North Karelia, Kainuu and Northern Ostrobothnia and the Republic of Karelia in the Russian Federation. (Since Russia is not a member of the European Union, it does not apply the NUTS division to its territories. A SNUTS ("Similar to NUTS") classification was created for the purposes of the Ulysses study and the Republic of Karelia was identified as SNUTS 2 level region.) The borderline dividing the Finnish and the Russian regions is an external border of the European Union and it is approximately 700 kilometres long. In contrast to EU internal borders, there exists no visa-free entry on the Finnish-Russian border, and the visa regulations are determined by EU-Russian visa agreement and the Schengen-regime. The regions collaborate across the border under the title of Euregio Karelia, which is a cooperation forum founded in 2000. The main aim of the Euregio is to develop living conditions in the region by improving economic wellbeing and social justice among the inhabitants.

#### *Demography*

This first theme of this study was demographic analysis of the cross-border area (CBA). It became evident that Northern Ostrobothnia is the only region in Euregio Karelia that has had positive total and natural population growth and positive net migration. North Karelia and Kainuu, on the contrary have suffered from negative population growth and negative migration, while in the Republic of Karelia population growth has been negative, but net migration positive. Accordingly, while the population density has been declining in three regions of Euregio Karelia, namely in North Karelia, Kainuu and the Republic of Karelia, the population density in Northern Ostrobothnia has been increasing through the whole 1990s and 2000s. Northern Ostrobothnia is also the only region in Euregio Karelia that has a larger amount of children (aged 0-14) than elderly people (65 years or more). The share of elderly population is largest in Kainuu (20,65 %) and North Karelia (19,43 %), while in the Republic of Karelia only 11,94 % of the population is 65 years or more and the working age population covers 73,33 % of the total population.

Total fertility rate of Euregio Karelia has been increasing from 1,74 in 2000 to 1,94 in 2009. In general total fertility rates have in all the NUTS 2 and NUTS 3 level regions of the Northern

Finland – Russia CBA shown gradual increase during the given time period, as have the fertility rates of Finland and Russia. On NUTS 2 level, Northern Finland is the only region with the fertility rate over the replacement level. As for total dependency ratio in Euregio Karelia, it was 49,32 in 2009 that signifies that there were 49,32 persons aged 0-14 and over 64 years of age for every 100 person in the working age population. This ratio is only slightly higher than EU average (48,90) and slightly lower than Finnish average (50,33), but much greater than total dependency ratio for Russia that was 39,24 in 2009.

Demographic in-depth analysis that were performed in the study show, that there is no significant “border effect” in Euregio Karelia. In other words, population growth and density in the Finnish regions of Euregio are not related to the border distance. In the future it would be interesting to have a closer look at migration statistic on the Finnish side, since it could become evident that regions close to the border are actually attracting population from the neighbouring country.

### *Polycentric Development*

The second topic analysed here was polycentric development, in other words the urban structure of a region. There are nine functional urban areas (FUAs) in the Northern Finland – Russia CBA (NUTS 2 level), and four of them are located in the territory of Euregio Karelia; Oulu (Northern Ostrobothnia), Joensuu (North Karelia), Kajaani (Kainuu) and Petrozavodsk (The Republic of Karelia). The largest FUA of the Northern Finland – Russia CBA was in 2006 the city of Petrozavodsk and Prionežskij municipality that surrounds the city. When we take a look at FUAs in the territory Euregio Karelia, it is possible to observe that population change has been positive between 2001 and 2006 in all the FUAs except for Kajaani (-2,9 % decrease).

The slope of rank size distribution of FUA population in the Northern Finland – Russia CBA was -0,88 in 2006. This indicates that the Northern Finland – Russia CBA has a relatively polycentric urban structure, more polycentric than the average urban structure in ESPON countries. The slope of rank size distribution of FUA GDP was -0,81 in 2006. Even if this value indicates of a polycentric cross-border area, it has to be noticed that the value did not include data for the city of Petrozavodsk and Prionežskij municipality. That would have, due to the significant differences in GDP, affected the final values. Primacy rate for the Northern Finland – Russia CBA was 0,79 in 2006. This again suggests that urban structure of the region is not dominated by one big city, but that the size of the biggest FUA (PETRO) is actually smaller than anticipated by the rank-size distribution of the FUAs.

In almost all the Finnish FUAs dominating economic activity is traditional manufacturing (incl. mining and energy production). The second most important NACE group is service sector, which in Kajaani is the leading one producing 24,9 % of total gross value added of the FUA. In general terms FUAs with lower GDP per inhabitant are located in Eastern Finland, while FUAs with higher GDP are in Northern Finland.

### *Urban-rural relationships*

The next theme analysed in this study was urban-rural relations in the Northern Finland – Russia CBA. First we applied ESPON 1.1.2 and Eurostat typologies to classify the regions into rural and urban areas. ESPON 1.1.2 typology classifies all the regions of the Northern Finland – Russia CBA as regions with low urban influence and low human intervention. The Eurostat typology also considers the regions of the CBA as predominantly rural regions. Even if the regions of Euregio Karelia appear rural from the European perspective, the share of agricultural areas in the region's total area is significantly lower than European average (ESPON countries). Share of agricultural areas in the ESPON countries was 38,65 % in 2006, while the largest share of agricultural areas in the CBA was 7,91 % in Northern Ostrobothnia. Urbanisation of agricultural areas in the regions of Euregio Karelia has been below the European average (ESPON countries). Urbanisation of natural and semi-natural areas in Northern Ostrobothnia and North Karelia, on the contrary, has been stronger than in ESPON countries in average.

The share of GVA by agriculture and fishing in total GVA has decreased in all the regions between 1997 and 2008. Even if there has been an increase in the GVA by agriculture and fishing, the share of those fields of economy in the total GVA has decreased between 1997 and 2008 in all the regions of Euregio Karelia, as in Finland and the European Union. In Euregio Karelia the decrease has been strongest in Northern Ostrobothnia, where the share of agriculture and fishing in total GVA has dropped at an annual rate of -4,09%.

#### *Accessibility and connectivity*

Considering accessibility and connectivity of the Northern Finland – Russia CBA, in the context of ESPON space potential accessibility of the Finnish regions of Euregio Karelia by road is very low, between 6,2 (North Karelia) and 3,1 (Kainuu). This is understandable considering the remote location of the regions from the main European road infrastructure. The regions of Euregio Karelia are not easily accessed by rail either, even if they do value slightly higher in the rail than in the road accessibility; between 10,3 (North Karelia) and 6 (Northern Ostrobothnia). Air connections to Euregio Karelia seem to make the region better accessible to the European countries than road and rail infrastructure. Accessibility by air to North Karelia valued at 55,2, to Kainuu at 50,8 and to Northern Ostrobothnia at 44,8. It is possible to argue how well these figures correspond to reality. If we look at flight traffic from and to the regions of Euregio Karelia, the busiest airport is located in Oulu, Northern Ostrobothnia.

Multimodal accessibility combines all the above analysed forms of transport and demonstrates general accessibility levels. Relatively good air accessibility of Euregio Karelia clearly affects the multimodal accessibility levels of the region. In the context of ESPON countries, North Karelia values at 48,2, Kainuu at 44,2 and Northern Ostrobothnia at 39,1. In the context of the cross-border region, North Karelia has the highest (106,78) and Northern Ostrobothnia the lowest (86,62) accessibility. Index change of standardised potential accessibility has in all the regions been negative. According to these analyses, greatest decrease of accessibility has taken place in Northern Ostrobothnia and the smallest in Kainuu.

Compared to the physical accessibility, the Northern Finland – Russia CBA ranks considerably higher with its “virtual connectivity”. In 2009 75,6 % of households in the NUTS 2 region of Northern Finland had a broadband internet connection and in Eastern Finland the respective figure was 60 %. The European average in 2009 was 56 %.

#### *Gothenburg and Lisbon / Europe 2020 strategy*

Analyses on Lisbon / Europe 2020 and Gothenburg objectives included four subcategories: economy and employment, research and innovation, social cohesion and environment. The coefficient of deviation, which measures regional disparities in the GDP per capita has been increasing between 1997 and 2008 in the Northern Finland – Russia CBA from 9,2 to 16,4. The coefficient shows significantly lower disparity between the regions of the CBA than between Finnish or ESPON regions in average. It is necessary to remind that this analysis included only the Finnish regions of the Northern Finland – Russia CBA. Had the Republic of Karelia been included in the analysis, the results had been quite the opposite.

We compared NUTS 3 regions of the CBA with the leading region (Inner London West region) in terms of GDP per capita, through index number analysis. Northern Ostrobothnia was classified as middle income region, while both North Karelia and Kainuu were identified as less developed regions. In the catching up analysis we evaluated the speed of catching-up with the leading region (Inner London West region). Northern Ostrobothnia is the only region that has been classified as a (slow) converging region, while North Karelia and Kainuu had performed as non converging regions. The strongest region of Euregio Karelia, Northern Ostrobothnia, would need 218 years to catch up with the leading region.

The leading economic sector in the North Karelia and Kainuu in 2008 was public administration and community services. Highest share of employment in all the Finnish regions of Euregio Karelia was in 2008 recorded in public administration and community services (L-P).

Total intramural R&D expenditure in Northern Finland (5,38) was higher than the Finnish average, while in Eastern Finland R&D expenditure was below the Finnish and EU average (1,61). Unemployment in Eastern and Northern Finland was slightly above the Finnish and European average in 2010. Concerning other social cohesion indicators, Eastern Finland performed generally weaker than Northern Finland.

