ESPON BSR-TeMo

Territorial Monitoring for the Baltic Sea Region

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1 Territorial cohesion

1.1 Concept

Although included in the Treaty of Lisbon (Article 3) and becoming one of the main important horizontal objectives of the EU policies, the territorial cohesion lacks a precise, commonly shared definition. This has been highlighted by many researchers (Davoudi 2005; ESPON 2004, 118; Faludi 2005; Medeiros 2011, 11; Mole 2007, 98; Böhme 2011, 2; Farrugia, Gallina 2008, 7). Böhme (2011, 2) even argues that "over the last years, debates have shown that a precise definition of territorial cohesion is impossible. Because different groups of stakeholders focus on different dimensions of the territorial cohesion idea, any attempt to define it will exclude certain understandings and thus lead to a poorer result." Zillmer and Böhme (2010, 1) go so far as to say that a formal definition might be the end of the use and popularity of territorial cohesion. However, although vague the concept as such has been appreciated and widely recognised (Dühr *et al*. 2010, 188-189), and even considered as a potentially powerful conceptual innovation by the Commission (Camagni 2011, 79).

Faludi (2004, 1349) argues that the original focus of the concept of territorial cohesion has been regional economic development. Also in the Territorial Agenda of EU (Territorial Agenda 2007, 2) territorial cohesion is perceived not as a developmental goal as such (i.e. the desired state of territory) but rather as a "prerequisite for achieving sustainable economic growth and implementing social and economic cohesion". However just a year later, the Green Book (European Commission 2008) proposed a much broader approach by placing an integrated pattern of policy making and the state of territory (its diversity as a developmental resource) under the same heading for the first time. This interpretation raises the status of the territorial cohesion to that of an important development goal.

There are only a few comprehensive definitions of territorial cohesion in the contemporary literature[1]. For instance, Faludi (2009) considers territorial cohesion as a „situation whereby policies to reduce disparities, enhance competitiveness and promote sustainability acquire added value by forming coherent packages, taking account of where they take effect, the specific opportunities and constraints there, now and in the future. Territorial cohesion policy refers to measures promoting good territorial governance with the aim of achieving coherence as described". The farthest-reaching understanding of the concept of territorial cohesion has been proposed by the European Council of Spatial Planners. They perceive territorial cohesion not just as a means to achieve a more effective policy-making but rather as an overarching (macro) goal of the policy, where the social, economic and spatial dimensions of the territorial cohesion are resonated in three horizontally integrated policies: social, economic and spatial. In such a case territorial cohesion might be considered as "the Connectivity of and among Economic, Social and Physical Systems, which enhances their overall Effectiveness for innovative Sustainable Development" (Vogelij 2010, 2).

Also the recent key EU spatial document, the Territorial Agenda of the EU 2020 (2011), has not resulted in a commonly shared definition of the territorial cohesion. However, the process dimension of the concept has been once more strengthened by stating that territorial cohesion "is a set of principles for

[1] For a comprehensive list see Medeiros (2011, 12)

harmonious, balanced, efficient, sustainable territorial development". The following principles have been mentioned in this context: equal opportunities for citizens and enterprises wherever they are located; convergence between the economies of better-off territories and those lagging behind; development best tailored to the specificities of an area; as well as continued networking, cooperation and integration between various regions of the EU at all relevant territorial levels.

In EU member states the meaning of territorial cohesion varies slightly. The most common interpretations of the notion are summarised below (Szlachta and Zaucha 2010):

- territorial cohesion as a means of enforcing territorial aspects in general, and in economy, social planning and decision-making in particular,
- territorial cohesion as a method of planning and development taking into consideration the territorial capital (potential) of places, settlements and regions, and their interrelations,
- territorial cohesion as an addition to economic and social cohesion, to include also the areas with geographic disadvantages (like mountain areas, islands, areas with severe climate, geographically remote areas or border areas).

The most extensive conceptual analysis of territorial cohesion has been provided by Camagni (2010), namely the Tequila Model. The model, appearing also in the ESPON 3.3 project (ESPON 2005, part 2, 77), enumerates the following components of the territorial cohesion: (1) territorial quality, (2) territorial efficiency, (3) territorial identity. The model:

- acknowledges the key role of the territory in growth achievement by stressing territorial aspects of competiveness, efficiency in the use of territorial resources etc.,
- underlines the importance of territorial factors for achieving eco-development,
- highlights the "territoriality " of many social factors such as culture or social capital that play important role in sustaining growth but also in direct satisfaction of human needs.

The Tequila model properly encapsulates different roles of the territory that make the territorial cohesion concept so complex. It shows the territory as a growth resource (economies of agglomeration, natural resources, accessibility etc.), an indispensable frame securing interactions between development agents (diffusion of values, attitudes and ideas etc.), a unit for addressing public policies and, finally, a public good for satisfying human needs (cultural landscapes, lack of urban sprawl, transport infrastructure etc.). The model highlights the important dichotomy of territory in human life: i.e. its function as the vehicle for achieving other important goals such as prosperity or social justice, and the role of the ultimate objective of human activities. Sometimes the functions reinforce each other e.g. cultural landscapes can enhance tourism and increase prosperity of a given place; in some cases they might be in conflict, though. The model is in line with the understanding of the territorial cohesion as provided in the *Territorial State and Perspectives of the European Union* report (Damsgaard *et al*. 2011) in which cohesion is seen as a concept amalgamating diverse development paradigms such as convergence (polycentricity), sustainability, territorial competitiveness and regional vulnerability.

Recently the Tequila model was critically assessed by Medeiros (2011, 17) who criticised the model for paying insufficient attention to the concept of polycentric development and territorial governance among others. Thus Medeiros (2011) proposed the Star Model that features four dimensions:

- Socioeconomic cohesion dimension, also referred to as the distribution dimension of the territorial cohesion, is the economic and social cohesion interpreted in the traditional way, treated as part of the territorial cohesion pursued in order to alleviate excessive socioeconomic imbalances in space (the origin of the territorial cohesion concept).
- Environmental sustainability dimension following the ESDP idea of wise management of the natural and cultural heritage under which environmental consequences of territorial processes should be considered, i.e. the contribution of territory to conservation and development of nature or climate change adaptation and mitigation etc.
- Territorial polycentricity dimension (mainly morphology) following the ESDP idea of polycentric and balanced spatial development in the EU as a fundamental goal of territorial development also contributing to the socioeconomic cohesion.
- Territorial cooperation/governance dimension covering two aspects of one process – that of bringing territories closer together. The territorial governance is understood both as a (i) "process of the organization and co-ordination of actors to develop territorial capital in a non-destructive way in order to improve territorial cohesion at different levels" (Medeiros 2011, 22 drawing on ESPON 2006, 13) and as (ii) territorial co-operation offering an alternative to the typical 'hierarchical type of government (Medeiros 2011, 23) and allowing to integrate public and private actors in management of territories.

As a by-product of the search for territorial cohesion indicators, also the INTERCO project came up with proposals of the main dimensions of territorial cohesion (Böhme 2011; Gløersen and Böhme 2011): strong local economies ensuring global competitiveness; innovative territories; fair access to services, markets and jobs; inclusion and quality of life; attractive regions of high ecological values and strong territorial capital; and integrated polycentric territorial development (ESPON 2011, part B, 11).

Finally, one of the best descriptions of the content and the scope of territorial cohesion is provided in the ARL paper that identified five key points illustrating what territorial cohesion is about (Böhme *et al*. 2008):

- recognizing the territorial diversity,
- identifying potentials in relation to integrated development strategies in line with geographical specificities,
- acknowledging the territorial context, e.g. endogenous development potentials and fragilities, as well as exogenous factors such as the impact of developments in other territories, and the impacts of different sectoral policies at various levels of decision making,
- ensuring fair access to infrastructure and services,
- refining governance processes to encapsulate local and regional tacit knowledge and resources, needed for the development of integrated strategies and the identification of territorial potentials and fragilities.

Despite all of these documents, models and discussions, the concept of territorial cohesion tends to remain general, referring to territorial diversity and harmonious development of all places (which is perhaps the reason for its attraction and common acceptance). The analysis conducted above may, nevertheless, lead to some conclusions on the essence and evolution of the concept of territorial cohesion:

- Firstly, territorial cohesion has become a separate, independent goal of the EU on equal footing with economic and social cohesion, and in some models it is even treated as an umbrella concept embracing the latter.
- Secondly, territorial cohesion brings to the forefront the necessity of temporal trade-offs, due to domination of the long-term perspective in the territory-shaping processes.
- Thirdly, territorial cohesion pinpoints the need to take into consideration specificities of different types of territories in different types of human activities and interventions.
- Fourthly, territorial cohesion remains a heterogeneous concept covering different issues. Two of them, however, seem to be the most prominent: governance (the integration of policies affecting the same territory in order to improve policy efficiency) and territory as a development asset (territorial capital, territorially bound social, institutional and natural resources).
- Fifthly the concept of territorial cohesion carries with it important concerns about trade-offs between growth and other values shared by societies and expressed in the process of public choice (in a similar way as concepts of economic and social cohesion do).

1.2 Policy discourse

In the VASAB documents the notion of territorial cohesion as described above plays a prominent role although its meaning has evolved in line with the changes in the spatial structure of Europe, its political and economic geography, the quality of life of European citizens, and the consciousness of an average citizen.

For instance the initial VASAB document (VASAB 1994) was based on four values: development, environmental sustainability, freedom, and solidarity. A more thorough examination of what VASAB promoted in its vision eighteen years ago (VASAB 1994, 52-54) reveals its building blocks i.e. the ideas of: regional integration, economy of flows, agglomeration economies (also through networking), sustainable development, enhancement of local endogenous potential, integrative approach to programming development and balanced socio-economic development in space (with focus on specific types of territories). Integration was given a prominent place not only due to the efficiency reasons but also as an axiological paradigm of enhancement of "mutual enrichment among regions and nations" (VASAB 1994, 52). In that vision the concept of spatial cohesion was also put forward (VASAB 1994, 10-11) as a complement to economic and social cohesion. Nowadays it might be interpreted in the context of economy of flows (networking and co-operation), but its initial focus seemed to be on counteracting territorial disparities in growth and prosperity.

In the recent VASAB strategy (VASAB Long-Term Perspective for the Territorial Development of the BSR (LTP)) (VASAB 2009) territorial integration still remains an important development objective, while more attention is given to the notion of territorial cohesion (Zaucha and Fischer 2009, 624). In fact, the LTP is written as an illustration of how regional co-operation such as VASAB (ministerial network) can complement the EU Cohesion Policy with a territorial dimension and how it can enhance territorial cohesion at a larger geographical scale – both terrestrial and maritime. The meaning of territorial cohesion has changed since 1994 though. It evolved towards being an umbrella concept that captures the contribution of territorial structures to development. The concept should not be mistaken for the convergence of the well-being or level of living in space but it rather points towards accumulation and maintenance of the territorial capital and/or more integrative management patterns in space (i.e. the integration and territorialisation of policies).

A similar transformation of the understanding of the notion of the territorial cohesion can be observed in the debate powered by the documents prepared by the EU Commission, mainly the Cohesion Reports (CEC 2001; 2004b; 2007; 2010). This evolution can be summarised by the following observations:

- From a static concept of the state of a territory to a dynamic concept of policy integration in line with the specificity of the given territories,
- From the vehicle or instrument used to achieve social and economic cohesion to a genuine, independent EU objective,
- From a redistributive approach advocating spatial equalization of prosperity to the recognition of the importance of territorial factors in the process of development and satisfaction of human needs.

One should keep in mind that in the policy making system of the EU, territorial cohesion is mainly seen as a shared responsibility of the member states and the EU Commission. The intergovernmental process has been described in the inception report as well as attempts of territorialisation of EU2020; therefore more attention is paid to the EU Cohesion Policy here.

Territorial cohesion has become the legitimate component and dimension of the European cohesion policy as a new goal of the EU introduced by the Treaty of Lisbon (Art 3. TEU). In 2009 Barca proposed the "place-based approach" as a vehicle for implementation of the territorial cohesion in practice; i.e. as an instrument pursuing integrative territorial approach to policies. His "place-based approach" puts emphasis on endogenous potentials (both already accumulated and potentially obtainable by a given territory) and adjusts intervention to the spatial (territorial) context of local or regional specificity. Barca also highlights the role of appropriate institutional set up processes able to foster a dialogue between endogenous and exogenous developmental forces.

Territorial cohesion has been introduced to the programming of EU interventions financed from the Structural Funds. In the Commission Staff Working Document, Elements for a Common Strategic Framework 2014 to 2020 (CEC 2012), an emphasis was put also on integrated territorial development. The adjective "territorial" implies development which pays attention to specific features and endowments of different EU territories and regions. Therefore the Commission will want the Member States to make the programmes - launched under the Common Strategic Framework *(*CSF) i.e. the former Structural Funds - reflect the diversity of European regions "whether in terms of employment and labour market characteristics, commuting patterns, population ageing and demographic shifts, cultural, landscape and heritage features, climate change vulnerabilities and impacts, land use and resource constraints, institutional and governance arrangements, connectivity or accessibility, and linkages between rural and urban areas" (CEC 2012, 12). This statement might be considered as an indication of territorialisation of the EU programming process and abandoning territorially-blind approach based on the "one model fits all" principle. When designing their partnership contracts and programmes the Member States and regions should therefore take into account, among others, development potential and capacity, the major challenges, bottlenecks and missing links and innovation gaps, and come up with solutions based on a functional geography, i.e. transcending administrative boundaries and national borders in a similar way as the challenges do. The Commission will also ask the Member States to apply an integrated approach that would link the Europe 2020 Strategy with regional and local actors when developing the partnership contracts.

The proposal of the Common Provision Regulation also identifies eleven thematic objectives. This should allow for a concentration of funds and increase the

efficiency of the EU interventions. Unfortunately at present the objectives are spatially blind. Their final territorialisation will depend on the determination of the Member States to pursue the paradigm of territorial cohesion in policy implementation in practice. Thus at this stage it is extremely difficult to find out which type of territorial indicators will be necessary for the preparation of partnership contracts and operational programmes. One can only guess that they might include standard accessibility indicators to education and ICT; indicators dealing with transport and general accessibility; indicators related to territorially bound resources within – first of all - the domain of renewable energy; indicators on poverty, inclusion, human capital and social capital at a low (local) level of spatial resolution; indicators on functional labour markets, networking and economy of flows; on fragmentation and connectivity of biotopes, and – last but not least - on several spatial aspects related to exploitation of the maritime space. However, this is only a guess.

A new instrument introduced by the EU Commission in co-operation with the Member States to foster development in broader continuous areas is the macro-regional strategies. Adopted by the European Commission in June 2009 and endorsed by the European Council in October 2009 (CEC 2009), the European Union Strategy for the Baltic Sea Region is currently subject to revision. The quite sector oriented strategy is expected to become of a more integrated nature and be furnished with concrete targets. The Commission (CEC 2012c) proposed, in March 2012, the following three overall objectives for the Strategy: saving the sea, connecting the region, and increasing prosperity. Analysing a draft of the revised strategy (CEC 2012d) one can estimate a demand for territorial monitoring efforts in the future in relation to the BSR development. The key territorial processes and phenomena that would require monitoring will be the following:

- development of intelligent transport corridors on the sea (in relation to safe shipping),
- development of trans-boundary maritime spatial planning (in relation to better operation),
- changes in accessibility and connectivity and quality of TEN-T core and comprehensive network elements (in relation to good transport conditions),
- changes in prosperity and diminishing divides (e.g. GDP/per person, HDI index, employment rate, expenditures on R&D, labour productivity) – the problem is that these indicators should be measured at the level of sub regions (NUTS2/3) instead of at the BSR level only to show the territorial EU 2020 pattern (in relation to prosperity),
- implementation of the VASAB LTP (in relation to the renewed horizontal action).

1.3 Baltic filter

In order to identify the main components of the BSR territorial monitoring system, the European territorial debate described in the inception report should be translated to the Baltic Sea Region's specificity and priorities. The results are presented in the table below which features the specific components of the European territorial discourse that were given a prominent place in such VASAB strategic documents as:

- the strategy of 1994 (VASAB 1994),
- the key themes of 2001 (VASAB 2001),
- the key challenges of 2005 (VASAB 2005),
- the action agenda of 2009 (VASAB 2009).

Table 1: Correspondence between European and BSR goals and priorities for territorial development

	EU territorial goals, options and principles	EU strategy for the BSR	Main VASAB documents identifying priorities for spatial development of the BSR			
	Key components of European territorial debate (aims, goals, priorities)		**VASAB strategy of 1994**	**VASAB key themes of 2001**	**VASAB key challenges of 205**	**VASAB action agenda of 2009.**
1.	Balanced territorial development encompassing different types of territories	+ (indirectly in relation to LTP)	++	++	++	++
2.	Polycentricity of the settlement structure	+ (indirectly in relation to LTP)	+	++	++	++ (SMESTO development)
3.	Quality of urban nodes, dynamism and competitiveness of cities, sustainability of their structures, their integrated development	+ (indirectly in relation to LTP)	++	++	++	++
4.	Networking and co-operation between cities, city regions	+ (indirectly in relation to LTP)	++	++	++	++
5.	Functional areas including urban rural co-operation, integration of border areas, coastal zones	+ (indirectly in relation to LTP)	++ (urban, rural, border, coastal zone, islands)	++ (transnational development zones, rural areas, coastal zone, islands)	++ (transnational development zones, coastal areas)	++ (urban, rural)
6.	Access to services of general economic interest				+	
7.	Territorial assets/territorial capital (e.g. cultural landscapes, natural and cultural heritage, trust etc.)	++ (sea space)	+ (mainly cultural landscapes)	+ (mainly cultural landscapes)	+ (sea space)	++ (sea space, local capacities for change)
8.	Critical green mass, for instance: green networks, ecological corridors and preservation of areas of high ecological value	++ (in relation to sea mainly)	++	++		
9.	Access to knowledge and diffusion of innovation	++				++
10.	Regional clusters of competition and innovation	+ (indirectly in relation to LTP)			++	++
11.	Transport accessibility, connectivity, parity of access to technical Infrastructure, development of TEN-T	++	++	++	++	++ (including ICT)
12.	Inter-modality of transport and greening of transport	++	++		++	++ (motorways of the sea)
13.	Territorial governance, coordination of policies influencing the same territory		++		++ (territorial dimension of development policies)	

14.	Diminishing territorial divides or alleviating their consequences[2]	++	+	+		+ (integration of Russia into BSR)
15.	Developing energy resources	++	++			++ (incl. transmission grid)
16.	Sustainability of tourism development					
17.	Trans-European risk management including the impacts of climate change and preparedness to natural and man-made disasters	++				

Own elaboration

The analysis reveals a rather stable picture of the BSR priorities for territorial development. It can be noticed that within the last 13 years only few new elements i.e. innovation and clusters (at the expense of nature protection) were added. One should also keep in mind that in the recent VASAB report of 2009 some demographic issues related to social cohesion and maritime spatial planning were considered as an important field of joint spatial actions. In fact, they were assigned a more prominent role than in the Territorial Agenda of EU 2020 where they were mentioned under challenges and as parts of implementation mechanisms respectively.

The aforesaid analysis might help identify the main components of the territorial development as presented below and embed them into a framework for the BSR territorial monitoring system. Some elements of the European territorial discourse, less frequently mentioned in the BSR documents, have been merged into the more popular ones. The least frequently quoted ones have been completely left out.

1) Balancing territorial development, diminishing territorial divides or alleviating their consequences (paying attention among others to the integration of Russia into the BSR)
2) Maintaining at least the existing polycentricity level of the settlement structure and – consequently – ensuring access to services of general economic interest for the entire BSR population
3) Ensuring high quality of urban nodes (dynamic competitive and sustainable large and small cities), and their networking (cooperation of cities and city regions) with focus on diffusion of innovation and enhancement of knowledge-based development
4) Emergence and development of regional clusters of competition and innovation
5) Integrated development of functional areas with focus on:
   - Urban-rural cooperation
   - coastal zones
   - islands
   - integration of border areas
6) Development of territorial assets/territorial capital
7) Wise use of the sea space
8) Eco-resilience; for instance: green networks, ecological corridors and preservation of areas of high ecological value

[2] The main divides that VASAB has always referred to are between more and less affluent countries (E-W divide), between countries with low and high population density (N-S divide), and between rural and urban areas (U-R divide).

9) Ensuring accessibility, connectivity and parity of access to transport and ICT infrastructure, and development of TEN-T
10) Enhancement of inter-modality of transport and greening of transport, including motorways for the sea and short sea shipping
11) Development of renewable energy resources (also at sea) and the BSR transmission grid (integration of energy infrastructure in the BSR)
12) Territorially oriented governance (including vertical and horizontal integration of policies)

One can take the listed twelve points as the BSR specific operational interpretation of the concept of territorial cohesion. Therefore territorial cohesion by BSR circumstances can be defined as an overarching (macro) goal of different types of policies, prompting them to support an integrated territorial development of the BSR[3]. Such development requires integration of policies and their mutual (vertical and horizontal) coordination in relation to their impact on the BSR territory. The BSR specific objectives constituting territorial cohesion that have been listed and agreed upon in the strategic BSR documents include: diminishing territorial divides; enhancing polycentricity of development; contributing to sustainable city (urban regions) development and their networking and co-operation; facilitating formation of functional regions in particular those related to innovations and the knowledge-based economy but also those with specific territorial endowments; promoting wise use of territorial assets (immovable assets or territorial capital); enhancing accessibility and connectivity and parity of access to transport and ICT infrastructure; diminishing pressure on the natural and cultural environment; and finally opening of the space of the Baltic sea for sustainable development. In brief, the desired process resulting from the application of the notion of territorial cohesion is policy integration and territorialisation (making them place-based or territory sensitive) whereas the desired state of territory is depicted by the aforesaid objectives or priorities agreed upon by the BSR countries.

The monitoring system should try to measure both aspects of territorial cohesion, while being aware that measuring the territorial cohesion process can be extremely difficult and complex. Moreover, any monitoring system – if tailored to the BSR needs – should also provide spatial planners with clear measurement of the BSR divides as an important contextual factor conditioning the BSR policies and efforts. The system should also be flexible enough to take advantage of and serve the monitoring purposes of the EU Strategy for the BSR.

[3] The concept of an integrated territorial development has recently been promoted intensively in the draft regulation on the EU Cohesion Policy but in a slightly narrower sense, mainly limited to the Community Led Local Development and Integrated Territorial Investments.

2 Outline of the monitoring system: methodology and results achieved so far.

2.1 Developing the conceptual framework – interaction between policy discourse and the territorial monitoring system

The records of efforts to establish territorial monitoring systems for the BSR are long and instructive. Probably the first initiative was that of VASAB, with its attempt of 1996 which is mentioned in annex 8. With the establishment of ESPON the work on territorial indicators was then undertaken for the entire EU territory including the EU-associated countries. In 2008 two seminars were organised by ESPON: a workshop on territorial indicators and indices in April and a workshop on monitoring territorial dynamics in November. And next, in 2010, the ESPON launched a project titled INTERCO (ESPON 2.1.1), dedicated to this effort, and in 2011, in relation to this project, ESPON organised a workshop titled: "Assessing Indicators for Territorial Cohesion".

Despite those efforts, in contemporary literature one can find only three[4] comprehensive conceptual attempts to elaborate the monitoring systems for territorial cohesion covering EU territory which were carried through to the end (Farrugia, Gallina 2008; Medeiros 2011; ESPON 2011[5]). These efforts are very different content-wise and of different usability. Only the ESPON monitoring system is based on firm political endorsement that can make INTERCO indicators implementable in practice. The selection process of ESPON indicators has combined scientific advice and a discourse with the final beneficiaries i.e., policy makers (ESPON stakeholders). This has allowed the ESPON indicators to become policy-oriented.

In many cases the conclusions from the research, as summarized by Farrugia, Gallina (2008, 34), were rather pessimistic. They pointed out that the existing statistical situation of the EU made it impossible at that time to build any relevant index of territorial cohesion at the regional level which could embrace the three dimensions of the ESDP. The INTERCO project overcame those limitations by establishing a wish list of indicators.

The best example, out of the available ones, of translating policy discourse into the features of the territorial monitoring system can be provided by the case of INTERCO. The indicators were selected on the basis of their relevance for the EU 2020 Strategy, the Territorial Agenda 2020 and the aims within territorial cohesion, such as: reducing territorial inequalities in access to services, improving the natural environment, reducing poverty and exclusion, increasing territorial innovation and enhancing territorial governance. The indicators were chosen for the following seven dimensions of territorial cohesion, identified on the basis of the territorial cohesion objectives: (i) economic performance and competitiveness, (ii) environmental qualities, (iii) social inclusion and quality of life, (iv) innovative territories, (v) access to services, markets and jobs, (vi)

[4] Also ESPON 3.3. Project (ESPON 2006b) developed a comprehensive set of indicators related to the dimension of the development referred to as the 'quality', covering also the quality of the territory. Those indicators cannot, however, be taken as a system for measuring the territorial cohesion or territorial development. They rather measure the socio-economic development in space. The same is true with regard to OECD Regional Database. Finally, the EEA (2010) also developed a list of potential territorial indicators to support the environmental dimension of territorial cohesion. That attempt covers mainly ecological aspects of the latter, though.

[5] Also the ESPON Project KITCASP aims at the elaboration of a core set of key indicators of territorial cohesion, economic competitiveness and sustainable development to keep spatial planners at the national level informed, drawing on ESPON research and datasets available in the case studies. The project, however, has just been started.

territorial cooperation and governance, and (vii) polycentric territorial development (ESPON 2012). Finally, some selection criteria were applied to allow permanent gathering of information on the indicators and ensure their usefulness for the policy makers. According to the criteria, the indicators should:

- show a clear direction of change,
- show the value of a direction of change (e.g. larger is better – or worse),
- be sensitive to policy change and be able to measure the outcome or impact of a policy measure,
- be available for time series, i.e. the data should be updated regularly, preferably annually and the costs of updating data should be reasonable,
- be available at sub-national level, preferably at NUTS3,
- focus on the added value of territorial cohesion and cover its dimensions and not so much on economic or social cohesion,
- be easy to calculate and to use by the end-users.

For each of the territorial themes, "a number of so-called 'top indicators' were selected by means of the INTERCO combined analytical and participatory process, taking into account data constraints" (ESPON 2011, 3). The indicators were divided into four categories: (i) those indicating changes, disparities and territorial assets/opportunities (Ch), (ii) those showing territorial structural elements (St), (iii) those portraying the contextual situation of regions, and the framework conditions (C), (iv) those that are important but cannot be computed due to different reasons (the wish list) (W).

The results of the selection by the ESPON Monitoring Committee (of June 2012) are presented in the table below. The indicators in grey have been added to the INTERCO indicators by the ESPON stakeholders.

Table 2: ESPON Territorial indicators.

Annex 1. Indicators for Territorial Cohesion - grouped per theme and category
(The indicators in grey are added to the INTERCO indicators by ESPON stakeholders)

Themes / Categories:	Change (Ch)	Structure (St)	Context (Co)	Wish list (W)
Economic performance and competitiveness	- Unemployment rate		- GDP per capita in PPS - Old age dependency ratio - Labour productivity in industry and services - Labour productivity per person employed - Primary employment rate - Tertiary employment rate	
Environmental qualities	- *Air pollution: PM10 - *Air pollution: Ozone concentrations - *Soil sealing per capita (St) - *Accessibility to Natura 2000 (St)	- Wind power potential	- Potential vulnerability to climate change - Fresh water resources - Noise pollution - Photovoltaic potential - Aggregated Natural Hazards	- Natural resources (Co) - Biodiversity (St) - Mortality, hazards and risks (Co)
Social inclusion and quality of life	- Disposable household income - Proportion of early school leavers - Quality of housing - % in risk of poverty		- Life expectancy at birth - Gender imbalances - Difference in female-male unempl. rates - Ageing index - % of households very low in work - Deprived persons	
Innovative territories	- Population aged 25-64 with tertiary education - Creative workforce - % of high growth firms		- Intramural expenditures on R&D - Employment rate 20-64 - Birth rates and survival rates of firms	
Access to services, markets and jobs	- Access to compulsory school (St) - Access to hospitals (St) - *Accessibility of grocery services (St) - Access to university (St) - Access to primary health care - Households with broadband access	- *Accessibility potential by road - *Accessibility potential by rail - *Accessibility potential by air		
Territorial cooperation and governance	- *Cooperation intensity - *Cooperation degree		- Variation in corruption, discrimination & victimization	- Use of integrated place based strategies (Ch) - Use of functional regions (St) - Use of territorial impact assessments (Co)
Polycentric territorial development		- *Population potential within 50 km	- Net migration rate	- *Polycentricity index (St)

* The Indicators marked with an * have intrinsic territorial dimensions meaning that they
- include the notion of distance, i.e. all the "accessibility" indicators + "Population potential within 50 km"
- are calculated using areas/volumes (soil sealing, air pollution)
- relate 2 or more territories (the cooperation indicators)

The lessons learned for the BSR-TeMo project are the following:

Firstly, the INTERCO project has encountered problems with measuring such a complex and heterogeneous category as territorial cohesion. The solution was flexibility of the indicator system i.e. the ability of the system to serve different policy objectives (ESPON 2011, 9).

Secondly, the INTERCO project (ESPON 2011, 8) underlined a trade-off between flexibility and stability of the monitoring system. On the one hand the system should allow comparable measurement and comparison over time; on the other hand it should react to the changes in territorial goals and objectives. The project tried to resolve the dilemma by making a distinction between data (which can be organised using a thematic thesaurus) and indicators (which would be linked to specific dimensions of territorial cohesion – e.g. the territorial objectives identified by the INTERCO project). The strive towards stability was probably the main reason why originators of the project after analysing different, politically approved territorial objectives, considered as foundations and essence of the territorial cohesion (e.g. priorities of the Territorial Agenda of EU 2020) came up with their own set of six and then seven objectives (dimension of the territorial cohesion) which were regarded as more versatile[6].

Thirdly, the INTERCO project paid a lot of attention to the simplicity and usefulness of the system for policy makers. This should be considered as one of the key factors for success. For instance, an idea of composite indicators was clearly rejected by a vast majority of the stakeholders during the discussions held (ESPON 2011, 9). Therefore it was decided to elaborate some sets of indicators under the project.

Fourthly, the INTERCO project recognized the importance of data constraints, in particular lack of relevant data collected periodically at the NUTS 3 level. As a result the INTERCO system is unable to measure e.g. progress in the state of biodiversity and in renewable energy production and consumption, since such information has been collected only at the national level so far.

Fifthly, the INTERCO project underlined the importance of the contextual indicators (e.g. life expectancy) that were not related to the outcomes of concrete policies but shaped the context for such policies by describing the complexity of the various situations in the EU.

The general conclusions on the desired shape of the BSR territorial monitoring system, expressed in the inception report, hold true after in depth analysis of the practical attempts to establish such systems for EU or/and parts of Europe. However, additional conclusion should be added on the institutional preconditions for the systems success.

The TPG will strive towards a monitoring system that will be user friendly, receptive to the needs of its main users (the stakeholders) and sufficiently stable (to allow for inter-temporal comparison) but also flexible enough to remain useful in the future. It's design and development will be done in close collaboration with the stakeholders that should gain a feeling of ownership in this process. Efforts will be done to pass responsibility for its further development and maintenance to the key stakeholders and to furnish them with instruments signalling real needs of adjusting the system to the new circumstances and demands.

[6] "The recurrent updates of the policy objectives and documents had forced us to take a flexible attitude in the course of the project, rendering the current results more in line with the future shape of Europe but also more adaptable if any changes should take place in the future as well " (ESPON 2011, 8).

2.2 Developing the monitoring system: Domains and indicators

Based on 1) the project specifications and the inception report, 2) the ideas put forth in the VASAB working group, 3) renewed input from ESPON on the INTERCO indicators, 4) a meeting with stakeholders in St Petersburg with following suggestions transmitted via the VASAB secretariat, and 5) the internal expertise of the TPG, we have now developed further a suggestion for the final domains, sub-domains as well as indicators included therein. We have opted for partially dividing the six main domains into sub-domains in order to enable better conceptual coverage and analytic clarity. This is a similar method utilised particularly within the European Commission (e.g. EU 2020 or EU Sustainable Development Strategy monitoring systems).

The proposition can be found in table 3 below. We have after thorough consideration opted for labelling the domains precisely as has been done in the INTERCO project. This decision is supported by the ToR of the project. We will in what follows give a brief description of each domain and indicator included in the monitoring system. After this we proceed to show the data availability and territorial scale of data (table 4). In table 5 we depict a crosscheck of indicators between TeMo, INTERCO and ESPON 4.1.3. to highlight the continuity (and evolution) of the ESPON indicators for territorial cohesion. Finally, in the end of this chapter we introduce the possibility of working with headline indicators in the monitoring system. In Annex 9 we have finally included reflections on proposed specific indicators and/or broader conceptual themes that the TPG has considered but subsequently discarded.

Before we go into the detailed description of each domain and indicator we would like to point out that it is evident that no strict compartmentalisation can be made between the different domains. For example, unemployment could just as easily be viewed in terms of social cohesion and not only from an economic point of view. We do however deem it neither possible nor sensible to forcefully try to eradicate all overlapping between the different (sub-) domains. In the end it is nevertheless the end-user of the system that will make a qualitative assessment as to the contents, coverage and scope of the separate indicators.

In table 3, under each domain, we added a second heading illustrating the relevance of the domain from a BSR perspective, i.e. the Baltic raster and some normative aspects for better understanding why this perspective and these indicators have been included.

Table 3: Domains and indicators of the ESPON TeMo monitoring system.

Domains	1. Economic performance and competitiveness	2. Access to services markets and jobs	3. Innovative territories
Baltic raster / Normative aspect of domain	Place based Economic development. Development of territorial assets/territorial capital. Context indicators	Balancing territorial development, diminishing territorial divides or alleviating their consequences. Maintaining at least the existing polycentricity level of the settlement structure. Ensuring accessibility, connectivity and parity of access to transport and ICT infrastructure, development of TEN-T.	Ensuring high quality of urban nodes, and their networking with focus on diffusion of innovation and enhancement of knowledge-based development. Emergence and development of regional clusters of competition and innovation.
SUB-DOMAINS AND INDICATORS	**Macroeconomic development**	**Accessibility**	**Human capital endowments**
	GDP/capita	Access to main and secondary cities and towns	Population with tertiary education (25-64 years)
	GDP/person employed	Accessibility potential by road	Employment in technology and knowledge-intensive sectors (manufacturing and services)
	Total GVA per economic branch (primary, manufacturing, services)	Accessibility potential by rail	**Financial and institutional endowments**
	Total employment per economic branch (primary, manufacturing, services)	Accessibility potential by air	Gross domestic expenditure on R&D (private and non-private sector)
	Labour market	Access to (IC) train stations	Patent applications filed to the EPO
	Unemployment rate, total	Multi-modal accessibility	
	Employment rate (20-64 years)	Households with access to internet at home	
	Demography	**Territorial functionality**	
	Net migration rate	Population potential within 50km	
	Total population change	Gender imbalances (ratio of male-female aged 25-39)	
	Demographic dependency ratio(s)	Functional areas (nr overlapping at one municipality)	
	Economic dependency ratio(s)	Border crossings	
Domains	**4. Social inclusion and Quality of life**	**5. Environmental qualities**	**6. Territorial cooperation and governance**
Baltic raster / Normative aspect of domain	Brought forward on the VASAB-TPG workshop in Potsdam, as result of present economic, financial and social crisis in Europe	Wise use of the sea space. Eco-resilience: i.e. green networks, ecological corridors and preservation of areas of high ecological value. Development of renewable energy resources (also on the sea) and the BSR transmission grid.	Territorially-oriented governance (incl. vertical and horizontal integration of policies).
SUB-DOMAINS AND INDICATORS	**Social inclusion**	Soil sealing (change over time)	**Regional partnership**
	At-risk-of-poverty rate	Air pollution (nr of days PM10 exceeds norm value)	Cooperation project intensity (nr of projects/region)
	Severe material deprivation rate	Land consumption by transport (% of total area)	Cooperation degree (nr of project partners/region)
	Youth unemployment rate (15-24 years)	Eutrophication (Helcom HEAT index)	
	Health	Fragmentation index	
	Life expectancy at birth in years		
	Self-assessed general health status		

Domain 1: Economic performance and competitiveness

For the first domain, **Economic performance and competitiveness**, no major challenges were encountered. One reason for this may be that this issue is in measurement terms rather well covered e.g. by the EU2020 strategy.

Sub domain: Macroeconomic development

GDP per capita (in PPS) refers to the total value of all goods and services produced within a territory during a given period (here converted into purchasing power standards in order to accommodate transnational comparison). Although it is the most widely used measurement of economic activity and included as a headline indicator e.g. for the EU Sustainable Development Strategy (SDS), it has over the years been criticised for bypassing the core issues of material well-being (national income, real household income, consumption, environment, and so on)[7]. However, as it still constitutes the principal indicator for European regional policy (e.g. for confirming eligibility) it has as such to be included in any territorial monitoring system. It is included also in the INTERCO list of indicators.

GDP per person employed (in PPS) refers to the same indicator as above, but with number of employed persons as the denominator. Included on the INTERCO list it is used as an indicator for labour productivity (i.e. how much output a given number of persons are producing). For measuring regional production it alleviates the measurement problem of commuting and provided a more truthful picture of regional productivity than does GDP/capita.

GVA per economic branch (at basic prices) and employment per economic branch are used as crude indicators of the regional economic structure. GVA differs from GDP[8] in that GVA also contains subsidies but not taxes on products. GVA is an indicator of an individual producer's, industry's or sector's contribution to the overall economy. Supplemented by the same data for persons employed, a crude assumption as to the economic structure of a region's economy and particularly changes thereof can be obtained. This data can for the BSR be obtained by crude economic branch only (primary, manufacturing, services).

Sub domain: Labour market

Unemployment rate (total) is included as an indicator in the EU SDS. It is the most widely used indicator of labour market performance but is connected with a number of measurement imperfections and should be considered as a complementary indicator to employment rate. It can be viewed both from an economic and from a social point of view, in the latter case particularly when disaggregated either by gender, age, education or at the level of the individual. Only data from Labour Force Surveys (LFSs) are comparable across countries. It is included in the EU SDS as well as in INTERCO.

Employment rate (for persons aged 20-64 years) is included as an official indicator in the EU SDS and is furthermore a headline indicator of the EU 2020 Strategy's "Smart growth" and "Inclusive growth" priorities, aiming for 75 % of the 20-64 year-olds to be employed by 2020. It is also on the INTERCO list of indicators. It refers to the number of persons aged 20-64 years that are

[7] For a recent review of the shortcomings of GDP, see for example the Report by the Commission on the Measurement of Economic Performance and Social Progress: http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf

[8] For which branch wise data is not available.

employed as a share of all persons of that age. Concerning such normative goals, there are some measurement challenges included in that a high employment rate of e.g. persons aged 20-24 years would de facto imply that they do not attend education, which in the long run for some would be counterproductive.

Sub domain: Demography

Net migration rate and total population change (and as their subtraction also natural population change) are traditional indicators when measuring regional polarisation and often also used as measurements of regional attractivity (or lack thereof). Net migration is included as an official indicator for the EU SDS as well as in INTERCO. Typically, regional net migration rates constitute only between 5 and 15 % of the total gross migration volumes.

Demographic dependency ratios and economic dependency ratios refer to the theoretical number of persons supported by a certain fraction of the population, either an age group (demographic dependency ratios) or the nr of persons employed (economic dependency ratios). Three principal types are commonly used: total dependency ratio equalling 0-14 years plus 65+ years as a share of either 15-64 years (demographic) or persons employed (economic); young age dependency ratio (only 0-14 years as the numerator); and old-age dependency ratio (only 65+ years as the numerator). Such indicators can be used to assess the (theoretical) financial burden of supporting these age groups and in making predictions about the future demographic composition of a region. Old-age-dependency ratio is included as a contextual indicator in the EU SDS and is on the INTERCO list of indicators.

Domain 2: Access to services, markets and jobs

The TA2020 acknowledges the crucial importance of service provision and accessibility for territorial connectivity and integration in a broad sense by stating that "*Fair and affordable accessibility to services of general interest, information, knowledge and mobility are essential for territorial cohesion. Providing services and minimizing infrastructure barriers can improve competitiveness and the sustainable and harmonious territorial development of the EU*". Sufficient accessibility thus helps balancing territorial development, helps diminishing territorial divides or alleviating their negative impacts. In the Baltic Sea Region context, accessibility to services, markets and jobs is key to ensure that every part of the territory is able to benefit from well-being standards, and from equal development potentials, by providing access and connectivity to transport and ICT infrastructures, facilities and services, especially for remote, isolated, sparsely populated areas and areas with harsh climatic conditions.