We studied environmental performance of the Northern Finland – Russia CBA based on indicators from the European Commission's 5th Cohesion Report and ESPON Climate Project. From the 5th Cohesion Report we selected six indicators; soil sealed area, ozone exceedance, waste water treatment, Natura 2000 areas, solar energy and wind power potential.

In North Karelia 97 km<sup>2</sup>, in Kainuu 100 km<sup>2</sup> and in Northern Ostrobothnia 415 km<sup>2</sup> of soil per inhabitant was sealed in 2006. Ozone concentration exceedances were low or non-existence in Euregio Karelia. Urban waste water treatment capacity in the Northern Finland – Russia CBA is slightly above the Finnish and EU averages. The share of NATURA 2000 areas values significantly lower than the average European (EU27). Solar energy potential in the CBA is well below the leading European regions, but also well above European regions with the least solar potential. Wind energy potential, on the other hand, is above the European average in all the regions of Euregio Karelia. Sensitivities to climate change were generally low in all the regions of Euregio Karelia.

#### *Factor analysis*

Factor analyses that complete this study on the territorial development of Northern Finland – Russia CBA validate results of the previous sections. For future development of the study it would be necessary to include more Russian data into the analyses. This applies both to data on the Republic of Karelia and Russia in general, as it would make it more accurate to examine and to view the Northern Finland – Russia CBA in the European and Russian contexts than relying almost solely on Finnish data.

What also needs to be studied in the future is how the connections in the CBA actually work. What is the role of the border in connecting / disconnecting the regions from each other? Since data is available on border traffic, we will make at least qualitative analysis on the development of the traffic across the Finnish-Russian border in Euregio Karelia.

### **Case Study 5 – Euro-region Pomerania (Germany-Poland-Sweden) cross-border area**

Euregion Pomerania is a cross-border region situated on the border between Poland, Germany and Sweden. The border between Poland and Germany is a land border, while Sweden is separated from the Polish and German regions of Euregion Pomerania by a maritime border. From a governance point of view Euregion Pomerania is an association formed by three associations of local authorities in Poland, Germany and Sweden. The Euregion was originally established in 1995 in Szczecin, where the parties officially agreed upon a common goal to be achieved with the collaboration; that of promoting equal and balanced development in the regions of Euregio Pomerania.

#### *Demography*

Euregion Pomerania has a total area of 49 663,97 km<sup>2</sup> and a total population of 3 915 493 inhabitants. Demographic analyses performed in this study reveal that Polish regions have the largest share of inhabitants in Euregion Pomerania (43,24 %), Swedish region of Skåne län the second largest (31,02 %) and German regions the smallest share (25,74 %). From the perspective of sex structure, Euregion Pomerania has a female majority with 1 993 574 females that make up 50,92 % of the total population of the CBA. Age structure of the CBA is following: the share of 0-14 year old population in Euregion Pomerania in 2009 was 14 %, the share of 15-64 year old population 69 % and the share of population over 65 years of age 17 %. Dependency ratios for Euregion Pomerania indicate that, in comparison with the European

Union averages, there is less pressure for the working age to take care of children less than 15 years of age, but more pressure on the working age population to take care of elderly people. Considering the small share of children under 15 years of age, there will also be less people to take care of the working age population in the future.

Population density in Euregion Pomerania was 278,7 inhabitants per km<sup>2</sup> in 2008. While the population density has been declining in the German and Polish regions of Euregion Pomerania, the population density in Skåne län has been increasing between years 2000 and 2008. Besides Skåne län there were only two other regions in Euregion Pomerania that have experienced positive growth in population density between the given period. These were Barnim in Germany and Szczecinski in Poland. Population change has accordingly been negative in all the regions of Euregion Pomerania, except for Barnim, Szczecinski and Skåne län in Sweden.

Natural increase has been a more significant factor for population change than net migration in the regions of Euregion Pomerania. Between 2000 and 2008 there were 10 163 deaths over births in Pomerania and 8 890 emigrants over immigrants. None of the regions of Euregion Pomerania has a total fertility rate above the replacement level. Sydsverige has the highest TFR, and the rate has experienced a considerable growth between 1997 (1,51) and 2008 (1,9), as has the TFR for Sweden. Sydsverige is the only region in the Poland – Germany – Sweden CBA with a total fertility rate above the EU average (1,6 in 2008).

#### *Polycentric Development*

Polycentric development of the Poland – Germany – Sweden CBA has been studied here on NUTS 2 level, and therefore Functional Urban Areas outside the actual territory of Euregion Pomerania have been included in the study. FUAs located in Euregion Pomerania are Neubrandenburg, Greifswald, Stralsund and Eberswalde-Finow (Barnim) in Germany, Szczecin, Koszalin (Koszalinski), Kolobrzeg (Koszalinski) and Stargard Szczecinski (Stargardski) in Poland and Malmö (Skåne län) in Sweden. The largest FUA of the Poland – Germany – Sweden CBA in 2006 was Malmö with 636 157 inhabitants. When we take a look at population change in the FUAs of Euregion Pomerania, it is possible to observe that population growth between 2001 and 2006 has been positive in Malmö (4,4 %), Koszalin (0,3 %) and Greifswald (0,7 %), while all the other FUAs have been losing population.

The slope of rank size distribution of FUA population in the Poland – Germany – Sweden CBA was -0,96 in 2006. This indicates of a relatively polycentric urban structure in the CBA, more polycentric than the urban structure in ESPON space. When considering the GDP of the FUAs the CBA is more monocentric. GDP in the leading city Malmö was 19 688 M€ in 2006 and the difference in GDP was significant compared to other FUAs in the CBA. Primacy rate for the Poland – Germany – Sweden CBA was 0,57 in 2006. This again suggests that urban structure of the region is not dominated by one big city, but that the size of the biggest FUA (Malmö) is actually smaller than anticipated by the rank-size distribution of the FUAs. Average FUA size in the Poland – Germany – Sweden CBA was 189 228,9 inhabitants in 2006. Only 51,5 % of the Poland – Germany – Sweden CBA's total population lives in FUAs. The dominating economic activity in the FUAs of the CBA was Service sector (L-P). However, the share of Trade and transport (GHI) and Finance and business services (J-K) was almost as large in the GVA added of the FUAs.

#### *Urban-rural relationships*

Considering urban-rural relationship in the CBA, ESPON 1.1.2 typology classifies following regions of Euregion Pomerania as regions with low urban influence and low human intervention: Uckermark, Demmin, Mecklenburg-Strelitz, Nordvorpommern, Ostvorpommern, Rügen, Uecker-Randow and Koszaliński. Regions with high urban influence and high human intervention are, according to the classification Barnim, Greifswald, Neubrandenburg, Stralsund and Skåne län. The Eurostat typology considers following regions of the CBA as predominantly rural regions: Uckermark, Demmin, Rügen, Uecker-Randow and Stargardski. The rest of the regions of Euregion Pomerania are classified as intermediate regions.

Agricultural areas occupy relatively large areas in all the regions of Euregio Pomerania. Demmin has the largest share of agricultural areas (79,73 %) and even in Neubrandenburg (where the share of agricultural areas is the smallest in the CBA) 25,08 % of the total area is occupied by agricultural land. In general, total area of agricultural land has been decreasing in all the regions of Euregio Pomerania between 1990 and 2006.

Urbanisation of agricultural areas in the regions of Euregio Pomerania has been relatively similar to the European Union average (2,67 ha per 10000 ha), but two regions have experienced urbanisation of far larger agricultural areas. In Stralsund 38,93 ha per 10000 ha and in Greifswald 24,89 ha per 10000 ha of agricultural land was urbanised between 2000 and 2006. The average share of artificial areas in Euregio Pomerania was also very similar to the ESPON average (11,35 ha per 10000 ha of land). Biggest changes in the amount of artificial land cover between 2000 and 2006 in the regions of Euregio Pomerania have taken place in the city districts of Greifswald, Stralsund and Neubrandenburg.

The share of GVA by agriculture and fishing in total GVA has decreased in all the regions of Euregio Pomerania between 1997 and 2008. Employment statistics for agriculture and fishing show a gradual decrease in the regions of Euregio Pomerania and the changes have been especially severe in the Polish regions of the CBA. Decrease in employment in agriculture and fishing has naturally reduced the share of employment in general employment statistics.

#### *Accessibility and connectivity*

In the context of ESPON space potential accessibility of the regions of Euregio Pomerania by road vary from 129,3 (Barnim) to 48,7 (Skåne län). German regions of Euregio Pomerania are potentially more easy to access by road than ESPON regions in general. Potential accessibility of the Polish regions is below the ESPON average. German regions of Euregio Pomerania have the highest potential accessibility by road also in the context of the cross-border area.

Potential accessibility by rail in the regions of Euregio Pomerania is relatively similar to the road accessibility values. The German region of Barnim has the highest potential accessibility both in the context of ESPON regions (135,8) and the CBA (140,1). Index change in the potential accessibility by rail has been positive in all the German regions of Euregio Pomerania, but negative in all the other regions.

Accessibility of Euregio Pomerania appears very different, when considering accessibility by air. In the context of ESPON space Skåne län was the most difficult region to access by road and rail, but it is has the highest accessibility by air among the NUTS 3 regions of Euregio Pomerania (136,8). It is also the most potential region to be accessed by air within the CBA (158,3). Good air accessibility clearly affects the multimodal accessibility of Skåne län, which has according to the analysis the highest potential multimodal accessibility of the regions of Euregio Pomerania (120,6). "Virtual accessibility" of Skåne län is also good considering that Södra Sverige had the largest share of households with broadband internet access in 2009 (78,6 %).

#### *Gothenburg and Lisbon / Europe 2020 strategy*

Analyses on Lisbon / Europe 2020 and Gothenburg objectives included four subcategories: economy and employment, research and innovation, social cohesion and environment. The coefficient of deviation, which measures regional disparities in the GDP per capita has been increasing between 1997 and 2008 in the Poland – Germany – Sweden CBA. This signifies that disparities in GDP per capita have been growing in Euregio Pomerania during the given time period. When compared to the NUTS 3 average of ESPON countries, the coefficient of deviation (and accordingly disparities in GDP per capita) has been higher in ESPON countries, but has now settled on the same level with the CBA.

We compared NUTS 3 regions of the CBA with the leading region (Inner London West region) in terms of GDP per capita, through index number analysis. The best performing region among the regions of Euregio Pomerania in terms of GDP per capita is Neubrandenburg (32900 in

2008), while the lowest GDP per capita is to be found in Stargardzki (6100 per capita). Compared to the leading European region in GDP per capita (London), Greifswald, Neubrandenburg, Stralsund and Skåne län are considered middle income regions. Stargardzki is classified as a very laggard region, while other regions of the CBA area have according to the index number analysis been classified as less developed regions or laggard regions.

In the catching up analysis we evaluated the speed of catching-up with the leading region (Inner London West region). Most of the regions in Euregio Pomerania have been classified as diverging regions. This indicates that these regions are not catching up the leader, but growing less and thus diverging from the leading region. Polish regions of Euregio Pomerania have been classified as slow catching-up regions (Koszalinski, Miasto Szczecin and Szczecinski) or slow converging regions (Stargardzki). With a similar growth rate these regions could in theory catch up the leader in 75 to 102 years.

The leading economic sector in Euregio Pomerania in 2008 was Public administration and community services (L-P), which produced 30 % of the total GVA in the CBA. Highest share of employment in Euregio Pomerania was in 2008 recorded in Public administration and community services (L-P). Share of employment in this sector was in average 36,20 % of total employment in Euregio Pomerania.

Total intramural R&D expenditure in Euregio Pomerania was 1,66 in 2007, which is lower than the EU average (2,01). In Sydsverige (4,75) R&D expenditure was well above the EU and Swedish average (3,4). Zachoniopomorskie had the lowest R&D expenditure (0,24). Unemployment in Euregio Pomerania (11,12) was well above the European and national (Germany, Poland, Sweden) averages in 2010.

We studied environmental performance of the Northern Finland – Russia CBA based on indicators from the European Commission's 5th Cohesion Report and ESPON Climate Project. From the 5th Cohesion Report we selected six indicators; soil sealed area, ozone exceedance, waste water treatment, Natura 2000 areas, solar energy and wind power potential.

Soil sealing was particularly high in the city regions of Euregio Pomerania. In Stralsund soil sealed area covered as much as 37 % of the total land area. Ozone concentration exceedances were below national and EU averages in Euregio Pomerania. Urban waste water treatment capacity in Euregio Pomerania was above national and EU averages in all other regions but Zachodniopomorskie, where the capacity was only 57 %. The share of NATURA 2000 areas values higher than national or European averages. Solar energy potential in the CBA is below European averages, but in line with national averages. Wind energy potential, on the other hand, is well above European average in Euregio Pomerania. Sensitivities to climate change were relatively low in all the regions of Euregio Pomerania.

Factor analyses that complete this study on the territorial development of Poland – Germany - Sweden CBA validate results of the previous sections.

### **Case Study 6 – Alentejo-Extremadura (Portugal-Spain) cross-border area**

Portugal and, to a lesser extent, Spain are normally understood as part of the periphery of the European Union, in a geographical as well as an economic sense. Except for the northern part, the border between these two countries is, on its turn, a periphery for each one of them. In the European context, the cross border region of the Alentejo-Extremadura can therefore be understood as a “periphery of a periphery”.

This peripheral location is a crucial element which shapes this regions' behaviour in many of the analysed dimensions manifesting itself in an overall low density in human settlements, infrastructures and economic activities and a poor capacity in achieving the Lisbon/Europe 2020 and Gothenburg Strategy objectives in all except the climate indicators.

#### *Accessibility and connectivity*

As stated above, this cross border region is marked by overall low densities, to which communication and transport infrastructures and services are no exception.

Regarding the few connectivity indicators that were analysed, this CBR has one of the poorest performances of the whole countries it belongs to.

Regarding accessibility, the long term choice for transport modes of this CBR seems to be the road, for which the regions' potential accessibility scores were the highest when compared to other modes of transportation (rail and air). In fact, and although the potential accessibility by road is still well below the ESPON average, the road infrastructure has been witnessing major improvements in the last two decades, especially on the Spanish side of the border. This CBR also has one of the most important road border crossings in terms of daily car and truck intensity of all Portuguese-Spanish border (the Caia-Badajoz border crossing).

The potential accessibility for rail, on the other hand, is very low and its evolution between 2001 and 2006 shows a negative tendency in the NUTS 3 where the scores were the lowest.

But although accessibility and connectivity levels are very low, this region's transport infrastructure is essentially in line with its remote position. Considering the very low densities, the regions can even be understood as having a fairly good infrastructure.

### *Demography*

This CBR is struggling with a major ageing challenge in the Alentejo and a force replacement challenge in the Extremadura. Several aspects are worth being analysed on this topic.

The first one is that, as these regions have been witnessing a decline in the young cohorts over extended periods, the ratio of persons aged over 65 is very high, not only in comparison to the cohorts of people under 15, but also in comparison to the working aged population.

The second, which is closely related to the previous one, is that most of the CBR seems to be experiencing a negative momentum of population growth. It is therefore very likely that most of these territories will witness an accelerating natural population decline in the next decades, even if the life-expectancy continues to grow and if effective measures to boost fertility would be put into place.

The third one is that, given the negative outlooks for natural population growth, the demographic sustainability of many of the settlement of these regions will depend on their capacity to attract population. This has been occurring to some extent in most of the regions, but it is not clear how this will progress, as the migration rates depend a lot on different variables such as the political context, accessibility levels or economic performance.

The fourth one considers the potential problems that come from relating the former aspects to one of the major trait of these regions – very low population density. Some of the predictable challenges of this situation include: the satisfaction of an increasing demand of services from an ageing population that is scattered on a large area; the maintenance of general public infrastructures (roads, water, schools, etc.) for a population that would no longer justify them from an efficiency point of view; the viability of ecosystems that rely on human activities; the struggle of economic sectors that could suffer from factors related to an increasing remoteness, such as growing distances to markets, decreasing economies of scale or scarcity of labour force.

The fifth is that the major demographic challenges, although common to all of the regions, are not experienced at the same magnitude by all of them and cannot easily be linked to the border condition on a local level. For instance, a positive effect of the border distance on population growth has only been observed on the Portuguese side, which also suffers from decreasing densities as we move towards more remote areas. On the Spanish side there are consolidated settlements very close to the border and the regions' population growth is also positively impacted by smaller border distances, even if this impact is not very significant.

The sixth is that the before mentioned growing urban agglomerations on the Spanish side of the frontier have a significant effect on the demographic potential on the neighbouring areas. This implies that a further integration might attenuate the remote position of the whole border regions, including on the Portuguese side.

### *Polycentric Development*

As stated by the Territorial Agenda of the European Union 2020, polycentric territorial development is a major factor for cohesion, since a network of cooperating cities act as centres for development in the larger territories. Concerning the polycentric development of this CBR, six major conclusions have been drawn.

The first one is that the share of people living in Functional Urban Centres is very low in. Only 31,2% of the total population lives in FUA, compared to the 74,8% in the total ESPON countries, 73,5% in Portugal or 83,7% in Spain.

The second one, which is a consequence of the former, is that the amount and size of these FUA is very small. Essentially, besides the already low densities, this region is also characterized by the difficulty of agglutinating its population in urban areas of a significant any size.

The third one is that the FUA network lacks hierarchy in the upper end of the rank size distribution. When considering that the share of the prime city in the total FUA is also relatively low, this means that city system does have a polycentric layout, even if at a very low scale.

The fourth is that the FUA are, sparsely, but evenly spaced throughout the CBR. This region therefore does not follow the overall tendency of Portugal and Spain to concentrate the biggest cities at the coast, leaving much of the interior deprived of major urban agglomerations.

The fifth is that the hierarchy of the GDP per capita distribution among the FUA is very similar to the one of the population. So the CBR does not follow the pattern of the ESPON space, where wealth is distributed in a more hierarchical way among the FUA than population.

### *Urban-rural relationships*

As stated before, the amount of urban population is very low in this region. The urban-rural relationships are therefore marked by a spatial layout that consists of a network of small urban areas that spreads out over a large, predominantly rural, territory.

These rural areas have a large share of agricultural areas, although they have the overall tendency to diminish. But the changes in the share of agricultural areas seem to be only slightly related to the growth of artificial surfaces, and more to their abandonment or the uptake of forests or semi-natural areas.

As would be expectable, the low progress in the artificialization of the land use also extends itself to the urbanization process. There is only one NUTS 3 in this CBR in which the urban land consumption is faster than at the national levels. But even this makes sense, as it is the region of the CBR with the largest population growth in the last decade.

Besides having large shares of land dedicated to agriculture, the economic structure of this CBR is also characterized by the weight of this sector. Its share in the regions' total values is well above the national average in employment but especially in Gross Value Added. From this, it is possible to deduce that in this region the agricultural sector stands out not only for its weight, but also for its high labour productivity. This high productivity is probably linked to a highly mechanized and standardized production process which contrasts with the traditional rural lifestyles and rhythms.