Eleven indicators were identified under this domain, divided into two sub-domains which are 'accessibility' and 'territorial functionality'.

Sub domain: Accessibility

Good access to main and secondary cities and towns, as the spatial centers for public and private service provision, is of prime interest for people´s daily life. Fair travel times to these centers should thus be one of the political objectives of spatial policies. Emphasis will be given not only on main cities, but on secondary towns, since for many rural and remote areas the latter ones serve as the first destination for people to run their errands. Establishing or maintaining a functional polycentric system of cities and towns will be of benefit for all people.

The four indicators on accessibility potential (by road, rail, air and multimodal) measure the market potential of regions and thus the locational advantages a region enjoys from the existing transport systems. How accessible is a region, and how many people can be reached from a region in reasonable time? The higher the accessibility potential for a region is, the higher is also its attractiveness for economic and social activities in that region. All four indicators are proposed since good accessibility by one mode does not suppose equally good accessibility for another mode. Instead, often region enjoy good accessibility by one mode but poor accessibility by another.

In order to promote a shift from car vehicles to public transport for environmental reasons, but also to guarantee fair accessibility for elderly people in future, given the ongoing trends of over aging, the indicator access to main train stations (i.e. train stations with IC services) was selected to assess the quality of access of the railway system. For some areas, access to train services might be lacking at all or might by very poor, so that public transport is no real option to ensure people´s mobility needs.

While the previous indicators measure physical infrastructures (i.e. transport networks) in relation to certain physical destinations, the indicator households with access to internet at home is looking at the digital infrastructures, i.e. access to information. Fast internet access is nowadays fundamental to all economic activities, and everyday´ s life can no longer be imagined without internet as indispensable source of information and mean of communication. While the indicator households with broadband access was neglected due to its poor data availability (aggregated NUTS levels, many data gaps), this said indicator was selected to assess internet access in Europe.

Sub domain: Territorial functionality

While the previous sub-domain deals with physical and digital infrastructures and the levels of accessibility they provide, this sub-domain is focusing on territorial structures and functionalities, represented by four indicators. It picks up main priorities of the ESDP, TA2020 on "*polycentric and balanced territorial development of the EU [is] as key element to achieving territorial cohesion*", by promoting polycentric patterns at all spatial levels helping to reduce territorial polarization. Concentration and connection are the main challenges of polycentrism, as they help achieving a critical mass and allow surrounding areas to benefit from agglomeration effects (ESPON INTERCO, 2012, 106).

The population potential within 50 km is a proxy for the demand for provision of public (and private) services, for (minimum) market potentials and for the level of polycentricity. A radius of 50 km airline distance is considered a typical distance for daily commuting trips to go to work or education, to go shopping, to visit other services or visit friends and relatives. Similarly, from the viewpoint of shops or service provides, this distance is considered a reasonable service areas for their products, customers or workers. This indicator is also able to assess the urban-rural divide for the Baltic Sea Region. Urban (or agglomerated) areas are likely to have high population potentials, while rural areas are expected to experience a lack of potential. The degree to which rural areas fall behind urban areas can be analyzed with this indicator.

The morphological indicator on functional areas is defined as the number of functional areas (ESPON 1.1.1) overlapping at one municipality, i.e. it counts to how many FUA centers a municipality can be assigned to. People living in municipalities that are located in the service area of more than one FUA may enjoy the benefits of all these FUAs, as the travel times to reach them are rather short. Despite their morphological meaning, this indicator also has practical

implications: People in municipalities assigned to more than one FUA have freedom of choice to travel to several destinations (for work, shopping, leisure, etc.), while people in municipalities assigned only to one FUA don´t have this freedom. The rationale behind this indicator again is that there is no need to offer all services and facilities in every town and village, however, for all people *access* to these services should be granted the same.

For the Baltic Sea Regions, border crossings are still a major concern between the countries of the European Union on the one hand, and Russia and Belarus on the other hand. Complicated and lengthy custom clearance procedures, and long waiting times at border control points are still obstacles to free movement of goods and persons. This indicator measures the border waiting times for trucks at major border crossings, differentiated by inbound (into EU) and outbound (out of EU) traffic, and thus addresses one major issue of the East-West divide in the BSR.

Gender imbalances in a region will be assessed by the ratio of male-female aged 25-39. Unbalanced gender compositions in a region hint at social problems, and are obstacles for further demographic and economic developments.

Domain 3: Innovative territories

This domain lays the heart of the EU 2020 Strategy's "smart growth" priority. It contains indicators both of an input and of an output character, enabling regional comparison of a cost-benefit type.

Sub domain: Human capital endowments

Share of persons aged 25-64 with tertiary education attainment can be viewed as a crude indicator of the level of more advanced skills of the population of a region and as an input indicator of innovation. Tertiary educational attainment in the age group 30-34 years[9] is a headline indicator of the EU 2020 Strategy's "Smart growth" priority, aiming for at least 40 % of 30-34–year-olds completing third level education by 2020. In contrast, in the EU SDS indicator set, focus lays on reduction of those with the lowest level instead. Striving for a higher level of persons with tertiary education may be seen as a general normative goal, but the level reaches a vertex at an unspecified point depending on the economic structure of the region, and in many regions skilled labour could be a more critical resource. In the context of "innovative territories" it is nonetheless a justified indicator on the existing human capital endowments of a region.

Share of employment in technology and knowledge-intensive sectors is a summary indicator of employment within a selection of high-technology manufacturing and knowledge-intensive high-technology service branches. The selection of included branches focuses on the level of knowledge intensity of the economic activity of the region[10] rather than on e.g. the educational level of the population or the labour force. It may thus be viewed more as an output indicator for the innovative capacity of a region.

[9] Data for this age group is only available at NUTS 1 level, whereas data for the age group 25-64 years is available at NUTS level 2, whereupon the latter was chosen for this monitoring system.

[10] These include the crude branches of manufacturing of aircraft spacecraft, medical, precision and optical instruments, watches and clocks, pharmaceuticals, medicinal chemicals and botanical products, office machinery and computers as well as radio, television and communication equipment and apparatus, and within services research and development, computer and related activities, post and telecommunications as well as financial intermediation.

Sub domain: Financial and institutional endowments

GERD - Gross domestic expenditure on R&D (as a share of GDP) is a headline indicator of the EU 2020 Strategy's "Smart growth" priority, aiming at combined public and private investment levels to reach 3 % of EU GDP by 2020. It is also included in the EU SDS as well as in the INTERCO list of monitoring indicators and is a typical input indicator for innovation as high investment do not automatically yield high output. It refers to the relative share of a regions' GDP generated from R&D –related activities that, in the long run, may help create new products/services and boost creation of new jobs. We have here subdivided this indicator by sector of performance into private (business enterprise) and non-private sector (the government, higher education and private non-profit) respectively.

Number of patent applications filed to the European Patent Organisation EPO is possibly the most commonly used European output indicator for regional innovation. It reflects a region's capacity to exploit knowledge and translate it into potential economic gain. It is usually reported as a share of the population, but could equally well be calculated e.g. as a share of GDP or of R&D investment.

Domain 4: Social inclusion and quality of life

The EU Sustainable Development Strategy as well as the EU 2020 Strategy, and particularly its "inclusive growth" priority, both emphasise the importance of poverty reduction and combating social exclusion. Also the "GDP and Beyond" initiative with its focus on human well-being is closely connected to this domain. All indicators in this domain stem from the monitoring systems of these strategies.

Sub domain: Social inclusion

The at-risk-of-poverty rate is included in the Laeken, the EU SDS and in the EU 2020 Strategy indicators. Within the target for "Inclusive growth", the EU 2020 headline goal is that at least 20 million people should be lifted out of the risk of poverty *or social exclusion* by the year 2020. A person is defined as being in risk of poverty if his/her equivalised (by household size) income after social transfers is below 60 % of the corresponding national median. Although it is calculated per individual, its primary measurement unit is the household. The at-risk-of-poverty rate should not be confused with the AROPE[11] indicator, which partially contains the former. The at-risk-of-poverty rate is useful for comparing some distributional aspects of monetary well-being but being a relative indicator (related to the national median), it should not be utilised for cross-country comparisons of absolute levels of poverty.

Severe material deprivation targets persons having their living conditions severely constrained by a lack of resources. The indicator is defined as the share persons experiencing at least four out of nine following deprivations items: cannot afford: 1) to pay rent or utility bills; 2) keep home adequately warm; 3) face unexpected expenses; 4) eat meat, fish or a protein equivalent every second day; 5) a week holiday away from home; 6) a car; 7) a washing machine; 8) a colour TV; or 9) a telephone. As such this indicator allows for direct cross-country

[11] The AROPE indicator (People at risk of poverty or social exclusion) is defined as the share of the population in at least one of the following three conditions: 1) being below the poverty threshold; 2) being in a situation of severe material deprivation; or 3) living in a household with very low work intensity.

comparison of material poverty. The indicator is a headline one for the EU 2020 Strategy and it is also included in the EU SDS set of indicators.

Youth unemployment rate can be viewed as an "early warning indicator" for future social exclusion. It is included in the EU SDS set of indicators and defined as unemployed persons aged 15-24 years as a share of all persons of that age group *in the labour force*. Interpretation of this indicator must be done cautiously, as a high youth unemployment rate does not necessarily imply that a large share of the total number of youth are unemployed (as they may be off the labour force, typically studying). It is therefore also at times calculated with the total population of that age as the denominator, which provides a more accurate picture of the relative volume of young unemployed persons.

Sub domain: Health

Life expectancy at birth (in years) is one of the principal global indicators for mortality. Included in the Laeken list of indicators, it reflects improvements in living standards and the establishment and improvement in health systems. It can thus be viewed as a partial output indicator of the quality of the health care system in general also incorporating aspects of public health awareness etc. It is a theoretical indicator where general trends of mortality are transposed on a new born child. Alongside low levels of fertility the gradual increase in life expectancy is however also one of the contributing factors to the ageing of the population. The BSR shows considerable variations in life expectancy, reflecting the socioeconomic divide of the region.

Self-assessed general health is widely utilised as an output indicator of the quality of the health care system and is included in the Laeken list of indicators. We are here utilising ESS (European Social Survey) data, where respondents are asked the question "How is your health in general? Would you say it is "Very good", "Good", "Fair", "Bad", or "Very bad"." We utilise this subjective indicator as a proxy to the objective indicators on health care personnel and expenditure, which have proven to be very difficult to measure comparatively across countries. The EU-SILC (Survey on Income and Living Conditions) will tentatively produce also regionalised data on this topic in forthcoming rounds.

Domain 5: Environmental qualities

Sustainability is essential in the Europe 2020 Strategy of smart sustainable and inclusive growth and has in recent years been emphasised within the overall concept of green economy (or green growth). Many of the thematic objectives of cohesion policy (and recently in the objectives of the common strategic framework of the EU) emphasise reduced emissions, investments in clean-tech, renewable energy, and adaptation strategies as the core of policy. A greening of the economy is aimed at decoupling growth from energy consumption and emissions, and emphasises the aspect of a clean environment as a territorial capital which is an integrated part of a placed based development. From a Baltic Sea Region perspective we have recognised in this perspective some important aspects of the domain which we have tried to cover but not always successfully. These include aspects such as a wise use of the sea space, eco-resilience (i.e. green networks, ecological corridors and preservation of areas of high ecological value), development of renewable energy resources (also on the sea) and the BSR transmission grid for energy. Within the domain of environmental qualities we have defined five indicators which focus primarily in emissions and use of land. These are indicators which captures the state of air and water as well as the quality of land and landscapes. This will combined provide a picture of the state of the environment as a territorial capital or capacity.

Basic air pollution (PM10) is provided by the European Environment Agency (EEA, Copenhagen) and can be depicted at the NUTS 3 level since this data is available as even raster data.

Eutrophication (HEAT index from Helcom) is an important indicator for the quality of the Baltic Sea and an indicator for how successful measures are to prevent the leakage of nutrients from agriculture and sewerage plants around the sea.

Soil sealing (change over time) is a measure of how much land is converted to a "built" surface in a wider definition. Hence this indicator is associated with land take for economic development and is associated with settlement structures and demographic development. Since soil sealing is associated also to the resilience and buffering capacity of nature this is an important indicator, as well as indicating the quality of landscapes for recreation and human well-being.

Land consumption by transport (% of total area) is an indicator that is similar to soil sealing but it is interesting from the conflicting perspective of improving the accessibility of the BSR region. Hence this indicator can be used together with accessibility indicators to assess the sustainability of improved accessibility.

The final indicator, the fragmentation index, is our attempt to overcome the lack of data on biodiversity and landscape qualities at the NUTS 3 level and propose a "proxy" indicator for the value of landscapes and possibility for larger habitats and green areas for plants, animals and humans.

Domain 6: Territorial cooperation and governance

Territorial governance (i.e. employing a territorial approach in development strategies and decisions) is becoming an increasingly important aspect of policy actions in Europe. It is related to the concept of territorial cohesion as both a policy goal and a political and planning process including the means to achieve efficient, equitable and sustainable development in all types of territories of the EU. The ESPON TANGO project states that territorial governance can be seen as a means to achieve endogenous territorial development via the organization of new constellations of actors, institutions and interests. Formally, governance can be defined as the capacity of public and private actors to build an organisational consensus involving different actors in order to define common objectives and tasks; agree on the contribution by each partner to attain the objectives previously defined; agree on a common vision for the future of their territory. It is oriented towards a commonly defined aim of territorial development at different spatial scales in order to ensure the spatial coherence of the different actions. From this viewpoint, the key challenges for territorial governance are to create horizontal and vertical cooperation/coordination between (i) various levels of government; (ii) sectoral policies with a territorial impact; and (iii) governmental and non-governmental organizations and citizens. From a conceptual perspective it would have been interesting to pursue (with indicators) the dimensions brought forward by Davoudi et al. (2008) to describe, analyse and evaluate territorial governance actions. These are:

i) Context: to describe the general structural conditions, features and dynamics of the territory. I.e., describing the favourable territorial preconditions for defining and implementing territorial governance actions.

ii) Policies: to describe the institutional frameworks of territorial policies, instruments and procedures for governance.

iii) Territorial governance actions: defined as the experiences, projects, programmes, etc. that need or stimulate a territorial governance approach.

From a BSR perspective we also identify the important component of analysing territorially-oriented governance (incl. vertical and horizontal integration of policies). In reality we are limited by data and therefore are somewhat forced to focus, as did previous projects, on the final category (iii). This includes well known indicators on regional partnerships from previous projects:

Cooperation project intensity in INTERREG program period 2000-20XX

Cooperation degree in INTERREG program period 2000-20XX

These indicators have been developed by the ESPON TERCO project. They indicate the cooperation intensity and cooperation degree of regions in INTERREG IIIc projects for the program period 2000-2006; we have indicated the periods ending with XX because we are investigating the opportunity to update these indicators already for the current period 2007-2013. Cooperation intensity measures the intensity each region is cooperating in terms of number of INTERREG IIIC projects in the program period. Cooperation degree measures the degree of cooperation between partner regions in INTERREG IIIC projects for the program period 2000-2006.

2.2.1 Data availability

Table 4 below shows the investigation into data availability which has been conducted. It shows that the indicators selected are feasible both with regards to temporal coverage and spatial scale. We are currently intensifying out investigation into Russia and Belarus and will conduct meetings with national experts during the months to come. At this point in time we have started to investigate data availability manly at Oblast level, which is indicated in table 4 as well.

Table 4: Data availability for indicators suggested

Indicator	Temporal data availability	Spatial level
Economic performance & competitiveness		
GDP per capita	1997-2008	NUTS-3/Oblast
GDP/person employed	1995-2010	NUTS-3/Oblast
Total GVA per economic branch (primary, manufacturing, services)	2000-2009	NUTS-3
Total employment per economic branch (primary, manuf., services)	2000-2009	NUTS-3/Oblast
Unemployment rate, total	1999-2009	NUTS-3/Oblast
Employment rate (20-64 years)	1999-2009	NUTS-2/Oblast
Net migration rate	Ca. 2005-2010	NUTS-3/Oblast
Population change	2000-2010	NUTS-3/Oblast
Demographic dependency ratio(s)	2000-2010	NUTS-3/Oblast
Economic dependency ratio(s)	2000-2010	NUTS-3/Oblast
Access to services, markets & jobs		
Access to cities	2006 ,2011	Grid, NUTS-3
Accessibility potential road	2001, 2006, 2011	NUTS-3
Accessibility potential rail	2001, 2006, 2011	NUTS-3
Accessibility potential air	2001, 2006, 2011	NUTS-3
Multi-mode accessibility		
Access to (IC) train stations	1996-2011, 2006	Grid, NUTS-3
Households with access to internet at home		
Population potential within 50km	2008	Grid, NUTS-3
Border crossings		
Gender imbalances (ratio of male-female aged 25-39)	2000-2009	NUTS-3
Functional areas	2001	LAU-2
Innovative territories		
Population with tertiary education (25-64 years)	Ca. 2001-2011	NUTS-2/Oblast
Employment in technology and knowledge-intensive sectors	2006-2010, or 2004-2008	NUTS-2
Gross domestic expenditure on R&D	Ca. 2005-2009	NUTS-2
Patent applications filed to the EPO	Ca. 2000-2009	NUTS-3 (or 2)
Social inclusion & quality of life		
At-risk-of-poverty rate	Ca. 2005/07-2010/11	NUTS-2/Oblast
Severe material deprivation rate	Ca. 2008-2011	NUTS-2
Youth unemployment rate (15-24 years)	Ca. 2007-2011	NUTS-3/Oblast
Life expectancy at birth in years	2000-2008	NUTS-2/Oblast
Self-assessed general health status	2010	NUTS-1-3
Environmental qualities		
New soil sealing/capita	2006	NUTS-3
Air pollution (nr of days PM10 exceeds norm value)	2008	NUTS-3/Oblast
Land consumption by transport	2001,2010	NUTS-3
Eutrophication (Helcom HEAT index)	Period 2001-2006	Per sea area
Fragmentation index	2001, 2010	NUTS-3
Territorial cooperation and governance		
Cooperation intensity	2008	NUTS-2
Cooperation degree	2008	NUTS-2

2.2.2 Correspondence to ESPON INTERCO and ESPON 4.1.3 indicators

The following table compares the selection set of ESPON TeMo indicators with those indicators selected in ESPON INTERCO and ESPON 4.1.3 projects, the intention being to demonstrate to what extent INTERCO and ESPON 4.1.3 indicators have been picked up by TeMo. Sometimes indicator names are not identical, so corresponding indicator names are indicated.

Table 5: Crosscheck of indicators between TeMo, INTERCO and ESPON 4.1.3.

Comparison with INTERCO		Comparison with 4.1.3	
ESPON INTERCO	**ESPON TeMo**	**ESPON 4.1.3 ***	**ESPON TeMo**
GDP per capita in PPS	✓ GDP / capita	Male and female activity rate 15-64 years	✖
Overall unemployment rate	✓ Unemployment rate	Unemployment rate < 25 years	✓ youth unemployment
Old age dependency ratio	✓ Economic dependency ratio	Employment in high-tech sector	(✓) employment per economic branch
Labour productivity	✓ GDP / person employed	Unemployment rate	✓ Unemployment rate
Population aged 25-64 with tertiary education	✓ Population with tertiary education	Migratory balance	✓ net migration rate
Intramural R&D expenditures	✓ Gross expenditures on R&D in non-private sector	Share of population younger than 15	✖ (Can be estimated from data collected)
Employment rate 20-64	✓ employment rate 20-64	Population in the age of 15 to 64 years	✖ (Can be estimated from data collected)
Access to compulsory schools	✖	Population older than 64 years	✖ (Can be estimated from data collected)
Access to hospitals	✖	Primacy rate	✖
Access to grocery services	✖	Potential multimodal accessibility to population	✓ Multimodal accessibility
Access to universities	✖	Fragmentation index	✓ fragmentation index
Accessibility potential by road	✓ Accessibility potential by road	Settlement endangered by flood and artificial areas	✖
Accessibility potential by rail	✓ Accessibility potential by rail	R&D expenditures as percentage of regional GDP	✓ Gross expenditures on R&D in non-private sector, gross expenditures on R&D In private sector
Accessibility potential by air	✓ Accessibility potential by air		
Disposable household income	✖	GDP per PPS per inhabitant	✓ GDP / capita
Life expectancy at birth	✓ life expectancy at birth	Labour costs	✖
Proportion of early school leavers	✖	Connectivity to railway stations	✓ access to train stations
Gender imbalances	✓ Ratios of male-female 25-39 in region		
Differences in female-male unemployment rates	✖		
Ageing index	✓ Demographic dependency ratio		
Air pollution: PM10	✓ air pollution		
Air pollution: ozone concentration	✓ air pollution		
Soil sealing per capita	✓ Soil sealing (change)		
Population potential within 50 km	✓ Population potential within 50 km		
Net migration rate	✓ net migration rate		
Cooperation density	✓ cooperation project intensity		
Cooperation degree	✓ cooperation degree		

* *Routing indicators*

Comparing with INTERCO, almost all INTERCO indicators have been selected in TeMo, except for the accessibility indicators taken from SILC, which were not selected. In order to compensate for this, another indicator on ***access to main and secondary cities and towns*** was selected, where all these facilities usually are located. Concerning ***disposable household income***, in TeMo a similar indicator on ***severe material deprivation*** was selected, which focus on availability of goods and services rather than on the available money. The ***proportion of early school leavers*** was neglected due to data problems, and eventually the ***differences in male-female unemployment rates*** were not considered of prime importance for the BSR.

Compared with ESPON 4.1.3, nine out of 16 routing indicators have also been selected by TeMo. Main differences are the ***population by age group*** indicators identified in ESPON 4.1.3, which have not been considered by TeMo, so as the ***male and female activity rates***. ***Primacy rate***, an indicator selected by ESPON 4.1.3 to analyse polycentricity, was replaced in TeMo by the two indicators ***population potential within 50 km*** and by ***functional areas***. The last two indicators on ***settlements endangered by flood and artificial areas***, so as ***labour costs***, were considered as of minor importance for the BSR.

2.2.3 Simple and complex monitoring system

It was explained in the Inception report that the project implementation should envisage a "two level" monitoring system as outlined in the ToR. A basic monitoring system/module would provide basic thematic and sector-oriented information. The advanced monitoring system/module would be more sophisticated and complex/combined indicators (and indices) on socio-economic and territorial development. It is apparent now for the TPG that this approach is not the right way to proceed since what has emerged from the conceptual and policy oriented work package is a need for a comprehensive and integrated understanding of the process of territorial cohesion. It is suggested that such a division of indicators would be rather detrimental and that it is better for dissemination, presentation, analysis, testing and construction of visual browsing tool to keep the system together and rather follow a new approach.

This new approach is rather to simplify further the monitoring system and to propose "headline indicators" for each domain which capture this domain in a suitable way. A division can also be communicated in a les institutional way of which indicators that are more complicated in terms of collection and/or construction; and hence provide more of a challenge in either updating and/or interpretation. This would not be a separate module of the system (which we perceive to be an unnecessary level of complication) but rather a communication within the technical specification (and possibly the handbook) that these indicators are of a more complicated nature.

The headline indicators, which can be used to get an overview of the situation in a specific domain and region, will be developed in a two-step process. First they will be suggested below based on our current knowledge of all indicators within the monitoring system and based on our perception of correlation between indicators and which indicators are saying something about each domain and where we know that data will be available at suitable geographical scale and coverage. Secondly, once all data is within the monitoring system we will analyse the domains based on indicator correlation and explanatory power of each indicator for its domain, and hence we will come up with a suggestion for which indicators should ultimately be considered as headline indicators of the system.

The following indicators have been identified as headline indicators for the monitoring system at this intermediate stage:

Table 6: Possible headline indicators

Domains	Possible headline indicator(s)
1. Economic performance and competitiveness	GDP/capita in PPS
2. Access to services markets and jobs	Multi-modal accessibility potential
3. Innovative territories	Gross expenditure on R&D
4. Social inclusion and Quality of life	At-risk-of-poverty rate
5. Environmental qualities	Soil sealing and/or Eutrophication
6. Territorial cooperation and governance	Cooperation project intensity

2.3 Developing the concept for visualisation and analysis

The territorial monitoring system for the Baltic Sea Region entails a strong visual component. Different means of visualization of indicator results are required to illustrate the project output and to provide different views on each indicator – the BSR view benchmarked to other regions and the ESPON space as a whole.

The visualization tool will be designed in a way to provide easy access to the different physical outputs (Figure 1), illustrating the different kinds of analysis through different ways of implementation.

The monitoring system will focus on three types of ***analyses***, which are the analysis of disparities at one point in time, to look at developments over time and to benchmark the Baltic Sea Region with other regions in Europe.

As ***output***, analyses results will be documented in maps (i.e. the main form of illustrations in ESPON), diagrams, as well as in tables and as time series graphs.

All this will be ***implemented*** as map templates in a GIS (ArcGIS), will be laid down in tables and Excel files, and will be made available to the user through an easy-to-use local browser application (i.e. the territorial monitoring ***system***). The latter is particular designed to enables non-GIS professionals to access the monitoring results through a simple application, which is not bound to any specialized software or by specific operating systems. GIS professionals may, in addition, utilize the ArcGIS map files, together with the underlying GIS database, to perform further analyses or to create their own maps.

The concept for the visualization framework foresees a flexible framework, where all output, analysis and implementation components tightly integrate with each other. ArcGIS map template files create indicator maps based upon the main integrated TeMo GIS database. From ArcGIS, maps can be exported into the specifically designed folder structure, from where the browser application loads and illustrates the exported maps, as well as charts and project documentations.

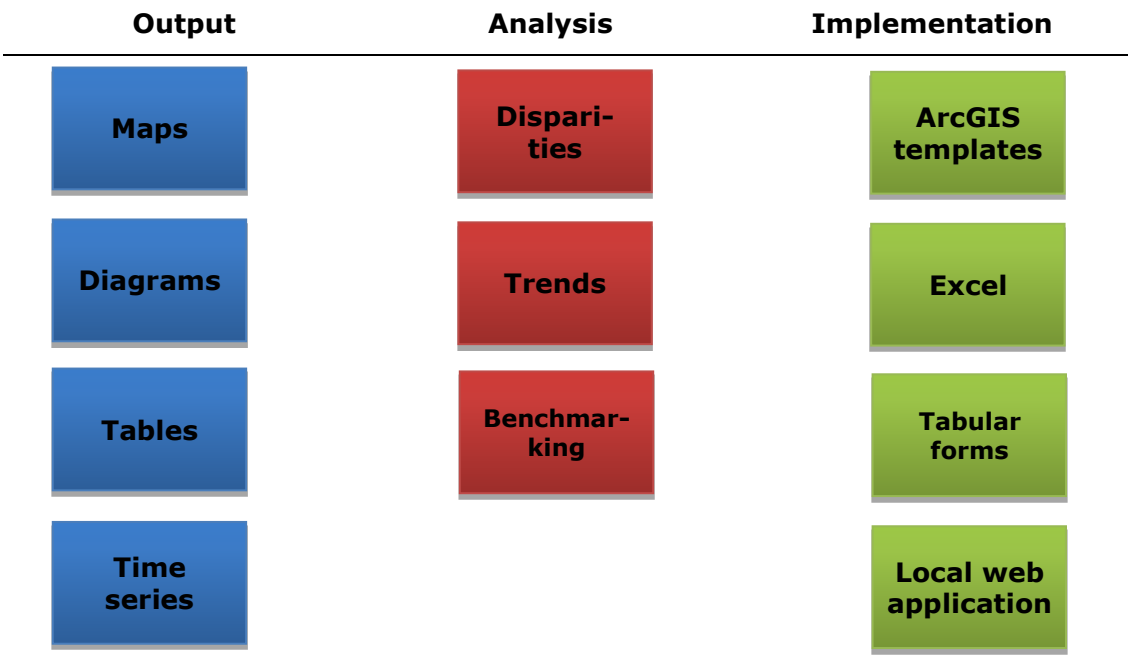

Figure 1. Presentation and visualization framework.

An easy-to-use browser application not only provides access to the indicator maps, but also grants easy access to the domain and sub-domain descriptions, indicator metadata and indicator descriptions, as well as to specific implementation recommendations for each single indicator. All this information can of course also be printed or exported from within the browser application. Figure 2 illustrates the starting page of the browser application (draft version). Annex 8 provides a more detailed outline of this application.

While a similar concept for the underlying GIS database and folder structure has already been developed in the framework of the ESPON INTERCO project (see Chapter B.2.3 of Final Report of ESPON INTERCO; Dao *et al*., 2012), the browser application is a new development on top of the INTERCO approach. One of the deficits of the INTERCO approach was that, despite the well-structured database and folder structures, the user still had to know where to look for which kind of information. Thus, the user had to navigate through folders and subdirectories in order to obtain the information he is interested in[12]. In TeMo, the browser application is designed so that the user is guided by simple hyperlinks and navigation bars, representing the domains and sub-domains. In times of widely used web applications, most users are familiar with such browser-based applications, thus no technical objectives should prevent people from using the system. Moreover, the browser application releases the user to know where actually a map file or table or documents is stored, in order to retrieve the relevant information. Even though far from representing latest state-of-the-art technologies, from a technical point of view, the browser application represents a robust and sound solution tailor-made for politicians to easily interact with the monitoring system.

[12] The ESPON INTERCO Final Report is only of little help for the user in this respect. Even though INTERCO already strived for a standardized indicator presentation, the full indicator description including maps, charts, metadata and descriptive texts required almost 140 pages, which the user has to scroll to find the information he is interested in.

Figure 2. Browser application as gateway to the monitoring system – start page (draft).

In order to adhere to the specific needs of VASAB, the browser application will be developed in two language versions. The main version will be the English version, followed by a Russian version for users from Russia and Belarus.

The Potsdam VASAB Stakeholder assessment (for workshop minutes see Annex 1) clearly showed the need for such a smart application. At the same time, for experienced users, the GIS database and also the Excel files are still available, allowing further in-depth analysis.

Components of the territorial monitoring system
Based upon the system description above, the BSR territorial monitoring system for the BSR is composed of different tiers, which are

Tier 1: Techniques
Tier 2: Data and indicators
Tier 3: Analyses
Tier 4: Output
Tier 5: Documentation

each tier subsuming a set of further elements (Figure 3).

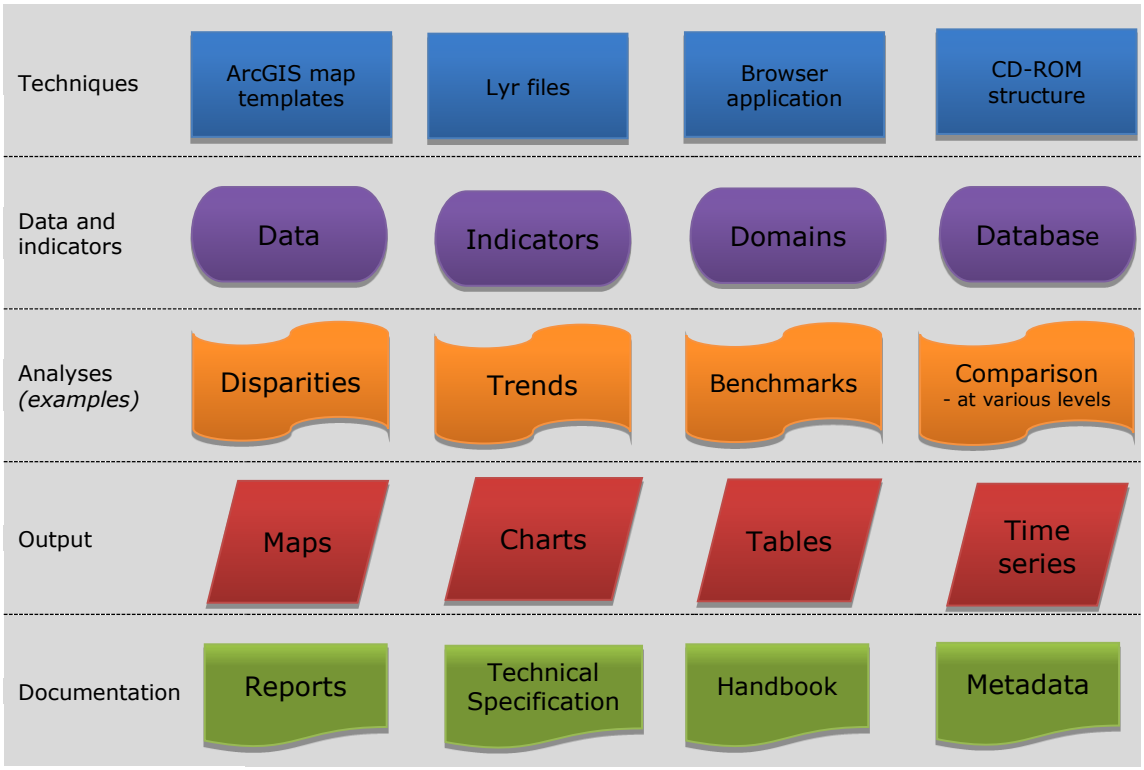

Figure 3. Elements of the territorial monitoring system

Concerning the ***technological basis***, ArcGIS map templates, lyr files, a browser application and a dedicated CD-ROM folder structure will be utilized. ***Data and indicators*** are the second tier, composed of statistical data, the defined indicators, organized in a system of domains and sub-domains, and physically implemented in a dedicated database. The third tier, the ***analyses*** tier, builds upon both previous tiers, conducting different types of analysis, such as analyzing disparities, trends, benchmarking and other forms of ESPON-wide comparisons. Results of the analysis tier are communicated through maps, charts, tables and as time series, as system ***output***. Finally, the ***documentation*** tier summarizes and explains the monitoring system in form of reports, a Technical Specification, a handbook, and indicator metadata.

From Figure 3 it becomes obvious that the monitoring system represents not only an indicator framework, but a dedicated and compatible system of techniques, indicators, types of analysis, output, as well as recommendations as laid down in the project documents.

List of monitoring needs

Besides the general outline of the monitoring system, the Potsdam workshop with the VASAB stakeholders revealed other detailed technical requirements of the monitoring system[13], as follows:

- *Analysis*: focus on simple but yet policy relevant types of analysis. Complicated statistical methods or complicated types of diagrams (such as sigma and beta convergence) were not appreciated.

[13] The workshop output in terms of domains, sub-domains, and policy relevance, is reported in Annex 1.

- *Analysis*: there was no need to interactively change indicator thresholds or ways of standardizations. Compared to the proposals made in the TeMo Inception Report, Figure 1 was revised accordingly.
- *Output*: The ESPON standard output (maps, diagrams, tables) were appreciated. However, it was stressed that easy access to the different outputs is required. This is should be ensured through the monitoring system.
- *Map templates*: There is need for two map templates. One specific template focusing on the BSR space and the standard ESPON map template for the entire ESPON space. The BSR map template should be used to produce high-quality zoom-in maps for the Baltic Sea Region (see Annex 4 for more information), while the latter one is needed to draw up benchmarking maps, comparing the BSR with other macro regions in Europe or with the ESPON space as a whole.
- *Spatial level*: NUTS-3 has been identified as the main spatial level to work at. Finer levels such as LAU-2 or grid levels were highly appreciated, acknowledging the more experimental character of these levels in terms of data availability and computation efforts. NUTS-2 level or even more aggregated spatial levels will only be accepted in exceptional cases, where current data availability prevents from using more disaggregated approaches.
- *Other geographical references*: Beyond the traditional regional levels, the VASAB stakeholders emphasized need and interest in other geographical references, such as points or hubs (e.g. cities, ports or airports), links (e.g. air, train or maritime connections including frequencies and/or goods and passengers transported), or flows (e.g. o-d-matrices). These types of geographical objects go beyond the classical ESPON type of regional approach, as alternative geographical objects are used as reference. Nonetheless, interesting alternative information could be provided that way.
- *Types of maps*: Following the opinions of the VASAB Committee, the BSR territorial monitoring system should make use of different map types (Figure 4). Besides the standard chloropleth map type, used at regional level, point maps, flow maps and interaction maps were appreciated. More complex map types, such as chart map, were, however, declined.

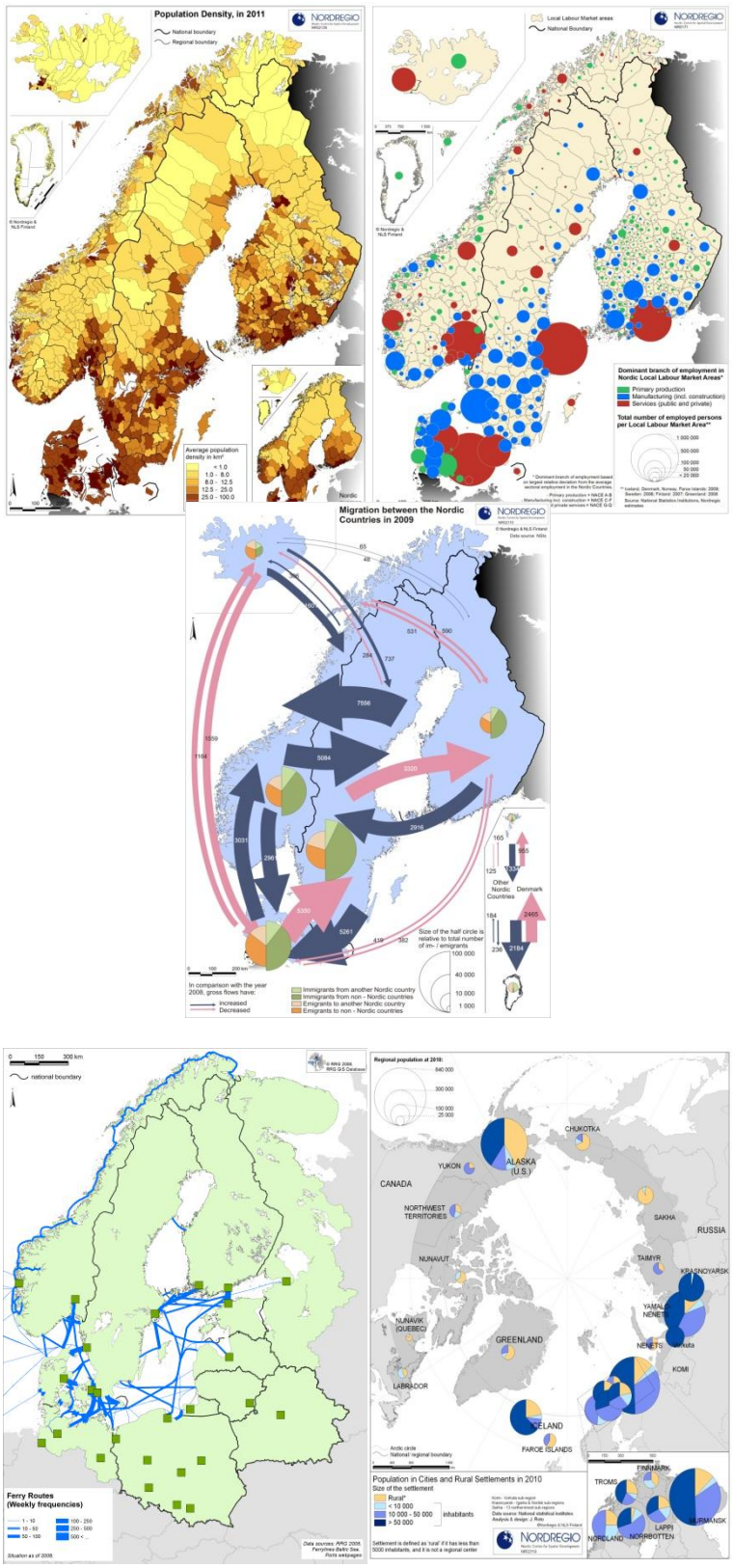

Figure 4. Examples of different map types: Chloropleth map (top, left), point map (top, middle), flows map (top right), interaction map (bottom left), chart map (bottom right).

- *Standardized presentation*: The indicator presentation through the visualization and presentation tool should be done in a standardized manner,

i.e. each indicator should be presented in the same way as all indicators are presented. This should lead to a harmonized presentation, where the user finds himself easy, and finds all information at the same place, regardless which indicator he is looking at.