### *Gothenburg and Lisbon / Europe 2020 strategy*

As for the Lisbon/Europe 2020, six major aspect where highlighted.

The first one is that the economic situation of these regions is fragile, especially on the Portuguese side of the border. On one hand, all of the NUTS 3 are well below the leading region in terms of GDP per capita. On the other hand many of them have been diverging, or converging very slowly, from the leading region over the last decade.

The second one is that the region has relatively high economic disparities, especially between the two sides of the border, despite sharing so many overall characteristics. This seems to imply that belonging to one country or another has in itself a much greater impact on the regions' economic performance than the more remote or central position it occupies within a country.

The third one is that most of the regions' social cohesion indicators are much worse in this CBR than the respective national averages. This is especially worrying for the Extremadura, given that Spain already tends to have high values in these kind of indicators (youth unemployment, at risk of poverty after social transfers, etc.).

The fourth is that the public sector plays a greater role in the CBR than in the rest of the countries. As can be seen in the factor analysis, a large weight of the public sector is often related to depressed territories, as the public services are more evenly distributed among the territory and therefore leads to their overrepresentation in a scenario of a dwindling private sector.

The fifth is that the regions' capacity to invest in research, development and innovation is very limited and is reflecting itself on the outputs (low amount of patent applications).

The sixth is that the regions have a relatively good performance on climate related indicators, such as soil sealed areas, ozone concentration or protected areas. The trend of the long term climate change is also limited in its potential impacts).

#### *General conclusion*

The overall conclusion that can be reached from this analysis is that this CBR's will face major challenges in the future. On one hand, this region's situation in many of the indicators is already poor when compared to the EU27. Not only does it have low accessibilities, small urban areas, low GDP per capita and poor social cohesion, but many of the NUTS 3 are also diverging from the leading region in the GDP growth. On the other hand, as has been revealed by the factor and regression analyses, the NUTS 3 of this CBR perform badly in the main factors that explain good economic performance in Europe. For example, all the NUTS 3 fall below the 20% percentile in the factor that is related to central location and a strong service sector, which has the biggest weight when explaining a region's GDP per capita. In the factor that expresses R&D&I, most of the Portuguese regions fall below the 50% percentile, while the Spanish ones fall below the 80%.

### 3.1.2. Task 2.3. Institutional performance analysis

The overall results have already been represented in form of a European map (see Map 2). The figure below shows the described patterns as 2-D-graphic, again differentiating the structural dimension and the regional status.

The following chapters explain the underlying regional situations within the different Ulysses regions.

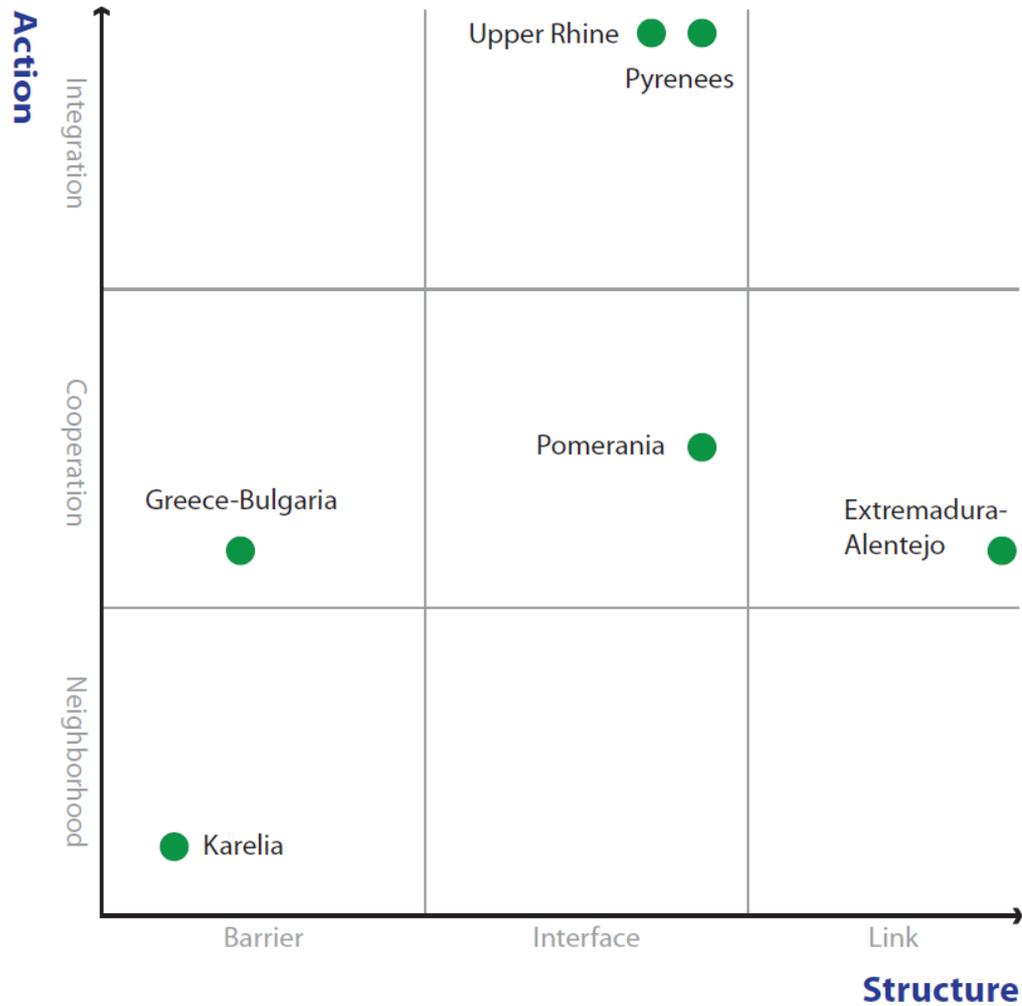
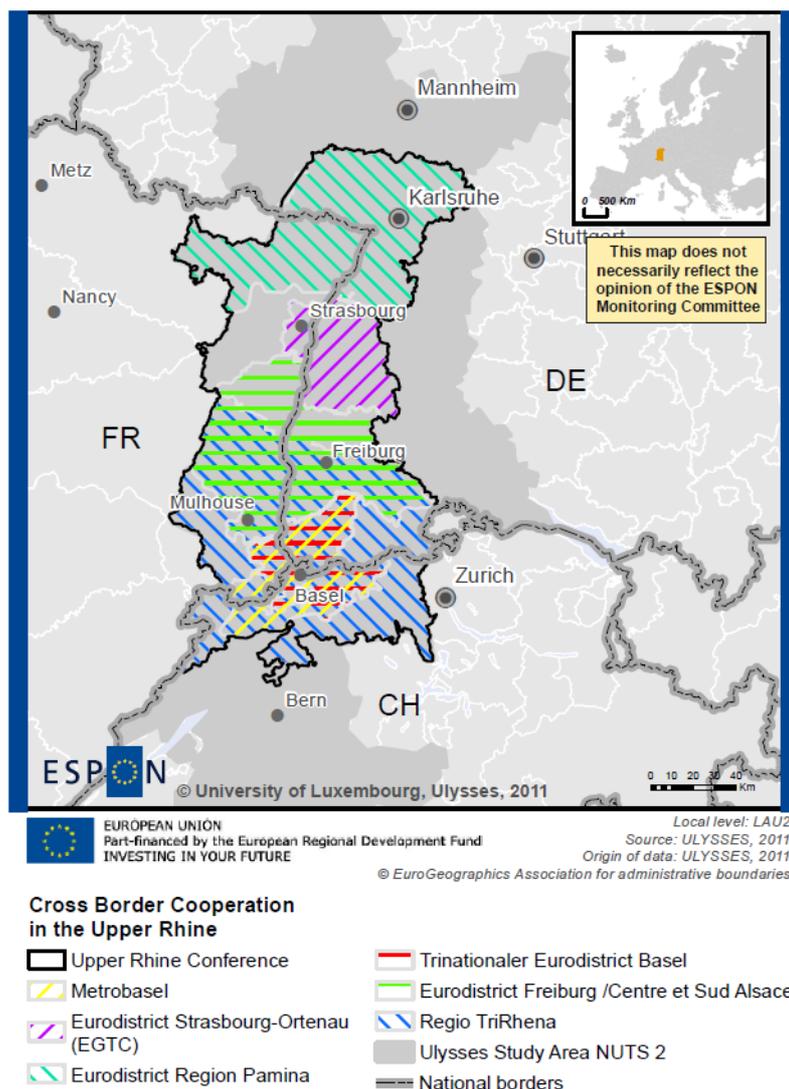


Fig. 1: Visualisation of the results on the European level in a 2-D-graphic

## Results for the regional level - Upper Rhine (CS 1)



Map 3 Institutional Mapping of the Upper Rhine region

### *Structural Dimension*

The reputation of the Upper Rhine as one of the pioneers of cross-border cooperation must not conceal that the structural dimension of the Upper Rhine does bear considerable challenges. The political situation has to take into account that three countries – one of them being a non-EU member state – are involved, and being divided by a language barrier. Even if Switzerland is a country with several languages, the Swiss border region near Basel belongs to the German speaking part.

The planning systems of the three involved countries bring together the centralized French tradition, the federal German system and the Swiss culture of considerable competences on the local and canton level. According to the quantifying analysis (s. the chapter on methods), the border between Germany and France is coming along with higher border effects, in particular due to the different planning traditions and due to the language barrier.

The Rhine River is – on the one hand – a common symbol of this border region which helps to establish a common identity. On the other hand, bridging the large river and organizing the transport infrastructure within the limited scope of the Rhine valley between considerable hill ranges is an ongoing challenge.

### *Activity Dimension*

The Upper Rhine area is – from the institutional point of view – an extraordinary case. In 1963, the European wide first cross-border institution of the post-war period on the interregional level was founded here (*Regio Basiliensis*). Today, the density of cross-border institutions is extremely high as Map 3 reveals. This ‘institutional thickness’ comprises the *Upper Rhine conference* with its multiple activities, the privately initiated *Metrobasel*, a series of *Eurodistricts* and most recently also initiatives for *EGTCs*. Also the current dynamic is large; notably the *leitmotif* of the *Tri-national Metropolitan Region* is currently discussed in the framework of the *Upper Rhine Conference*.

Even beyond the institutions shown on Map 3, a large variety of cross-border activities can be named: The already mentioned *Regio Basiliensis* is not shown as it is not only based on territories but also on individual and corporate membership. Moreover, from the European perspective, the Interreg space PAMINA might be one of the most prominent cases of active programme involvement (here not shown as it has just been a temporary programme structure). From the scientific perspective, the *Euro-Institute* in Kehl is an inspiring institution for cross-border development. The high degree of institutionalised cross-border activity can also be illustrated by means of the four *Infobest* along the border that aim to inform and help the civil society with regard to cross-border issues.

On the one hand, this ‘institutional thickness’ is witness of the long-standing cooperation and can be inspiration for younger cross-border cooperation. On the other hand, the overlapping institutions are sometimes seen as a challenge for political coordination and efficiency.

### *Spatial development*

The Upper Rhine region has shown remarkable efforts with regard to the territorial development, even if the institutional territory is extremely large and morphologically challenging.

Firstly, the common GIS (GISOR/SIGRS) is developing towards a European benchmark for cross-border territorial monitoring. This is true with regard to data harmonisation and stable institutionalisation of the project. Even if the data basis has to further develop, the currently available output also for planning processes is remarkable.

Also with regard to joint spatial development projects, the Upper Rhine can look back on a series of comprehensive strategic documents – some more general (in particular the spatial vision from 2002), others more specific (e.g. with regard to cross-border commercial areas). Also the more recent strategy for the *Trinational Metropolitan Region* does reflect territorial implications and seems to be a promising input.

### *Transport*

Reflecting on the transport situation in the Upper Rhine region recalls automatically the international Airport of Mulhouse/Basel literally *on* the border between two countries, opened just after World War II: This airport is one of the European symbols for cross-border integrations – even if the airport is not embedded into the rail-network, yet.

The integration of the region into the network of the TENs priorities is considerable (priorities 24 and 28).

On the regional level, the following projects have to be mentioned: In Strasbourg, the extension of the Tram net across the border is an important project. Moreover, the *New Rhine Bridge* in Strasbourg now allows much higher train speed than before.

Near Basel, the Tram line to *Weil am Rhein* is being extended, and also the connection of the airport into the rail net is being discussed.

However, the activity in the transport sector seems to slightly lack behind the ambitious efforts with regard to territorial development strategies. For example, there is neither a

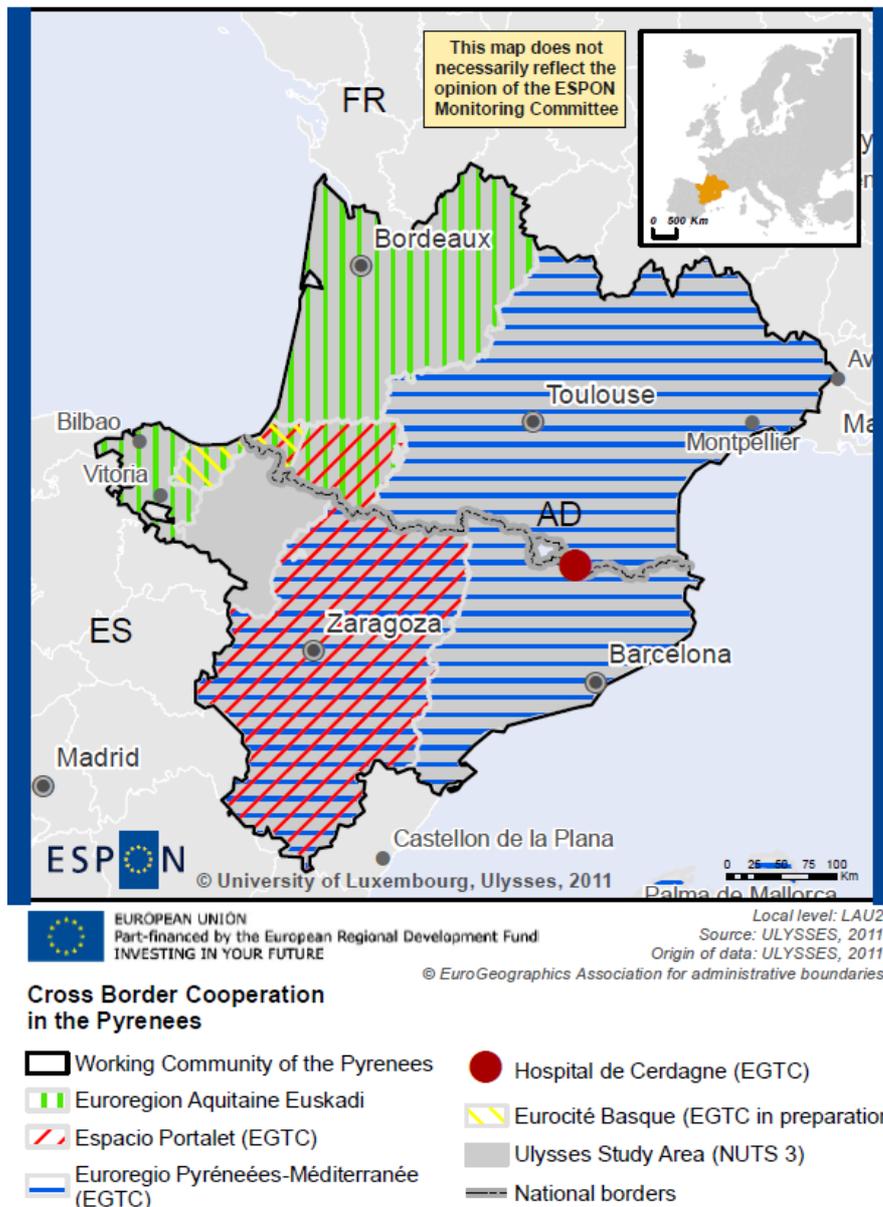
comprehensive transport development scheme, nor has a comprehensive cross-border tariff system in public transport yet been established.

#### *Quantification and categorisation*

Against the background of the *structural dimension*, the analysis of the various indicators as visualised on the European map (see Map 2) states that the borders between the three countries have to be categorised differently: From the perspective of territorial development, the border between Germany and Switzerland has to be categorised as '*link*' meaning that this border is part of the category that comprises the least hindering borders: Language, Schengen treaty, and the federal system are the most striking indicators here. However, the borders France/Switzerland and France/Germany have to be categorised as '*interface*', thus the medium category, as here the obstacles – in particular language and different political systems – are more pressing.

With regard to the activity dimension, the trinational area can be regarded as a common space as the cross-border activities have since long followed a *trinational* logic. This means for the quantification of the data that the mean value has to be applied to the complete institutional perimeter. In the case of the Upper Rhine, the current state has to be categorised as *integrated area* as the continuity and intensity of the activities is scoring relatively high, in particular due to the high number of institutions and strategic documents

## Results for the regional level - Pyrenees (CS 2)



Map 4 Institutional Mapping Pyrenees

### Structural Dimension

The cross-border cooperation in the Pyrenees region is very much characterized by the presence of the mountainous barrier. The situation can be regarded as the most exemplary case of a 'natural' border. The dominant languages of this large border region – Spanish and French – do both belong to the Romantic languages, but still they make up a certain language barrier (which is being complemented by regional languages such as Basque and Catalan).

From a political point of view, the border along the Pyrenees is an 'old' (EU15) border, even if the status of the small state Andorra is a particular one.

With regard to territorial development and spatial planning, the two systems of France and Spain are quite different. From an institutional point of view, France has a much more centralised system even if the local level does have a considerable influence. Spain is much more focussed on the autonomous communities.

On the content side, France traditionally has focussed on the comprehensive approach of *aménagement du territoire* whilst Spain is following to some extent a land use regulation approach without an excessive degree of regulation. So though the region as a whole is often seen as belonging to a Romanistic tradition, the differences should not be underestimated.

#### *Activity dimension*

In this region, the earliest cross-border cooperation institution in the modern sense has been funded in 1983 – the *Communauté de Travail des Pyrénées* which is until today a key institution. The importance of this institution is in particular underlined as it is commissioned to carry out the current ERDF programme of territorial cooperation. In this function, the perimeter is not linked to the *Comunauté de Travail* itself but to the programme perimeter POCTEFA, which is not shown here as it currently is a pure programme structure.

Beyond the *Comunauté de Travail*, a series of cross-border institutions has been established, as shown on Map 4. Most remarkably, perhaps, is the high activity with regard to EGTCs. The Pyrenees have very early explored this new instrument and still new EGTCs are being established.