Advantages of the browser application

The browser application (tier techniques, see figure 3) to be developed, representing the central gateway to the monitoring system for the user, will offer a range of advantages, such as:

- *Information access*: it is the central gateway of TeMo to access all information from within one application, i.e. from one place, in an easy manner. Indicator maps, charts, and benchmarks will be accessible through this gateway, so as metadata, domain, subdomain and indicator descriptions.
- *Domain, sub-domain and indicator-driven approach*: The application follows a domain, sub-domain and indicator-driven approach. Navigation is guided by the domains, sub-domains and indicators, as the building blocks. At the lowest level, all information for one single indicator will be presented at one place, at one hand.
- *Hyperlink navigation*: The browser application will rely on simple hyperlink navigation. The user will be guided through the application through the domains, sub-domains and indicators by simply clicking on hierarchical hyperlinks. Since the beginning of the WWW, people are familiar with this concept of user interaction.
- *Independence from software or OS requirements*: The browser application will be based on simple HTML techniques. Other (commercial) software than web browsers are not required to run the application. Moreover, a browser application based on HTML is independent from any operating system, and does not need to be formally installed. Just a click on the starting html file will open the application.
- *Independence from GIS*: The browser application will also be independent from any GIS software. ArcGIS or other GIS software is not needed to launch the monitoring system; however, interested GIS professionals can use ArcGIS or other GIS software to do their own types of analysis.
- *Easy sharing*: The entire monitoring system including all input data, maps and Excel files will be delivered on one CD-ROM[14]. The browser application can be launched directly from this CD-ROM, or, after copying the contents to the CD-ROM to a local hard drive, from any PC. The monitoring system, along with all its components, can then easily be shares with interested people just by handing over the CD-ROM (DVD).
- *Easy implementation*: A territorial monitoring system based upon HTML standards is rather easy to implement for the TPG, compared to developing dedicated software.
- *Website options*: Finally, the browser application based on HTML can be easily transformed into a formal website without significant amendments, if ESPON or VASAB are requiring this in the future.

From the central browser application, all other elements of the monitoring system can be accessed easily, without changing the medium.

[14] Optionally on DVD, subject to the final size of the database.

The TeMo GIS database

In order to allow for GIS analyses and mapping, a comprehensive TeMO GIS database in ESRI´s Personal Geodatabase format (PGDB, ArcGIS Version 10.1) will be developed, named **TeMo_DB**. The overall geodatabase will be structured by so-called feature datasets, feature classes and tables.

A ***feature dataset*** is a collection of related feature classes that share a common coordinate system. Feature datasets within a geodatabase are used to spatially or thematically organize and integrate related feature classes. ***Feature classes*** are homogeneous collections of common features, each having the same spatial representation, such as points, lines or polygons, and a common set of attribute columns (fields). The four most commonly used feature classes in a geodatabase are points, lines, polygons and annotations.

The third building block of a geodatabase is ***tables***. Tables store statistical data. Tables are not permanently linked to any feature class, but if a common field exist both a table and a feature class may be joined to each other. The join may be furthermore permanently saved in a so-called relationship class.

The **TeMo_DB** PGDB comprises feature datasets, feature classes and standalone tables, as shown in Figure 5:

- the feature dataset called **ADMINISTRATIVE_BOUNDARIES** stores line and polygon layers representing administrative units. Most of these layers were imported from the overall ESPON Database, however, the layers called **ZONES_TEMO*** represent newly created NUTS region layers.
- the feature dataset called **LANDCOVER** provides land cover and land use layers. Currently two layers are available, which are the **LAKES** layer, i.e. a layer representing water bodies derived from the seamless ESPON NUTS 5 municipality layer, and the **UMZ_PROJECT** layer, which represents settlements/urban areas, taken from the overall ESPON Database.
- The feature dataset called **OTHER_LAYERS** comprises various other layers that are needed for drawing maps or for GIS processing. All layers subsumed under this feature datasets were taken from the ESPON Database.
- Apart from these feature datasets, the **TeMo_DB** PDGB provides a number of different standalone tables, which can be combined into three groups: First, the template tables **ZONE_TEMPLATE_TABLE_NUTS3**, **ZONE_TEMPLATE_TABLE_NUTS2**, **ZONE_TEMPLATE_TABLE_NUTS1**, and **ZONE_TEMPLATE_TABLE_NUTS0** are template tables providing lists of all NUTS 3, 2, 1, and 0 regions that are used in ESPON TeMo. These templates can be used to create new tables. Tables starting with **RD*** and followed by numeric numbers represent "raw data" tables, i.e. tables to provide raw data that are needed to calculate certain indicators but that are not indicators itself. Finally all standalone tables starting with **DOM_*** store the actual indicators, where one table is supposed to store all indicators belonging to a particular domain (**DOM**) for a specific spatial level. The actual spatial level is provided as suffix to the table name **(*_NUTS0, *_NUTS1, *_NUTS2, or *_NUTS3)**. The following six domains were identified:

    - Economic performance and competitiveness (**DOM_ECONOMY_***)
    - Access to services, markets and jobs **(DOM_ACCESSIBILITY_*)**
    - Innovative territories **(DOM_INNOVATION_*)**
    - Social inclusion and quality of life **(DOM_SOCIAL_INCLUSION_*)**
    - Environmental quality **(DOM_ENVIRONMENT_*)**
    - Territorial cooperation and governance **(DOM_COOPERATION_*)**

A full description of this geodatabase, including detailed descriptions of database structures, fields and formats, will be given in the metadata document that will be provided through the database CD-ROM/DV and which will be accessible through the browser application.

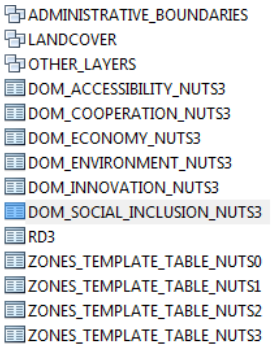

Figure 5. TeMo GIS Database Structure.

Documentation
After the testing and the full implementation of the monitoring system, a **Handbook** as well as a **Technical Specification** (tier documentation, figure 3) of the browser application, the GIS database, and the ArcGIS map templates will be written (tier documentation, Figure 3, see also chapter 2.5).

The handbook should enable all users of the monitoring system, whether politicians, novices or professional GIS experts, to utilize the overall system along with the developed database. Inter alias, it will include detailed instructions on how to use the various templates, files, and applications. Thus, the handbook can be considered a *system user manual*. The handbook will also be translated into Russian, to enable people from Russia and Belarus to use the system easily as well.

In addition to the handbook, the Technical Specification will contain the information needed for maintenance and update of the monitoring system as a whole with respect to the indicator definition, indicator calculation and indicator mapping. Regardless of the system implementation, indicators need to be updated regularly, and new indicators or even new domains or subdomains may be added. The Technical Specification gives advice on how to work with the domains, sub-domains and indicators.

2.4 Developing the concept for applications and testing

This WP consists of three consecutive sub tasks / research steps that are:

(i) Identification of test cases

(ii) Implementation and testing

(iii) Critical evaluation

At this stage the first task can be considered implemented through the two stakeholder meetings held in Potsdam and St Petersburg respectively as well as the communication from the ESPON CU. This section of the report is therefore focussed primarily on research step 2: Implementation and testing. The third and

final subtask (Critical evaluation) will be performed after the DFR has been submitted.

In order to establish the functionality of the monitoring system its analytical capacity will hence be tested in a selection of "real life situations" where the ability to meet policy requirements constitutes the key parameter for assessment.

Four particular investigative areas have been chosen for testing the capacity of the monitoring system, namely testing its:

1. **overall benchmarking** ability;
2. functionality within a pronounced **thematic focus**;
3. functionality to depict a particular **geographic scope**; as well as
4. ability to handle **cross-cutting issues**.

The evolvement of these issues and their selected focus is based on the requirements and suggestions put forth in a) the ToR of the project, b) the tender delivered by the TPG, c) Annex III to the project contract, d-e) the VASAB CSPD feedback from the two stakeholder meetings held so far (in Potsdam and St Petersburg), f) similar feedback received directly from individual countries, as well as g) the CU response to the inception report. These have not at times been fully congruent with each other, but the proposal put forth hereunder has tried to accommodate all viewpoints as far as feasible.

The overarching economic, social and environmental framework to be used is that of territorial cohesion, which reflects the horizontal goals of the EU stated e.g. in the Lisbon Treaty, the Europe 2020 Strategy, the Green Paper on Territorial Cohesion, the Territorial Agenda, the 5th Cohesion Report and the 7th Progress Report on Economic, Social and Territorial cohesion. In addition, the three principal territorial challenges faced by the Baltic Sea Region (N-S, E-W, U-R) will be taken into account where feasible. Finally, our interpretation of the normative VASAB Long Term Perspective goals (labelled "Baltic Raster" in the monitoring module tables) will be utilised throughout as the backbone of the analysis.

The assessments will be made with regard to both structural patterns as well as dynamic processes also incorporating differing scales of analysis (macro regional, national, regional, and [where feasible] local).

The key analytical factor here is the degree to which the capacity of the monitoring system allows for accurately capturing principal issues in relation to territorial cohesion within these given policy frameworks.

The overarching approach of the testing is confirmatory in the sense that an indication as to whether the monitoring system is able to accurately enough pinpoint the principal issues of interest will be sought for. However, in terms of technical or methodical approaches, the testing will by necessity have to be exploratory and different techniques will need to be utilised in order to extract as much, and as relevant, as possible information from the data sets at hand. Such exploratory analysis has much the character of trial and error.

Where meaningful, the data will also be filtered through any of the – for that particular case – relevant territorial typologies[15]. The typologies to be used stem from the provided ESPON CU Typology Compilation, but need to be supplemented with proxies for Russia and Belarus.

[15] These typologies are: 1) urban-rural regions, 2) metropolitan regions, 3a) border regions, 3b) border regions - internal and external, 4) island regions, 5) sparsely populated regions, 6) outermost regions, 7) mountainous regions, 8) coastal regions and 9) regions in industrial transition.

The TPG wishes to emphasize that the four tests conducted herein will not constitute in-depth scientific analyses of their respective themes. Rather, they should be viewed as compact state-of-the-art accounts of these issues, accounts that as such are possible to produce *within the capacity* of the developed system. Where feasible, additional data (i.e. information from outside the system) will be utilised in order to comparatively assess the capacity of the system to holistically depict these issues also with only the data contained therein.

VASAB has highlighted the importance to test both the simple as well as the more advanced modules of the monitoring system. All selected testing exercises will to varying degree generally allow for this.

Hereunder follows a short description of the four selected test cases. The description provided at this stage (with the monitoring system not yet having been entirely implemented) cannot fully take into account issues e.g. related to data availability and comparability, particularly concerning Belarus and Russia. In addition, the feedback from this interim report may affect the final design of the system in a way that needs to be reflected also when testing it.

Test case 1 – Overall benchmarking ability

In particular the correspondence from the ESPON CU as well as the feedback from two VASAB CSPD stakeholder meetings indicate that the BSR should be benchmarked not against other macro regions (as originally proposed) but rather against other INTERREG transnational areas. The feedback indicates that two such areas would be particularly suitable, namely the Alpine Space and the North Sea. The benchmarking exercises will thus as far as possible compare these two areas with the entire BSR, i.e. also including Belarus and NW Russia.

These two areas are particularly suited for such benchmarking as both of them are by and large territorially fully covered by regional data in the Eurostat data bases. Liechtenstein and Switzerland in the Alpine Space programme may constitute minor challenges insofar as data availability in concerned.

The benchmarking will in the first instance be performed solely on such data from the monitoring system that stems from Eurostat (supplemented by corresponding information for Belarus and NW Russia). The approach will therefore be rather broad providing an indication as to the a) feasibility as well as b) the rationality of such operations in general. Tentative indicators to include stem primarily from the domains of "Economic performance and competitiveness", "Access to services markets and jobs" (insofar as data on the two benchmarking territories is available), "Innovative territories", "Social inclusion and Quality of life" and "Environmental qualities". It appears at this stage as tough the domain of "Territorial cooperation and governance" would provide for little comparable data for this exercise.

The benchmarking will be performed at the principal territorial levels of the macro region on the whole, but will for some exercises utilise the regional level (NUTS 3, NUTS 2, or corresponding) as well as. Apart from traditional comparison e.g. to the EU27 average, more advanced analytic techniques (such as coefficients of variation or Gini concentration ratios) will be utilised in order to address the issue of territorial cohesion. Due comparison to relevant macro regional divides will be attempted e.g. by means of percentile share calculations.

Expected outcome of test case 1

This testing exercise will result in a validation of the monitoring system's ability to allow for (macroregional) benchmarking. It will demonstrate the (ease or difficulty) in utilising the information of the

system to comparatively contrast different cooperation areas with each other.[16]

Test case 2 – Thematic scope: migration

Several concrete proposals for the testing within a thematic scope have been delivered by the ESPON CU as well as the VASAB CSPD. Among others these included migration, accessibility, transport infrastructure, demography, research and innovation. Of these, the first two (migration and accessibility) were mentioned by both commenting entities. Bearing in mind the specific request that also NW Russia and Belarus as far as possible are not to be omitted from the testing exercise, migration appears to be the thematic issue that would be the most feasible to apply to the BSR.[17] Migration as a theme is also in accordance with the examples mentioned in the ToR of the project.

The CU has additionally requested that testing with a thematic scope "should be an exercise for the whole BSR" (as opposed to being "a more complex/detailed exercise on a relatively low geographical level"). The thematic testing on migration will hence in the first instance be based on regional data at NUTS level 3 stemming from the monitoring system. This hence implies that also data from Belarus and Russia will be included.

The principal focus of this test is the extent that migration plays in achieving territorial cohesion at multiple levels within the BSR. Migration within the BSR will be analysed both in terms of absolute volume as well as in relative terms.

The TPG has additionally received some comments regarding analysis of flow data. Eurostat hosts scattered data on domestic migration flows (i.e. origin-destination tables) at NUTS level 2 for Denmark, Finland, Norway, Poland and Sweden. The years reported vary, but 2007 appears the last year for all of them. For some BSR countries national sources also allow for origin-destination flows to be depicted at a finer level, and such data will be used whenever feasible. As domestic migration in general constitutes a lion's share of all gross migration in BSR countries, the issue of migration flows is tentatively an interesting point to highlight. Mapping such flows will need close cooperation with WP 2.4 (visualisation).

In addition, origin-destination data on international migration is also available at the national level, albeit the quality of such needs to be assessed on a case by case basis. This nonetheless also tentatively would add value in allowing for assessing the degree of the BSR becoming an integrated region in terms of movement of people.

As far as the data allows for it, more detailed analysis will be conducted at LAU 2 level in order to assess the extent to which data in the monitoring system is able to depict migration patterns and processes accurately. In other words, a comparison between findings at the cruder level of the monitoring system vis-à-vis those at a finer geographic scale obtained from national sources can thus be obtained.

Where meaningful, the migration data will also be filtered through any of the relevant territorial typologies mentioned previously.

[16] In one sense this is a non-issue, since given the strict focus on available data from central Eurostat sources the positive outcome is implicitly already given. Nonetheless, it will serve to demonstrate the possibilities or challenges in incorporating information from particularly Belarus and Russia.

[17] Even though neither migration nor accessibility data for NW Russia and Belarus are included in previous ESPON work, migration data can without modelling be collected nationally also for these countries.

The main migration data will also be cross-analysed with other variables from the monitoring system in order to establish the underlying forces of migration patterns within the BSR. Such analysis will utilise selected multivariate data analysis techniques (in the first instance multiple linear regression).

Expected outcome of test case 2

This test case will depict migration patterns and dynamics thereof within the BSR. It will at the level of the BSR demonstrate the extent to which the region is moving toward – or away from – becoming an integrated functional region in terms of movement of people. It will also demonstrate to what extent migration patterns are aiding the achievement of macroregional and national territorial cohesion in the BSR and will highlight the degree of the principal BSR territorial gaps being affected by migration. Finally it will by means of multivariate data analysis provide a crude picture of what are some tentative underlying forces in shaping migration patterns within the region.

At the level of functionality of the monitoring system, this exercise will validate the degree of the system's ability to accurately depict current patterns and dynamics of migration within the BSR utilising the data contained in it.

Test case 3 – Geographic scope: cross-border areas

The ESPON CU as well as the VASAB stakeholder feedback on the selection of a suitable testing target with specific geographic features reciprocally indicates that cross-border areas as well as rural areas would constitute a relevant testing theme with a geographic scope. Regarding cross-border areas the possibility to choose one cross-border-cooperation-programme region (or more) was proposed as a suitable test case geography. Additionally, feedback from both entities highlights the necessity of incorporating both NW Russia and Belarus into this testing.

The TPG assesses that the theme of cross-border areas would accommodate the above-mentioned proposals best. This would also be in accordance with the examples listed in the ToR of the project. In order to cater for the inclusion of NW Russia and Belarus into the analysis, and in order to simultaneously maximise the relevance for as large a share of the BSR as possible, we would suggest including all border areas participating in EU CBC programmes involving countries outside both the EU and EFTA as well as their corresponding adjacent regions in Russia and Belarus. Denmark and the BSR parts of Germany would thus in this case be the only countries not included in the analysis.

Within the BSR, focus should primarily lay on community external borders. Also including all internal border regions (i.e. regions located on borders between EU Member States and/or EFTA countries) would imply that e.g. in addition to entire Denmark, Estonia and Latvia, most of Lithuania and Sweden as well as substantial parts of Finland and Norway would be considered a border region. This would not aid meaningful comparison of the negative effects of borders as administrative, legal and physical barriers and their possibilities to exploit untapped potential.

The identification of these areas is based on DG Regio / ESPON typology of "Border regions - internal and external" which identifies regions participating in the core areas of cross-border cooperation programmes in the programming period 2007-2013. This would also to a certain extent allow for a natural incorporation of the east-west divide into the analysis

In the EU/EFTA part of the BSR this would imply 37 NUTS 3 regions that participate in programmes involving countries outside both the EU and EFTA

(draft map in figure 6). In addition, the R. of Karelia, and the oblasts of Murmansk, Leningrad, Novgorod, and Kaliningrad in NW Russia as well as Brest, Grodno and Vitebsk oblasts in Belarus would be included correspondingly.

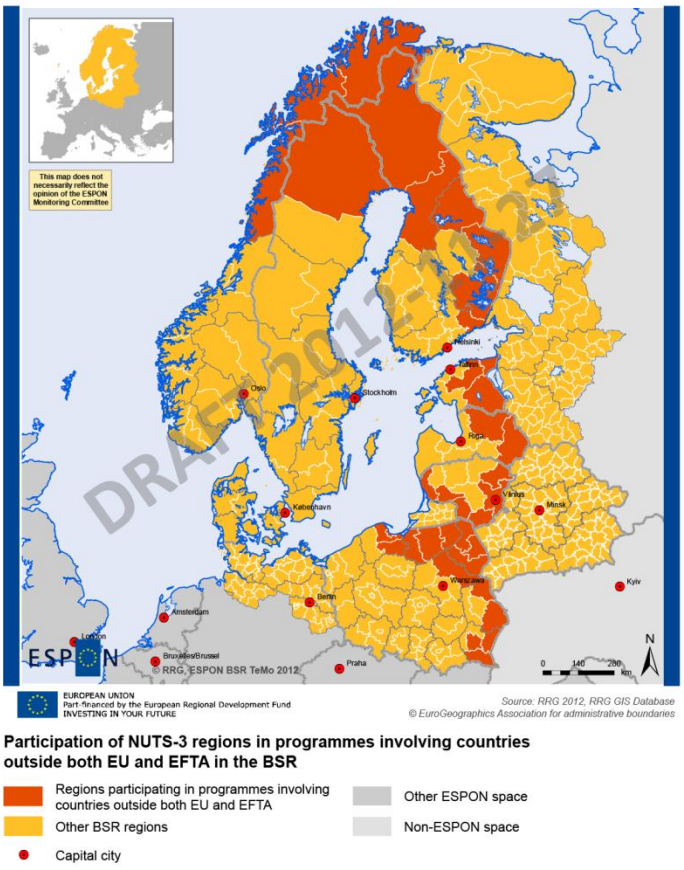

Figure 6.Draft area for test case 3.

The focus will lie solely on those border regions that are within the BSR, thus excluding the corresponding adjacent regions in Ukraine or Slovakia from the analysis.

In accordance with recent EU level policy development, apart from the overarching question of territorial cohesion, place based economic development and the development of territorial assets or territorial capital will constitute the guiding framework for the analysis. The approach of the analysis will primarily focus on the following overarching questions:

- How do the selected border regions in the BSR perform in comparison to non-border regions? What is the role of these cross-border areas in reaching the goal of overall territorial cohesion within the BSR?
- How large are these cross-border disparities across the BSR and in what direction are they moving?
- What competitive features of these cross-border areas appear underutilised today and could constitute future potential for better capitalisation of their development potential?
- Which are the patterns and magnitude of cross-border cooperation within these areas?

Answers to these questions will be sought for in the first instance by utilising information contained in the monitoring system and in the second instance by

utilising more detailed information from national sources, which could also include data at finer geographical levels.

Thematically, all domains of the monitoring system will be explored in order to holistically highlight the specific features, challenges and opportunities of cross-border areas in the BSR. Such an analysis calls for cross-sectional data investigation.

Expected outcome of test case 3

This test case will chart the relative position of cross-border areas within the BSR vis-à-vis other areas in the regions. By utilising information from the monitoring system it will provide a picture of the state and trends of cross-border disparities and their wider implication for overall territorial cohesion within the BSR. By means of comparative cross-domain analysis, indications of underutilised development potential in cross-border areas will tentatively be identified. Finally, the level of cross-border cooperation (both physical as well as institutional) will be depicted.

At the level of functionality of the monitoring system, this exercise will confirm the possibilities of the system to portray the specific development challenges faced by cross-border areas in the BSR and the possibilities for identification of currently underutilised or future tentative development potential within the BSR utilising the data contained in the monitoring system. Wider implications of the possibilities of the monitoring system for conducting similar analyses also concerning other specific types of territories (islands, mountainous areas, sparse, etc.) in the BSR will also be obtained.

Test case 4 – Cross-cutting issue: Territorial cohesion

A number of proposals for cross-cutting issues by which to test the monitoring system's capacity have been delivered to the TPG. The stakeholder meetings held with VASAB CSPD identified particularly the following themes: rapid development, rural areas' potential for performing, growth of secondary cities vs. mono-centric development, and territorial cohesion as a cross-cutting theme in itself. The ESPON CU in turn recommended choosing fields of conflict such as energy networks/energy production and other land uses or land consumption as such related to key sectors.

Bearing in mind that

- the testing is primarily intended to be performed utilising the data of the system, and that
- the overarching goal of the system is to measure territorial cohesion, and that
- none of the prior three test themes (macroregional benchmarking, migration, cross-border areas) are addressing the main rationale of the system,

the TPG assesses that choosing territorial cohesion in the BSR as a cross-cutting test theme would in this instance be appropriate. This would allow for including information into this testing exercise that spans the entire framework of the monitoring system, which will aid the eventual evaluation of the system's overall capacity.

As the TPG is also obliged to consider "complex indicators", something which could be interpreted as a partial output of applying different (more complex) techniques on different variables of the system, this thematic focus would allow for such analytic tools to be incorporated into the testing as well.

In order to obtain a coherent picture of a) the status of and b) the trend in territorial cohesion in the BSR, the aim is to measure TC utilising a multitude of different analytical techniques. Apart from more simple / traditional graphical illustrations of patterns and trends, more advanced techniques are also called for. Inspiration for suitable such will be sought for e.g. from the DG Regio Working Paper[18] where different techniques to assess spatial disparities are tried and evaluated. Such analytic frameworks included e.g. Beta and Sigma convergence measures as well as different distributional techniques such as Gini Coefficient Ratio. Additionally, measures of cross-border disparities will also be included. Utilising such more complex techniques is not an end in itself, rather, the findings of such need to be "translated" into common parlance in order to ensure high policy relevance, thus tentatively providing answers to the following overarching questions:

- how balanced is the overall territorial development of the BSR? In which direction does it appear to move?
- how large are the territorial discrepancies across the region? Where are the steepest gaps in socioeconomic development?
- is the level of polycentricism maintained?
- etc.

Ideally, the testing of more advanced techniques should be applied to at least one indicator per each domain in order to provide for a holistic picture of the current state and trends in territorial cohesion.

Cohesion will be examined as a BSR issue, a national issue as well partially as a boundary discrepancy one. The TPG also strives at incorporating the three principal regional divides of the BSR into the analysis of territorial cohesion wherever feasible.

The approach will also where feasible explore the effects of multiscalarity on determination of the concept of territorial cohesion.

Finally, the TPG also foresees a multi-sectional analysis where different economic, social and environmental aspects of relevance for TC are analysed jointly.

Expected outcome of test case 4

This test exercise will provide a coherent and thematically holistic picture of the current status of territorial cohesion in the BSR. It will do so by applying a cross-sectional approach that incorporates items from all domains of the monitoring system taking into account issues of multiscalarity, the principal BSR divides, with both a macro - and a national level approaches.

At the level of functionality of the monitoring system itself, this test will demonstrate the overall usability of the system for depicting and measuring TC and it will provide for a real-life testing of more "complex indicators".

Critical evaluation

The final subtask of this WP which involves a critical evaluation of the monitoring system where the outcome of the test cases will be analysed in a structured manner. Strengths and weaknesses emerging from the testing process will be

[18] Monfort, Philippe (2008) Convergence of EU Regions. Measures and Evolution, DG Regio Working Paper n° 01/2008

identified and tentative suggestions for readjusting the monitoring framework will be forwarded. This evaluation will also provide an assessment of whether the way in which the results are visualised corresponds to the user needs, or whether the visualisation approach (of WP 2.4) is in need of further refinement.

Allocation of resources in WP 2.3

The tentative allocation of the remaining resources used for conducting the separate tests is foreseen as in table 7.

Table 7: Allocation of resources for testing

Task		***Resources allocated***
Subtask 2: Testing	Test case 1 – Overall benchmarking ability	**10 %**
	Test case 2 – Thematic scope: migration	**20 %**
	Test case 3 – Geographic scope: cross-border areas	**20 %**
	Test case 4 – Cross-cutting issue: territorial cohesion	**40 %**
Subtask 3: Critical evaluation	**Critical evaluation of the testing results with implications for the design of the monitoring system**	**10 %**

This tentative division would also largely reflect the relative volume of the WPs input into the DFR and FR reports respectively.

Timing & reporting of WP 2.3

This WP is scheduled to run for 14 months from November 2012 until December 2013. The first preliminary results of this WP will however be reported already in the Draft Final Report of June 2013 and discussed at the fourth Steering Committee meeting in September that same year. At this stage, these findings will also be used as feedback for the final construction of the monitoring system. The final results of this WP will be reported in the Final Report of February 2014.

2.5 Dissemination: Technical Specification and Handbook

The interactive TeMo dissemination activities consist of:

- Stakeholder work shop (held in Potsdam the 21st of June 2012)
- Presentations for relevant stakeholders (a list of those already held: see annex 2)
- Presentation at ESPON seminars (TeMo is on the agenda in December in Cyprus)
- A final seminar presenting the monitoring system (details still to be decided)

The written deliveries consist of:

- The formal ESPON deliveries (Inception Report, Interim Report, Final Report)
- Handbook + Technical Specification

- Other publications (articles in newsletters, on web pages etc.)

In the application, it was suggested to deliver **a Handbook** on the use of the monitoring system but at the Potsdam VASAB Stakeholder work shop in June, it was decided to supplement with a **Technical Specification** for the future maintenance and update of the system. This makes it possible to develop the Handbook as a targeted document for the end-users of the monitoring system only; and keep the technical specifications for the maintenance and update of the system in a separate document.

The Handbook is to present the monitoring system in an easily understood manner, enabling the users to understand the structure of the browsing application and enable them to extract relevant information for their individual needs. The handbook will include a description of what data is available for each indicator (geographical scope and time series), how the data is organised within the browsing application, and how the various templates, files, and applications can be used. Furthermore, the Handbook will outline how the indicators can be interpreted, and it will also summarise the case study testing of the monitoring system carried out during the TeMo project. Finally, the Handbook will state how the user can acquire a copy of the CD-Rom with the browser application.

The Handbook will consist of a mix of text and visualisation elements and will be published in the form of a pdf-document that enables easy distribution of the Handbook to interested users both via email and via relevant web pages. It will supplement the browsing application both by being an introduction the monitoring system as a whole (the Browsing Application + the Handbook + the Technical Specification) and by serving as a hands-on guide on how to use the browsing application.

At the Potsdam VASAB Stakeholder work shop, it was also decided to translate the Handbook into Russian in order to improve the dissemination of the monitoring system to a wider audience of users in the Baltic Sea Region.

The main differences between the Handbook and the Technical Specification are outlined in table 8.

Table 8: Comparison of technical specification and handbook.

	Technical Specification	Handbook
Function	To aid future maintenance and updates of the monitoring system	To guide the users of the monitoring system both of how to use the system and how to interpret the results.
Target Audience	Those carrying out the future maintenance and updating of the monitoring system	Practitioners, policy makers, and others interested in using the monitoring system
Publication	Annex to the final ESPON report of the TeMo project	A PDF-publication that can be easily distributed
Language	English	English, Russian

Final seminar
In the application it was outlined that the final dissemination seminar of the monitoring system should be decided upon in cooperation with VASAB.

While the details (where, when, in connection with other VASAB/ESPON events?) on the final seminar are to be discussed further on a VASAB Stakeholder meeting in Oslo in January 2013, it was decided at the Potsdam VASAB Stakeholder work shop that the final seminar should NOT be held in Russia or Belarus. The dissemination benefits of this would be diminished by the visa requirements for other nationalities (see also annex 1).

2.6 Institutionalisation

In order to make the proposed territorial monitoring system for the Baltic Sea Region useful for the different actors and stakeholders in the Baltic Sea Region, the TPG is aiming to propose appropriate measures for the maintenance and update of the system even after end of the ESPON BSR TeMo project. To develop these measures, one has to address and solve a number of key issues, including (Figure 7)

- institutional setup and ownership (who is responsible?),
- staffing (number of persons required, needed skills),
- technical requirements and capacities (hardware, database, software),
- organizational aspects (data gathering, timing, etc.),
- dissemination activities and publications (different means, scheduling etc.),
- liaison with stakeholders,
- public access to the monitoring system and
- financial considerations.

Solving the above issues is key to transforming the monitoring system from a one-time effort (i.e. from an ESPON project) into a permanent, somehow institutionalized system that is valuable and usable for the Baltic Sea Region in the future.

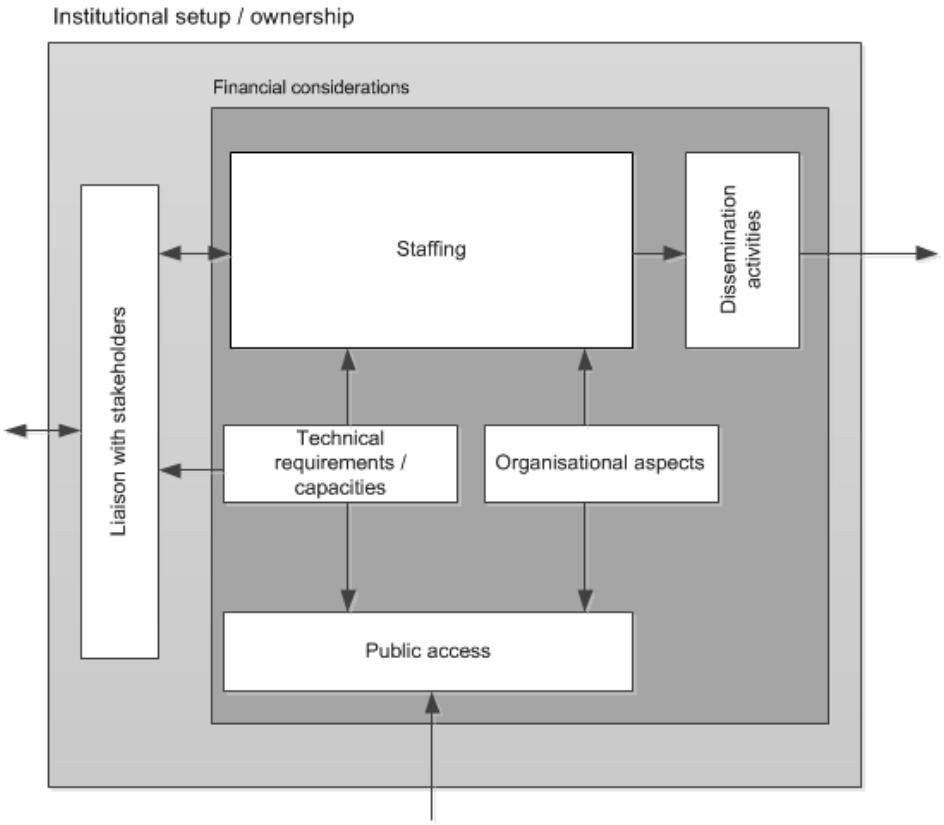

Figure 7. Key aspects for system implementation

Institutional setup and ownership

In order to ensure maintenance and future improvements of the monitoring system, one institution should be designated as the 'owner' of the system. The system 'owner' will be politically responsible for system maintenance, for granting public access to and for disseminating results of the territorial monitoring. In the ideal situation, the 'owning' institution shall also be the institution which technically implements and hosts the system.

However, acknowledging the technical, organizational and staffing requirements to run such a system (see below), a solution may be selected where the owning institution transfers the concrete implementation to another organization which already has technical, organizational and staffing competences to the required degree.

Since in the Baltic Sea Region a number of different trans-national organizations and cooperation's are already active, different solutions could be thought of for the institutional setup and for the ownership of the monitoring system. A new institution may be founded, or existing institutions or initiatives may be identified to designate responsibility to for the monitoring system.

Staffing

In order to run such a complex system as the proposed territorial monitoring system for the Baltic Sea Region, staff (experts) needs to be assigned to this system to work on a day-by-day or week-by-week basis. Experts should at least cover the following skills:

1. knowledge in GIS, geodatabases and mapping
2. knowledge in working with quantitative indicators at European scale
3. knowledge in statistical analyses and indicator interpretation
4. experiences in data gathering and data processing
5. experiences in European territorial cohesion policies, and experiences in policy debates in the Baltic Sea Region
6. knowledge about databases, data sources and data vendors in the European sphere, including Eurostat, ESPON, and national statistical offices
7. experiences in cooperation with different actors and stakeholders in the Baltic Sea Region (liaison)
8. experiences in dissemination and marketing activities, including 'help desk/contact point' for people from the Baltic Sea.

Individual experts may cover all of these skills; however, it seems advisable that at least three experts are assigned, one for the more technical aspects of work (1-3), another expert for data gathering and data processing (4), and eventually an expert for the more 'soft' skills (5-8). It needs to be assessed whether these activities require full time position(s), or whether part time work is sufficient.

Technical requirements and capacities

Besides appropriate experts needed to run the system, also some fundamental technical aspects need to be implemented:

First, an appropriate geodatabase needs to be established where all indicators and geodata are hosted. Second, appropriate GIS software needs to be at hand, allowing drawing maps and charts, to maintain and further develop the

geodatabase, and to import, export and process the needed statistical and geographical datasets. Third, depending on the envisaged dissemination means and means of public access, also appropriate internal and public website functionalities needs to be provided. Fourth, as the territorial monitoring system should act as a central gateway to relevant spatial information for the Baltic Sea Region, a central contact point (help desk) should be established. For this, fixed line telephone and e-mail facilities need to be provided to the public.

Organizational aspects

Running the monitoring system, and in particular keeping it 'alive', requires continuous database updates and database improvements. Also, new indicators may be added to the system, so as indicators may be dropped in the future, reflecting new political challenges in the times to come. All this is needed to keep the system useful and valuable in the future.

Strong organization schemes are thus required in order to organize

- data gathering and data update processes
- recalculation of indicators and re-generation of maps and charts
- updating of dissemination materials and websites
- updating and further development of various means of public access to the results
- links and liaisons with all the actors and stakeholders in the Baltic Sea Region
- promotion of the territorial monitoring system as such at European, national and regional scale

Dissemination activities

The existence and results of the monitoring system needs to be promoted in the Baltic Sea Region, and in Europe as a whole. Dissemination activities may include, but are not limited to; websites, CD-ROMs, database extracts, reports, newsletters and leaflets, organization of or participation in workshops and conferences, development of indicator fact sheets, and other means.

A dissemination strategy should be developed, how to capitalize the results of the territorial monitoring to the stakeholders and people in the Baltic Sea Region.

Liaisons with stakeholders

The monitoring system shall not be developed in an 'ivory tower', but shall actively interact with and liaise with the stakeholders in the Baltic Sea Regions, such as the VASAB Committee, the Joint Technical Secretariat of the Baltic Sea Region Programme, ESPON CU, national governments, other institutions in the field of spatial planning and development, and with data providers, such as Eurostat, ESPON Database, national statistical offices and others.

Active exchange is important not only for updating the system in technical terms (data), but also in terms of updating the general contents of the system, and in coordinating the dissemination activities. Cooperation with these actors may multiply the level of awareness of the monitoring system, and will be useful for its further development and exchange of experiences with other regions in Europe.

Public access

Means should be develop allowing the public to directly access the monitoring system, for instance via interactive web interface, or download options (e.g. downloading maps, charts, data tables, reports, fact sheets etc.). This would require development of an appropriate web site. Acknowledging the various information needs of different actors and stakeholders, the web site should provide different ways of accessing the monitoring system, either via a web GIS application, documents download, dynamic map gallery, and others.

Financial considerations

By way of institutionalizing the monitoring system some financial considerations must be given. Depending on the selected institutional setup, the financial budged needed to run the system differs significantly, depending on as to whether a new institution will be founded (one extreme option), or the duties of the system will be assigned to existing institutions already active in the field of spatial monitoring (comparatively little additional budget needed, other extreme option).

3 Description of tasks towards the Draft Final Report

The ESPON BSR-TeMo project is operating based on 14 tasks outlined in the application. Although some aspects of these have obviously changed during the process of implementation we can assess the status of these at this stage.

Table 9: Overview of tasks and progress.

Tasks to meet the objectives of the project		Status
T1	Perform a desk based review of theories, trends and policies related to territorial development, territorial cohesion and territorial monitoring. Specifically investigate the VASAB LTP, the EU BSR Strategy, the EU 2020 Strategy, the EU Cohesion Policy and the Territorial Agenda 2020.	✓
T2	Extract, through seminars or workshops with relevant stakeholders, the need for simple and complex indicators to monitor policy progress and territorial development.	✓
T3	Define appropriate geographical scale for implementing the monitoring system.	✓
T4	Select appropriate and policy-oriented indicators which also reflect the three main territorial cohesion challenges of the BSR, which are the east-west divide, the north-south divide, and the urban-rural divide.	✓
T5	Investigate the data availability at different spatial scales (from raster or LAU2 level up to national level), temporal data availability (allowing for time-series analyses), and easiness/difficulty in data collection or indicator calculation.	✓
T6	Gather, organize and harmonize data in order to implement the selected indicators.	**Started**
T7	Construct indexes and combined indicators to include in the advanced module.	(N.A)
T8	Categorization and grouping of regions after basic structural indicators making it possible to benchmark within comparable groups	After I.R
T9	Visualize current/present territorial structures, differences and trends with appropriate maps, figures and tables. Also, combining different cohesion dimensions – trends and states – in easy-to-read and easy-to-understand maps, figures and tables.	After I.R
T10	Test the developed monitoring system by first demonstrating its capabilities in presenting indicators and secondly by testing their analytical capabilities by performing applied analyses in a number of thematic fields and regions.	After I.R
T11	Develop a concept for benchmarking the BSR macro regions with other macro regions in Europe, and with ESPON space as a whole, including classification of regions based upon typological characteristics.	After I.R
T12	Prepare handbook and technical specification for the monitoring system.	After I.R
T13	Draw up a roadmap for the further development of the monitoring system including maintenance, updates and system transfer to other macro regions.	**Started**
T14	Use different forums and channels to disseminate the output of the project, both in terms of monitoring modules and the results of applied testing and analysis.	**Started**

A major task after the submission of this Interim Report, a task which is already started, is to gather, organize and harmonize data in order to implement the selected indicators. Many of the indicators are already collected by the TPG as they are available from previous ESPON projects. Other data has been scoped based on contacts with Helcom and by downloading data from Eurostat databases. At this point the amount of data gathered for the BSR-TeMo system could be described according to figure 8; however data is collected continuously.

Figure 8. Current assessment of the data situation.

Even thought there might not be such a clear distinction between a simple and a complex module, one important task after data has been collected will be the construction of indicators. This might involve simple implementation of time series in order to show change over time, or the combination of e.g. soil sealing and population (capita). In some instances this involves more refined analysis of transport and population data to construct accessibility indicators.