As on all the institutional mappings, the programme structures are not shown here, so also the *Euroinstitut Catalan* is not mapped, that is linked to the current ERDF funding. Amongst other objectives, the objective of this institution is to offer courses on the administrative details of ‘the other side of the border’, one of the most pressing concerns in many cross-border regions.

#### *Spatial development*

With regard to spatial development, two tools should be mentioned: Firstly, the statistical atlas for the Pyrenees offers some interactive cartography for the border area in a stricter sense. Even if not all kind of data is available yet, the tool is a good starting point for the territorial understanding in the region.

Moreover, some years ago, the *Observatoire des Trafics à travers les Pyrénées* (OTP) has started to publish the development of the Pyrenees traffic, but in recent years, only few publications have been released.

With regard to strategic *territorial development* documents, most available documents are linked to the European programmes. In programming and evaluation documents, the territorial dimension is very present. With regard to a joint territorial vision on the interregional level, in 2005 the study “*l’avenir des Pyrénées dans le context européen*” has built the basis for a political spatial development concept.

#### *Transport*

Because of the high barrier effect of the Pyrenees mountain range, the transport policy is of crucial importance within this region. In recent years, the efforts have been very high in order to make progress in this respect. These endeavours have been successful in particular with regard to the TEN priorities (priorities no. 3 and 16): Not less than three TEN corridors cross the Pyrenees’ border, amongst them the Central Pyrenees Crossing that still has to be concretised.

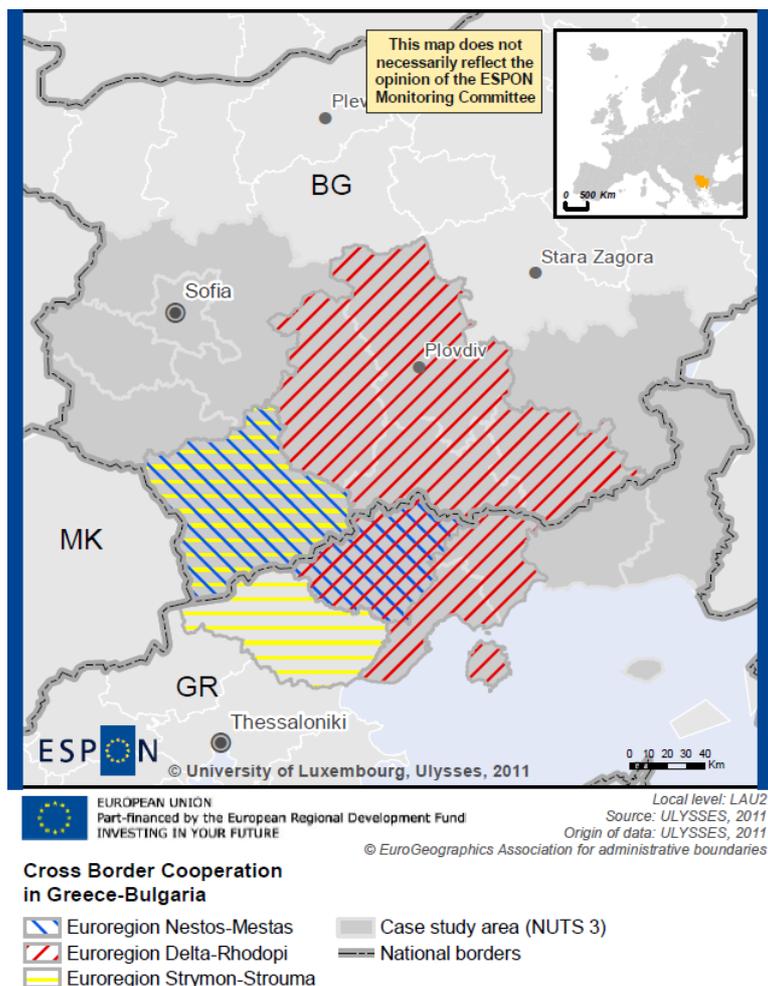
On the regional level, a series of political meetings has taken place. Already in 2006, a joint declaration on transport in the Pyrenees Euroregion has underlined the importance of this policy. Some regional projects have been started, in particular the renovation and reopening of the *Pau-Canfranc* train connection and the EU co-funded renovation of the Tunnel *Bielsa Aragounet*. Still, also in this region, a comprehensive joint cross-border development concept has yet not been detailed.

#### *Quantification and categorisation*

Quantifying the above mentioned aspects by means of the series of indicators described in the methodology chapter, we can state the following: From the structural point of view, the border has to be considered as part of the category '*Interface*', thus, the mediate category with regard to cooperation obstacles. The so obvious barrier function of the mountain range is relativized: In particular the related languages and planning systems of the region still provide a fruitful ground for cross-border cooperation.

The quantitative score with regard the activity dimension belongs the category '*integration*', thus, the category of cross-border activity with the most intensively intertwined areas from either side of the frontier. In the case of the Pyrenees region, the high degree of *institutional thickness* and the numerous efforts to foster strategic development influence the analytical score. The Pyrenees region is, in that sense comparable to the Upper Rhine region, one of the most experienced and most advanced regions of cross-border governance

## Results for the regional level - Bulgaria – Greece (CS 3)



Map 5 Institutional mapping of the border between Bulgaria and Greece

### *Structural Dimension*

The structural situation in this border region is challenging. The two different languages make up a serious linguistic barrier. Moreover, the differences between the political systems of Bulgaria as a transformation state on the one side and Greece as an EU member state since 1981 on the other side are considerable. This is true in general, but also with regard to planning traditions. Bulgaria, as a transition state, has a tradition of highly centralised planning procedures in socialist times. During the last two decades, the systems have been fundamentally reformed, but it takes to establish cross-border cooperation that is adapted to the new planning systems.

In physical terms, the border between both regions is characterised by a hilly and sometimes mountainous terrain.

### *Activity dimension*

Despite the fact that the structural situation is challenging, cross-border cooperation on the regional level does take place, on a technical level even since the 1970s. Given the natural situation of the border region, water management is an issue of high relevance that has led to a large experience of cooperation on this issue. The notion of “Hydro-Diplomacy” illustrates, that this technical cooperation is of high importance for the overall political setting.

With regard to institutionalised cross-border cooperation, three Euroregions have been established during the 1990s. Two of them are currently active, whilst in recent years the Euregion Strymon-Strouma has not been very visible.

The region has been involved in a series of INTERREG (and Phare) projects and promotes the deepening of cross-border interaction. Despite a series of projects, the cooperation in this region is still in a phase of trust building.

On a larger scale, the cross-border cooperation is much reflected in the framework of the Black Sea Economic Cooperation (BSEC) and the Southeast European Cooperative Initiative (SECI). As these institutions are not part of the interregional cooperation, they are not mapped on the institutional mapping above.

#### *Spatial development and Transport*

Spatial planning has not systematically been established as an object of cross-border cooperation, yet. This is due also to the fact, that the cross-border institutions have not yet reached a level of institutional power to exercise such a long term task. This has to be seen against the background, that the decentralisation of the planning systems is still going on and very much linked to European incentives.

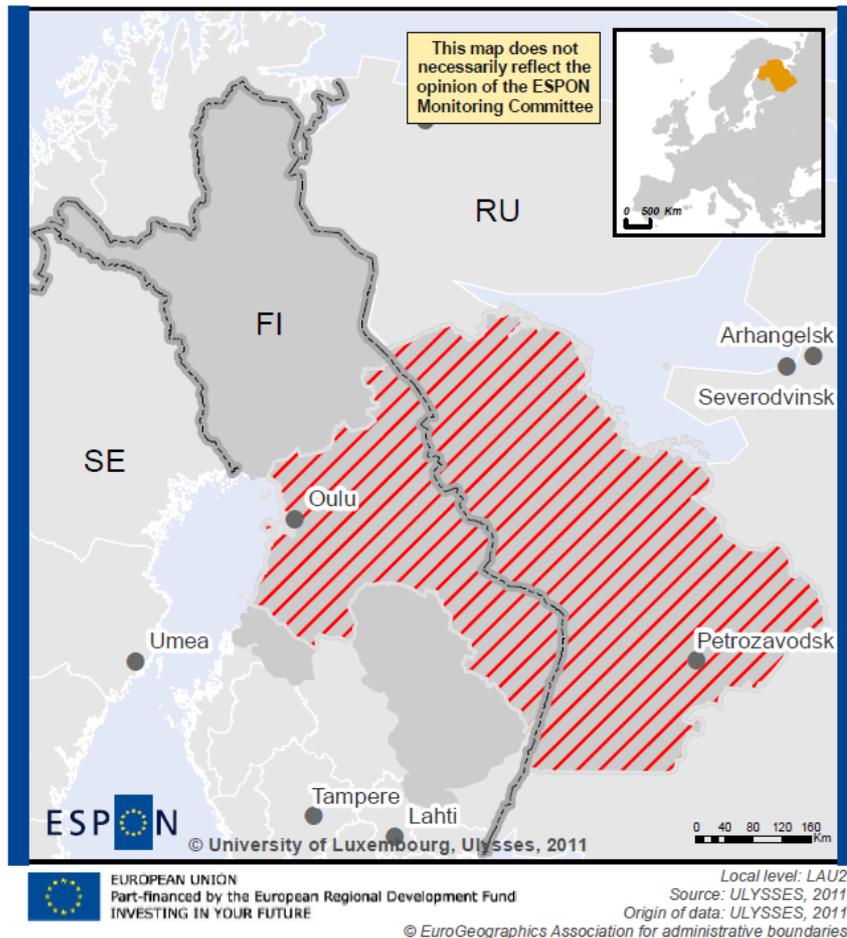
With regard to transport, two aspects have to be mentioned: First, a TEN-T priority has already been realised on the axis Sofia – Athens, crossing the border here. Secondly, a series of EU funded projects for regional transport projects has been established. However, a comprehensive regional transport scheme has not yet been developed.