Both tasks 8, 9, 10 and 11 falls within the visualisation and testing work packages which are envisaged to be carried out primarily after this Interim Report. These tasks have been explained in the text above and their respective time frames can be assessed based on the updated BSR-TeMo timeline introduced below in figure 9. A new task within the visualisation work is the development of the aforementioned browsing tool for accessing the results of the monitoring system.

Task 12 has been altered and does now includes a handbook and a technical specification; in order to clearly distinguish these two documents. These will be delivered after the system is finally constructed, but a draft will be presented in the Draft Final Report.

Task 13 is concerned with the further development of the monitoring system and this task has already been initiated by the TPG at this early stage in order to make sure there is an early recognition of this issue and an understanding of the requirements for maintaining such a monitoring system. Therefore an entire sub chapter (2.6) has already been devoted to this task in this Interim Report.

Finally, task 14 is about disseminating the output of the project, both in terms of monitoring modules and the results of applied testing and analysis. As outlined in annex 2 this has already started since the TPG has been invited to various conferences and meetings to present the monitoring system. The dissemination work package is scheduled to begin in early 2013.

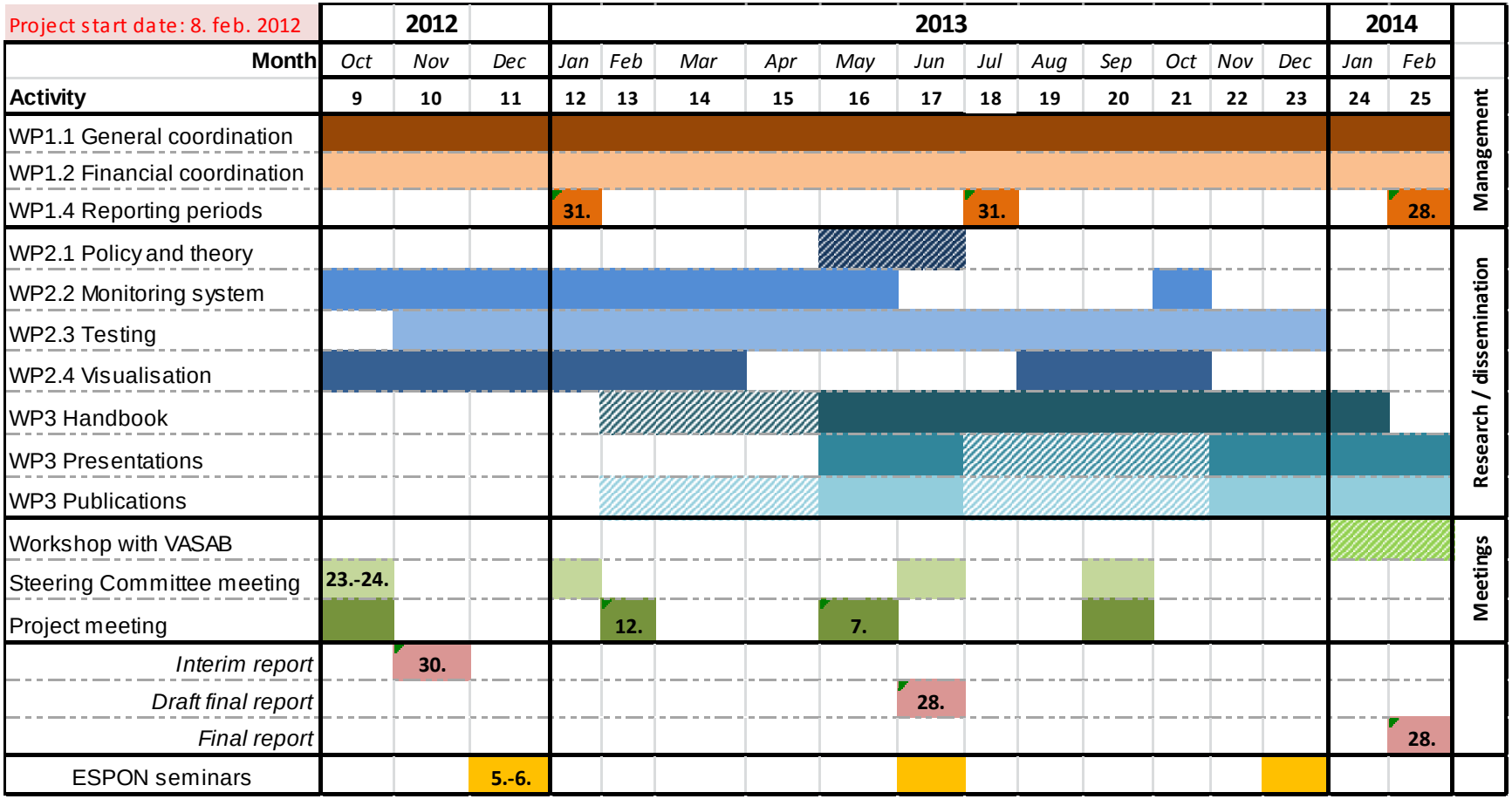

Figure 9. Updated project timeline

Annexes

List of Annexes

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Annex 2: Dissemination activities

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Annex 9: Discarded indicators

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Annex 1: Report from workshop with VASAB

ESPON 2013 Programme

Territorial Monitoring for the Baltic Sea Region
ESPON BSR-TeMo

Work Shop with the Steering Committee 21st of June 2012 in Potsdam

Meeting place: Hotel Mercure, Potsdam

Main Outcomes

Visualisation

Decisions:

- NUTS3 is the starting scale for the monitoring system - the finer the better, but NUTS3 is acceptable.
- A range of visualization tools should be used
- Time-series is particularly interesting
- The urban-rural, East-West, and North-South divide is relevant
- No strong interest in other typologies such as island regions and border regions, and functional regions are difficult.

Concrete opinions on the types of map:

Flow maps are interesting, for instance on migration, and cohesion and integration.

Cloropleth maps are probably the basic visualization but they have problems in that the large regions look to have problems but very few people live there

Point maps give a better picture.

Overview connection maps are also important to show infrastructure, pipelines etc.

Chart maps are sometimes difficult – so be careful here.

Plot diagrams with two dimensions are good

Indicators:

Decisions:

- The outlined policy approach was agreed upon
- NUTS3 is the desired level; but NUTS2 or national indicator can be necessary where regional indicators are not available.
- The Northern Dimension policy document and the new transnational programme are important to include in the determination of the policy domains
- Important to keep the territorial dimension
- Other organisations efforts (such as Helcom) should not be duplicated

Main points/outcome/ideas of group work on the suggested domains:

Particular sectoral policies are not the prime objective, selection of indicators should be well balanced.

Be specific on the territorial capital

Environment: from a planning perspective wind power is important and perhaps also some emission indicators.

Functional areas could be shifted to territorial governance.

Accessibility/quality of life should be split into two domains. Quality of life is of growing political interest.

Services should be taken into account as a perspective in quality of life.

Accessibility is an important domain - with a specific BSR profile.

Innovation: It was stressed that innovation is often measured by education, investment in RD but this does not necessarily led to innovation. Be aware of the ESPON Kit project in this regard. Cluster is a tricky theme to handle and maybe we should talk about nodes or agglomeration.

General: benchmarking is important. Perhaps also in a global context, particularly innovation.

Balancing territorial development is important. Four sub-domains were identified: demography (including age structure, migration), economy (innovation), accessibility (transport, social, ICT) and services, and city network and relations.

E-connections and ICT are of particular importance in rural areas.

It could be interesting to measure the relation btw. potentials of cities/regions and the ability to utilize these potentials.

Territorial Governance: perhaps not a key domain but rather a sub-domain.

The groups' input on the full range of domains:

- Functional areas should not be a domain. Functional areas are a tricky concept - what are functional areas defined by?
- Perhaps culture should also be included, culture as an asset; trust, rich cultural identity.
- Urban-rural relations are another wish.
- Polycentric is a tricky theme and at which scale.

Testing/case studies:

Decisions:

- Including Russia and/or Belarus in the cases is important to show that the system works for the whole BSR.
- Benchmarking against other macro-regions such as Danube is not a main priority.
- Although the aim is not to provide analytical results but rather to test the system, a content-filled benchmarking case would be preferred.

Concrete suggestions for the case studies:

- Benchmarking: the North Sea, another macro-region, Alpine Space
- Thematic tests: Migration, Accessibility, Flows – something not too traditional
- Specific locations: A border region including Russia and/or Belarus (based on one cross-border-cooperation-programme region or more). TPG makes investigation into what is suitable for this. Rural areas are also of great interest.
- Cross-cutting issues: Rapid development, Rural areas' potential for performing, Growth of secondary cities vs. mono-centric development, Territorial cohesion (a cross-cutting theme in itself)

Dissemination:

Decisions:

- The handbook should be translated into Russian
- The final seminar should not be held in Russia or Belarus.
- Fine with two publications: a technical user manual – perhaps as part of the final report – and a more user-oriented publication. Both only available online.

Other ideas for dissemination:

- The VASAB web site for online dissemination
- Presentation on the Russian annual event held in October.
- Presentation on the BSR strategic forum.
- The final seminar could be co-hosted by VASAB – perhaps in Lithuania when they have the presidency and will have the December-ESPON seminar anyway.
- Distribution of the final report via the national/ministerial web pages

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Annex 2: Dissemination activities

Already, there has been a great interest for the ESPON BSR-TeMo project and the TPG has participated in a number of dissemination activities during 2012. These are shortly described below.

Presentation of TeMo project at the XI ANNUAL LEADERS OF STRATEGIC PLANNING FORUM on 22-23 of October 2012 in Saint-Petersburg. Organized by: State Duma of the Russian Federation, Ministry for Regional Development of the Russian Federation, Ministry for Finance of the Russian Federation, Ministry for Economic Development of the Russian Federation, Saint-Petersburg City Administration, Center of Strategic Research, ICSER Leontief Centre.

Presentation of TeMo project and participation in discussions about the interaction between ESPON research and INTEREG Programmes. ESPON SCALES Conference in Berlin on October 30. Organized by: German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR)

Presentation of TeMo project at Institute of Territorial Planning Research at Vilnius Technical University and Ministry of Environment "National Urban Forum" in Vilnius on 15th of November.

Presentation of TeMo project at Baltic Sea Region Program 2007-2003 meeting of the Monitoring Committee for the Baltic Sea Region Programme 2007-2013 & Joint Programming Committee for the Baltic Sea Region Programme 2014–2020. 27-28 November 2012 in Riga/Latvia.

Annex 3: Regional subdivision of the study area

NUTS-3 and NUTS-2 levels are identified as the main geographical scales to work at in ESPON TeMo. Following is a comparison of these NUTS levels for the countries concerned (Table A.3.1), as well as an illustration of the regional boundaries (Figure A.3.1).

Even though there is already a newer NUTS classification, the NUTS 2006 system will still be used (Eurostat, 2007) since all the data provided by Eurostat, representing one of the main data sources, still refers to this classification.[19]

Table A.3.1: NUTS3 and NUTS2 levels in the Baltic Sea Region.

Country	NUTS2		NUTS3	
Belarus	Oblasts	7	Rayons (sNUTS4)	118 (130**)
Denmark	Regioner	5	Landsdeler	11
Estonia	Country	1	Groups of Maakond	5
Finland	Suuralueet / Storomraden	5	Maakunnat / Landskap	20
Germany *	Regierungsbezirke	8	Kreise / kreisfreie Städte	66
Latvia	Country	1	Regioni	6
Lithuania	Country	1	Apskritys	10
Norway	Regions	7	Fylker	19
Poland	Województwa	16	Podregiony	66
Russia *	Oblasts	7	Rayons (sNUTS4)	123***
Sweden	Riksomraden	8	Län	21

** Only those entities located in the BSR.*

*** Including towns of oblast subordinance (urban locality with the population of not less than 50,000 people; it has its own body of self-government). Belarus officially has 118 rayons, but there are separate statistics for towns of oblast subordinance.*

**** On the level sNUTS4 Russian statistic includes rayons and municipality districts.*

Apparently there are huge differences in the number of regions between the BSR countries, both at NUTS-2 and NUTS-3 level. While at NUTS-2 level the three Baltic States are not further subdivided, Germany, Sweden and Poland have 8, 8 and 16 NUTS-2 regions, just to mention the extremes. At NUTS-3 level, the number of entities is even more significant, ranging from 5 regions for Estonia up to 66 for Germany and Poland. By way of consequence, the average size of the regions is differing accordingly.

This basic drawback of the current NUTS classification cannot be amended by ESPON TeMo, since many datasets are provided based upon this classification. Therefore, the project will attempt to find additional data at LAU-2 or raster level; if not for all BSR countries, LAU-2 or raster data may be exemplified for a subset of them. One of the main advantages of using regular raster systems[20], for

[19] In case Eurostat manages to fully update its Regio database to the NUTS2010 classification, we will use NUTS2010 if corresponding NUTS region GIS layers for NUTS2010 system are also available through ESPON database project.

[20] I.e. raster systems where each raster cell is of same size.

instance, would be to get rid of the distortions caused by the different sizes and different numbers of NUTS entities.

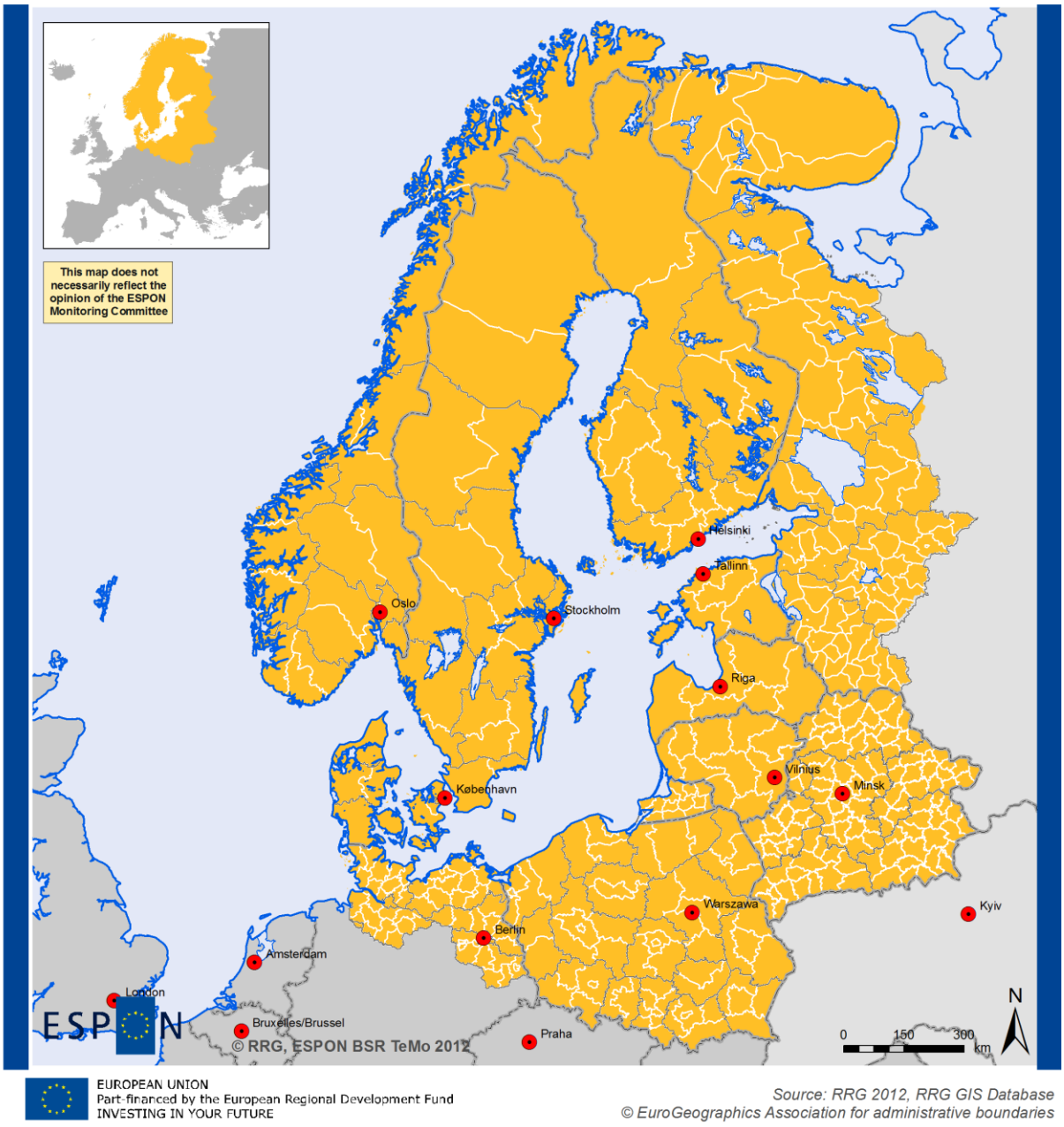


Figure A.3.1. NUTS-3 and NUTS-2 levels in the Baltic Sea Region.

Annex 4. Map template for the BSR region

Since the monitoring system to be developed should focus on the Baltic Sea Region, it was decided to develop a new map template (BSR mapkit) in ArcGIS for this territory based upon the general ESPON map templates (Figure A.4.1).

The justification for this new template is that all maps produced for this monitoring system should highlight the specificities, trends and spatial patterns within the Baltic Sea Region as best as possible, i.e. the map scale and map extent should be adjusted to this area.

Of course the new map template needs to follow the general ESPON map guidelines to ensure harmonized map layouts. Figure A.1 illustrates the new map template for ESPON TeMo, highlighting the study area and its adjacent regions.

The main map is fitted to the outline of the BSR region. Adjacent areas are shown as well, from Russia in the East to the UK in the West, plus neighboring regions to the south. The additional overview map highlights the BSR territory in the overall ESPON space.

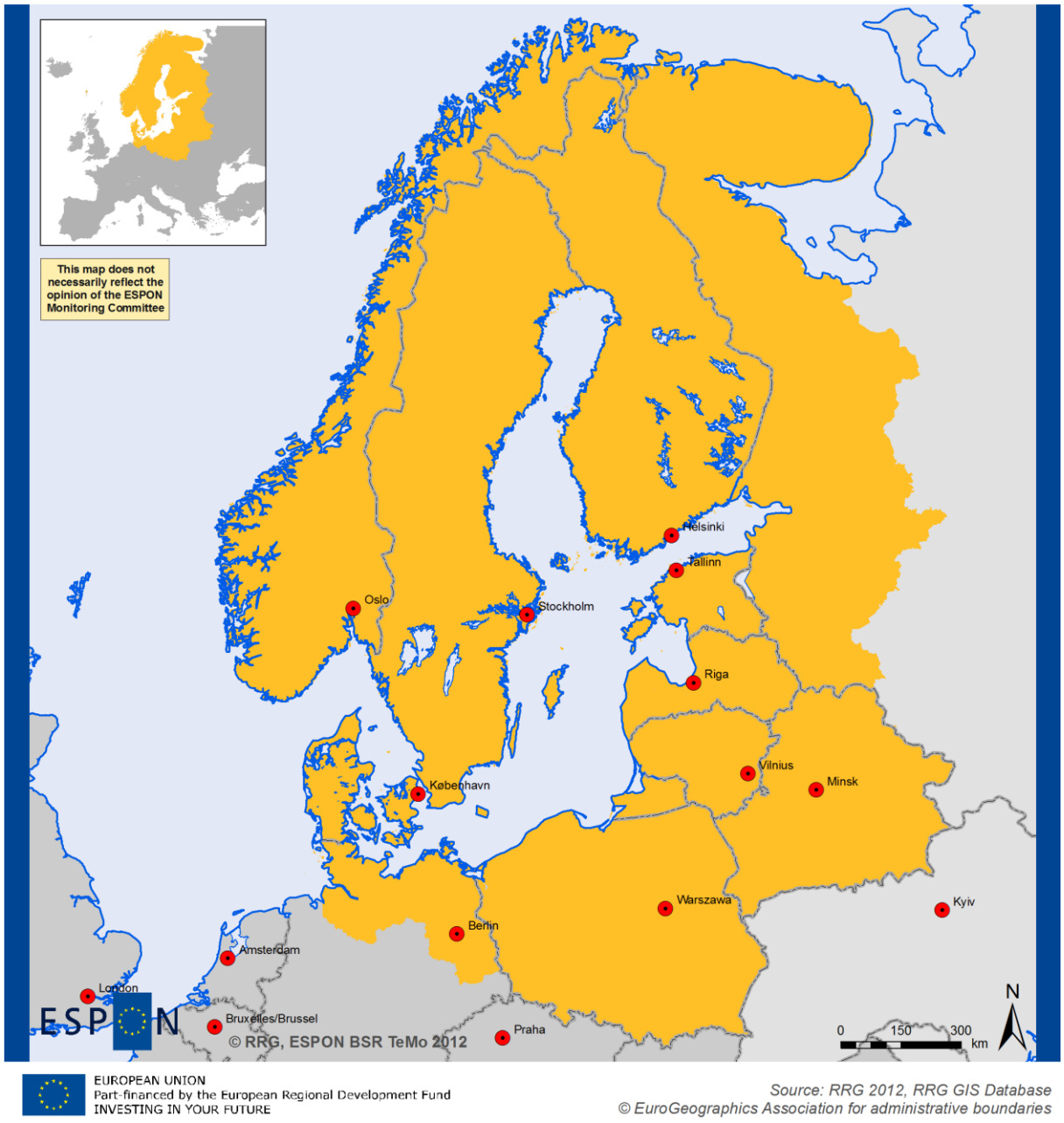
One of the advantages of this focused map template is that, as the spatial extent is adjusted to the outline of the BSR, higher spatial details can be shown. For instance, indicators at LAU-2 or raster level can be illustrated much clearer compared to Europe-wide map extents.

Apart from this new map template, the ESPON TeMo project need to work on the GIS input layers in two different aspects:

- ***Generalization level***: The standard ESPON shapefiles provided by the ESPON Database project are highly generalized. This generalization was introduced with the view to produce clear and easy-to-read maps. What works well for the cartography, entails certain drawbacks when attempting to use these layers for spatial analysis. Through the generalization overlay procedures in the GIS will return unreasonable results, for instance when spatial objects plunge 'into the sea' or when spatial objects 'move' over country boundaries. Therefore, for GIS analyses, the project team seeks for alternative input layers of administrative boundaries with higher resolution.
- ***Seamless layers***: so far the standard ESPON shapefiles provided by the ESPON Database project do not include regional boundaries for Belarus and Russia. Also, regions of the candidate countries and of Turkey are only provided as separate shapefiles. Again, this is not useful for GIS analyses, and causes extra work in the cartography. Thus the task for ESPON TeMo is to generate seamless layers of administrative boundaries (NUTS3, NUTS2 and NUTS0) for the study area.

As a result of these activities, the TeMo GIS Database will include new administrative boundary layers called **ZONES_TEMO_NUTS0**, **ZONES_TEMO_NUTS1**, **ZONES_TEMO_NUTS2** and **ZONES_TEMO_NUTS3**, including boundaries for Russia and Belarus, as well as representing seamless layers for the entire space.

The benchmarking and comparison maps illustrating the entire ESPON space, however, will be based upon the latest standard ESPOM SPACE map kit as provided by the ESPON Database Project.



Baltic Sea Region study area

Capital city

BSR territory

Figure A.4.1. Map template for Baltic Sea Region.

Annex 5: Structure of data handling and indicator coding

The TeMo Data Delivery Template

In order to structure and store the collected data in a coherent way a TeMo specific Excel data delivery template file has been produced. This TeMo data delivery template file will be used by the data collectors for describing and adding the data of a given indicator, forming a dataset (one file per indicator and country will be used). Having filled in the file, it will then be stored together with all other TeMo datasets within a tree structure on one of Nordregio's servers.

The TeMo data delivery template consists of five tabs with a predefined structure of fields for the data collector to fill in, both metadata (such as origin of data, explanation of abbreviations used for raw data, quality of data) and the raw data of different variables. The TeMo data delivery template is based on two official Espon data Excel data templates, the Espon "Metadata model" template (for metadata) and the Espon "Data model" template (for raw data). By merging these two templates into one sheet data collection and data handling within the TeMo project will be simplified since both metadata and raw data will be stored in one single file. However, the intention has been to keep the general structure of the official Espon templates, so that data collected within the TeMo project will be easily transferable to the Espon database in the future.

In addition to merging the two original Espon templates, two additional adjustments have been made to the TeMo data delivery template in order to fit the specific needs of the TeMo project.

The first adjustment is that instructions on how to use and fill in the data delivery template have been added to column and row headlines (Figure 1; text in red color). For the original Espon templates, such instructions are available only in separate documents (the Espon Metadata guidelines documents), but the idea here is that by providing instructions within the actual template the data collector won't have to access additional documents and data collection will hopefully run more smoothly. The instructions are easily erased from the data delivery template by the data collector before it is sent to Nordregio for storage.

The other additional adjustment consists of two newly added columns to the raw data section (within the tab "DATA", further described below) of the data delivery template, "region name" and "region name other" (Figure A.6.1; columns B and C). The reason behind adding these two columns is that the original Espon templates were made specifically to fit data of EU and EFTA countries. These are countries with a clearly defined and coherent NUTS classification where each NUTS code correspondents with a certain region. Thus only NUTS codes, and no region names, were added to the Espon data templates. However, this means that data of corresponding administrative regions outside the EU and EFTA space which lack coherent codes similar to the NUTS codes are not taken into account in the original Espon templates. Since several regions outside the EU and EFTA space are an integral part of the TeMo project's geographical coverage – namely *oblast* and *rayon* regions in Belarus and Russia – and these lack coherent codes, there was a need to make it possible to add these region's names in the TeMo template in order to avoid any confusion and clearly identify the regions by their names, both in Latin characters and in Cyrillic script.

	A	B	C
1	*id [NUTS code]*	*region name (with Latin characters)*	*region name other (in original language/script, e.g. with special charachters, Cyrillic alphabet)*
579	RU26	Leningrad Oblast	Ленинградская область
580	RU2A	Pskov Oblast	Псковская область
581	BY11	Minsk Oblast	Минская область

Figure A.5.1: TeMo specific columns "region name" (Column B) and "region name other" (Column C) have been added in addition to the "id" column (Column A, for NUTS and equivalent region codes) in order to clearly name regional entities outside the EU and EFTA space.

Within the TeMo data delivery template there are five tabs. The first three tabs were added from the Espon "Metadata model" template, while the fourth tab derives from the Espon "Data model" template. The fifth tab, "Instructions", consists of general instructions on how to use and fill in the template and also instructions on data delivery.

The intention of the first tab, the **dataset_metadata** tab, is to give an overview of the dataset. Name and date of latest upload of the dataset will be added here, as well as contact details for the data collector (Figure A.5.2).

Dataset information		**Explanation**
name	Total Population	*Name of dataset*
date of latest update	2012-10-15	*Date of latest update of dataset by year-month-day*
Metadata point of contact		
name	Linus Rispling	*Name of person uploading dataset*
email	linus.rispling@nordregio.se	*E-mail of person uploading dataset*
organization/institute	Nordregio	*Organization of person uploading dataset*

Figure A.5.2: Tab 1, dataset_metadata tab excerpt

In the second tab, **indicator_metadata tab**, information to identify each variable that is part of the dataset, such as name of variable and start and end of time series, is listed. As each indicator often consist of several variables, it is possible to list information on each variable here, with one variable per "Identification" box (Figure A.5.3).

Identification			**Explanation**
code	pop_t		*Code of variable*
name	Total population		*Name of variable (quick description)*
units	Thousands inhabitants		*Unit used to measure variable. More population": Annual average, Popula Population December 31st*
abstract	Annual average population (both sex)		*Name of variable in detail (e.g. desc*
methodology			*To be used if the variable is more c i.e. data is based on mathematical f*
temporal extent	**start**	2000	*Time series start*
	end	2006	*Time series end*
Identification			
code			
name			

Figure A.5.3: Tab 2, indicator_metadata tab excerpt

The third tab, **value_metadata tab**, contains information on origin and quality of the dataset. In case several sources have been used, the source information will be listed repeatedly, with one source under each "scope" row (*Figure A.5.4)*.

scope				**Explanation**
	label	1		*Each source is indicated by a specific label in number format (*
	lineage			
		provider	EUROSTAT	*Owner of origin data: Eurostat, a National Statistical Institute*
		date	2012-10-15	*Date of download of data by year-month-day*
		URL	http://epp.eu	*URL the database from where data has been downloaded*
		methodology		*No need to add information here in case the data is unmodifiec*
		methodology URI		
	reliability			
		estimation	FALSE	*Has the data been estimated by the original source provider (t*
		quality	high	*Using your knowledge on the quality of data, define the quality*
	constraints			
		public data access	TRUE	*Is it the data publicly available? Type TRUE or FALSE*
		public metadata access	TRUE	*Is it the metadata publicly available? Type TRUE or FALSE*
		copyrights	EUROSTAT	*Copyright owner of data - add name*
scope				
	label			
	lineage			

Figure A.5.4: Tab 3, value_metadata tab excerpt

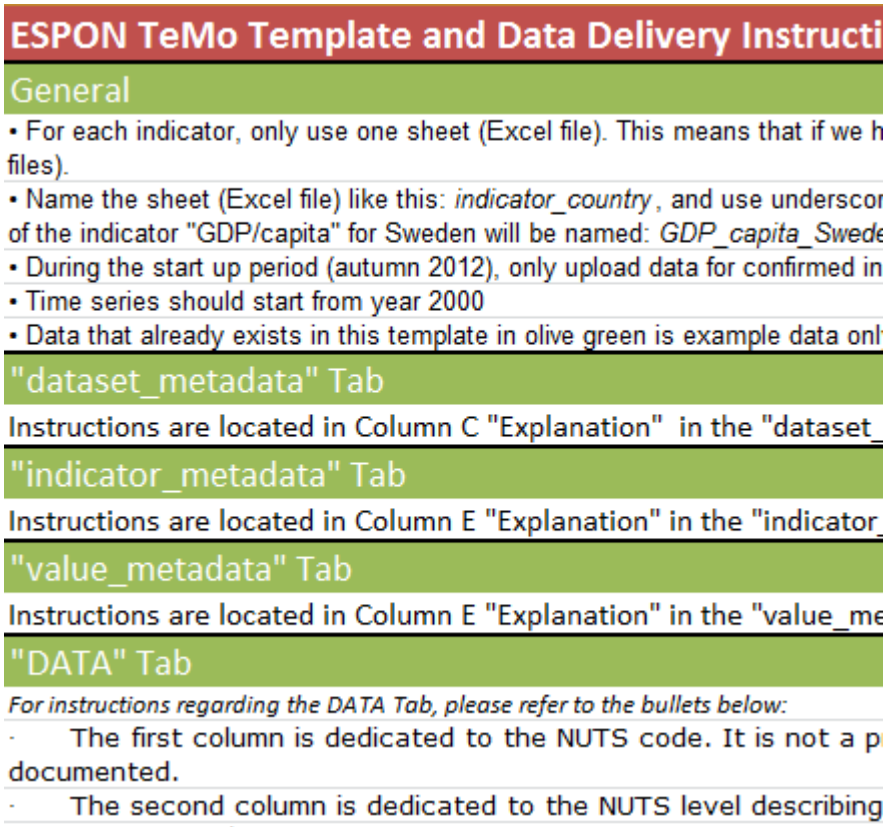
As mentioned above, the first three tabs derive from the Espon "Metadata model" template. It was deemed important to keep these detailed metadata tabs also in the TeMo data delivery template since the TeMo project covers regional data from eleven different countries, of which two are not part of EU and EFTA, with possible differences in data availability and classification methods. Considering this background it is crucial to have a comprehensive metadata section in order to clarify all aspects of the metadata, such as lineage of the data, and having the possibility to distinguish quality and classification methods, etc., between different collected data.

The fourth tab, **DATA**, is the tab where raw data is added. Region codes (NUTS or similar codes) and region names are added vertically, while variable data is added horizontally (Figure A.5.5).

id [NUTS code]	*region name (with Latin characters)*	*region name other (in original language/script, e.g. with special charachters, Cyrillic alphabet)*	*level [NUTS3/NUTS2/etc.]*	pop_t [name of variable	*scope*	pop_t
validity_start [Temporal start]				2000		20
validity_end [Temporal end]				2000		20
de300	Berlin		NUTS3	3384,1	1	3385
de411	Frankfurt (Oder), Kreisfreie Stadt		NUTS3	73,1	1	71
de412	Barnim		NUTS3	168,7	1	170
de413	Märkisch-Oderland		NUTS3	187,3	1	188
de414	Oberhavel		NUTS3	190,5	1	192
de415	Oder-Spree		NUTS3	196,5	1	195
de416	Ostprignitz-Ruppin		NUTS3	113,5	1	112

Figure A.5.5: Tab 4, value_metadata tab excerpt

Finally, in the fifth tab, **Instructions**, an explanation overview is given on how to use and fill in the template (including naming of the file according to the specific indicator that is collected) and also instructions for the data collectors on delivery of data (Figure A.5.6).


ESPON TeMo Template and Data Delivery Instructi

General

• For each indicator, only use one sheet (Excel file). This means that if we h
files).

• Name the sheet (Excel file) like this: *indicator_country*, and use underscor
of the indicator "GDP/capita" for Sweden will be named: *GDP_capita_Swede*

• During the start up period (autumn 2012), only upload data for confirmed in

• Time series should start from year 2000

• Data that already exists in this template in olive green is example data onl

"dataset_metadata" Tab

Instructions are located in Column C "Explanation" in the "dataset_

"indicator_metadata" Tab

Instructions are located in Column E "Explanation" in the "indicator_

"value_metadata" Tab

Instructions are located in Column E "Explanation" in the "value_me

"DATA" Tab

For instructions regarding the DATA Tab, please refer to the bullets below:

· The first column is dedicated to the NUTS code. It is not a p
documented.

· The second column is dedicated to the NUTS level describing

Figure A.5.6: Tab 5, Instructions tab excerpt

Data Delivery

The Excel files with datasets collected within the TeMo project (i.e. the TeMo data delivery templates populated with data) are to be delivered to Nordregio for storing. To simplify the delivery process and avoiding a large amount of Excel files containing TeMo datasets being sent by e-mail which then has to be sorted, a password protected share point to which the collected data is uploaded (Figure A.5.7) is used.

Once the data collector has collected all available data for a given indicator and populated the TeMo template (tabs 1-4), he or she navigates to http://sharepoint.nordregio.se/temo, log in and then, in the tree structure within the folder "Uploaded TeMo data", access the country/indicator folders in question and uploads the data file. The data collector also notifies the Nordregio staff that a dataset has been uploaded. Nordregio's staff will then be able to download data from the share point and store the data on Nordregio's server.

The share point is also the location of the latest updated version of the TeMo Data Delivery Template. Thus, in case any changes are made to the template, the new version of the template will be made available at the share point (within the folder "TeMo Template and Metadata Guidelines") for data collectors to download. For reference also the Espon Metadata guidelines documents are to be found here.

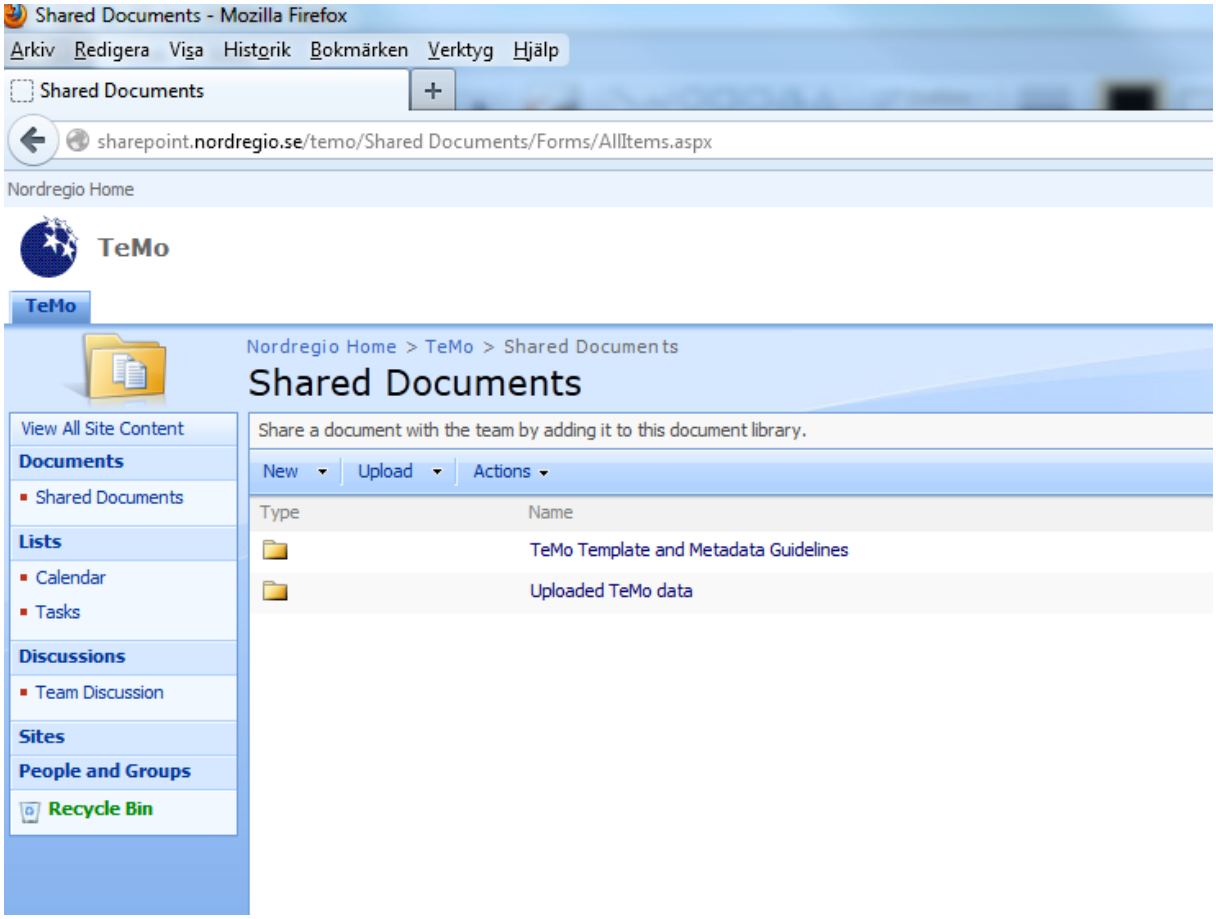


Figure A.5.7: The TeMo folder on Nordregio's share point, to be used by data collectors for uploading datasets or downloading the TeMo Data Delivery Template.

Annex 6: TeMo database structure

All inputs and outputs of the BSR territorial monitoring system will be compiled on a comprehensive CD-ROM as a simple mean for dissemination. This CD-ROM will have a dedicated structure of directories and subdirectories. The root level of the CD-ROM has the following structure:

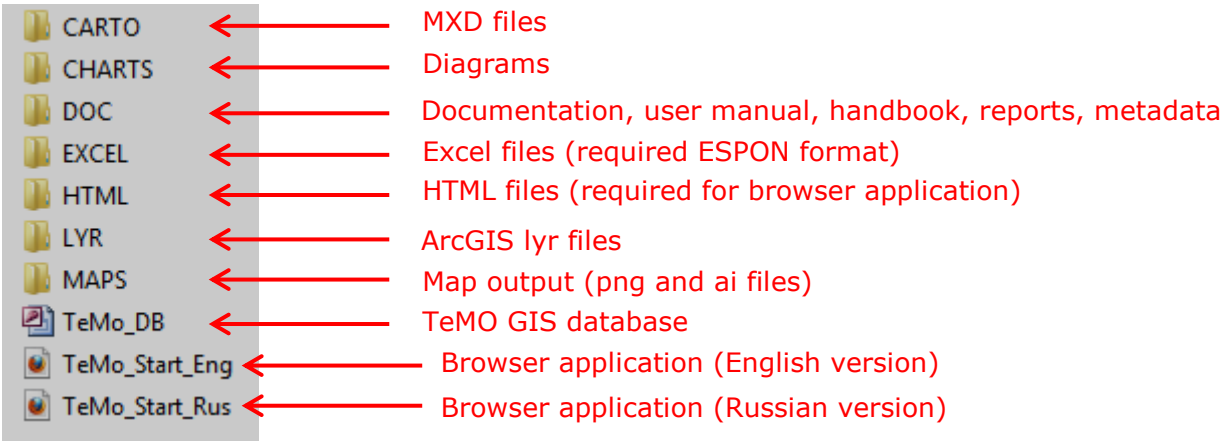


Figure A.6.1. Directory structure of the TeMo CD-ROM.