#### *Quantification and categorisation*

Bringing together the above mentioned aspects and quantifying them by means of the indicators described in the methodology chapter, we get the following picture (see Map 2 and Figure 1 above): With regard to the structural dimension, the border has still functioning as a high *barrier* and is, thus, part of the category assembling the most challenging contexts for cross-border cooperation. This is due to the overall political background, the short history of cross-border cooperation in the sense of territorial development.

With regard to the activity dimension, the quantifying analysis of the indicators results in the category labelled *cooperation*. This category mainly reflects the constant level interregional exchange in recent years.

## Results for the regional level - Karelia (CS 4)



### Cross Border Cooperation in Karelia

-  Euregio Karelia
-  Ulysses Study Area (NUTS 2)
-  National borders

Map 6 Institutional Mapping Karelia

### Structural Dimension

The structural dimension in Karelia is particular. Firstly, the low density of population, settlements and infrastructure has immediate implications also for cross-border cooperation. Secondly, the border is an external EU border with Visa obligations, along which high socio-economic differences have developed; the political systems are hardly to compare; the language barrier is high.

Within the framework of an ESPON project, one has to stress the fact that cooperation across the Finnish-Russian border is not to compare with internal EU cooperation schemes – the political, juridical and functional framework is very different. Still, and despite all barriers, cooperation across external borders is of high political and territorial relevance.

### Activity dimension

The cross-border cooperation in the region is based on the Euroregion Karelia, being established in 2000. This institution is not only the interregional cooperation platform, but in particular the basis for the EU neighbourhood projects (supported by ERDF, TACIS, and

currently the ENPI CBC). The activity in this framework has been and is high – several hundreds of projects have been conducted with regard to economic and cultural cooperation, tourism, environment etc.

Beyond the interregional cooperation, the political cooperation on the multinational level must be considered, notably the Barents Euro-Arctic Council (BEAC), and the Council of the Baltic Sea States (CBSS). These institutions are not visualized in Map 6 as they do not fit the interregional focus of the methodological framework (see above).

Summarizing the institutional setting, one can state that – despite the relatively difficult structural context, cross-border cooperation does take place in multi-faceted and increasing way. Still, the difference to internal EU cooperation is – not surprisingly – very obvious.

#### *Spatial development and Transport*

With regard to transport policy, the overall limited activity is due to the very limited population density in this region: The TEN-T priorities do not touch the Karelia perimeter – the TEN-T priority 12 (Nordic triangle) passes south of the perimeter.

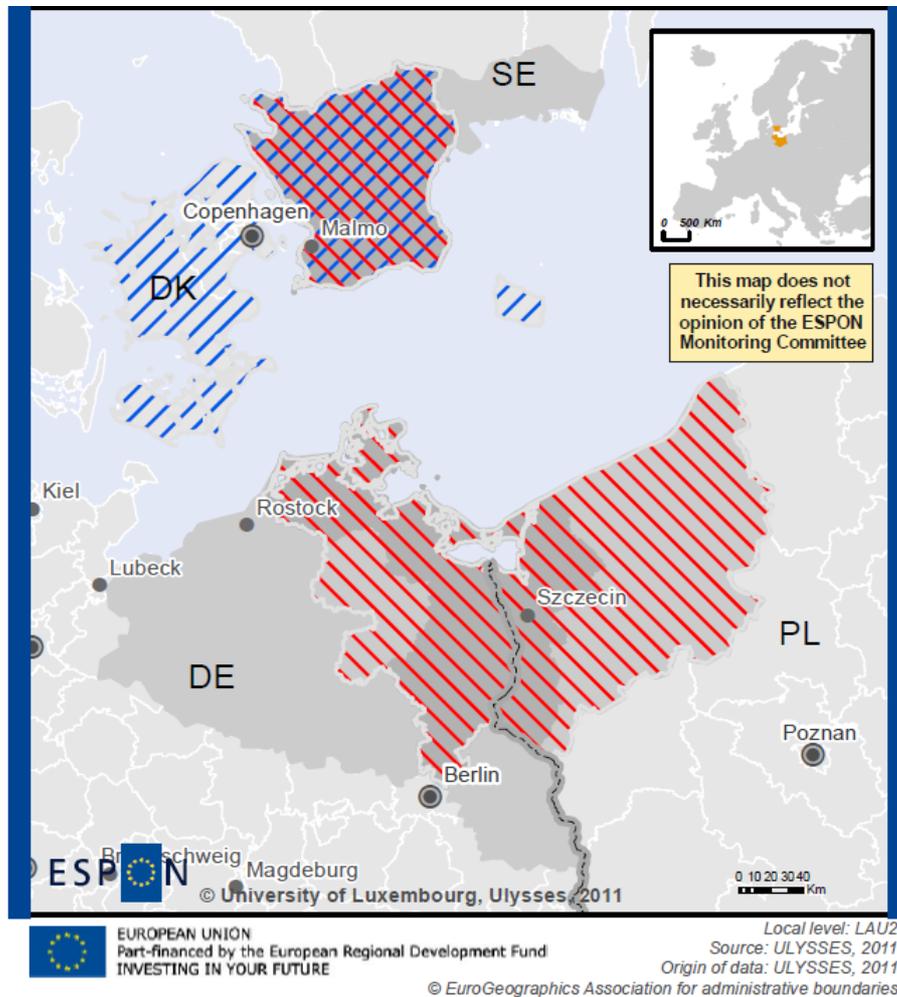
On a bilateral level, the *Barentslink* initiative has been very active in order to promote better large scale accessibility. On the regional level, a series of punctual improvements has been achieved in the framework of neighbourhood programme: The Karelia cooperation aims explicitly at improving the transport situation, in particular with regard to border crossing.

Neither a spatial planning nor the transport policy has been institutionalised on a cross-border level, yet. However, in particular two documents have so far developed a strategic framework for cross-border cooperation, considering systematically the territorial dimension.

#### *Quantification and categorisation*

Map 2 shows the synthesis picture also for the Karelia region: When bringing together the series of indicators, both the structural and the activity dimension in this region have to be classified in the categories that comprise the most challenging constellations. The border clearly has still the function as *barrier*, as both the socio-economic as the political situation on either side of the border is very differing. The activity dimension has to be summarised as *neighbourhood* in the sense that a series of cross-border cooperation projects has already been implemented, but that institutionalisation of cross-border cooperation beyond temporary programme structures is still rare. This is primarily a consequence of the particular political situation at the border between the EU and Russia.

## Results for the regional level - Pomerania (CS 5)



Map 7 Institutional mapping Pomerania

### Structural Dimension

The particular situation in the Pomerania region brings together a land border and a sea border that separate three nation states with very different institutional settings and traditions. The language barrier between Sweden and Germany is less high than the Polish-German one, but so called semi-communication also is not possible in this case, either (semi-communication = understanding the other language without having learned it). From a political point of view, three different traditions meet here – the Scandinavian, the transformation and the Germanic tradition come together. Against this background one must state that the structural dimension is challenging.

### *Activity dimension*

Also with regard to the cross-border activity, the cross-border cooperation is a particular one as the cooperation is not only characterised by the trinational platform of the Euroregion of Pomerania, but also by further bi- and multi-lateral cooperation.

Firstly, and although not part of the Pomerania cooperation, the Öresund committee has to be mentioned in this context: The cooperation between Sweden and Denmark (Malmö and Copenhagen) has become one of the most famous cooperation.

Secondly, the cooperation between Poland and Germany as well as between Germany and Sweden is very much organised in a bilateral way on different levels. In particular the Polish-German cooperation on the interregional and the intermunicipal level is a prominent part of the Euroregion Pomerania activities in recent years.

Thirdly, and on a larger scale, much activity can be seen on the multilateral level: in particular the Baltic Sea States Subregional Co-operation (BSSSC), the Council of the Baltic Sea States (CBSS), Union of the Baltic Cities (UBC), the Baltic Development Forum and, most recently, the Baltic Sea Macro Region process have to be mentioned in this context (all of them are not included in Map 7 as they are not fitting the interregional methodological scope of this work).

This enumeration illustrates that the number of institutions on this level that is far higher than the interregional cooperation. This is mainly due to the multi-national character of the Baltic Sea as a political object. The political setting in this region makes multi-national cooperation even more important, as EU and non EU member states and very different political traditions are meeting here.

### *Spatial development and Transport*

The tri-lateral aspect of the cooperation is most visible within the transport policy: The sea is linking all the three partner regions, that are involved in the TEN-T priority 'Motorways of the Sea'. Linked to this is a large variety of seaway projects (clean shipping, technical harmonization etc.). Moreover, the *Central European Transport Corridor ("Route 65")* has mobilised considerable activity in recent years.

On the bilateral level between Germany and Poland, a series of projects has been initiated in recent years, in particular linking Berlin and Szczecin.

On a more local level, the agglomeration of Szczecin is currently developing its cross-border linkages in the direction of Berlin: the Szczecin Cross-border Development Plan is being developed.

Moreover, the Pomerania region is influenced by two major cross-border transport projects that are not in the core of the Pomerania perimeter: The *Öresund Crossing* between Sweden and Germany – combining bridge and tunnel and opened in 2000 – is one of the symbols for European cross-border development. Moreover, the preparation for the so called *Fehmarn Belt* between Denmark and Germany is maybe the most spectacular current cross-border project that without a doubt will have direct consequences also for the Pomerania region.

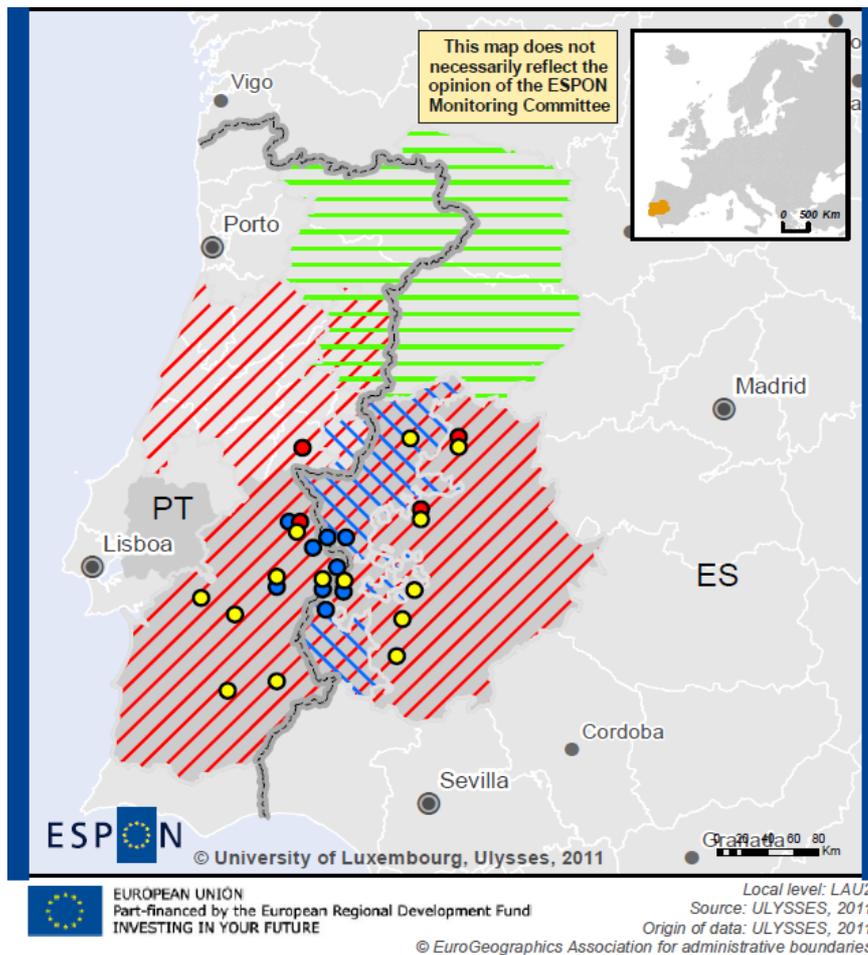
With regard to spatial development, in 1995 the German-Polish concept for spatial development was a starting point for spatial development. The 2006 development and activity concept of the Euroregion consequently formulates principles of cross-border German development even if it remains quite abstract with regard to spatial consequences.

### *Quantification and categorisation*

The mapping of the institutional situation in the main report shows for the Pomerania region the following picture: the border between Germany and Poland as well as the border between Germany and Sweden has to be categorised as *interface*, thus, as the medium category for border effects. In the first case, the fact of having a sea border is to be named; in the second case the difference of the political systems and the different policies of territorial development have to be named. The border between Sweden and Poland – as a sea border separating very different traditions of territorial development – is part of the category *barrier*.

Considering the different quantified data explained earlier, and with regard to the activity dimension, the Pomerania region has to be assigned to the category *cooperation*: As explained above, this averaged classification conceals to a certain extent the importance of bi-lateral cooperation on different political levels. Still the overall assessment of a certain institutional thickness and strategic orientation is very true.

## Results for the regional level - Extremadura – Alentejo (CS 6)



### Cross Border Cooperation in Extremadura-Alentejo

- Euroace
- Duero Duero (EGTC)
- Raya a Raia
- Citynetwork Agrupación 7X7
- Citynetwork Triurbir
- Euroregión Extremalentejo
- Ulysses Study Area
- National borders

Map 8 Institutional Mapping of the region Extremadura – Alentejo

### Structural Dimension

The Extremadura/Alentejo border separates two Iberian countries that share some important characteristics. The overall political and the planning systems show some similarities, and the languages allow to a certain extent semi-communication (reciprocal understanding without being fluent in the respective language). Also from a morphological point of view, the border does not represent a major barrier.

### Activity dimension

The cross-border cooperation in the region can look back to a large experience of EU programme based projects, currently in particular as the INTERREG platform POCTEP. Only recently, in 2009, the involved regions have founded the joint institution of “Eurace” that is comparable to the ‘classical’ Euroregion we know from other parts in Europe. Nevertheless, the concentration of cross-border cooperation on different levels is high as Map 8 reveals

(city-networks and interregional cooperation). Currently, the dynamic is high as not only the foundation of *Eurace* but also the presence of new EGTCs show.

#### *Spatial development and transport*

An interactive cartographic tool has been established and is accessible online, in parallel with the endeavours in the Upper Rhine region and in the Pyrenees region.

The recent strategic document *Eurace 2020* not only gives a comprehensive territorial analysis of the cross-border setting but also defines strategic guidelines and objectives that are ambitious. One has to admit that this document is the outcome of an outsourced study and has to be concretised and implemented in a political way. But the step towards a joint transport and territorial development strategy would be the next logic step.

#### *Quantification and categorisation*

From a structural point of view, and considering the quantified indicators discussed earlier, the region has to be classified as follows (see Map 2 and Figure 1): from the structural point of view, the area has to be assigned to the category *link* as it brings together quite comparable political systems with regard to territorial development, but also with respect to the socio-economic structure.

With regard to the activity dimension, the region belongs to the medium category *cooperation* as – despite the current dynamic – the intensity of institutionalisation in cross-border cooperation has been limited as the quantified indicators clearly show. It is of high relevance what kind of output the current institutional dynamics will show in the coming years.

### **3.2. Data Fact Sheets**

As already stated in Section 2.2, DFS have experienced a delay that makes impossible to present interim results at this stage. According to the contingency plan designed by out TPG, those results will be included in the Draft Final Report due for February 2012.

## 4. Next steps towards the Draft Final report

The Draft Final report will take into account feed-back on the Interim report from the ESPON internal seminar due for November 2011 in Cracow, as well as by the Second Joint Workshop with the stakeholders that will also be held on late November 2011 in Barcelona. The Draft Final report will present the final results of the project and focus on relevant conclusions and recommendations. The report will include draft final versions of all expected project deliveries, including CS and DFS.

### 4.1. Case studies

In relation to CS, there are two additional research activities that have started recently or are due for the following months. These activities should address two essential aspects of the investigation, namely integrated analysis and scenarios (Task 2.4) and conclusions and policy recommendations (Task 2.5).

As planned in the Inception Report, Task 2.4 has two main objectives:

- On the one hand, it aims at bridging results of Task 2.2 - Multi-scale performance analysis with those generated by Task 2.3 - Institutional performance analysis;
- On the other hand, it seeks to investigate how Ulysses CS areas are positioned in relation to three scenarios produced by a previous ESPON project.

As planned in the Inception Report, the **integrated analysis** has already commenced, according to a simplified methodology organised in a two-step procedure:

The **first step**, which has already been achieved (see Map 2), deals with the classification of particular thematic issues derived from Task 2.3, basing on a straightforward qualitative methodology. This methodology has included: (i) codification of the institutional mappings produced by Task 2.3 through interpretive techniques; (ii) transformation of these codes into 6 classes; (iii) visualisation of results.

The **second step** which is going to start promptly, aims at linking the themes examined by Task 2.2 and the institutional mappings produced by Task 2.3. This will be achieved by means of analysis of variance:

- A factor analysis will be used to identify the most important institutional factors explaining the variance of the performance indicators related to Lisbon and Gothenburg strategies;
- A cluster analysis will allow identifying groups of similar regions, handling in isolation, as above, the institutional indicators classified by the previous task.

The scenario analysis will be delivered comparing a “business as usual” linear projection of current data for the year 2030 to a selection of three relevant scenarios generated under ESPON project 3.2 - Spatial Scenarios and Orientations in relation to the ESDP and Cohesion Policy.

The last (but not least) challenge faced by Ulysses project towards the Draft Final and Final reports will be to produce a sound and overarching array of **conclusions and policy recommendations** at regional, cross-border area, national and EU scales. In this respect, the scheme will be to (i) interrelate the results produced from previous tasks; (ii) summarise the key points as main findings, and; (iii) wrap up those findings into relevant policy recommendations, which will be presented as strategic guidelines at various scales (region, CBA, national and EU levels).

#### **4.2. Data Fact Sheets**

Data fact sheets should be completed in the following weeks. For that scope, to get a clear picture on what information is available at the NUTS3 level for all DFS areas is a must. As explained in Section 2.2, this will be achieved by circulating among the stakeholders a new appeal for data collection. This appeal will be issued during October 2011, including:

- An Excel file containing a restricted list of ESPON or EUROSTAT indicators for which stakeholders will be asked to fill data gaps as far as possible.
- A final delimitation for each DFS at NUTS3 level, which will be presented to respective stakeholders for validation.
- An example of a finalised data fact sheet for the only area that falls entirely within ESPON.

As explained in Section 2.2, in case this appeal is unsuccessful, DFS will be completed relying exclusively on the data available from public domain databases, according to the demarcation presented. In any case, resulting DFS will be annexed to the Draft Final Report.



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