This structure represents a simple file-based organization, including GIS database (ArcGIS personal geodatabase), map files (MXD), lyr files, exported maps (png, ai), Excel files, and the required documentation (pdf files). The browser application will then act as the gateway to access this wealth of information.

The directories store different kind of files:

CARTO comprises all generated **MXD** files (ArcGIS version 10.1) for indicator mapping
CHARTS collection of diagrams for indicator benchmarking and comparisons
DOC reports, handbook, metadata documentation and user manuals
EXCEL collection of Excel files in ESPON file format (input/output of indicator calculation)
HTML html files required to run the browser application
LYRS collection of layer files for mapping (referenced in **MXD** files)
MAPS collection of maps in **PNG** & **AI** file format, exported from ArcGIS

The actual **TeMo_DB** PGDB as well as the browser application start file (English and Russian versions) are stored in parallel to these sub-directories.

Each of the directories **CARTO**, **EXCEL**, **LYRS** and **MAPS** have several sub-directories which are named after the selected domains (Table A.7.1) to store the respective map templates (**CARTO**), diagrams (**CHARTS**), indicator files (**EXCEL**), layer files (**LYRS**) or exported raster **PNG** and **AI** map files (**MAPS**).

Table A.6.1: Available sub-directories under CARTO, CHARTS, EXCEL, LYRS and MAPS folders. [21]

Name of subdirectory	Domain
ACCESSIBILTIY	Access to services, markets and jobs
COOPERATION	Territorial cooperation and governance
ECONOMY	Economic performance and competitiveness
ENVIRONMENT	Environmental quality
INNOVATION	Innovative territories
SOCIAL_INCLUSION	Social inclusion and quality of life

Map template files

The **CARTO** directory and its subdirectories provide a full collection of ArcGIS map files in **MXD** file format. For each indicator, there will be at least one map file, showing the indicator performance for the Baltic Sea Region. The file name conventions are as follows:

xxx_Nz_YYYY_BSR.MXD

where **xxx** represents the indicator name, **z** represents the NUTS level (0, 1, 2 or 3), and **YYYY** represents the year. The suffix **BSR** indicates that the indicator is illustrated for the Baltic Sea Region.

If benchmarks and comparisons with the entire ESPON space or with specific INTERREG areas were made, additional map files might be available for a single indicator. For ESPON space maps, the map name will be

xxx_Nz_YYYY_ESPON.MXD

where the suffix **ESPON** indicates the ESPON space extent. For maps showing other INTERREG areas, the map name will be accordingly

xxx_Nz_YYYY_IAppp.MXD

where the suffix **IA** stands for INTERREG area and **ppp** gives the name of the respective area. With these naming conventions, the individual file names already indicate the map contents and extent.

Charts and diagrams

In addition to the map output, charts and specific diagrams such as time series illustrations or change graphs might be generated to provide further analyses on specific indicators. All these materials are stored in **PNG** file format in the **CHARTS** directory. The naming conventions for the charts follow those for maps, as described above.

Individual charts may be directly opened from the file repository by clicking on the file name in the Windows Explorer; however, the charts will also be accessible through the browser application.

Documentations

[21] In alphabetical order as they appear in the Windows Explorer.

This folder provides access to all documents produced in TeMO. Documents will be provided in **PDF** file format. Documents available here include the Inception Report, the Interim Report as well as the Final Report of TeMo, including all Annexes. Moreover, the handbook and user manual, as well as the metadata description will also be available here.

Individual documents may be directly opened from this repository by clicking on the file name in the Windows Explorer; however, all documents will also be accessible from the browser application (Figure A.6.2).

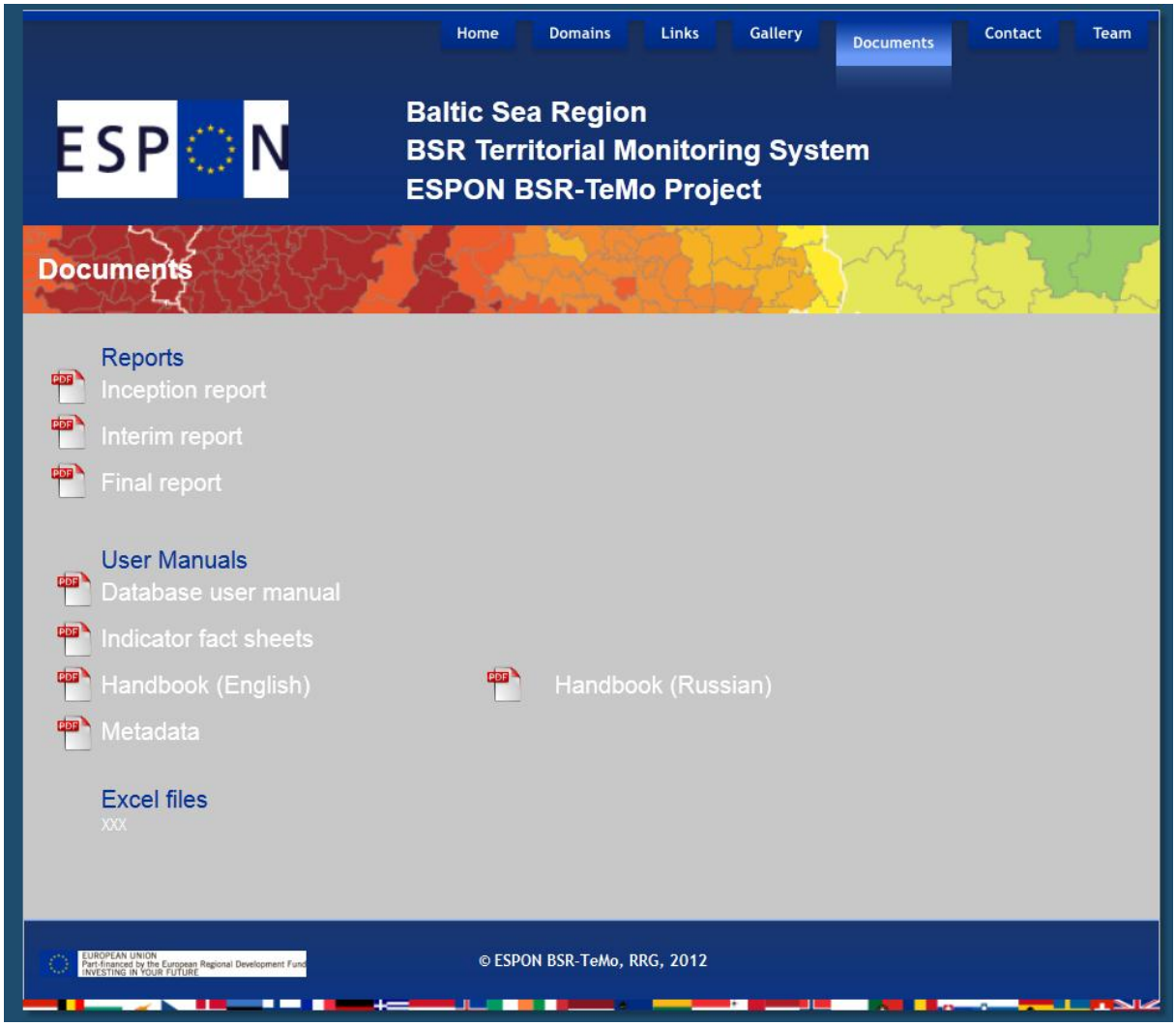


Figure A.6.2. Browser application – document download section (draft).

Excel files

For those people who do not have ArcGIS available, or are non-GIS specialists, or for those who just want to work with the statistical data outside a GIS, TeMo offers all indicators in Excel file format.

The structure of the Excel files is easy to understand and straightforward, following the ESPON guidelines. There will be one Excel file per indicator. Each file stores the indicator numbers (or input data) for all available years, where one column represents one year. The structure of these Excel file follows the

instructions as given by the ESPON Database project, i.e. these Excel files can also be used to import the indicators into the overall ESPON database.

The column headers, contents and units of the indicators are described in the metadata documentation and in the user manual.

HTML files

This directory comprises all technical background files necessary for the functioning of the browser application. These files are not intended to be directly opened by the user, but are needed by the application. They are stored in different file formats, such as **PNG**, **GIF, CSS, JS**, and **TXT**.

LYRS files

LYR files are specific files produced by ArcGIS storing layer symbology (colors, symbols, line type and line width, line and polygon markers, etc.) for later use in other maps, without the need to re-establish the overall layer symbology at a later stage again. LYR files can only be used with ArcGIS, not as stand-alone files.

PNG and AI files

All indicator maps are exported from ArcGIS into **PNG** and Adobe Illustrator (**AI**) file format, i.e. raster format and vector graphics format, respectively. Both the **PNG** and **AI** files are provided through a subdirectory on the CD-ROM/DVD. From there they can directly be viewed, retrieved and imported into reports, presentations or other documents; even for those users who do not have a GIS system at hand. The **AI** files can even more be further processed in any drawing software. The browser application will load the **PNG** files when illustrating the indicator maps.

Annex 7. Suggestions for the visualization tool

Conceptual background

The visualization and presentation tool will act as the standard gateway for the users to access the territorial monitoring system for the Baltic Sea Region.

It is proposed that this tool will be implemented as a simple and easy-to-use local browser application. Chapter 2.3 of the Interim Report already outlines the advantages of such an implementation.

Planned as standard information gateway, the TeMo browser application grants access to the following TeMo output:

- Domains, subdomains and indicators
- Documents
- Relevant ESPON, VASAB and INTERREG websites
- TPG and contact information

When the user navigates through the domains and subdomains, he eventually can select the indicator he is interested in. Each indicator will be presented on one dedicated side, with indicator map, comparisons with ESPON space and benchmarking with other INTERREG areas, as well as with specific charts and diagrams. Indicator metadata and recommendations for the indicator implementation can also be accessed through the indicator side.

All documents produced in TeMo will also be made accessible through the browser application. The documents can be downloaded as **PDF** files from the application, partly in both English and Russian versions.

The main navigation bar also provides links to relevant ESPON, VASAB and iNTERREG websites, as well as company and contact information about the TeMO transnational project group, implementing this monitoring system.

User interfaces (GUI)

The browser application can be launched from the CD-ROM by clicking the TeMo_Start_Eng (English version) or TeMo_Start_Rus (Russian version) file, respectively. Both language versions are conceptually identical; provide the same set of information, and only differ in their GUI language.

When launching the application, the start screen appears as shown in Figure A.7.1 pops up.

From the landing page, the user can either use the clickable buttons at the bottom of the main part, to directly navigate to the individual domain page (six different domains are available), or he may use the main navigation bar at the top to access domains, links, the map gallery, the downloadable documents, or contact or TPG team information.

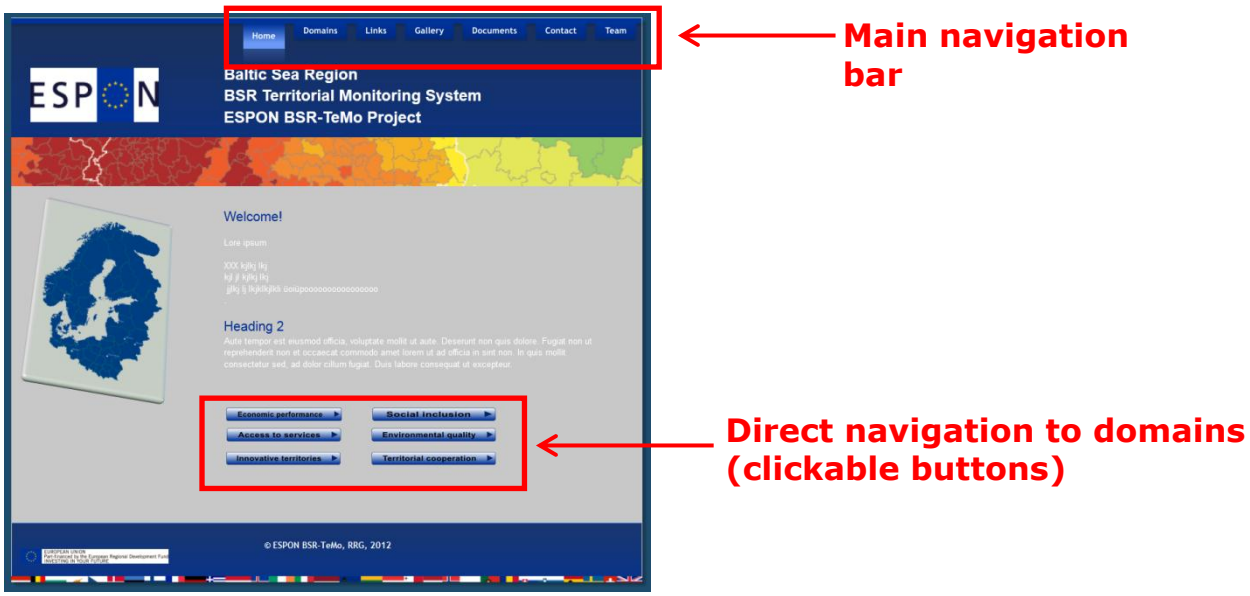


Figure A.7.1. *Welcome page of TeMo browser application (draft).*

As an example, Figure A.7.2 illustrates the page of the domain ***Economic performance and competitiveness***. This domain includes three sub-domains (macroeconomic development, labour market and demography), with four indicators assigned to each subdomain. The indicator names are hyperlinks, i.e. when clicking the names the user will be guided to the respective indicator page.

Figure A.7.2. *Economic performance and competitiveness domain page (draft).*

When the user clicks any indicator name, the indicator page of the desired indicator opens (Figure A.7.3). This page is the central information place, where maps, charts, benchmarks, descriptions, metadata and other types of information are presented in a standardized manner.

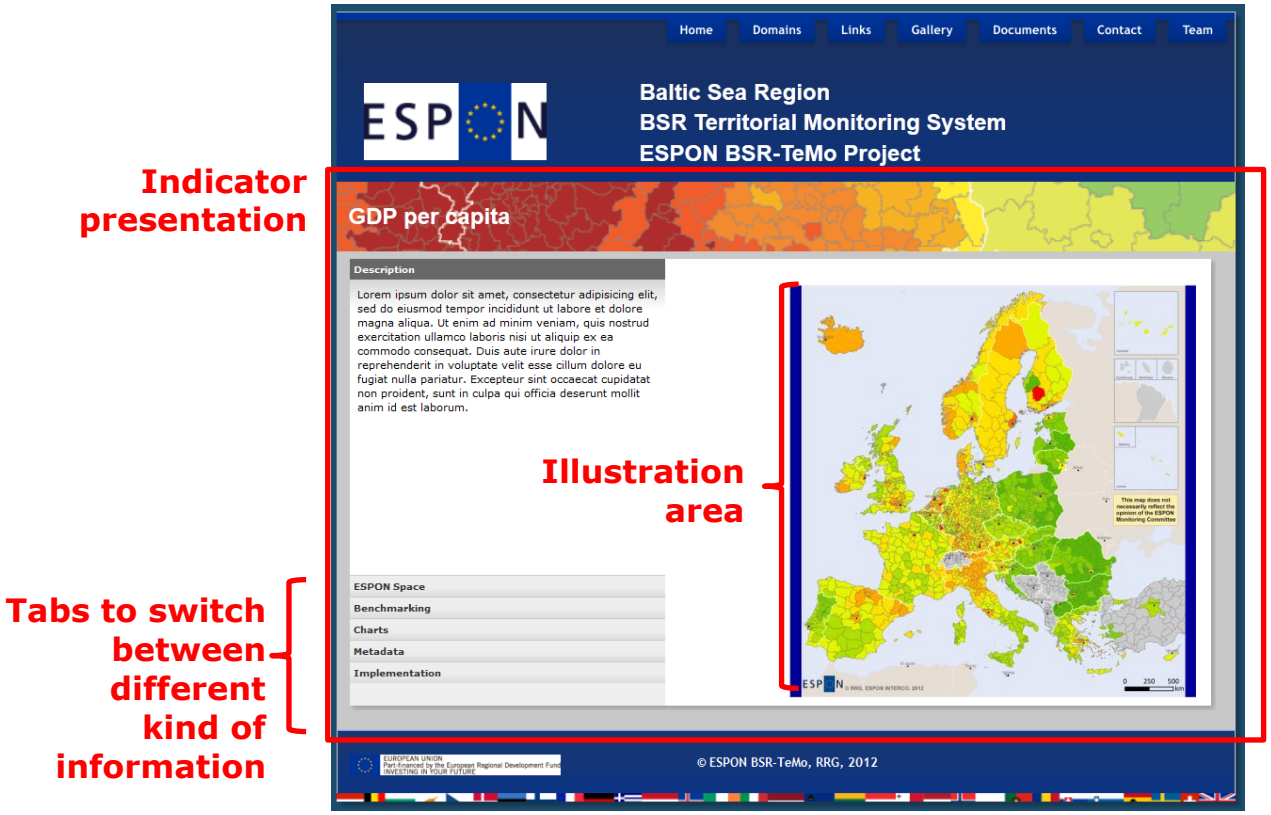


Figure A.7.3. *Indicator page (draft).*

The main part of the page is dedicated to the indicator presentation. By default, the description tab is open when the user enters this page. In the left hand column, a verbal description of the indicator patters is given, while in the right column the indicator map is shown (illustration area). The user can then switch between different kinds of information, by changing the tabs. He may choose between **DESCRIPTION**, **ESPON SPACE**, **BENCHMARKING**, **CHARTS**, **METADATA** and **IMPLEMENTATION**. While the tab **DESCRIPTION** focuses on a summary of results for the Baltic Sea Region (including a BSR map), the tab ESPON SPACE gives a complementary description for the entire ESPON space (including an ESPON space map). The tabs **BENCHMARKING** and **CHARTS** provide further analyses results through charts and diagrams and maps, and respective verbal explanations, The **METADATA** tab opens a tab to display all necessary metadata, including indicator definitions, data availability, data gaps, data sources, calculation methods etc., while the final tab, the **IMPLEMENTATION** tab, gives further recommendation on how this indicator should in future be implemented, calculated, gathered or further developed. Depending on the tab opened, the illustration in the illustration area will change between zoom-in maps, European maps, charts or tables. With these tabs, the user finds all information related to one indicator at a single page, in an convenient manner.

In addition to the domain, sub-domain and indicator information, as explained above, the user can use the navigation bar (Figure A.7.4) to access other relevant information.

The navigation bar offers seven menus. The **HOME** button can be used to navigate back to the start page. The **DOMAINS** menu offers to select one of the six domains, and upon selection guides the user to the selected domain page (see Figure A.7.3 for an example of a domain page). The **LINKS** menu offers hyperlinks to relevant websites, which are ***ESPON***, ***ESPON TeMo project*** side, ***VASAB Committee***, and the ***Baltic Sea Region Programme*** side. Clicking any of these links will open up a new (external) browser tab. The **GALLERY** menu offers to select one of the six domains, and then opens a comprehensive map gallery of all maps produced under this domain (see Figure A.7.5 for an example). By clicking on any of the maps, a slide show opens where the user can conveniently navigate through the maps. The **DOCUMENTS** menu opens the document download page from where the user can view, print or download all documents in **PDF** format produced in this project. In order to retrieve contact information about the BSR TeMo project coordinator, the user may click the **CONTACT** menu (Figure A.7.6, left) or navigate to the **TEAM** menu to get an overview about the composition of the transnational project group (Figure A.7.6, right).

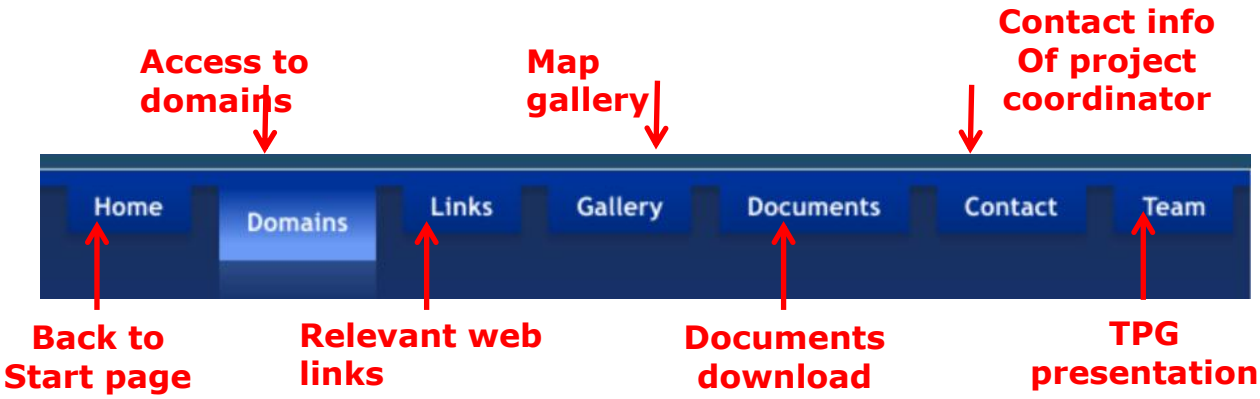


Figure A.7.4. *Main navigation bar (draft).*

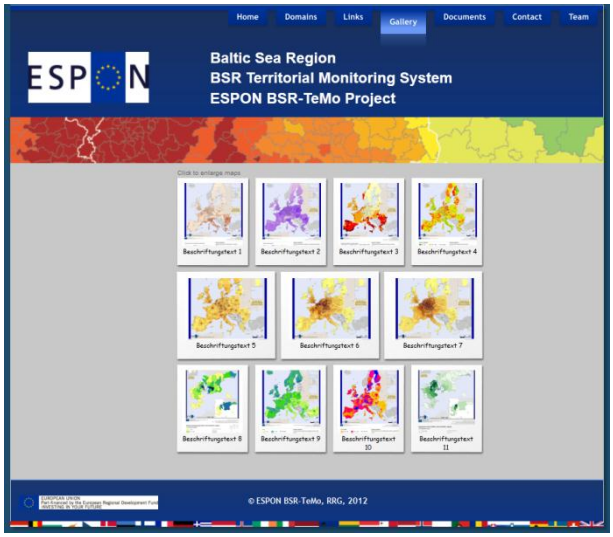


Figure A.7.5. *Example of a map gallery (draft).*

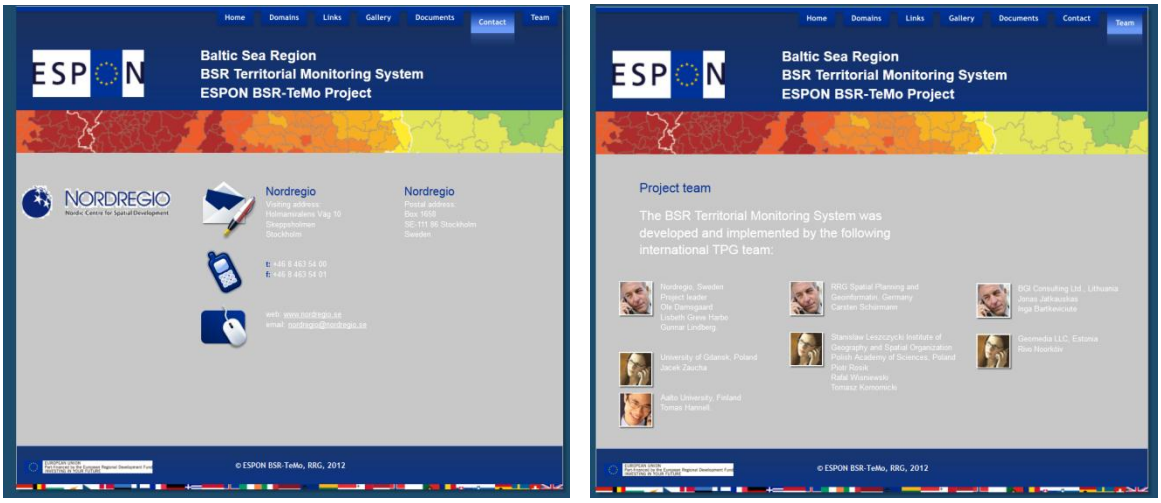


Figure A.7.6. *Contact page (left), team page (right) (draft).*

Technical implementation

The presentation tool as outlined above will be implemented as a local browser application based upon simple HTML technologies with additional Java scripting. The application does not need to be installed, but can just be launched from the CD-ROM. By using open web standards, the application can be opened from any browser on any operating system. Specific software is not required.

The user may access the application directly from CD-ROM, or he may copy the entire contents of the CD-ROM to his local hard drive, and launch the application from there. In the latter case the application will probably be faster compared to starting it from CD-ROM devices.

Options

Optionally, the local browser application may be transferred to a real web side, accessible through the WWW from any place worldwide at any time, if desired by ESPON or VASAB. Since the application already utilizes HTML and open web standards, this transfer should be rather straightforward without need to implement too many amendments to the code. The question to answer is which organization is going to host the application, and thus provides server space and bandwidth to run the application.

Annex 8: Working Paper WP 2.1: Theoretical and political framework(s).

Performing a desk-based review of theories, trends and policies related to territorial development, territorial cohesion and territorial monitoring is a key prerequisite for proposing and enhancing a territorial monitoring system for the BSR that will work. Failure to do so would result in a business-as-usual outcome, i.e. a collection of variables hardly interpretable in spatial terms instead of meaningful policy indicators able to guide policies with territorial impacts.

For those engaged in spatial research and policy advice it has become evident that the theory lost pace to the policy debate and interventions with regard to use of territories and shape of territorial structures at macro scale. The new economic geography, evolutionary economics or institutional spatial economics have been developed at least in parallel to such important spatial documents as ESDP or the VASAB vision and strategies[22].

Thus, in order to answer the questions: "what should be measured" and "how" a critical examination of the past and ongoing policy discourse has to be provided first of all. This might include a screening of the key policy documents prepared by the EU, EU member states and VASAB itself. Also the findings of the ESPON projects should be considered, in particular when it comes to designing the overall framework of the monitoring system. Therefore, the TeMo project should launch the analyses with a screening of key policy documents prepared by the EU, EU member states and VASAB, followed by a related policy discourse.

Key notions

The territorial monitoring system of a macroregion might be rooted in such notions as territorial development, territorial cohesion and territorial integration. They have a lot in common; actually, however, they illustrate slightly different processes.

The territorial (or spatial) development refers to the ..."geographical distribution of the physical features in the built and natural environment and patterns and flows of human activity. It may also embrace the social, economic and cultural aspects of development" (Dühr *et al*. 2010, 32). In brief, such development means changes of territorial structures (settlement structures, transport infrastructure, natural structures, cultural landscapes etc.) and flows and connectivity between them. Their valuation, however, requires normative considerations. Development can be assessed only against policy targets and objectives such as territorial integration or territorial cohesion.

The economic integration has a more or less clear definition based on flows of goods, capital and factors of production. The stages of this process (free trade, a custom union, common market, economic union /monetary and fiscal union, political union) were described by B. Balassa (1961) more than fifty years ago. Unlike economic integration, the territorial (spatial) integration has no clear cut definition or understanding. For instance P. Vartiainen (2002) interprets territorial integration from the point of view of locality (socio-spatial concept) as a basic element of the multi-level settlement and community structure. The integration is therefore close to an interplay between local and global actions. Kai Böhme *et al.*

[22] This situation slightly differs from the case of the territorial governance or strengthening of the territorial dimension of public policies, for which theoretical models offer an interesting insight, not yet fully utilised in policy making.

(2011, 34) define territorial integration from the perspective of homogeneity. By "territorial integration" they mean *the process of reshaping functional areas to make them evolve into a consistent geographical entity; this entails overcoming the various negative effects stemming from the presence of one or more administrative borders, which hamper harmonious territorial development.* This definition puts emphasis on functionality and consistency. Viewed from that angle, territorial integration requires a minimum level of connectivity between different types of territorial structures i.e. the creation of city networks, transport corridors, cross-border labour markets, cross-border development zones and ecological corridors. The broadest definition of spatial integration has been proposed by A. Cornett and F. Snickars (2002). They consider spatial integration as the farthest-reaching concept of integration, embracing both economic and political integration but going beyond them to include also territorial factors facilitating co-operation and intensity of relations. Such understanding of territorial integration assumes existence of important feedback loops (since while the political and economic integration is powered by spatial proximity and adjacency, the socio-economic integration contributes, at the same time, to improvement of connectivity/accessibility). According to Cornett and Snickars (2002) the spatial integration includes features like:

- the development of specific, geographically defined systems of production such as industrial districts, clusters of industries, or systems of innovation;
- a system of urban networks defined according to specific functional links;
- the availability of a regional infrastructure linking the analysed areas together;
- the higher intensity of intraregional flows relative to the outside flows.

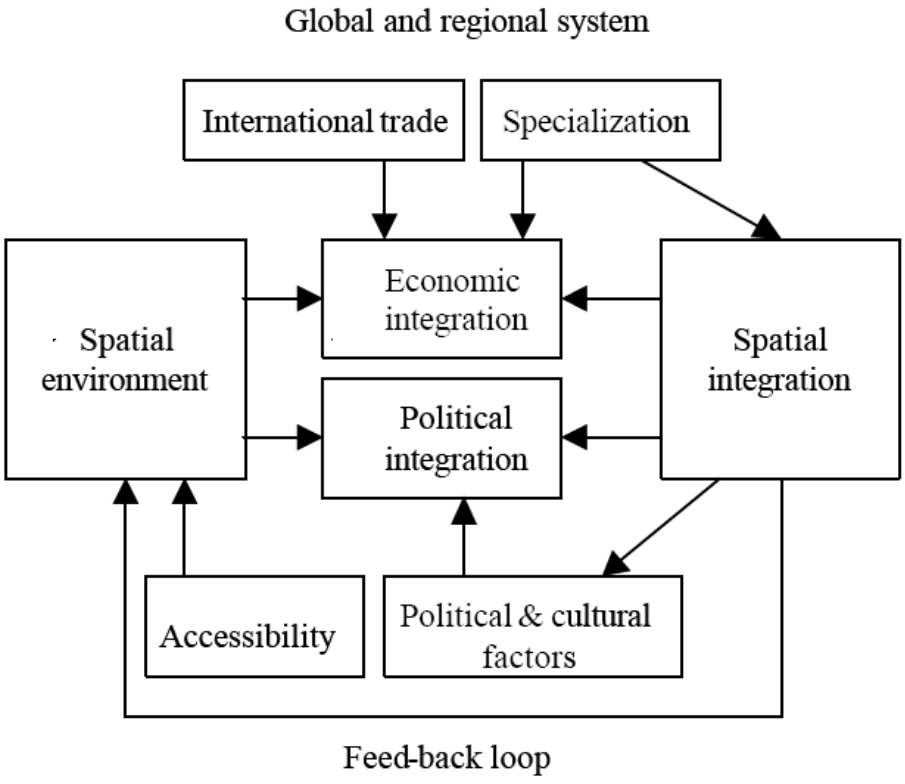


Figure A.8.1. Spatial integration. Source: Cornett and Snickars (2002, 4)

Similarly to the concept of territorial integration, also territorial cohesion has been subject to different, sometimes not entirely compatible interpretations (Farrugia, Gallina 2008, 33). Although included in the Treaty of Lisbon (Article 3) and becoming one of the main important horizontal objectives of the EU policies, the territorial cohesion lacks a precise, commonly shared definition. This has been highlighted by many researchers (Davoudi 2005; ESPON 2004, 118; Faludi 2005; Medeiros 2011, 11; Mole 2007, 98; Böhme 2011, 2; Farrugia, Gallina 2008, 7). Böhme (2011, 2) even argues that "over the last years, debates have shown that a precise definition of territorial cohesion is impossible. Because different groups of stakeholders focus on different dimensions of the territorial cohesion idea, any attempt to define it will exclude certain understandings and thus lead to a poorer result." Zillmer and Böhme (2010, 1) go so far as to say that a formal definition might be the end of the territorial cohesion use and popularity. However, the concept as such, though vague, has been appreciated and widely recognised (Dühr *et al*. 2010, 188-189), and even considered as a potentially powerful conceptual innovation by the Commission (Camagni 2011, 79).

Faludi (2004, 1349) argues that the original focus of the concept of territorial cohesion has been on regional economic development. Also in the Territorial Agenda of EU (Territorial Agenda 2007, 2) territorial cohesion is perceived not as a developmental goal as a such (i.e. the desired state of territory) but rather as a "prerequisite for achieving sustainable economic growth and implementing social and economic cohesion". But just a year later the Green Book (European Commission 2008) proposed a much broader approach, for the first time putting an integrated pattern of policy making and the state of territory (its diversity as a developmental resource) under the same heading. This interpretation raises the status of the territorial cohesion to that of an important developmental goal, by stating that the „territorial cohesion is about ensuring the harmonious development of all these places and about making sure that their citizens are able to make the most of inherent features of these territories. As such, it is a means of transforming diversity into an asset that contributes to sustainable development of the entire EU" (CEC 2008, 3).

However, the process dimension of the territorial cohesion had appeared in the European debate much earlier. The EU Ministerial Conference on Territorial Development (2004, 16–17) emphasised that the territorial cohesion should be understood as not a mere levelling of social and economic disparities across the space but rather a coherent development of Europe as one entity (mega-region). The emphasis was thus put upon providing more equal development opportunities in accessibility to transport and ICT infrastructure, science and research etc. Hence, the territorial cohesion should entail the coordination of sector policies in their spatial context (i.e. considering their contribution to the coherent European development) and the coordination of spatial development in the vertical direction[23] (the EU Working Group on Spatial and Urban Development 2003, 32).

An interesting transformation of the understanding of the notion of the territorial cohesion can be observed in the debate powered by the documents prepared by the EU Commission. The territorial cohesion as a concept appeared, for the first time, in the Second Cohesion Report (CEC 2001). At that time it was territorial imbalances, spatial disparities and the differences in the potential for development that were brought into focus. In this context Article 158 of the Treaty was referred with regard to the need of promoting a harmonious development of the Union as a whole. The same reasoning was repeated in the Interim Territorial Cohesion Report (CEC 2004). In this document (CEC 2004, 3) the territorial cohesion was seen as a balanced distribution of human activities

[23] The vertical and horizontal directions were already promoted in the ESDP (European Spatial Development Perspective).

across the EU territory, i.e. as a territorial application of the sustainable development paradigm with focus on fair access to services of general economic interest in line with the Art. 16 of the Treaty. As a result, the meaning of the territorial cohesion got very close to the ESDP idea of polycentric development and was perceived as the vehicle for achieving other important objectives of EU. The Third Cohesion Report (CEC 2004b) paid a lot of attention to the territorial cohesion. It has provided a new break-through by extending the concept beyond the limits of territorial disparities and polycentrism. And also the disparities were analysed in this document in a much more detailed way by adding such challenges as development of the regions with geographical handicaps, demographic changes or fragmentation of natural areas (the latter, i.e. fragmentation, without clear relation to the economic and social cohesion). One of the reasons for such strong focus on territorial cohesion in the document may have been the inclusion of the concept into Art. 3 of the draft EU Constitution. The additions to territorial cohesion were aimed at making the sectoral policies exerting a spatial impact and the regional policy more coherent. Thus the process dimension of the territorial cohesion was spelled out for the first time so strongly by the Commission. Also the need to improve territorial integration and encourage cooperation between regions was mentioned in this context. Moreover, in the document the Commission recognized for the first time that "the concept of territorial cohesion extends beyond the notion of economic and social cohesion" (CEC 2004b, 27), thus acknowledging the territorial cohesion as a development objective in itself. The Fourth Cohesion Report hardly offered a new insight into the meaning of the territorial cohesion, attributing the notion to the territorial disparities of GDP, suburbanisation, migrations, cross-border cooperation, polycentric development, access to key services and transport infrastructure (CEC 2007, XII-XIV and 59,100). However, this document continued the tradition of indirect interpretation of the territorial cohesion as a horizontal objective[24] of the EU and therefore discussed the issue under different chapters i.e. in the context of various problems and policies and not in a separate section. The Fifth Cohesion Report (CEC 2010) was the first in the series devoted directly to the economic, social and territorial cohesion put on an equal footing (which could be easily seen from the change of its title). Despite this, the report did not made any attempt to define the notion of territorial cohesion but at least provided some insight into its scope. The territorial cohesion was attributed to the access to services, sustainable development, 'functional geographies' and territorial analysis (CEC 2010, 24). The document underlined the need of territorial co-ordination of policies (at different geographical scales) and, while discussing the functional geography, applied some notions characteristic for the economics of flows. When trying to get the actual meaning of the evolution described above, the following changes in the interpretation of the territorial cohesion can be noticed:

- from a static concept of the state of a territory to a dynamic concept of policy integration in line with the specificity of the given territories,
- from the vehicle or instrument used to achieve the social and economic cohesion to a genuine, independent EU objective,
- from a redistributive approach advocating spatial equalization of prosperity to the recognition of importance of territorial factors in the process of development and satisfaction of human needs.

[24] One can gain such impression from different pieces of the report, for instance from the following statement: „As recognised in the EU Treaty (Article 16), access to services of general economic interest is of major importance in achieving economic, social and territorial cohesion." (CEC 2007, 60)

In EU member states the meaning of the territorial cohesion slightly varies. The most common interpretations of the notion are summarised below (Szlachta and Zaucha 2010):

- territorial cohesion as a means of enforcing territorial aspects in general, and in economy, social planning and decision-making in particular,
- territorial cohesion as a method of planning and development taking into consideration the territorial capital (potential) of places, settlements and regions, and their interrelations,
- territorial cohesion as an addition to economic and social cohesion, to include also the areas with geographic disadvantages (like mountain areas, islands, areas with severe climate, geographically remote areas or border areas).

There are only few comprehensive definitions of the territorial cohesion in the contemporary literature[25]. Szlachta and Zaucha (2010) define not the territorial cohesion as such but the territorially coherent area of a country or region, describing it as a territory that would appear as a network of mutually linked functional areas of varied spatial ranges to render citizens an access to workplaces and public services indispensable for development and preservation of social and human capital. The prevailing attitude is to interpret the notion of the territorial cohesion in the context of the integrative policy-making process. For instance, Faludi (2009) considers the territorial cohesion as a „situation whereby policies to reduce disparities, enhance competitiveness and promote sustainability acquire added value by forming coherent packages, taking account of where they take effect, the specific opportunities and constraints there, now and in the future. Territorial cohesion policy refers to measures promoting good territorial governance with the aim of achieving coherence as described". Medeiros (2011) defines territorial cohesion as the process of promoting a more cohesive and balanced territory, by: (i) supporting the reduction of socioeconomic territorial imbalances; (ii) promoting environmental sustainability; (iii) reinforcing and improving the territorial cooperation/governance processes; and (iv) reinforcing and establishing a more polycentric urban system. The farthest-reaching understanding of the concept of territorial cohesion has been proposed by the European Council of Spatial Planners. They perceive the territorial cohesion not just as a means to achieve a more effective policymaking but rather as an overarching (macro) goal of the policy, where the social, economic and spatial dimensions of the territorial cohesion are resonated in three horizontally integrated policies: social, economic and spatial. In such case the territorial cohesion might be considered as "the Connectivity of and among Economic, Social and Physical Systems, which enhances their overall Effectiveness for innovative Sustainable Development" (Vogelij 2010, 2).

Also the recent key EU spatial document, the Territorial Agenda of the EU 2020 (2011) has not resulted in a commonly shared definition of the territorial cohesion. However, the process dimension of the concept has been once more strengthened by stating that the territorial cohesion "is a set of principles for harmonious, balanced, efficient, sustainable territorial development". The following principles have been mentioned in this context: equal opportunities for citizens and enterprises wherever they are located; convergence between the economies of better-off territories and those lagging behind; development best tailored to the specificities of an area; as well as continued networking, cooperation and integration between various regions of the EU at all relevant territorial levels. But simultaneously the document underlines the importance of

[25] For a comprehensive list see Medeiros (2011, 12)

the territory as developmental assets by stating that the territorial cohesion should allow to make the most of the territorial potentials.

The most extensive ever conceptual analysis of the territorial cohesion has been provided by R. Camagni (2010) - Tequila Model and E. Medeiros (2011) – Star Model. The Tequila Model, appearing also in the ESPON 3.3 project (ESPON 2005, part 2, 77), enumerates the following components of the territorial cohesion: (1) territorial quality, (2) territorial efficiency, (3) territorial identity (Fig. A.8.2). The model is interesting in that it offers a new insight into the territorial cohesion, compared to the already discussed documents and reports. Also the approach to the territorial cohesion in this model is more comprehensive. The model:

- acknowledges the key role of the territory in growth achievement by stressing territorial aspects of competiveness, efficiency in the use of territorial resources etc,
- underlines the importance of territorial factors for achieving eco-development,
- highlights the "territoriality " of many social factors such as culture or social capital that play important role in sustaining growth but also in direct satisfaction of human needs.

The Tequila model properly encapsulates different roles of the territory that make the territorial cohesion concept so complex. It shows the territory as a growth resource (economies of agglomeration, natural resources, accessibility etc.), an indispensable frame securing interactions between developmental agents (diffusion of values, attitudes and ideas etc.), a unit for addressing public policies and, finally, a public good satisfying human needs (cultural landscapes, lack of urban sprawl, transport infrastructure etc.). The model highlights the important dichotomy of territory in human life: i.e. its function as the vehicle for achieving other important goals such as prosperity or social justice, and the role of the ultimate objective of human activities. Sometimes the functions reinforce each other e.g. cultural landscapes can enhance tourism and increase prosperity of a given place, in some cases they might be in conflict, though. The model is in line with the understanding of the territorial cohesion as provided in the *Territorial State and Perspectives of the European Union* report (Damsgaard *et al*. 2011) in which the cohesion is seen as a concept amalgamating diverse development paradigms such as convergence (polycentricity), sustainability, territorial competitiveness and regional vulnerability.

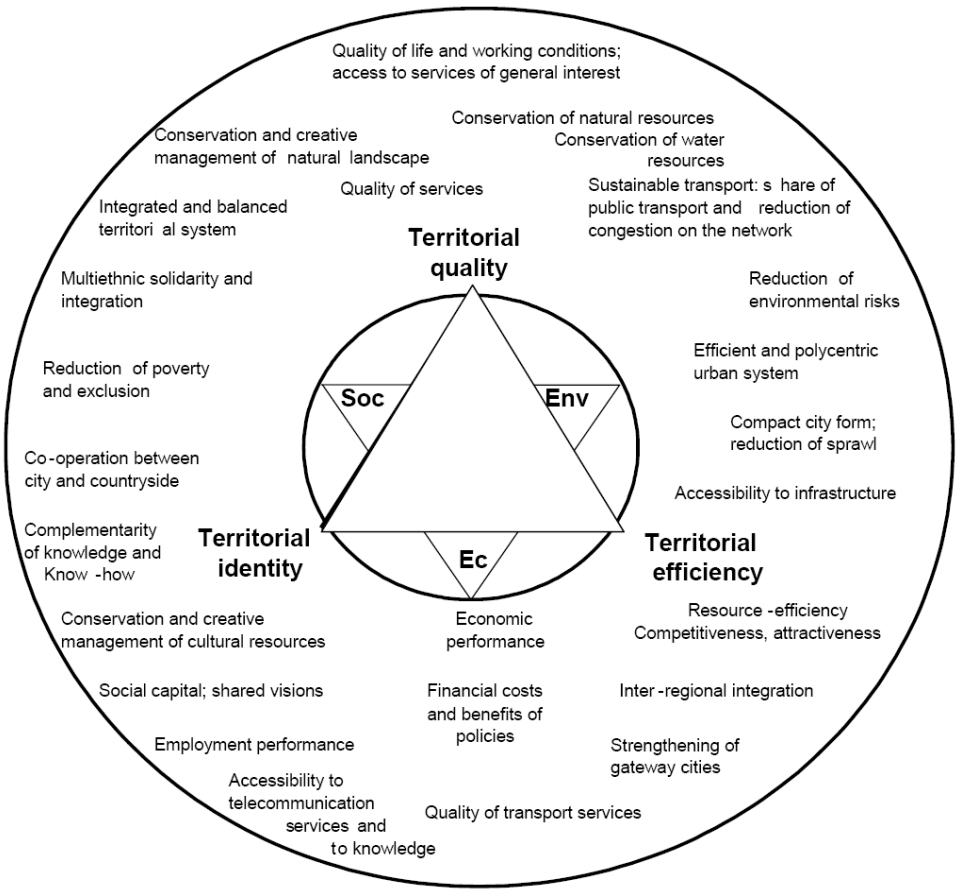


Figure A.8. 2. Components of the territorial cohesion in the Tequila Model

Source: Medeiros (2011, 17) drawing on Camagni (2010).

The Star model proposed by E. Medeiros (2011, 17) originates, among others, from the critical analysis of the Tequila model. In particular, Medeiros argues that the Tequila model does not provide a sufficiently prominent place to the concept of polycentric development and territorial governance and that it erroneously positions the concept of the territorial efficiency between economic and environmental dimensions, while it should cover all territorial dimensions including the social and institutional ones (Medeiros 2011, 19 and others). The Star model features four dimensions:

a) Socioeconomic Cohesion dimension, also referred to as the distribution dimension of the territorial cohesion, is the economic and social cohesion interpreted in the traditional way, treated as part of the territorial cohesion pursued in order to alleviate excessive socioeconomic imbalances in space (the origin of the territorial cohesion concept).

b) Environmental Sustainability dimension following the ESDP idea of wise management of the natural and cultural heritage under which environmental consequences of territorial processes should be considered, i.e. the contribution of territory to conservation and development of nature or climate change adaptation and mitigation etc.

c) Territorial polycentricity dimension (mainly morphology) following the ESDP idea of polycentric and balanced spatial development in the EU as a fundamental goal of territorial development also contributing to the socioeconomic cohesion.

d) Territorial cooperation/governance dimension covering two aspects of one process – that of bringing territories closer together. The territorial governance is understood both as a (i)" process of the organization and co-ordination of actors to develop territorial capital in a non-destructive way in order to improve territorial cohesion at different levels" (Medeiros 2011, 22 drawing on ESPON 2006, 13) and as (ii) territorial co-operation offering an alternative to the typical 'hierarchical type of government'(Medeiros 2011, 23) and allowing to integrate public and private actors in management of territories.

The main weakness of the Star model is insufficient focus on competiveness as a dimension of territorial cohesion linked to territorial capital or territorial potential.

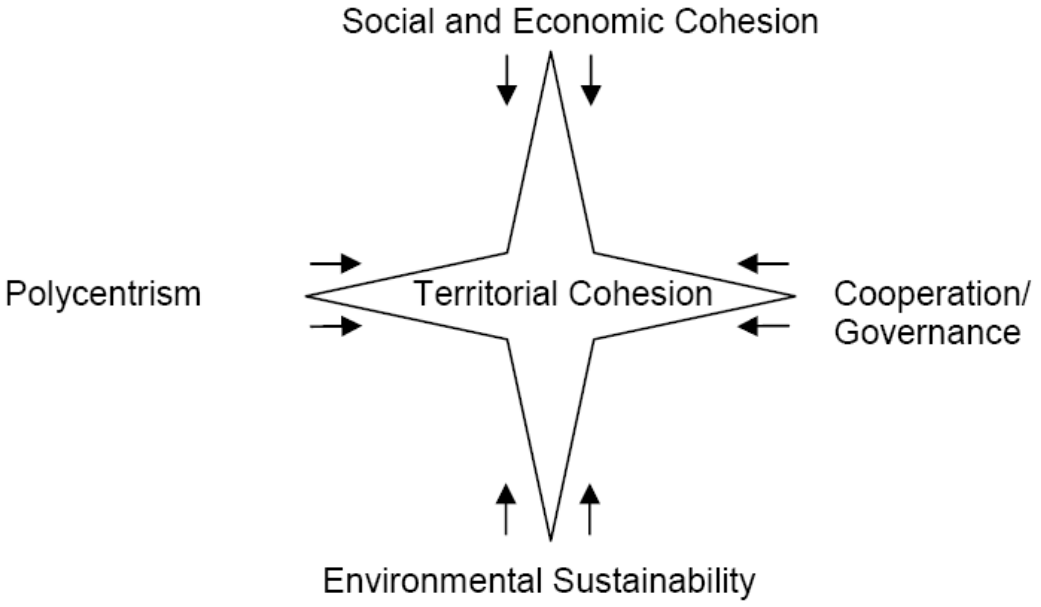


Figure A.8. 3. Components of territorial cohesion in the Star Model

Source: Medeiros (2011, 17)

As a by-product of the search for territorial cohesion indicators, the INTERCO project also came up with proposals of main dimensions or even functions (roles) of the territorial cohesion (referred to as facets of the territorial cohesion, thematic entrance points of the territorial cohesion or storylines) (Böhme 2011; Gløersen and Böhme 2011). The project identified the following, non-mutually exclusive storylines on the territorial cohesion:

- territorial cohesion is about competitiveness that implies a strong focus on territorial potentials and the support of smart growth and the connectivity of Europe's economic centres but also on diversity of territories as well as the diversity of factors,
- territorial cohesion is about balanced development focusing on European solidarity and stressing inclusive growth, fair access to infrastructure services and the reduction of economic disparities,
- territorial cohesion is about place-based policy making, paying particular attention to local development conditions , identification and exploitation / use of tangible and intangible endogenous potentials, local networks (incl. clusters) and specificities of places and their comparative advantages,

- territorial cohesion is about the environment, ecosystem approach, resource-efficient and greener economy, tackling climate change,
- territorial cohesion is about the need to maintain dialogue with other sectors to strengthen the territorial dimension in various policy fields with key concerns on a better use of synergies between different policies (vertical and horizontal coordination) as well as on the actual costs of non-coordination.

The INTERCO came up with following dimensions of the territorial cohesion: strong local economies ensuring global competitiveness, innovative territories, fair access to services, markets and jobs, inclusion and quality of life, attractive regions of high ecological values and strong territorial capital and integrated polycentric territorial development (ESPON 2011, part B, 11).

Finally, one of the best descriptions of the content and the scope of the territorial cohesion is provided in the ARL paper (Böhme *et al*. 2008). The ARL came up with the five points illustrating what territorial cohesion is about:

- recognizing the territorial diversity,
- identifying potentials in relation to integrated development strategies in line with geographical specificities,
- acknowledging the territorial context, e.g. endogenous development potentials and fragilities, as well as exogenous factors such as the impact of developments in other territories, and the impacts of different sectoral policies at various levels of decision making,
- ensuring fair access to infrastructure and services,
- refining governance processes to encapsulate local and regional tacit knowledge and resources, needed for the development of integrated strategies and the identification of territorial potentials and fragilities,

Despite all of these documents, models and discussions, the concept of the territorial cohesion tends to remain general, referring to territorial diversity and harmonious development of all places (which is perhaps the reason for its attraction and common acceptance). The analysis conducted above may, nevertheless, lead to some conclusions on the essence of the territorial cohesion:

- Firstly, the territorial cohesion has become a separate, independent goal of the EU on the equal footing with economic and social cohesion, and in some models it is even treated as an umbrella concept embracing the latter,
- Secondly, the territorial cohesion brings to the forefront the necessity of temporal trade-offs, due to domination of the long-term perspective in the territory-shaping processes,
- Thirdly, the territorial cohesion pinpoints the need to take into consideration specificities of different type of territories in different types of human activities and interventions,
- Fourthly, the territorial cohesion remains a heterogeneous concept covering different issues. Two of them, however, seem to be the most prominent: governance (the integration of policies affecting the same territory in order to improve policy efficiency) and territory as a developmental asset (territorial capital, territorially bound social, institutional and natural resources).

Although those conclusions might seem pretty theoretical, they actually offer clear guidance for development programming at different geographical scales, including the EU level. Assuming that it is the smart, inclusive and green growth that is an overall objective of our activities as stipulated by the Europe 2020 Strategy, the following should be stated.

1. The message conveyed by the economic cohesion to decision makers is that attention should be paid to territorial distribution of prosperity achieved as a result of such development and excessive disparities should not be tolerated even if this might slow down the pace of the growth of the entire EU.
2. The concept of social cohesion conveys a message that convergence of prosperity by simple redistributive (welfare-type) measures is not sufficient, that all the EU citizens should be provided fair access to jobs and self-development opportunities even if the pace of the growth of the entire EU could be slowed down as a result.
3. The message contained in the concept of territorial cohesion is twofold. First of all, it tells that territory matters for smart, inclusive and green growth and therefore spatially blind policies should be turned into territorially sensitive policies i.e. ones tailored to the specificity of a given place as postulated by Barca (2009) in its place-based concept. In that context territorial cohesion means just a smart, green and inclusive growth achieved through horizontally integrated policies: social, economic and spatial as suggested by Vogelij (2010, 2). All the said is about the efficiency of development policies. The second message is that decision makers should pay attention to the quality of territory just as they pay attention to territorial distribution of prosperity or opportunities for self-development. In other words, sometimes it is well-worth to promote polycentricity of urban network and maintenance of strong performance of inner cities, protect cultural landscapes, limit urban sprawl and territorial fragmentation even at the expense of the pace of the growth of the entire EU.

And thus the concept of economic, social and territorial cohesion carries with it important concerns about trade-offs between growth and other values shared by societies and expressed in the process of public choice. In addition, however, the territorial cohesion entails important efficiency aspects that are not so clear (although highlighted in some OECD analysis) with regard to economic and social cohesion.

Summing up the entire section on the key notions, an apparent lack of consensus on their scope, content, interpretation and functions can be noticed. The following can, nevertheless, be concluded:

1. Growth and development belong to the most general and overarching policy goals, and usually carry positive connotations (despite the negative externalities which they might cause). They are associated with satisfaction of human needs or sustainable human well-being (Stiglitz, Sen, Fitoussi, 2009).
2. The socio-economic and territorial development notions are governed by different sets of values. While they sometimes reinforce each other (as the case is with territorial efficiency or agglomeration economies through networking), they also happen to be in conflict as regards the use of space. It is important to acknowledge that territorial development can be governed by its specific values and objectives (e.g. polycentric development) of at least uncertain relation to smart, inclusive and green

growth. In some models territorial cohesion seems to play the function of the ultimate objective of territorial development.

3. The territorial cohesion concept remains heterogeneous. It concerns both the desired state of territory and the way in which the territory should be managed in order to achieve both the desired state and the high level of prosperity (economic well-being) of the territory's inhabitants.
4. While the concept of the territorial cohesion brings the territory closer to the idea of smart, green and inclusive growth through the notion of territorial efficiency, it also puts some territorial values (the quality of territory) on top of such growth (thus becoming a "mitigating" factor of negative consequences for the application of the current economic model – see Farrugia and Gallina (2008)). This has been noticed by many scholars[26] and professionals, e.g. by P. Schön (2005) who pointed out that territorial cohesion aimed at strengthening both endogenous potential and territorial equity (equality) and by K. Böhme *et al*. (2008) claiming that „territorial cohesion address both territorial potentials and fragilities".
5. Territorial cohesion is integrative from its very nature. Its "focus is on territories and not on sectors, implementing territorial cohesion requires coordination of economic policies of member states as well as of sectoral policies and actions of the EU" (ESPON 2011, part C, 3).
6. Territorial integration is less frequently considered as an objective of territorial development; at least as far as EU documents are concerned. In some analyses it has been treated as part of territorial cohesion. However, the two concepts are not identical. For instance, territorial integration may be achieved through, for instance, co-operation between large cities at the expense of the smaller ones, thus contradicting the objective of polycentric development. In a majority of cases, however, territorial integration supports territorial cohesion e.g. by contributing to the formation of functional areas in line with the idea of functional geography. For instance, INTERCO authors put it clearly that „territorial cohesion is not conceivable without a high degree of cooperation between territories and between actors, at each step of the policy process" (ESPON 2011).

VASAB documents, their focus and content

The initial VASAB document, viz. the VASAB vision and strategy(ies) (VASAB1994), was based on four values, including: development, environmental sustainability, freedom and solidarity (fig. A.8.4). The two initial evolved with time to form the objective of the sustainable development, while two others slightly dissolved within the EU *acquis* (with the gradual accession of majority of the Baltic Sea region /BSR/ countries to the EU). A more thorough examination of what VASAB promoted in its vision eighteen years ago (VASAB 1994,52-54) reveals, in fact, the ideas of: regional integration, economy of flows, agglomeration economies (also through networking), sustainable development, enhancement of local endogenous potential, integrative approach to programming

[26] Also in Damsgaard et al. (2011) the territorial cohesion is characterised as "harmonising different development paradigms such as sustainability, convergence (solidarity between regions), and regional competitiveness" and using a normative statement that "the best balance of economic, environmental and social needs has to be specific to each particular territory".

development and balanced socio-economic development in space (with focus on specific types of territories). Integration was given prominent place not only due to the efficiency reasons but also as an axiological paradigm of enhancement of "mutual enrichment among regions and nations" (VASAB 1994, 52). In that vision the concept of spatial cohesion was also put forward (VASAB 1994, 10-11) as a complement to the economic and social cohesion. Nowadays it might be interpreted in the context of economy of flows (networking and co-operation), but its initial focus seemed to be on counteracting territorial disparities in growth and prosperity.

Figure A.8.4. VASAB values, as formulated in VASAB 1994

Source: own elaboration drawing on VASAB (1994)

The core of the VASAB vision was formed by fourteen goals (Zaucha 1998). Divided into four pillars: the settlement structure (pearls), transport network (strings), open areas (patches) and functioning of the spatial planning system, they can be presented as the following statements:

- A competitive system of cities gains value by co-operation across the Baltic Sea and with Europe.
- The system of cities ensures spatial cohesion.
- Links provided between urban areas and rural hinterland support regional economic and environmental balance.
- The cities offer an attractive urban environment for inhabitants and investment.
- The Baltic Sea Region (BSR) mobility network facilitates environment-friendly transport.
- The mobility network provides conditions for effective integration within the BSR and with the world.
- Energy production relies increasingly on renewable and environment-friendly sources of energy.
- Cross-border co-operation contributes significantly to spatial economic and social cohesion.
- Islands function as a tourist core in the BSR.
- The coastal zone is planned, careful balance between development and protection being maintained.
- A Baltic Network of nature areas is designated and protected,
- Spatial planning contributes to harmonization and spatial cohesion across borders,

- Spatial planning is based on the principles of subsidiarity, participation and transparency,
- Spatial planning contributes to the co-ordination of sectoral and regional planning.

Figure A.8.5 below present all VASAB goals in an integrative manner.

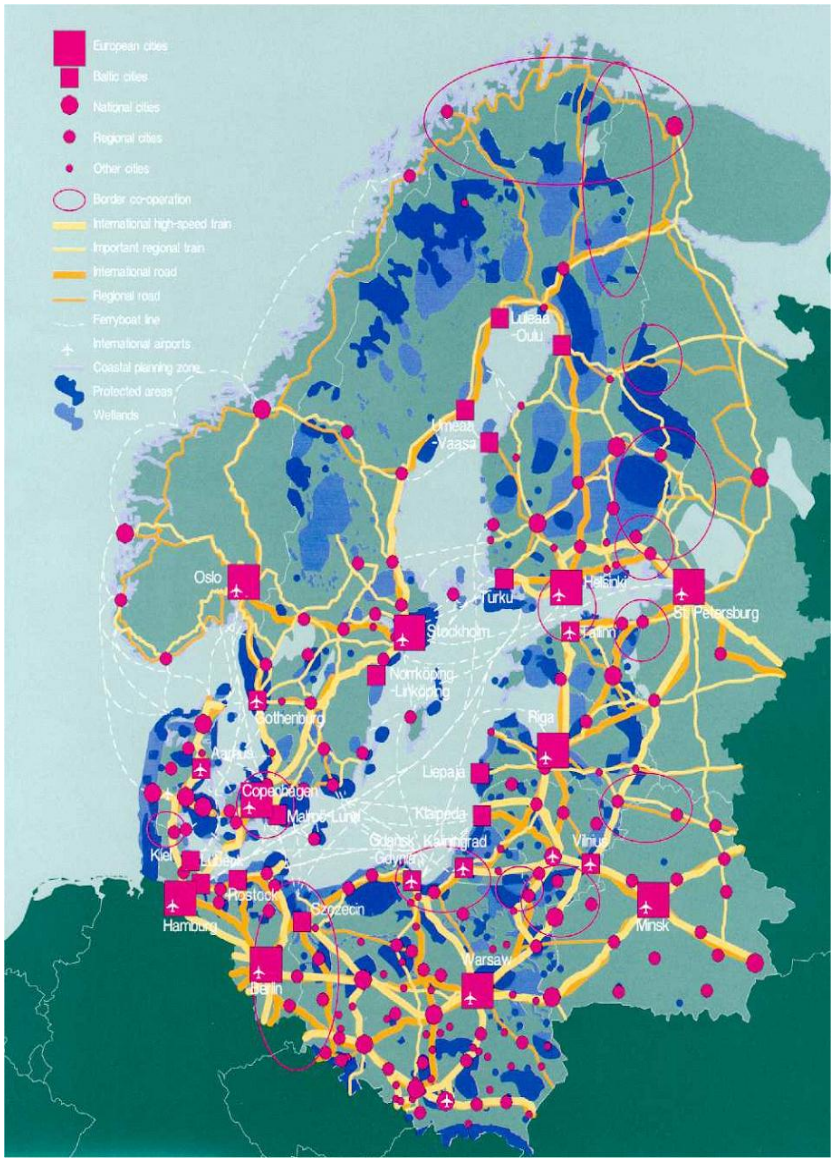


Figure A.8.5. VASAB vision of 1994

Source: VASAB (1994)

The next VASAB document named " [From Vision to Action (Zaucha 1996) paved the way for implementation of the VASAB Strategy of 1994. It listed eight pilot projects that VASAB countries agreed to execute (fig.A.8.6). The common recommendations for spatial planning of the coastal zone in the Baltic Sea Region were also attached to the document. The most important part of "From Vision to Action" was devoted to the need of integrative implementation of the VASAB strategy of 1994, i.e. to the close co-operation of VASAB with other Baltic networks and stakeholders (e.g. the ministers for regional development, ministers for environment, ministers for transport). The document also extended spatial

planning to the marine (with focus on sea transport) and meant the first VASAB attempt to elaborate a spatial monitoring system for the region.

a. Orsha-Minsk-Brest zone

b. THTR Zone (Tampere-Helsinki-Tallinn-Riga)

c. Karelia-Atlantic zone (Petrozavodsk-Vaasa-Umea)

d. TEM/TER (the South East Baltic co-operation)

e. Arch of Bothnia (Lulea-Haparanda-Tornio-Kemi-Olu city networking)

f. Project on tourism development of German-Polish border

g. Project of transborder co-operation of Latvia, Lithuania and Belarus,

h. Common recommendations for spatial planning of the coastal zone in the Baltic Sea Region.

Figure A.8.6. VASAB pilot projects and common actions of 1996

Source: Zaucha (1996, 21)

The third VASAB document, titled "VASAB 2010 Plus" (VASAB 2001), took form of an Action Programme. Its underlying paradigm was sustainable development. Such development was defined by VASAB as the development (of territorial structures) enhancing the ability of future generations to meet their needs, while balancing the developmental goals without promoting one single goal to the detriment of others (Damsgaard and Groth 1998, 6). The key themes offered, in fact, a kind of operational definition of the transnational sustainable development strongly rooted in spatial concepts and notions.

The document identified several challenges for spatial policies regarding: the BSR global position (competitiveness, diversity, unity), socio-economic development and integration, natural environment, settlement system, internal structures of urban regions, mobility and energy networks, rural and cultural landscapes, coastal areas, BSR islands, national spatial development plans and, finally, spatial

cohesion. The last term was defined in the document (VASAB 2011, 15) by explaining that spatial cohesion meant low disparities across BSR borders regarding innovation and welfare, spatially more balanced growth within countries, and connectivity necessary for regional competitiveness and pan- Baltic integration. As an illustration of that particular issue a map was developed showing the regional GDP/per capita disparities (fig.A.8.7).

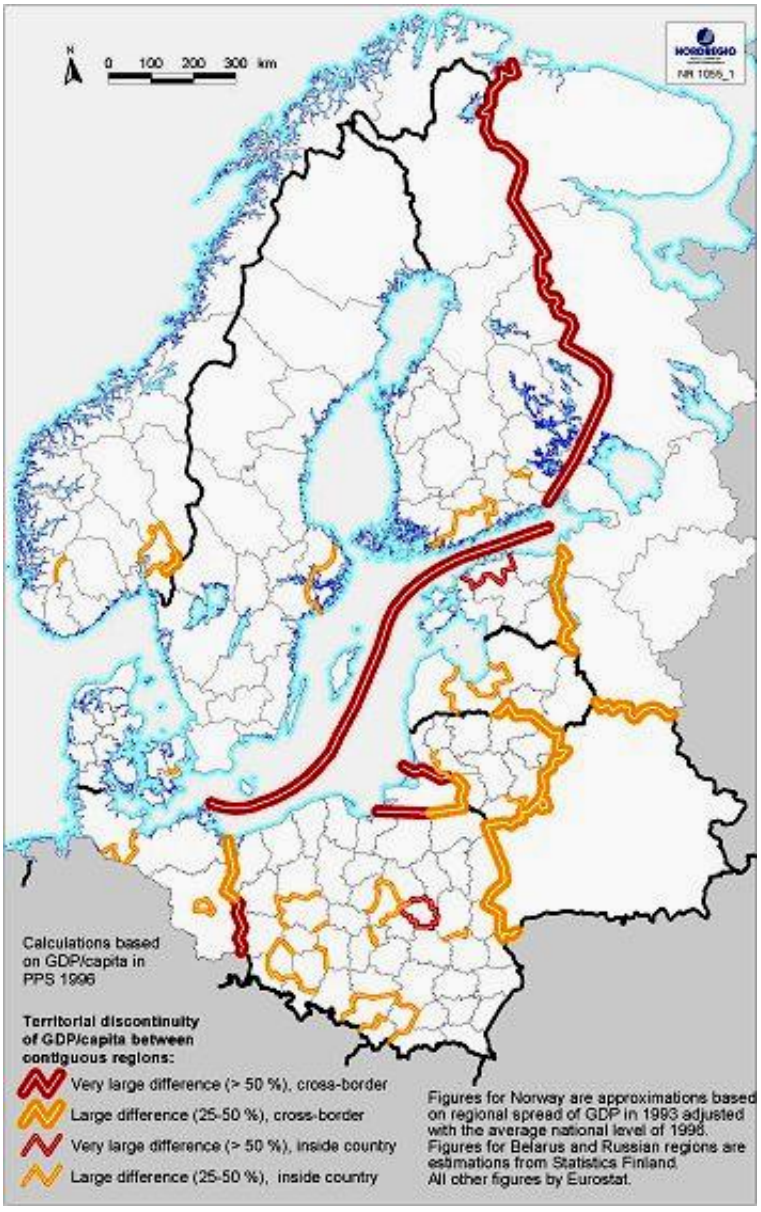


Fig.A.8.7. Regional GDP/per capita disparities in the Baltic Sea region in 1996

Source: VASAB (2001, 25)

The focus of the Action Programme was on issues requiring transnational co-operation of spatial planners in order to enhance sustainable development. Such development was seen in the context of other important European documents such as the ESDP and CEMAT Guiding Principles. The six key themes identified by VASAB and listed below (fig. A.8.8) were considered as a VASAB vehicle for implementation of the ideas underlying those aforesaid documents under BSR specific conditions. The key themes offered a balanced policy mix with regard to sustainable spatial development:

1. Co-operation of urban regions on key issues of sustainable development.
2. Strategic development zones important for transnational integration within the BSR.
3. Transnational transport links important for integration across-BSR and with Europe.
4. Diversification and strengthening of rural areas.
5. Development of transnational green networks, incl. cultural landscapes.
6. Integrated development of coastal zones and islands.

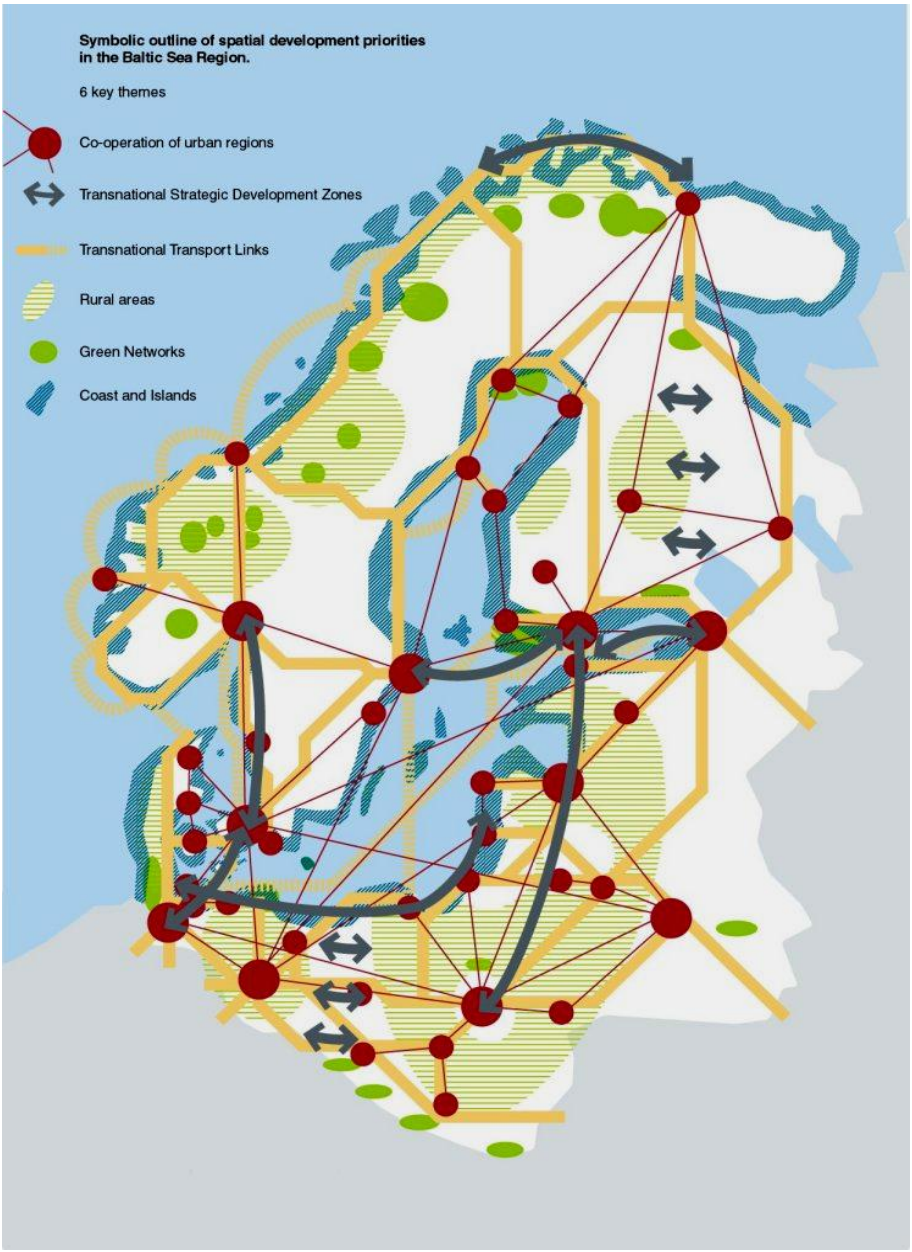


Fig.A.8.8. VASAB key themes of 2001 at one map.

Source: an unpublished map from the archives of the VASAB Secretariat in Gdańsk

A closer look at the themes reveals that a new territorial concept of spatial development zone was, in fact, proposed and elaborated in the "VASAB 2010 Plus". Strategic development zones were defined (VASAB 2001, 25) as relatively large territories (exceeding the capacities of inter-municipal co-operation) characterised by the superposition of some (or all) of the following characteristics: closeness to borders, high trans-border disparities in economic and social indicators, high development potentials to be activated by transnational cooperation, relatively low cross-border exchange intensity (trade, business contacts, private travelling), and – finally - deficient infrastructure and regulations for border crossing. Such zones were considered as possessing significant economic growth potentials not adequately used. The concept was implemented in several BSR countries e.g. in Poland (Matczak *et al.* 2004), Germany, Lithuania, Latvia and Estonia, but only with moderate achievements.

Preparation of the "VASAB 2010 Plus" had been proceeded by the comprehensive analytical work financed[27] by the VASAB Plus project of INTERREG II C. Several spatial trends and spatially sensitive processes had been examined and the results were presented in analytical monographs on the spatial development of the BSR (Groth 1998; 2001; Groth *et al*. 2000; Hanell *et al*. 2001; Platz 2001). The pity was that those efforts were not continued on a systematic basis. Only ten years later similar but different (adjusted to a new spatial situation) spatial analysis (Schmitt and Dubois 2008; Zaucha *et al.* 2008) were conducted as a part of preparation of the VASAB Long-Term Perspective /LTP (VASAB 2009).

With the massive enlargement of the EU in 2004 the issue of spatial integration popped out on the VASAB agenda once more, while the sustainable development was still recognised as an important VASAB objective. As the Gdańsk Declaration put it, " a major goal of the VASAB cooperation is the better spatial integration of the BSR and the improved integration of the BSR with other areas of Europe, resulting in territorial cohesion" (VASAB 2005, 3). In this document the territorial cohesion was recognised by VASAB and understood as an improvement of accessibility and connectivity, and therefore it was closely associated with the concept of the spatial integration. i.e. the earlier said collaboration, intensification of flows, links and connections in space. The background document to the Gdansk Declaration titled "Connecting Potentials" was strongly anchored in the paradigm of the growth, competitiveness and innovations (providing a link to the Lisbon and Gothenburg Agendas). The document recapitulated the experience with implementation of the VASAB action programme of 2001 and proposed focusing on four issues only: polycentric urban networking, spatial accessibility, transnational development zones and management and planning of the sea and coast. The first three themes are ones well-known from the previous VASAB documents. VASAB experience only proved that it was worthy to focus on them. They offered a specific added value in terms of transnational spatial co-operation. However, maritime spatial planning was a new task for VASAB that first time appeared in this document.

In the recent VASAB strategy (VASAB Long-Term Perspective /LTP/ for the Territorial Development of the BSR) (VASAB 2009) the territorial integration still remains an important developmental objective, while more attention is given to the notion of the territorial cohesion (Zaucha and Fischer 2009:624). In fact, the LTP is written as an illustration how regional co-operation (ministerial network) such as VASAB can complement the EU Cohesion Policy with a territorial dimension and how it can enhance territorial cohesion at a larger geographical scale – both terrestrial and maritime. The meaning of the territorial cohesion has changed since 2005, though. It evolves towards an umbrella (overall) concept

[27] In a similar manner the preparation of the LTP (VASAB 2009) was financed by the TACIS/INTERREG III B project EastWest Window .

capturing the contribution of territorial structures to development. Despite the misleading "cohesion" component in its name, the concept should not be erroneously mistaken for the convergence of well-being or level of living in space but it should rather point out towards accumulation and maintenance of the territorial capital and/or more integrative management patterns in space (i.e. the integration and territorialisation of policies).

The LTP has been growth driven. This can be easily seen from the composition of the action agenda (22 actions related to urban networking and urban-rural co-operation, internal and external accessibility and maritime spatial planning/management listed in the box). Figure A.8.9 presents the LTP actions at one map.

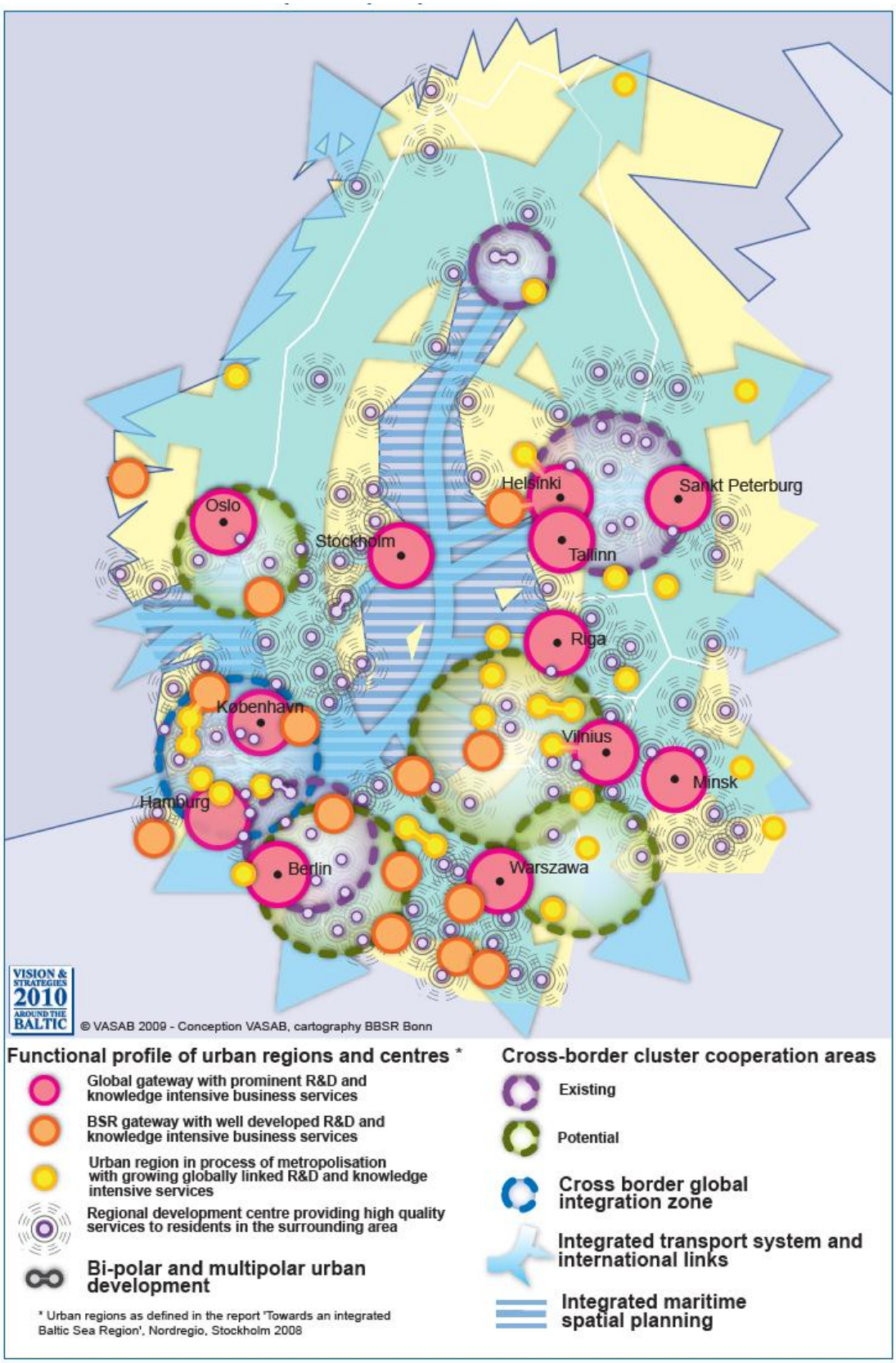


Figure A.8.9. Main actions of the VASAB Long Term Perspective of 2009

Source: VASAB (2009, 13)

ACTION AGENDA OF THE LTP

ACTION AGENDA 1: Develop and implement a BSR cooperation strategy for the metropolitan areas of the whole Region by involving relevant urban cooperation actors (e.g. business support organisations, investment agencies, marketing agencies and national/regional authorities, etc.).

ACTION AGENDA 2: Implement transnational networking actions to connect the research and development potentials of the eastern and western BSR metropolises and thereby to enhance the innovation potential of the Region.

ACTION AGENDA 3: Map the territorial cluster potentials of non-metropolitan areas in North-West Russia and Belarus and develop measures for facilitating the knowledge and technology transfer to these territories

ACTION AGENDA 4: Develop the measures for harmonising the investment plans of Saint Petersburg with the macroregional economic integration needs.

ACTION AGENDA 5: Create and spread within the BSR a model solution on using a stakeholder approach in enhancing the potential of small and medium-sized cities and towns within the metropolitan areas as international centres of innovation and specialised services.

ACTION AGENDA 6: Consider launching cross-border cluster cooperation initiatives with North-West Russian entities in the economic branches with high BSR integration potential.

ACTION AGENDA 7: Launch joint transnational and cross-border initiatives to combine the development of metropolitan areas and their rural surroundings in a better way.

ACTION AGENDA 8: Activate transnational networking initiatives to facilitate the foreign direct investments into small and medium-sized cities outside the metropolitan areas, based on the documented success stories in the BSR and other macroregions.

ACTION AGENDA 9: Organise a pan-Baltic conference to work out measures for counteracting the impact the demographic trends and labour market development have on the urban-rural polarisation and social cohesion in the Region.

ACTION AGENDA 10: Address the obstacle of cross-border deficits in primary (TEN-T) and secondary (interregional connections) transport networks of the BSR countries for developing transborder labour markets in the Region.

ACTION AGENDA 11: During the revision of the EU transport policy and follow-up work on the EU Strategy for the Baltic Sea Region, consider the following examples of road and rail links, the current state of which pose the challenge for the integration of transport networks in the BSR from the macroregional perspective (7 links named).

ACTION AGENDA 12: In the EU Strategy for the Baltic Sea Region and its follow-up work, consider the following air transport issues of relevance to the BSR territorial cohesion (3 items named)

ACTION AGENDA 13: Monitor the trends in airborne connectivity of the BSR metropolises and report about the prevailing shortcomings and the possible improvement measures at the transnational political meetings

ACTION AGENDA 14: Develop the Motorways of the Sea in the Baltic Sea Region as a systemic solution to enhance the cross-border scale integration and a transfer of goods between the EU, the eastern neighbours, Central Asia and the Far East. Consider in the revised EU transport policy the extension of the Baltic Sea

Motorways system to include further short-sea links between the EU ports, as well as connections from the EU ports to Kaliningrad and Saint Petersburg.

ACTION AGENDA 15: Initiate work on the intelligent sea transport corridors in the BSR (separated and electronically monitored traffic routes) by activating at least one pilot project for a corridor with high traffic volumes in an environmentally sensitive area.

ACTION AGENDA 16: Analyse the territorial development implications of more East-West connections to secure a fully integrated BSR transmission grid.

ACTION AGENDA 17: Consider a BSR Energy Supergrid to interconnect the power plants producing renewable energy in the BSR sea areas as a possible component of actions towards a fully integrated BSR transmission grid.

ACTION AGENDA 18: Analyse and demonstrate solutions for better utilisation of renewable resources on the pan-Baltic scale and thus a higher energy independency of the Region (exemplary topics named).

ACTION AGENDA 19: Map the coverage status for the ICT services in the BSR cross-border territories and develop joint initiatives to address the detected disparities.

ACTION AGENDA 20: Arrange a BSR conference together with relevant stakeholders in order to develop a common approach for the Baltic Sea Maritime Spatial Planning.

ACTION AGENDA 21: Prepare and implement demonstration projects for some Baltic Sea areas of severe use conflicts (e.g. the Gulf of Finland, the Gulf of Riga, Norra Kvarken, southern part of the Gulf of Bothnia, including the archipelagos, the Danish straits, and offshore areas south and east of Öland and Gotland, as well as other appropriate Baltic Sea locations).

ACTION AGENDA 22: Initiate joint capacity building actions in maritime spatial planning to ensure exchange of experience, promote education availability and to increase competence in that field at the BSR level.

In fact, all VASAB documents pay great attention to the BSR divides. This has not changed since the beginning of the VASAB existence although the definition of divides and their composition has slightly evolved over time. Divides were treated both as a policy problem and a source of particular market potential. A comprehensive list of divides addressed by VASAB in a number of documents is listed below:

- a divide, reflecting political circumstances, between countries being EU members and countries not foreseeing EU accession;
- an East/West divide, reflecting, on the whole, sharply differing levels of economic development;
- a North/South divide, reflecting, in the first instance, sharply differing population densities;
- a variation between small/large countries, influencing the relative importance of the Baltic Sea Region to a respective country;
- a physical divide resulting from the fact that the Baltic Sea takes a central part of the Region.

These divides have influenced VASAB thinking on both the integration and the spatial cohesion. Therefore in addition to the set of spatial planning objectives which promote spatial cohesion and integration in all pan-European regions (such as polycentric urban development, equal access to infrastructure and knowledge and careful management of nature and cultural assets), the VASAB has formulated some specific objectives related to those issues in the Baltic Sea Region, which include:

a. improving physical links, mainly transport systems across the Baltic Sea Region and between the Baltic Sea Region and the rest of Europe;
b. sustaining population in the already extremely sparsely populated areas of the northern part of the Region;
c. enhancing integration across the sea;
d. supporting transformation of the sectors lagging behind (primary sectors in particular) in the eastern part of the Baltic Sea Region;
e. assisting Russia (the Kaliningrad exclave in particular) and Belarus to integrate with the rest of the Baltic Sea Region.

The above presented evolution of the understanding of the key goals guiding territorial development in the BSR leads to the conclusion that their actual names, definitions and interpretations are context-dependent. The goals and objectives have evolved in line with the changes in the spatial structure of Europe, its political and economic geography, quality of life of European citizens, and consciousness of an average citizen. Such evolution has not been of a catastrophic character. Just the opposite, the new concepts have rather complemented and extended the existing ones, thus reinforcing one another. Therefore for designing a long-term oriented monitoring system of the territorial development instead of focusing on a single concept, an attempt would be recommendable to capture all the important "building blocks" of the European and BSR debate on the rationale of territorial development – in order to identify the main components that should be monitored in a long run

The strategic documents at the European level - spatial policies and the EU Cohesion Policy

Intergovernmental process

While the "Europe 2000" and Europe 2000+" reports presented a rather dominant descriptive and analytical attitude it was the "European Spatial Development Perspective" that paved the way for macro-scale territorial approach in policy making. The ESDP provided three integrated policy guidelines for spatial development of the EU territory:

1. Polycentric Spatial Development and a New Urban-Rural Relationship with focus on: polycentricity and balanced development, dynamism and competitiveness of cities, indigenous development of rural areas and functional urban-rural linkages.
2. Parity of Access to Infrastructure and Knowledge covering: development of transport and communication infrastructure at different geographical scales (accessibility), intermodality (integrated transport and communication), access to public services, diffusion of innovation and knowledge.
3. Wise Management of the Natural and Cultural Heritage encompassing: ecological networks, protection of cultural and natural assets (e.g. soil, water resources, cultural landscapes) and their wise use, integration of conservation and development policies via integrated strategies.

On top of that, the ESDP promoted an integrative approach to the development through networking and co-operation, so-called vertical and horizontal coordination (ESDP 1999, 35-36).

A year later the Council of Europe, Committee of Planning Ministers (CEMAT 2001) elaborated the *Guiding Principles for Sustainable Spatial Development of the European Continent* that were adopted by the Committee of Ministers on 30 January 2002 at the 781st meeting of the Ministers' Deputies. The document underlines territorial dimension of sustainable development aiming, in particular,

"at bringing the economic and social requirements to be met by the territory into harmony with its ecological and cultural functions and at contributing in this way to long-term, large-scale and balanced spatial development". To achieve these, the document postulates, similarly to the ESDP, close co-operation between spatial planning and sectoral policies. To the traditional three pillars of sustainability (social, economic and environmental), the *Guiding Principles* added, by the way, a fourth dimension: cultural sustainability.

As regards the spatial development policy, it was explained as the policy influencing the spatial structures. Diversity was regarded as „an inestimable potential for sustainable spatial development" and territorially balanced development (polycentric development pattern) as the key value or objective. The *Principles* also put attention to spatial integration at different geographical scales, from the global down to local. A separate section was devoted to the role of private sector in spatial development.

The document stated ten principles of the development of the entire European continent, more balanced regionally:

1. Promotion of territorial cohesion through a more balanced social and economic development of regions and improved competitiveness (with territorial cohesion meaning a polycentric development pattern plus connectivity).

2. Encouraging the development generated by urban functions and improving the relationship between the town and the countryside.

3. Promotion of better balanced accessibility,

4. Developing access to information and knowledge.

5. Reducing environmental damage.

6. Enhancing and protecting natural resources and the natural heritage.

7. Enhancing the cultural heritage as a factor of development.

8. Developing energy resources while maintaining safety.

9. Encouraging sustainable tourism of high quality.

10. Limitation of the impact of natural disasters.

For different types of territories separate principles have been formulated. In general, the aspects (goals) of territorial development are very similar to the ones featured in the ESDP, with an exception of the added components of tourism and natural disasters.

In 2007 the Ministers responsible for urban development and territorial cohesion in the EU countries adopted the Territorial Agenda of the EU. The document reinforces the ESDP approach by operationalising its three guiding principles (referred to as the "aims" in the text of the Agenda) with six priorities for the territorial development of the EU:

1. Strengthening polycentric development and innovation through networking of city regions and cities.
2. Strengthening new forms of partnership and territorial governance between urban and rural areas.
3. Promoting regional clusters of competition and innovation in Europe.
4. Strengthening and extension of trans-European networks (TEN-Ts).
5. Promoting trans-European risk management, including the impacts of climate change.

6. Strengthening ecological structures and cultural resources as an added value to development.

The Agenda was updated under the Hungarian Presidency of the EU Council in order to better reflect situation of the EU after enlargement and to take into consideration the impact of the economic slowdown. The updated document (Territorial Agenda of the EU 2020) was adopted by the Ministers responsible for spatial planning and territorial development at their informal meeting in May 2011. Territorial cohesion has been regarded as a common goal for a more harmonious and balanced state of Europe and the Agenda itself as the policy framework to support the territorial cohesion in Europe. The function of the document was defined by declaring that it was supposed to:

- provide strategic orientations for territorial development,
- foster integration of territorial dimension within different policies at all governance levels,
- ensure implementation of the Europe 2020 Strategy according to the territorial cohesion principles.

Compared to its predecessor, the Territorial Agenda 2020 pays more attention to integrative development and functional linkages which in the previous draft were mainly restricted to urban and urban-rural co-operation. It attributes more importance to the territorial developmental assets as those that cannot be easily moved in the global economy (a factor important during the period of economic slowdown). It recognises the significance of local and regional actions for development of the entire EU. However, both documents acknowledge diversity of territories as the potential for development, and come up with similar priorities with only moderate differences described above. The priorities formulated under Agenda 2020 are listed below:

1. polycentric and balanced territorial development promotion:
   - polycentric and balanced territorial development of the EU as the key element of achieving territorial cohesion,
   - cities as centres contributing to the development of their wider regions (the aspect of functional regions),
   - polycentric territorial development fostering the territorial competitiveness of the EU territory also outside the core 'Pentagon area',
   - city networking improving performance in European and global competition,
   - small and medium-sized towns playing a crucial role at the regional level so that polarization between capitals, metropolitan areas and medium-sized towns on the national scale should be avoided.

2. Encouraging integrated development in cities, rural and specific regions:
   - a need for integrated and multilevel approach in urban development and regeneration policies,
   - cooperation and networking of cities contributing to smart development of city regions at varying scales in the long run, a need to build responsibility of city authorities for the development of their wider surroundings,
   - a need to look beyond city administrative borders and focus on functional regions, including peri-urban neighbourhoods,
   - rural, peripheral and sparsely populated territories as providers of ecological functions and other important services requiring enhancement of their accessibility, entrepreneurship and local capacities,

- urban-rural interdependence to be recognised through integrated governance and planning based on broad partnership,
- joint unleashing of specific potentials of the Art. 174 territories by actors from different states or regions in an integrated way.

3. Territorial integration in cross-border and transnational functional regions (a new one):
   - integration of territories through territorial cooperation as an important factor in fostering global competitiveness through better utilization of potential divided by borders (the creation of a critical mass for development),
   - a need for transnational and cross border integration of regions to go beyond cooperation projects and to be better embedded within national, regional and local development strategies.
4. Ensuring global competitiveness of the regions based on strong local economies (new):
   - social capital, territorial assets, and the development of innovation and smart specialisation strategies in a place-based approach playing a key role in ensuring competitiveness,
   - integration of local endowments, characteristics and traditions into the global economy, contributing to the reducing of vulnerability to external shocks.
5. Improving territorial connectivity for individuals, communities and enterprises:
   - fair and affordable accessibility to services of general interest, information, knowledge and mobility as an essential component of the territorial cohesion,
   - decentralized, efficient, secure and environmentally-friendly production and use of renewable and low-carbon energy,
   - a need for sea-overland connections, efficient airport-railway relationships and inter-modal transport solutions especially within city-regions,
   - a need for further development of Trans-European networks (TEN-T) linking the main European centres, such as capitals, metropolitan regions and TEN-nodes and improving linkages between primary and secondary transport systems,
   - development of secondary transport networks,
   - development of transport connections across territorial barriers,
   - improving accessibility of urban centres located in peripherial regions.
6. Managing and connecting ecological, landscape and cultural values of regions.
   - well-functioning ecological systems and the protection and enhancement of cultural and natural heritage as important conditions for long-term sustainable development,
   - integration of ecological systems and areas protected for their natural values into green infrastructure networks at all levels,
   - development of joint risk management,
   - special attention – if needed – paid to cultural landscapes in order to make best use of these assets (environment-friendly job creation and strengthening their recreational functions as a complement to conservation),
   - improvement of regional and local identity by strengthening awareness and responsibility of local and regional communities towards their environments, landscapes, cultures and other unique values.

Territorial cohesion as the shared responsibility between the EU Commission and the Member States.

In the meantime the aforementioned intergovernmental process on spatial planning and development was upgraded through an added Community perspective. Territorial cohesion has become the legitimate component and dimension of the European cohesion policy as a new goal of the European Union (EU) introduced by the Treaty of Lisbon (Art 3.TEU).

An important contribution to the understanding of the first component i.e. the role of territorial cohesion in policy making (as an instrument pursuing integrative territorial approach to policies) has been provided by Barca (2009). His "place-based approach" puts emphasis on endogenous potentials (both already accumulated and potentially obtainable by a given territory) and adjusts intervention to the spatial (territorial) context of local or regional specificity. As stated by Barca (2009, 4), such an approach shows an intentional focus on: 'the place specificity of natural and institutional resources and of individual preferences and knowledge; the role played by the (material and immaterial) linkages between places; and the resulting need for interventions to be tailored to places'. Barca highlights the role of appropriate institutional set up processes able to foster a dialogue between endogenous and exogenous developmental forces.

The recently adopted EU "Europe 2020" strategy pays little attention to the territorial issues, although territorial development remains one of the key preconditions for its successful implementation. Therefore, the Polish Presidency of the EU Council has made an attempt to identify the linking issues between this document and the Territorial Agenda of EU 2020. In effect, five territorial keys were identified that require attention in the implementation process of the "Europe 2020" document (Böhme *et al* 2011):

1. Accessibility
2. Services of general economic interest
3. Territorial capacities/ endowments/ assets
4. City networking
5. Functional regions

Territorial Cohesion has been introduced to the programming of EU interventions financed from the Structural (CSF) Funds. In the Commission Staff Working Document *Elements for a Common Strategic Framework 2014 to 2020* (CEC 2012) an emphasis was put also on integrated territorial development. The adjective "territorial" implies development which pays attention to specific features and endowments of different EU territories and regions. Therefore the Commission will want the Member States to make the programmes launched under the CSF i.e. the former Structura Funds reflect the diversity of European regions, "whether in terms of employment and labour market characteristics, commuting patterns, population ageing and demographic shifts, cultural, landscape and heritage features, climate change vulnerabilities and impacts, land use and resource constraints, institutional and governance arrangements, connectivity or accessibility, and linkages between rural and urban areas" (CEC 2012, 12). This statement might be considered as an indication of territorialisation of the EU programming process and abandoning territorially-blind approach based on the "one model fits all" principle. When designing their partnership contracts and programmes the Member States and regions should therefore take into account, among others, development potential and capacity, the major challenges, bottlenecks and missing links and innovation gaps and come up with solutions based on functional geography, i.e. transcending administrative boundaries and national borders in a similar way as the challenges do. The Commission will also ask the Member States to apply an integrated approach that would link Europe 2020 Strategy with regional and local actors

while developing the partnership contracts. The key shortcoming is that the Commission has presented the territorial cohesion in this document in the context of development problems intensified by geographic or demographic features (CEC 2012, 12) instead of the development potential.

The proposal of the Common Provision Regulation identifies eleven thematic objectives. This should allow for concentration of funds and increase efficiency of EU interventions. The thematic objectives concern the following issues:

1. Research and innovation.
2. Information and communication technologies (ICT).
3. Competitiveness of Small and Medium-sized Enterprises (SMEs).
4. Shift towards a low-carbon economy.
5. Climate change adaptation and risk prevention and management.
6. Environmental protection and resource efficiency.
7. Sustainable transport and removing bottlenecks in the key network.
8. Employment and support to labour mobility.
9. Social inclusion and combating poverty.
10. Education, skills and lifelong learning.
11. Institutional capacity building & efficient public administration.

At present the objectives are spatially blind. The notion of territory has been used only a few times in the document (CEC 2012b) with regard to three priorities only: (i) social inclusion in the context of the territorial dimension of poverty (its spatial concentration) and social innovation as a vehicle for enhancement of territorial cohesion, (ii) education as a means of reducing territorial disparities, and, finally, as the (iii) institutional capacity in the context of territorial pacts. Also the maritime spatial planning has been mentioned under the theme of environmental protection and resource efficiency.

For the sake of promoting integrated approaches to territorial development, the proposal for a Common Provisions Regulation provides for two new mechanisms to facilitate the development of local and sub-regional approaches: the Community Led Local Development and Integrated Territorial Investments for the ERDF, ESF and Cohesion Fund (CEC 2012, 9). The first mechanism is supposed to provide support for 'bottom-up' actions defined by local stakeholders in line with the local needs and specificities but respecting priorities set at a higher level. Such actions can be eligible only on part of Member State territories as defined in the partnership contracts. Integrated approach, territorial point of departure and attention to different needs of different territories can be spotted here. The second mechanism supports integration of funding sources and policies. „An Integrated Territorial Investment (ITI) is an instrument which provides for integrated delivery arrangements for investments under more than one priority axis of one or more operational programmes. Funding from several priority axes and programmes can be bundled into an integrated investment strategy for a certain territory or functional area". Also in this respect a territorial point of departure and support for functional geography can be noticed.

It is extremely difficult to find out at the current stage what type of territorial indicators will be necessary for the preparation of partnership contracts and operational programmes. One can only guess that they might include standard accessibility indicators to education and ICT, indicators dealing with transport and general accessibility, indicators related to territorially bound resources in – first of all - the domain of renewable energy, indicators on poverty, inclusion, human

capital and social capital at low (local) level of spatial resolution, indicators on functional labour markets, networking and economy of flows, on fragmentation and connectivity of biotopes, and – last but not least - on several spatial aspects related to exploitation of the maritime space. However, this is only a guess.

Baltic versus European perspective

In order to identify the main components of the BSR territorial monitoring system the European debate should be translated to the Baltic Sea Region specificity and priorities. The results are presented in table 1 which features specific components of the European territorial discourse that were given a prominent place in such VASAB strategic documents as:

- the strategy of 1994 (VASAB 1994),
- the key themes of 2001 (VASAB 2001),
- the key challenges of 2005 (VASAB 2005),
- the action agenda of 2009 (VASAB 2009).

Please note that the arranging of different elements of the European territorial discourse to form broader components is always slightly of arbitrary nature since it has to be based on the knowledge and experience of experts. Different grouping would result in identification of different components of territorial development.

Table A.8.1 Correspondence between European and BSR goals and priorities for territorial development

	EU territorial goals, options and principles	Main VASAB documents identifying priorities for spatial development of the BSR			
	Key components of European territorial debate (aims, goals, priorities)	VASAB strategy of 1994	VASAB key themes of 2001	VASAB key challenges of 205	VASAB action agenda of 2009
1.	Balanced territorial development encompassing different types of territories	++	++	++	++
2.	Polycentricity of the settlement structure	+	++	++	++ (enhancement of SMESTO development)
3.	Quality of urban nodes, dynamism and competitiveness of cities, sustainability of their structures, their integrated development	++	++	++	++
4.	Networking and co-operation between cities, city regions	++	++	++	++
5.	Functional areas including urban rural co-operation, integration of border areas, coastal zones	++ (urban, rural, border, coastal zone, islands)	++ (transnational development zones, rural areas, coastal zone, islands)	++ (transnational developme nt zones, coastal areas)	++ (urban, rural)
6.	Access to services of general economic interest			+	
7.	Territorial assets/territorial capital (e.g. cultural landscapes, natural and cultural heritage, trust etc.)	+ (mainly cultural landscapes)	+ (mainly cultural landscapes)	+ (sea space)	++ (sea space, local capacities for change)
8.	Critical green mass, for instance: green networks, ecological corridors and preservation of areas of high ecological value	++	++		
9.	Access to knowledge and diffusion of innovation				++
10.	Regional clusters of competition and innovation			++	++
11.	Transport accessibility, connectivity, parity of access to technical infrastructure, development of TEN-T	++	++	++	++ (including ICT)
12.	Intermodality of transport and greening of transport	++		++	++ (motorways of the sea)
13.	Territorial governance, coordination of policies influencing the same territory	++		++ (territorial dimension of developme	

				nt policies)	
14.	Diminishing territorial divides or alleviating their consequences	+	+		+ (integration of Russia into BSR)
15.	Developing energy resources	++			++ (incl. transmission grid)
16.	Sustainability of tourism development				
17.	Trans-European risk management including the impacts of climate change and preparedness to natural and man-made disasters				

Source: own elaboration

Table A.8.1 reveals a rather stable picture of the BSR priorities for territorial development. It can be noticed that within the last 13 years one only few new elements i.e. innovation and clusters in expense of nature protection were added. One should also keep in mind that in the recent VASAB report of 2009 some demographic issues related to the social cohesion and maritime spatial planning were considered as an important field of joint spatial actions. In fact, they were assigned a more prominent role than in the Territorial Agenda of EU 2020 where they were mentioned under challenges and as parts of implementation mechanisms respectively.

The aforesaid analysis might help identify the main components of the territorial development as presented below and embed them into a framework for the BSR territorial monitoring system. Some elements of the European territorial discourse, less frequently mentioned in the BSR documents, have been merged into the more popular ones. The least frequently quoted have been completely missed.

1) Balancing territorial development, diminishing territorial divides or alleviating their consequences (paying attention among others to the integration of Russia into the BSR).
2) Maintaining at least the existing polycentricity level of the settlement structure and – consequently – ensuring access to services of general economic interest for the entire BSR population.
3) Ensuring high quality of urban nodes (dynamic competitive and sustainable large and small cities), and their networking (cooperation of cities and city regions) with focus on diffusion of innovation and enhancement of knowledge- based development.
4) Emergence and development of regional clusters of competition and innovation.
5) Integrated development of functional areas with focus on:
   - urban rural cooperation,
   - coastal zones,
   - islands,
   - integration of border areas;
6) Development of territorial assets/territorial capital.
7) Wise use of the sea space.
8) Eco-resilience, for instance: green networks, ecological corridors and preservation of areas of high ecological value.
9) Ensuring accessibility, connectivity and parity of access to transport and ICT infrastructure, development of TEN-T.

10) Enhancement of intermodality of transport and greening of transport including motorways for the sea, short sea shipping.
11) Development of renewable energy resources (also at sea) and the BSR transmission grid (integration of energy infrastructure in the BSR);
12) Territorially oriented governance (including vertical and horizontal integration of policies).

Moreover, any monitoring system - if tailored to the BSR needs - should also provide spatial planners with clear measurement of the BSR divides as an important contextual factor conditioning BSR policies and efforts. The system should be also flexible enough to take advantage of and serve the monitoring purposes of the EU Strategy for the BSR. The Commission (CEC 2012c) proposed, in March 2012, the following three overall objectives for the Strategy: saving the sea, connecting the Region and increasing prosperity. The Commission also promised that these would be complemented by a number of indicators and targets. Member States were invited to come forward with indicators and targets for the individual priority areas, including the intermediate targets and benchmarks to achieve the overall objectives.

Monitoring experience

There are few spectacular examples of successful worldwide monitoring systems, e.g. the HDI (laid down in Human Development Reports and computed under United Nations Development Programme) or GCI (published in Global Competitiveness Reports by the World Economic Forum). Also GDP per capita in PPP, despite massive criticism (Stiglitz, Sen, Fitoussi, 2009), is still used worldwide for monitoring changes in the level of well-being. However, other efforts to develop functional monitoring systems turned out to be less successful. For instance, the original list of 35 "Lisbon" indicators for the EU15 of 2001 was first expanded to 24 indicators in 2002 and then squeezed down to 14[28] structural indicators in 2004 to benchmark the progress towards the Lisbon objectives across the EU[29]. The main reason for those changes was a trade-off between comprehensiveness and coherence of measurement. However, the most striking fact is that the Member States more or less ignored even this narrow set of EU structural indicators, with the exception of Luxembourg being the only EU Member State that monitored its National Reform Programme with exactly those 14 ones. Only six other countries included those indicators in their National Reform Programmes or respective progress reports (Steurer, Berger 2010). The limited applicability of the Lisbon indicators could have been caused by different reasons but the most important were the following:[30]

a) inclusion of indicators which subsequently either were not available for most countries or were too arduous/costly/time-consuming in practical terms to collect,

[28] GDP per capita; Labour productivity; Employment rate; Employment rate of older workers; Female participation rate; Educational attainment; Research and Development expenditure; Business investment; Comparative price levels; At risk-of-poverty rate; Long-term unemployment rate; Dispersion of regional employment rates; Greenhouse gas emissions; Energy intensity; and Volume of freight transport.

[29] From 2010 a revised set of structural indicators is to be used for the monitoring of the EU 2020 Strategy, the successor to the Lisbon Strategy.

[30] Drawing on Tomas Hanell ideas, as presented at the TeMo workshop in April 2012.

b) application of indicators that did not have joint relevance for all stakeholders (rather, usually only for those that specifically argued for/requested them),
c) pressure by some stakeholders and interest group to add indicators that were important from the theoretical or political point of view but were too complex to be easy interpreted or lacked background data and information necessary for their computation.

The lesson learned from this experience is that it is extremely difficult to come up with a monitoring system that would be in line with the needs and specificities of all Member States, that availability of information is equally important for the proper construction and content of any indicator, and – finally - that for the indicator system to be successful there has to exist a feeling of ownership and support among its final beneficiaries.

Even more challenging were the attempts to establish systems for routine monitoring of territorial development aspects at the supranational level. One of the main problems is the complexity of territorial processes. This has led to e.g. a setback in the first VASAB monitoring trial in 1996 and the failure to elaborate a system for measuring results of transnational programmes supporting the European territorial cooperation. In the latter case the only feasible solution was the use of proxy measures related to the number of projects or financial allocations. Difficulties in measuring the territorial development are illustrated by the story of the Cohesion Reports. The territorial information presented there usually refers to the state of the territory but hardly to its changes, while the findings (with but few exceptions related to typical indexes as GDP etc.) have not been intertwined between the series of reports. The territorial information published in the Cohesion Reports lacked systematic approach being gathered on an ad hoc basis. For instance, in the 3rd Cohesion Report (CEC 2004) the Commission made use of the following indicators regarding the territorial cohesion: GDP per capita, change in population, accessibility indicators and indicators on fragmentation of natural areas whereas in the next report the Commission applied different indicators to the same end with the exception of GDP per capita (Zillmer and Böhme 2010, 6).

Monitoring of territorial issues also witnesses the challenge of trade-off between the scope of measurement and simplicity. The monitoring (territorial) systems proposed for wide implementation have been either too demanding (idealistic) in terms of cost, information intake and interpretation to be commonly used by decision-makers as a guidance for their policies (ICZM indicators) or vice versa - they were too narrow and thereby might turn attention of decision-makers to non-measurable development components, thus biasing the efforts towards the measurable issues (the targets of Europe 2020).

The records of efforts to establish territorial monitoring system are long and instructive. Probably the first initiative was that of VASAB, with its already mentioned unsuccessful attempt of 1996. With the establishment of ESPON the work on territorial indicators was then undertaken for the entire EU territory including the EU-associated countries. In 2008 two seminars were organised by ESPON: a workshop on territorial indicators and indices in April and a workshop on monitoring territorial dynamics in November. And next, in 2010, the ESPON launched a special project titled INTERCO (ESPON 2.1.1), dedicated to this issue, and in 2011 in relation to this project organised a workshop titled: "Assessing Indicators for Territorial Cohesion".

Despite all those efforts, in the contemporary literature one can find only three[31] comprehensive conceptual attempts to elaborate the monitoring systems for territorial cohesion covering EU territory which were carried through to the end (Farrugia, Gallina 2008; Medeiros 2011; ESPON 2011[32]). There were also some evident failures. The attempts of the ESPON project 3.2 to create the Territorial Cohesion Index (ETCI) did not bring the expected results (Grasland 2008). The conclusions from the research, as summarized by Farrugia and Gallina (2008, 34), were rather pessimistic. The project team pointed out that the existing statistical situation of the EU made it impossible to build any relevant index of the territorial cohesion at the regional level which could embrace the three dimensions of the ESDP.

Monitoring efforts related to territorial integration and territorial development have been even less popular[33]. There has been only one successful attempt related to territorial development of the EU. The ESPON project 4.1.3. examined and tested in practice the monitoring of the territorial development of Europe and came up with a set of routing indicators (i.e. spatial relevant indicators explaining spatial structures and development) and the wish list of indicators which were not available at that time but were identified as being of crucial importance for future spatial monitoring (ESPON 2007).

The above mentioned "successful" monitoring initiatives are presented below, in depth, in a chronological order. However, it is important to note in this context that some scholars expressed serious doubts about the actual usefulness of the expanding monitoring efforts. For instance Zillmer and Böhme (2010) are of the opinion that the empirical evidence related to territorial cohesion has been provided excessively and that, especially at the moment, the utility of the additional empirical evidence is quite low due to data limitations caused by the economic crisis. They have pointed out a vast body of available territorial knowledge and know-how in different territorial networks such as NTCCP. However, they have failed to address the constraint of lack of long-term perspective in systemizing the knowledge and information and therefore difficulties in monitoring territorial changes. Some other scholars are of an opposite opinion. Medeiros (2011, 18), for instance, argues that the discussion of the territorial cohesion concept will be useless if it cannot be measured over time despite problems with the quantification of indicators.

[31] Also ESPON 3.3. project (ESPON 2006b) developed a comprehensive set of indicators related to the dimension of the development referred to as the 'quality', covering also the quality of the territory. Those indicators cannot, however, be taken as a system for measuring the territorial cohesion or territorial development. They rather measure the socio-economic development in space. Their direct attribution to the territorial cohesion by Prezioso (2008, 21) seems interesting but not fully justified, as only some aspects of territorial cohesion are covered by them. The same is true with regard to OECD Regional Database that includes regional statistics for the OECD member countries on demography, regional economic accounts, labour market, social indicators. Those indicators measure mainly socio-economic development in space. Finally, the EEA (2010) also developed a list of potential territorial indicators to support the environmental dimension of territorial cohesion. That attempt covers mainly ecological aspects of the latter, though.

[32] Also the ESPON Project KITCASP aims at the elaboration of a core set of key indicators of territorial cohesion, economic competitiveness and sustainable development to keep spatial planners at the national level informed, drawing on ESPON research and datasets available in the case studies. The project, however, has just been started.

[33] There are also numerous national and regional systems of territorial indicators that will not be examined in this paper.

ESPON Project 4.1.3

The monitoring system for territorial development was elaborated within the framework of the ESPON Project 4.1.3 (between 2006 and 2007). The project made use of the indicators developed under other ESPON projects. It aimed at improving, further developing and integrating the existing component of a monitoring system within the ESPON programme and gaining the first experience from practical testing of the monitoring of the territorial development of Europe. The monitoring system worked out under the project had policy-oriented character i.e. it was aimed at supporting the decision-making processes while till trying to satisfy the needs of researchers. The spatially relevant indicators identified under the project were called 'routing' indicators (i.e. complex and "expressive" ones able to explain spatial structures and development trends). The 'routing' indicators were supposed to have a 'beacon' function in relation to policy objectives and to highlight the shortcomings in data availability. The routing indicators were selected from the ESPON database and its core-[34] and key indicators[35], though some other sources were used as well[36] (EEA 2010, 46).The selection process is shown in Figure A.8.10.

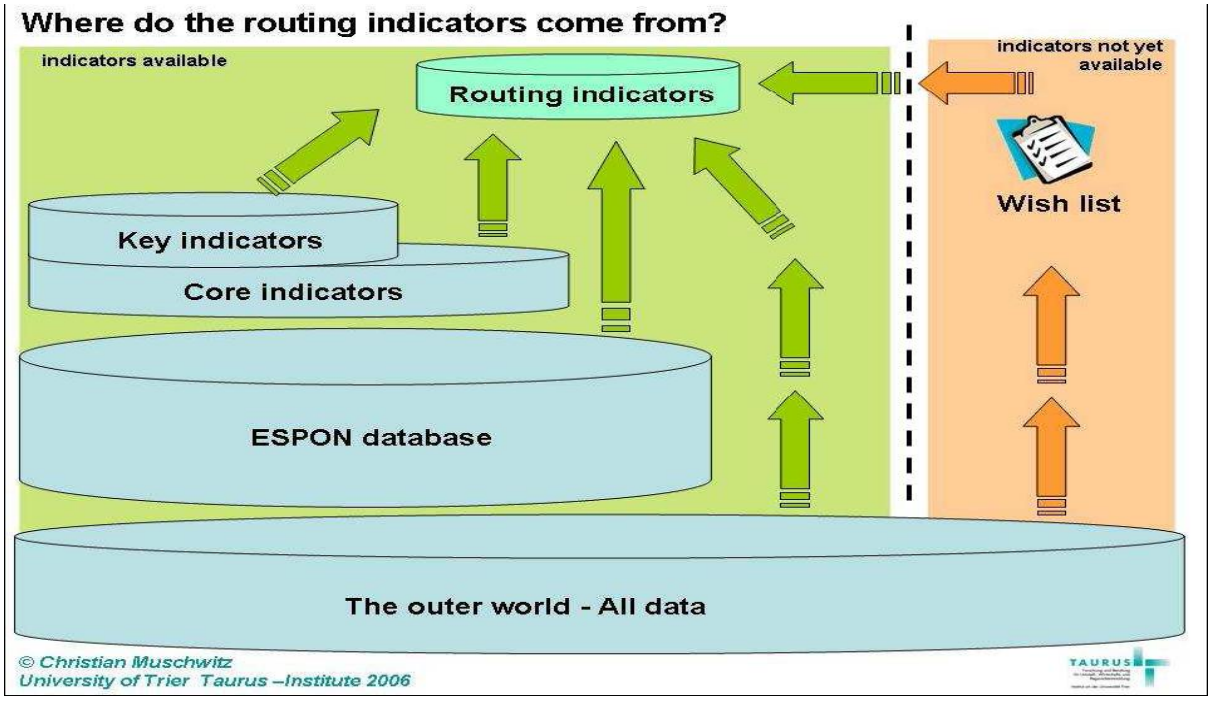


Fig. A.8.10. Selection of the routing indicators Source: ESPON 2007, 2

[34] The most important indicators for the themes analysed by the ESPON 2006 projects (EEA 2010, 46). The indicators were developed during the process of a discussion between the ESPON Coordination Unit, two cross-thematic projects (ESPON 3.1 and 3.2) and the lead partners of other ESPON projects. The result was a short list of indicators, sufficient for providing cross-thematic information on European spatial development. The key indicators were eventually agreed upon by the ESPON Monitoring Committee (ESPON 2007b).

[35] The ESPON core indicators closely linked to the territorial policy objectives (EEA 2010, 46).

[36] Nordregio (special study), INTERREG IIIB BSR, Eurostat Regio Database, World Bank, CORINE 2000Dataset / 1990 Dataset, EEA, Eurostat Regio Database, Various national sources, United Nations University, European Social Survey, CITERES, Mcrit, Forbes 2000, CIS 3 – Third community innovation survey.

The routing indicators should meet several criteria, those of: a high explanatory power, clear regional (or territorial) dimension (availability at the regional level) and practicability or applicability (i.e. the usefulness for policy making).

The project also allowed to elaborate the main components of the monitoring system. They were identified through the combination of the themes, complex policy strategies, complex territorial concepts and ESPON territorial typologies describing the most fundamental spatial patterns. The following four components were identified, concerning respectively: simple thematic indicators of territorial development, simple territorial approaches, complex thematic approaches and complex territorial concepts. The components were then arranged (fig. A.8.11) according to their nature (ranging from simple single regional indicators to complex indices) and the political explanatory power (being mainly sectoral or thematically oriented or having territorial significance).

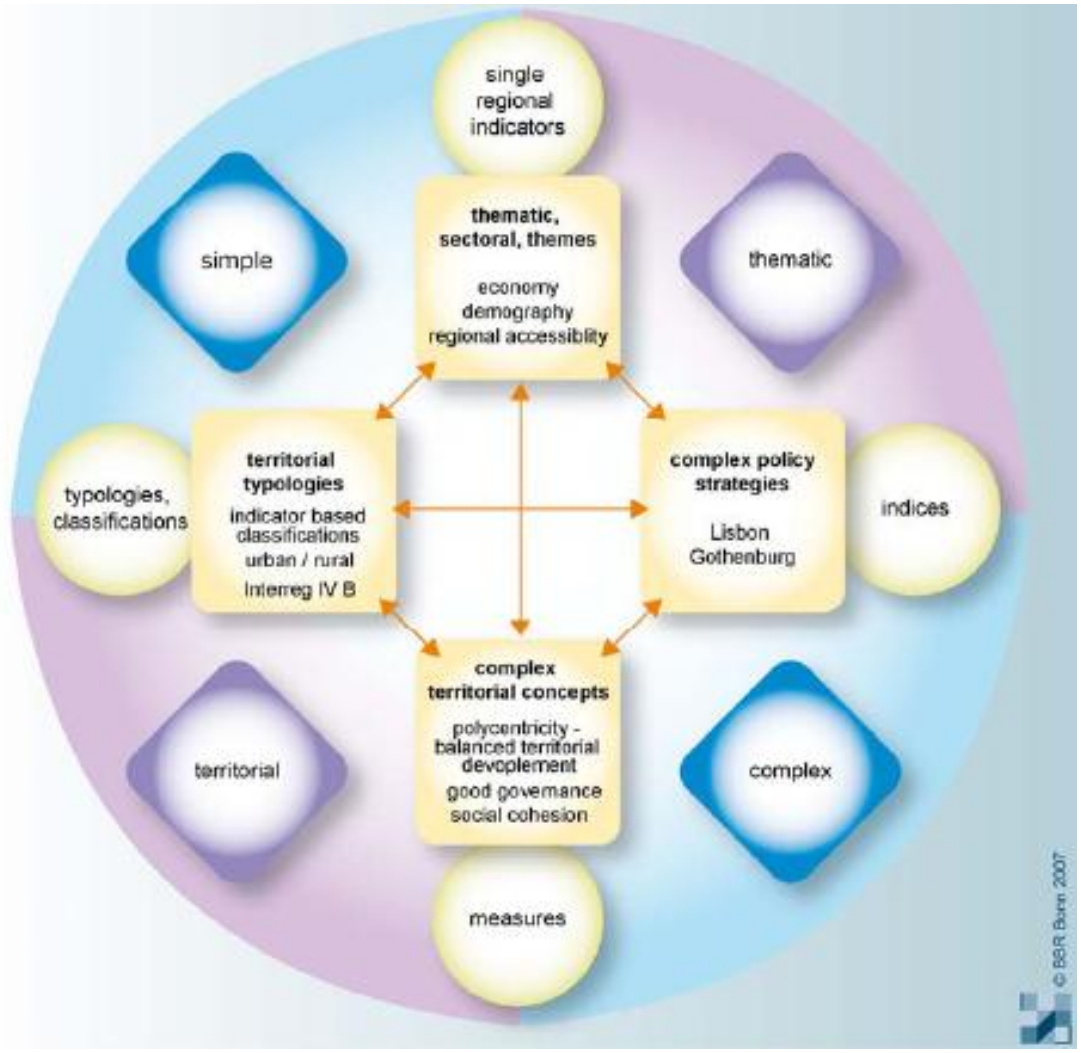


Figure. A.8.11. Components of territorial monitoring

Source: ESPON (2007)

Finally, the project described the features that should be met by the indicators (univocality, traceability, clear link to the phenomena, reproducibility, easiness of maintenance) and their essence (measurable units consisting of one single datum or combining different data that evaluate the state of affairs and / or the dynamics of a phenomenon under consideration) as well as the metadata format.

The indicators were presented in a matrix form, i.e. in relation to long-term territorial goals[37], each under one of the following domains: Economy and Innovation (Agriculture), Demography, Spatial Structure (urban, urban-rural, urban hierarchy), Energy and Transport and ICT, Social and Culture and Governance, Environment and Hazards.

Table A.8.2 provides an overview of the routing indicators of the project and table A.8.3 presents the wish list of the indicators.

Table A.8.2: List of routing indicators

Dimension	Name of Indicator	EU 25+2+2	NUTS 3	NUTS 2
Economy, Innovation (Agriculture)	Employment by economic activity	X	-	X
	R&D personel % of total employment	X	-	X
	Gross domestic expenditure on R&D as percentage of GDP	X	-	X
	GDP per capita in Euros, 2003	X	X	X
	GDP in PPS per inhabitant, 2003	X	X	X
	Change of GDP in Euro per capita	X	X	X
	Labor costs	X	-	X
	Activity rate male 15-64 years	X	-	X
	Share of agriculture, forestry and fishery in the regional added value (%)	X	X	X
	Share of technological manufacturing industries in the regional added value	X	X	X
	Share of financial and business services in the regional added value	X	X	X
	Share of administration, education, health and social services in the regional added	X	X	X
	Activity rate female 15-64 years	X	-	X
	Employed in high-tech sector	X	-	X
	Employment in R&D	X	X	X
	Development of unemployment rate	X	X	X
	Unemployment rate < 25 years	X	-	X
Demography	Population density	X	X	-
	Migratory balance	X	X	X
	Share of population younger than 15 years	X	-	X
	Population in the age of 15 to 64 years	X	-	X
	Population older than 64 years	X	-	X
	Fertility rate	X	-	X
Spatial structure (urban, urban-rural, urban hierarchy)	Primacy rate	X	-	X
Energy, Transport, ICT	Accessibility by public transport (rail)	X	X	-
	Potential accessibility, multimodal, to population	X	X	-
Social, Culture and Governance	Number of cultural sites	X	X	X
	Employed persons by highest educational level	X	-	X
	Population by highest educational level attained	X	-	X
	Part-time employment	X	-	X
	Unemployment rate	X	X	-
Environment, Hazards	Fragmentation index	X	X	-
	Flood endangered settlement and artifical areas (Corine)	X	X	-

Source: ESPON (2007b, 101)

Table A.8.3: List of wish indicators

[37] The goals have been related to policy concepts and ESDP policy options addressing territorial cohesion: competitiveness (Lisbon agenda), infrastructure and accessibility, environment (Gothenburg), socio-cultural issues and governance (ESPON 2007, 3). The following ten territorial goals were selected: (i)Balanced distribution of population, wealth, cities, (ii) Sustainable settlement structures, (iii) Assets for global competitiveness, (iv) Innovative knowledge society, (v) Diversified regional economies, (vi) Sustainable transport and energy, (vii) Socially inclusive society and space, (viii) Healthy environment and hazard prevention, (ix) Diversified cultural heritage and identities, (x) Territorially oriented governance.

Dimension	Name of Indicator	EU 25+2+ 2	NUTS 3	NUTS 2
Economy, Innovation (Agriculture)	Investment rate	-	-	X
	Location of multinational headquarters	-	X	X
	Enterprises in innovation	-	-	-
	Utilised agricultural area (UAA)	-	-	X
Demography				
Spatial structure (urban, urban-rural, urban hierarchy)	Urban growth 1990 - 2000	-	X	-
	Percentage of artificial area - Corine	-	X	-
	Percentage of urban fabric - Corine	-	X	-
Energy, Transport, ICT	Average travel time to next three regional cities	X	-	-
	Intensity of traffic flows per network segment	X	-	-
Social, Culture and Governance	Trust in the legal system	X	-	-
	Politics too complicated to understand	X	-	-
	Worked in an organisation or association (other than party) last 12 mon	X	-	-
Environment, Hazards	Land consumption by transport infrastructure	-	X	-
	Natural areas (NATURA 2000)	-	X	-

Source: ESPON (2007b, 102)

The ESPON 4.1.3 monitoring attempt may lead, *inter alia*, to a reflection on the fast changes in the content of the notion of spatial development. Although the territorial goals selected by the project are still valid, the indicators (even the wish list) fail to reflect the phenomena of the economics of flows, ability to network, formation of functional areas and territorial resistance to climate change. Only the economies of agglomeration and distance, as components of modern understanding of the concept of territorial development, are covered to more or less satisfactory degree.

Measurement of territorial cohesion reduced to services of general economic interest

The description of the achievements of N. Farrugia and A. Gallina (2008) is included in this report as they provided the first attempt to compute a composite index of territorial cohesion that ended up with concrete numerical results. In fact, the authors made two attempts to measure the territorial cohesion. The first one, which did not bring about the expected results, was based on the operational definition of territorial cohesion built out around a three-goal axis:

- fair access to services of general economic interest across the territory;
- avoiding territorial imbalances;
- polycentric territorial systems, both in urban and rural areas, enabling the existence of opportunities for all.

Farrugia and Gallina (2008) selected relevant indicators accordingly (table A.8.4), but when trying to find the data for computing them, they realised that the scheme would not work. Therefore due to the constraint of information availability they decided to re-define the territorial cohesion as "the possibility for the population living in a territory to access services of general economic interest" (Farrugia and Gallina, 2008, 39).

Although the authors recognised the need to split the index of territorial cohesion into a "provision component (measuring the sustainable provision of services of general economic interest to population living in a territory) and an access component (measuring the access of population living in a territory to the services provided" they failed to do so, explaining that such distinction might include a too high degree of subjectivity (Farrugia and Gallina, 2008, 40-41). The following services were chosen as components of the territorial cohesion index:

- transport,
- energy,
- communication services,
- education,
- health,
- other essential services.

The index has also encompassed some indicators measuring equality of access to some services echoing the original idea of the territorial cohesion as a vehicle for reducing spatial imbalances and disparities. The index excludes some important services such as culture. The authors did not explain the reasons for that, though.

The indicators selected under each component are shown in table A.8.5. The indicators on physical accessibility to services are missing. For obtaining the composite index the indicators were converted to a similar unit or scale with the use of a rescaling method that allowed to normalise the indicators between the range <0,1>. The territorial cohesion index was aggregated used equal weighting, that is, all seven components were given the same weight in the index. The numerical values of territorial cohesion were calculated for 22 countries and presented both as a total and separately for each component. Sweden was ranked at the top, followed by Norway, Switzerland, Austria and Finland. When examining the structure of the index the authors revealed that the transport index was negatively correlated to all other components but failed to explain the reasons.

Table A.8.4: Indicators for computing territorial cohesion index based on

Goal Dimension	Measurement Dimension	Example of selected Indicators dimension
Increase access to services of general economic interest across the territory	Communication and access to ICT	(a) Indicators of access to ICT (b) Indicators of new enterprises, male- and female-managed in the ICT business (c) Indicators of virtual communities/networks/research centres of women and of immigrant women with international contacts (d) Indicators of virtual exchanges between universities and research institutions (e) Indicators of access and use of ICT by elderly people
	Environmental quality, renewable energies, sustainable tourism	(f) Indicators of sustainable use of natural resources (g) Indicators of reduction of pollution and recycling of waste (h) Indicators of energy saving and new sources of energy (i) Indicators of public management and saving of water (j) Indicators of sustainable tourism enterprises
	Quality of life Opportunities for training in arts, culture, creativity	(k) Indicators of quality of social and health services (l) Indicators of housing equipped for disabled and elderly people (m) Indicators of cities, areas in the countryside and mountains without barriers for disabled and elderly people (n) Indicators of integration of knowledge between educational areas from humanities to technological education (o) Indicators of creativity and art in different educational areas
Avoid territorial imbalances	Access to transport infrastructure	(a) Indicators of access to roads
	Urban – Rural linkages	(b) Indicators of balance between urban and rural settlements
Polycentric territorial systems, in urban and rural areas, enabling the existence of opportunities for all	Participation and social responsibility	(a) Indicators of participation in local decision-making (b) Indicators of corporate social responsibility (c) Indicators of territorial social responsibility with all local stakeholders
	Solidarity and exchange for the positive enhancement of gender differences	(d) Indicators of the active presence of women associations in a given area (e) Indicators of female entrepreneurship and employment (f) Indicators of the presence of women in high-tech sector education (g) Indicators of the presence of women in strategic jobs
	Solidarity and exchange for the positive enhancement of differences in cultures	(h) Indicators of the presence of active associations of migrant men and women (i) Indicators of migrant male and female entrepreneurship and employment (j) Indicators of integration in school of migrants' children (k) Indicators of concrete linkages between migrants and their country of origin (l) Indicators of concrete relationships between local authorities in a given area and local authorities in other parts of the world
	Solidarity and exchange for the positive enhancement of differences between people with different abilities	(m) Indicators of integration in schools and in the jobs of women and men with disabilities and of different ages (n) Indicators of social and technological projects for disabled and elderly people (o) Indicators of the elimination of barriers for disabled people (p) Indicators of integration of elderly men and women
	Positive enhancement of traditional crafts, agriculture, and traditional productions	(q) Indicators of enhancement of craft, traditional production in urban areas (r) Indicators of enhancement of craft, traditional production and traditional agriculture in rural and mountainous areas (s) Indicators of enhancement of craft and traditional production in areas that are particularly isolated

Source: Farrugia and Gallina (2008, 37)

The index was computed only for 22 countries due to lack of comparable data. The main problem was with two components dealing with other essential services and the equality. After their exclusion from the index, the indicator was re-computed for 52 countries. The correlation between indexes for 22 and 52 countries appeared rather high.

Table A.8.5: Indicators for computing territorial cohesion index based on access to services of general economic interest

Component	Indicators
1.Transport	a. Air transport: Domestic takeoffs and takeoffs abroad of air carriers registered in the country (% of population). b. Road network: Motorways, highways, and main or national roads, secondary or regional roads and all other roads in a country (% of total land area). c. Carbon dioxide emissions: CO_2 emissions (metric tons per capita)
2. Energy	a. Provision and consumption of energy: electric power consumption (kWh per capita). b. Sustainability of energy production: GDP per unit of energy use (constant 2000 PPP $ per kg of oil equivalent). c. Quality of the production of energy: electric power transmission and distribution losses (% of output). **d.** Renewable energy: proportion of energy from sources other than coal and oil.
3. Communication services	a. Internet: (i) the international internet bandwidth (bits per person) and (ii) the number of internet users per 1,000 people. b. Telephone: (i) number of telephone mainlines per 1,000 people, (ii) the average of the price basket for residential fixed lines (US$ per month) (iii) mobile phone subscribers per 1,000 people, (iv) the price basket per mobile (US$ per month). c. Other communication services: the proportion of households with televisions.
4. Education	a. Provision and access of education at primary, secondary and tertiary levels: (i) the expenditure per student (% of GDP per capita) at each of these levels, (ii) enrolment at each of these levels.
5. Health	a. Health expenditure per capita (current US$). b. Hospital beds per 1,000 people. c. Physicians per 1,000 people. d. Life expectancy at birth (years).
6. Other essential services	a. Improved water source (% of population with access). b. Improved sanitation facilities (% of population with access).
7. Equality	a. Urban-rural: This was measured by taking the difference between the provision and access to water and sanitation in urban areas as opposed to rural areas. b. Females: This was measured by the HDI's Gender Empowerment Index. c. Income groups: This was measured by the GINI coefficient.

Source: Farrugia and Gallina (2008, 42-44)

The above described monitoring attempt reveals very interesting features. The system can be used for supporting different policies (e.g. health / education / transport policy etc.) in promoting one specific aspect of the territorial cohesion, namely access to services of general economic interest, with a single, yet important exception, though. Due to the lack of indicators on physical accessibility the system is of little value for the spatial policy as such. Another reflection is that difficulties will arise should it come to capturing geographical specificities of a global or continental coverage by the monitoring system. For instance, access to railway stations which is perhaps of little importance in the

USA might be considered of critical importance for the case of territorial cohesion in Europe. The easiest way is to skip such "continent- or nation-specific indicators" but the composite index might lose its accuracy as a result. In this context it is well worth it to remind the opinion of S. Davoudi[38] on the rationality of building aggregated indexes for territorial cohesion. She drew an analogy „with the Human Development Index, which while open to criticism as being too crude and limited, had nevertheless proved to be a way of challenging the dominance of GDP as a measure".

Measurement of territorial cohesion based on the Star Model

Medeiros (2011) computed an index of territorial cohesion applying his Star Model. Compared to the model by Farrugia and Gallina (2008) his attempt is much broader and clearly addresses territorial complexity. Moreover, it is the first attempt to compute a territorial cohesion index at a regional level with comparable data for different time periods. For each dimension of the Star Model (as discussed in the previous sections) Medeiros defined three components and collected indicators for their measurement (see fig.A.8.12). The operational definition of each dimension (via the components) reflects a subjective choice of the author (his experience, knowledge and expertise) but at that stage of research this seems to be the only feasible way to go forward.

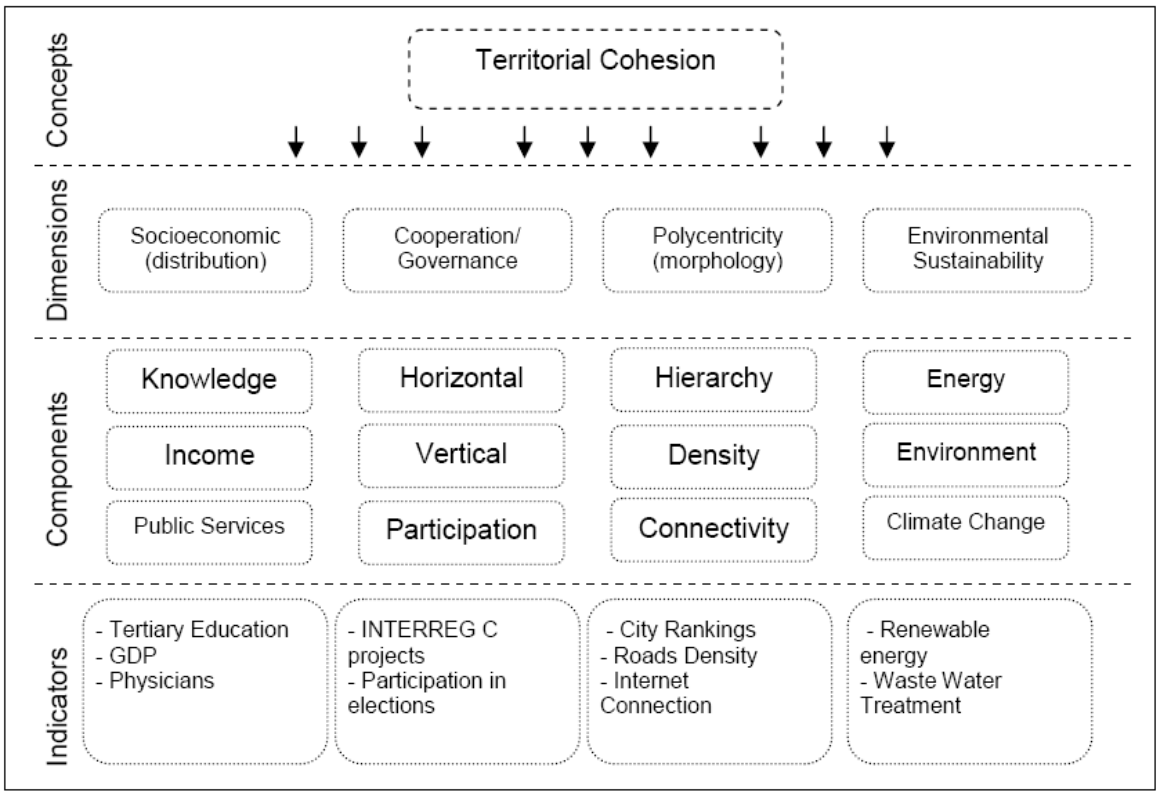


Figure A.8.12. Dimensions, components and indicators in the Star Model
Source: Medeiros (2011, 24)

The most critical part of the work was selection of the indicators and deciding on those to be used. As the author explains, he tried to choose the most adequate

[38] An opinion presented in reference to the outcomes of the workshop held by ESPON on 12 November 2008.

indicators for each dimension and component in order to achieve a balance in their distribution (avoiding too large numbers of indicators for some dimensions while tolerating underrepresentation of others). Also the adequacy for a specific territorial level was important. Quality of the indicators was assumed to be more important than their quantity. The choice was based on the existing knowledge (mainly that concerning ESPON projects) but restricted by data availability. In fact, a much larger list of indicators had been initially considered by the authors (see table A.8.6), but due to different reasons in the final computing exercise only those listed in figure 6 were applied. This allowed for computation of the territorial cohesion index for regions located in the Iberian and Scandinavian peninsulas (regarded as the benchmark) for the years 1998 and 2008. The composite index was computed by applying methods similar to those used for computing the HDI index: i.e. standardization, normalization and weighting. For the Iberian Peninsula the results were presented at the level of NUTS II regions and for the Scandinavian Peninsula at NUTS III level.

Table A.8.6: The long list of indicators for computing territorial cohesion based the Star Model

Indicator - Socioeconomic (distribution) Dimension	Component
EU Human Development Index	*Transversal*
GDP	Income
Competitiveness Index	Income
Net adjusted disposal income of private households	Income
Tertiary education	Knowledge
Access to the information society	Knowledge
Research Centres	Knowledge
Physicians	Public Services
Public transports	Public Services
Schools	Public Services
Indicator – Cooperation/Governance Dimension	**Component**
Cooperation Projects Intensity (same territorial level)	Horizontal
Twin Cities	Horizontal
Inter-Municipal Cooperation	Horizontal
Cooperation Projects Intensity (different territorial level)	Vertical
Regional and Local Cooperation Associations	Vertical
International Trade	Vertical
E-government use/availability	Open/Partic
Administrative Decentralisation	Open/Partic
Participation in Elections	Open/Partic
Indicator – Environmental/Sustainability Dimension	**Component**
Renewable Energy Production	Energy
Energy Efficiency	Energy
Eco-Efficiency	Environment
Waste Treatment	Environment
Environmental Risk Reduction	Environment
Indicator – Polycentricity (Morphology) Dimension	**Component**
Polycentric Index	*Transversal*
City Rankings	Hierarchy
Specialized Functions	Hierarchy
Population Density	Density
Compact City Form	Density
Road Density	Density
Transports Accessibilities	Connectivity
Accessibility to Infrastructures	Connectivity
Telecommunications Infrastructures	Connectivity

Source: Medeiros (2011, 25)

However, when trying to extend his research to the entire EU territory (NUTS 2 level), the author encountered several constraints, mainly as regards data availability. Therefore he managed to produced what he called "a Territorial Cohesion snapshot for 2008" using a much lower number of one-time indicators:

- for Socioeconomic Dimension: competitiveness index and human development index (CEC, 2010),
- for Cooperation/Governance: cooperation intensity (ESPON 2006c);
- for Polycentricity/Morphology: polycentric index – available for NUTS I, but adapted to NUTS II level (ESPON 2004);
- for Environmental/Sustainability: environmental vulnerability index (CEC, 2010).

Measurement of territorial cohesion, as proposed by Medeiros, reveals important problems with data availability, compatibility and comparability over time and

between countries, and provides an example of the challenge of subjective choices in construction of the composite (aggregated) indices. This is a nice and inspiring effort from the scientific point of view, however, with limited relevance (only as a background material) for the policy makers. The latter might have serious problems with direct application of composite indices as measurable targets of their policies. Another problem is doubts as to the versatility of the aggregated indices. One can easily imagine that the meaning of territorial cohesion in different countries might vary, and therefore different weights would be necessary to capture those differences should we treat territorial cohesion as such a policy goal.

ESPON territorial cohesion indicators

The first draft of the ESPON indicators of the territorial cohesion was elaborated under the INTERCO project (ESPON 2011). The most prominent feature of those indicators is their official recognition. This has and will be done in the future through a debate procedure and then a decision of the ESPON Monitoring Committee composed of the officials from the EU Member States and associated countries, representing public institutions endowed with official responsibilities regarding territorial matters and territorial cohesion. The selection process of indicators has combined scientific advice and a discourse with the final beneficiaries i.e., policy makers (ESPON stakeholders). The selection procedure allowed the ESPON indicators to become policy-oriented. The INTERCO project also developed a set of tools and a database to support working with the territorial indicators.

The indicators were selected on the basis of their relevance for the EU 2020 Strategy, the Territorial Agenda 2020 and the aims within territorial cohesion, such as: reducing territorial inequalities in access to services, improving the natural environment, reducing poverty and exclusion, increasing territorial innovation and enhancing territorial governance. The indicators were chosen for the following seven dimensions of territorial cohesion identified (as the case was with the Star and Tequila models) on the basis of the territorial cohesion objectives: (i)economic performance and competitiveness, (ii) environmental qualities, (iii)social inclusion and quality of life, (iv) innovative territories, (v) access to services, markets and jobs, (vi)territorial cooperation and governance, (vii) polycentric territorial development (ESPON 2012). Finally, some selection criteria were applied to allow permanent gathering of information on the indicators and ensure their usefulness for the policy makers. According to the criteria, the indicators should:

- show a clear direction of change;
- show the value of a direction of change (larger is better – or worse);
- be sensitive to policy change and be able to measure the outcome or impact of a policy measure;
- be available for time series, i.e. the data should be updated regularly, preferably annually and the costs of updating data should be reasonable;
- be available at sub-national level, preferably at NUTS3;
- focus on the added value of territorial cohesion and cover its dimensions and not so much on economic or social cohesion;
- be easy to calculate and to use by the end-users.

For each of the territorial themes, "a number of so-called 'top indicators' were selected by means of the INTERCO combined analytical and participatory process, taking into account data constraints" (ESPON 2011, 3). The indicators were divided into four categories: (i) those indicating changes, disparities and territorial assets/opportunities (Ch), (ii) those showing territorial structural

elements (St), (iii) those portraying the contextual situation of regions, and the framework conditions (C), (iv) those that are important but cannot be computed due to different reasons (the wish list) (W).

The results of the tentative selection by the ESPON Monitoring Committee (of June 2012) are presented in the table A.8.7. The indicators in grey have been added to the INTERCO indicators by the ESPON stakeholders.

Table A.8.7: A short list of territorial cohesion indicators chosen by ESPON

Categories: Change (Ch) / Structure (St) / Context (Co) / Wish list (W) Themes	Change (Ch)	Structure (St)	Context (Co)	Wish list (W)
Economic performance and competitiveness	- Unemployment rate		- GDP per capita in PPS - Old age dependency ratio - Labour productivity in industry and services - Labour productivity per person employed - Primary employment rate - Tertiary employment rate	
Environmental qualities	- *Air pollution: PM10 - *Air pollution: Ozone concentrations - *Soil sealing per capita (St) - *Accessibility to Natura 2000 (St)	- Wind power potential	- Potential vulnerability to climate change - Fresh water resources - Noise pollution - Photovoltaic potential - Aggregated Natural Hazards	- Natural resources (Co) - Biodiversity (St) - Mortality, hazards and risks (Co)
Social inclusion and quality of life	- Disposable household income - Proportion of early school leavers - Quality of housing - % in risk of poverty		- Life expectancy at birth - Gender imbalances - Difference in female-male unempl. rates - Ageing index - % of households very low in work - Deprived persons	
Innovative territories	- Population aged 25-64 with tertiary education - Creative workforce - % of high growth firms		- Intramural expenditures on R&D - Employment rate 20-64 - Birth rates and survival rates of firms	
Access to services, markets and jobs	- Access to compulsory school (St) - Access to hospitals (St) - *Accessibility of grocery services (St) - Access to university (St) - Access to primary health care - Households with broadband access	- *Accessibility potential by road - *Accessibility potential by rail - *Accessibility potential by air		
Territorial cooperation and governance	- *Cooperation intensity - *Cooperation degree		- Variation in corruption, discrimination & victimization	- Use of integrated place based strategies (Ch) - Use of functional regions (St) - Use of territorial impact assessments (Co)
Polycentric territorial development		- *Population potential within 50 km	- Net migration rate	- *Polycentricity index (St)

* The Indicators marked with an * have intrinsic territorial dimensions meaning that they
- include the notion of distance, i.e. all the "accessibility" indicators + "Population potential within 50 km"
- are calculated using areas/volumes (soil sealing, air pollution)
- relate 2 or more territories (the cooperation indicators)

Source: ESPON (2012)

After validating the territorial indicators presented in table 7 by the ESPON Monitoring Committee, the indicators will be subject to testing by the 'European Territorial Monitoring System' project with the support of other ESPON projects[39] That first selection of indicators could be complemented with new indicators developed under the ESPON projects or with indicators related to new policy developments. The first annual review is foreseen to take place in summer 2013 (ESPON 2012).

A few important lessons have been learned and observations collected by the ITERCO project with regard to territorial monitoring (ESPON 2011). The most relevant of them for the TeMo project are summarised below.

Firstly, the INTERCO project has encountered problems with measuring such a complex and heterogenous category as territorial cohesion. The solution was flexibility of the indicator system i.e. the ability of the system to serve different policy objectives (ESPON 2011, 9).

[39] All ESPON projects dealing with indicators to measure territorial cohesion, should first consider the indicators included in the first selection (ESPON 2012)

Secondly, the INTERCO project (ESPON 2011, 8) underlined a trade-off between flexibility and stability of the monitoring system. On the one hand the system should allow comparable measurement and comparison over time, on the other hand it should react to the changes in territorial goals and objectives. The project tried to resolve the dilemma by making a distinction between data (which can be organised using a thematic thesaurus) and indicators (which would be linked to specific dimensions of territorial cohesion – e.g. the territorial objectives identified by the INTERCO project). The strive towards stability was probably the main reason why originators of the project after analysing different, politically approved territorial objectives, considered as foundations and essence of the territorial cohesion (e.g. priorities of the Territorial Agenda of EU 2020) came up with their own set of six and then seven objectives (dimension of the territorial cohesion) which - as one may easily guess - were regarded as more versatile[40].

Thirdly, the INTERCO project paid a lot of attention to the simplicity and usefulness of the system for policy makers. This should be considered as one of the key factors of success. For instance, an idea of composite indicators was clearly rejected by a vast majority of the stakeholders during the discussions held (ESPON 2011, 9). Therefore it was decided to elaborate some sets of indicators under the project.

Fourthly, the INTERCO project recognized the importance of data constraints, in particular lack of relevant data collected periodically at the NUTS-3 level. As noticed in the project documents "the official data collection is not yet fully adjusted to the newest political priorities and we are strongly urging the data providers to make the missing data available for the researchers, the policy-makers, if not for the general public" (ESPON 2011, 9). As a result the INTERCO system is unable to measure e.g. progress in the state of biodiversity and in renewable energy production and consumption since such information has been collected only at the national level so far.

Fifthly, the INTERCO project underlined the importance of the contextual indicators (e.g. life expectancy) that were related to the outcomes of concrete policies but shaped the context for such policies by describing the complexity of the various situations in the EU.

The examination of findings and the experience of the projects/initiatives, dealing exclusively with the territorial monitoring, might lead to the following conclusions:

1. A monitoring system requires prioritisation and focus. This can be achieved by examining goals and priorities of spatial visions and strategies at different geographical scales. The EU initiatives and regulations (e.g. INSPIRE, GISCO) will not ensure such a focus automatically (as many would believe).
2. A monitoring system, if useful, should guide not only spatial policies but all policies with territorial impact. It should monitor to what extent such policies contribute to the territorial development or territorial cohesion. In particular the system should serve, in addition to the VASAB needs, also the needs of the EU Strategy for the BSR.
3. Single composite indicators (similar to GDP) depicting territorial development (territorial cohesion) in Europe are unfeasible. This is due to

[40] In fact, in parts A and B of the draft final report (ESPON 2011) the Territorial Agenda has been mentioned only seven times. This limited focus on the document was explained in following way: "The recurrent updates of the policy objectives and documents had forced us to take a flexible attitude in the course of the project, rendering the current results more in line with the future shape of Europe but also more adaptable if any changes should take place in the future as well" (ESPON 2011, 8).

e.g. varied understanding of the territorial cohesion or the overall goal of the territorial development (in fact, spatial policy is about arbitration between different developmental goals, thus there is no single goal that can be used for measurement of the progress in spatial development and territorial cohesion).

4. Therefore, the most promising approach is to disaggregate complex territorial processes into the more simple components and to measure the progress in each component separately. The weighting of components (priorities or goals of spatial development) depends on policy decisions in each country and might change with time. Thus, there is no uniform weighting pattern that can be applied in Europe or in the macroregion with such a high level of heterogeneity as that in the BSR.
5. An alternative to measuring the progress of territorial development and territorial cohesion another technique could be proposed, to group territories with similar development preconditions in order to adjust policies to the local conditions (place-based approach).
6. Data gathering should come at the lowest possible geographical level in order to satisfy the plea for monitoring the development of functional regions. However, this would raise the costs of the monitoring system. Thus, there is a need for defining a proper balance between flexibility of the monitoring system and the resources necessary for its execution and maintenance.
7. The composite indicators pose a threat of being unfriendly and difficult for interpretation for the decision-makers. There are, however, a few examples of very successful territorial indicators of that kind (e.g. multimodal accessibility). Thus, resigning from such indicators would be premature, as they should be used in an informed way (demonstrating, if possible, the impact of each single index on the overall value of such an indicator).

All the above described preconditions and related decisions form important milestones for designing a territorial monitoring system. They require an intensive dialogue between stakeholders (decision-makers) and the researchers. The decisions cannot be made alone by experts without involvement of people involved in daily practice.

Also, the data availability should be paid due attention. Several monitoring systems failed because they restricted themselves to measure processes, for which they could find available data. This would lead to the business-as-usual case. On the contrary, the success of Urban Audit can be attributed to the clear measurement frame filled in the course of far-sighted measurement efforts. The lesson learned is therefore that a monitoring system should be developed in a gradual way but with a clear perspective what is desirable and what indicators are necessary in a long run.

References

See Annex 10 for all bibliographical references.

Annex 9. Discarded indicators

This annex contains reflections on proposed specific indicators and/or broader conceptual themes that have been considered by the TPG but subsequently discarded from further development. In general, the future functionality of the monitoring system implies that the number of included indicators should be kept as low as possible, which is the primary reason for discarding most of the following indicators. In a limited number of cases their inclusion would have been justified even in light of the future scarce resources available, but issues such as actual data availability or the future effort/cost of obtaining these has nonetheless excluded them from further development.

Domain 1: Economic performance and competitiveness

Newly created jobs was proposed as a concrete indicator. Such information is not available as such in any collective data sources (such as Eurostat) but can be nationally collected in a smaller number of BSR countries. In a state of employment growth, some instances do estimate this by comparing gross number of persons employed between two periods in time thus assuming that no existing jobs are lost and all employment addition hence consists of "newly created jobs". However, such an assumption is misleading since the net flow of jobs on a labour market does only reflect a small share of the total gross volumes to and from the market. For example, in Finland the net increase in new enterprises typically only accounts for around ten percent of the overall increase in such. Job vacancies would be another way to proximally estimate the nr of new jobs. At Eurostat, there are data at NUTS 2 level on the number of job vacancies per region. However, when examining actual entries in the data base, data only exist for the three Baltic States (that are NUTS 2 regions in themselves). Hence, the TPG does not see any feasible possibilities of including this in the monitoring system even at a proximal level.

Part-time employment has been proposed as another concrete indicator to be included in the monitoring system. Such information does exist at Eurostat at NUTS level 2 for the EU MS in the BSR as well as for Norway. The TPG has however difficult to establish how a low or high share of part-time employment respectively should be interpreted on a normative basis? In theoretical literature such interpretations are twofold and primarily based on the individual's own conception of the desirability of part-time employment. Also from a macroeconomic point of view, part-time employment can be assessed both from a negative (e.g. less productivity per employee) and from a positive (e.g. easier entry on and better attachment to the labour market for some strata of society) perspective. Hence, bearing in mind that the auxiliary information value of this indicator is limited, the TPG has not found a justification of its inclusion in the monitoring system considering the limited overall scope and expected future functionality of the system.

Also long-term unemployment was proposed as one tentative indicator. Regional data for this is available at Eurostat at NUTS level 2. This data is based on labour force surveys and would need to be estimated for NW Russia and Belarus. However, a test (for the year 2011) with those 289 NUTS 2 regions within the ESPON space where data was available revealed that as much as 85 % of the regional variation in long-term unemployment rate can be explained by the general unemployment rate. The TPG thus decided that the expected auxiliary information on this issue would not justify its inclusion in the monitoring system in a situation where the number of variables that feasibly can be included is limited.

Some sort of indication on services of general interest has also been called for. Bearing in mind that collective data sources (such as Eurostat, OECD) do only have employment data at a one digit NACE level, statistically identifying such services is not feasible. In addition, the widely varying societal structures within the BSR would in all likelihood render any meaningful comparison very difficult even if such branches of general interest could be identified.

In addition there was a proposal of including variables on more qualitative labour indicators such as capital intensive, labour intensive or intelligence intensive employment. The TPG withholds that the variable on employment in technology and knowledge-intensive sectors of manufacturing and services partially addresses this issue.

One indicator for this domain, the birth rate and survival of firms, was finally considered by the TPG but discarded due to lack of reliable and comparable regional data. The actual existing definitions of a firm or enterprise and when it is (statistically) considered born or dead vary substantially across all BSR countries and the challenges related to regionalising them (e.g. are all activities registered on the HQ address only or are they regionalised, and how) rendered any meaningful comparison impossible. In addition, most such information has to be purchased on a case by case basis (e.g. from chambers of commerce), which would have substantial implications for the future maintenance of the monitoring system.

Domain 2: Access to services, markets and jobs

The TPG initially considered the inclusion of data on ferry services/maritime traffic, air traffic connections as well as train connections into the monitoring system. As such information generally has o be collected on a case by case basis, it was decided to pursue these indicators in an exploratory manner and investigate the possibility to include such indicators in the future and perhaps show some examples within the scope of BRS-TeMo.

The TPG also considered including general information on intra-BSR cargo flows. Such information is by default available only at the level of countries. It was therefore decided to discard this from further development.

The TPG finally considered including the rate of urban primacy at the regional level as a concrete indicator in the monitoring system. While conceptually of high relevance for the system, methodical issues however do pose some serious obstacles for developing this further. Utilisation of urban morphological zones or functional areas could have constituted concrete paths for developing such an indicator comparatively for the BSR. The TPG however decided to discard this indicator due to the sheer amount of work included in updating such information in the future. ESPON 4.1.3 used a much easier definition for this indicator: share of largest city population to total population in %. While it is rather easy to compute, this indicator is somewhat questionable at NUTS-3 level since, for instance in Germany, all these largest cities are individual NUTS-3 entities, i.e. their share by definition is 100% for this entity, and zero for the surrounding entity. Functionally, the NUTS 3 boarders should not be so important for the benefits of policentricity, so a useful indicator for urban primacy should go beyond these limitations.

Domain 3: Innovative territories

The TPG was asked to consider the summary innovation indicator from the ProInno Europe Innovation Scoreboard. In this comprehensive and comparative analysis of innovation performance of 2011, 24 innovation-related variables are

at the national level merged into a single composite scoreboard. For 2009, also a regional innovation scoreboard has been created. This utilises regional data (mostly NUTS 2 with some modifications, e.g. Denmark is treated as a single region) for 16 variables, some of which stem directly from the standard Eurostat data base and some of which are derived from the CIS (Community Innovation Survey) of 2006. Re-creating this information for NW Russia and Belarus is not possible. Although it would be possible to include this scoreboard into the data base, the TPG is if the opinion that since the updating of it is not certain, since NW Russia and Belarus are not included, and most importantly, since the interpretation of this information requires a thorough understanding of the actual method of creating this synthetic indicator, it should not included into this monitoring system. Method wise the TPG acknowledges the merits if such a composite index and will tentatively consider something similar with the actual data at hand for the entire BSR.

Population with primary education was further suggested as an indicator in this domain as this may constitute an important factor for regional economic growth. The TPG decided not to include this into the monitoring system in order to save resources.

Early leavers from education and training, included both in the EU SDS and the EU 2020 set of indicators as well as in the Laeken list of social policy indicators, was in this domain considered by the TPG as an early warning indicator on future challenges related to knowledge and skills. It was subsequently considered to be included in the "Social inclusion and Quality of life" domain instead, but was subsequently discarded due to lack of space and difficulty of estimation in NW Russia and Belarus.

Research centres (without any specific operationalisation) was by the TPG considered as an auxiliary indicator to regional performance in R&D, but was subsequently discarded due to the difficulties in operationalising it. Among the assessed issues were questions related to what constitutes a research centre and where is it precisely located. While data and location of universities may be gathered for the BSR quite easily, data collection for private research centres such as research department of big companies seems not feasible; however, for many regions the latter ones are the dominating research centres.

Creative workforce at a conceptual level was considered by the TPG as an indicator in the spirit of Richard Florida's "creative class" theory. It however turned out that in order to statistically identify this segment of employment, data at the N.A.C.E. three digit level would be needed. Such data does not exist in most BSR countries at the regional level, whereupon this indicator was subsequently discarded.

Mean years schooling was by the TPG considered both in the domain of "Innovative territories" as well as in "Social inclusion and quality of life". Such an indicator, available sporadically in some BSR countries (e.g. Finland), refers to the mean number of years the (target) population has been in education. It has the advantage that it captures the overall level of education of the entire (target) population rather than a given segment (such as tertiary or secondary, etc). Lack of data however hindered further development of this indicator into the monitoring system.

Domain 4: Social inclusion and quality of life

Healthy life expectancy (HALE) was proposed as a concrete indicator for the monitoring system. It is calculated as the average number of years that a person can expect to live in "full health" by taking into account years lived in less than full health due to disease and/or injury. Reconstructing such an indicator at the

regional level for the BSR would be very difficult since it would imply considerable estimation of severity-adjusted prevalence of diseases. The TPG is of the opinion that the two included variables on life expectancy and subjective health independently cover most of the (expected) regional variation in HALE.

The household structure was also proposed as an indicator. Although such data for the EU MS is available at NUTS level 2, and possible to estimate for Norway, Belarus and NW Russia, the TPG decided to discard this from further examination due to the ambiguity of how to interpret the information.

Very old persons was also proposed as a concrete indicator in this domain. Such information is available. Due to the size limitations of the monitoring system, the TGP however opted for not including this information into the system despite the obvious well-being –related issues available. The TPG believes that the two selected indicators on Demographic dependency ratio and Economic dependency ratio cover most of the explanatory power.

Receivers of social aid would have been an interesting indicator of regional poverty. Such information has however to be collected from national sources only, and such data is (expectedly) not comparable across countries. The TPG therefore decided not to develop this issue further.

Disposable income per capita (in PPS) was considered by the TPG as a complementary indicator to the poverty-related ones, capable of reflecting absolute differences in monetary poverty. However, a testing with 248 NUTS 2 regions across the EU revealed that it correlates rather strongly with GDP/capita (OLS R^2=0.75 for log. data). It was hence subsequently discarded in order to save resources.

Quality of housing is deemed as a primary measurement of material well-being and here considered by the TPG as a complementary indicator to the material deprivation one. Lack of comparable data however implied it to be discarded from further development. The EU-SILC (Survey on Income and Living Conditions) will tentatively produce also regionalised data on satisfaction with accommodation in forthcoming rounds.

Standardised death rate was by the TPG considered as an auxiliary indicator in the sub domain "Health" but consequently discarded since it correlates very strongly with life expectancy. Data for the three year average 2008-2010 for 254 NUTS 2 regions within the ESPON space indicate that 77 % of the regional variation in standardised death rates can be explained by life expectancy at birth. When both data sets are ranked, the amount of variation explained reaches 97 %, indicating that the variables are nearly identical.

Domain 5: Environmental qualities

Wish list indicators under this domain include the state and development of biodiversity as well as indicators associated with renewable energy production. Also, the concept of climate change and vulnerability thereof is a multi-faceted concept and it is on the list right now to indicate that this would be an interesting concept to pursue in territorial cohesion in the future. The aspect of climate change differs greatly across regions and will have an impact on such regional aspects as agricultural production, renewable energy production and building and construction. However, we recognise that this also implies that the monitoring of such a concept would have to be as multi-faceted and that this would be almost an entire monitoring system in itself. Also, any measures in the same categories as those developed in Europe on vulnerability to climate will be difficult to obtain (define and measure) in Russia and Belarus. As such, the following indicators or concepts were at this stage discarded from further development:

- Energy efficiency
- Renewable energy production
- CO2 emissions
- Fresh water resources
- Wind power potential
- Photovoltaic potential
- Biodiversity
- Natural resources
- Vulnerability to climate change
- Aggregated natural hazards

The TPG has also omitted an indicator on access to Natura 2000 areas, partly because this indicator does not change much over time, partly because it does not say so much about the value of landscapes from a territorial cohesion perspective. Instead, the TPG selected the indicator on fragmentation index which much better reflect the size of unfragmented habitats.

Domain 6: Territorial cooperation and governance

The TPG considered methods of obtaining regional data on institutional decentralisation, inter municipal cooperation, the use of integrated place based strategies, and the use of territorial impact assessments. In all these cases, such concepts do not for the time being lend themselves to quantitative measurements comparative across countries. Such information is therefore put on the general "wish list" of the monitoring system.

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