ESPON ATLAS
ESPON ATLAS - Mapping European Territorial Structures and Dynamics

Scientific Platform and Tools Project 2013/3/5

Inception Report | Version 12/10/2012

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This report presents a more detailed overview of the analytical approach to be applied by the project. This “Scientific Platform and Tools” Project is conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

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

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

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

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

This basic report exists only in an electronic version.

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1. Objective and basic concept of the ESPON ATLAS

The results of the ESPON 2013 Programme cover a wide range of territorial knowledge on the territorial development of regions in Europe, on the regional diversity that is a characteristic of Europe, on the regional capital and the possibilities of regions to deal with the territorial challenges. ESPON projects have identified different types of territories, differently sensitive to and involved in specific territorial questions and endowed with diverse combinations of resources, thus classifying them thematically and territorially into different roles for contributing to territorial cohesion and regional development.

The mission of the ESPON 2013 Programme is the deepening and extending of territorial knowledge. Basic regional indicators are amended by sophisticated indicators, territorial classifications and typologies. By this the ESPON 2013 Programme plays an important supporting role in the discussions on territorial policy. Thus, ESPON contributes to the development of cohesion policy beyond 2013 and territorial development with the horizon of 2020, both related to the EU 2020 Strategy and the Territorial Agenda 2020.

1.1 The ESPON ATLAS – The synoptic reference of the European territory

The ESPON ATLAS will support the mission of the ESPON 2013 Programme by compiling ESPON results, evidence and policy advice in a synoptic and comprehensive manner. The objective is to present a widespread picture on European territorial structures and dynamics by the end of the ESPON 2013 Programme in an atlas format.

The ESPON ATLAS will provide basic and comprehensive territorial information on the European territory, the Member States, regions and cities for different themes that have been researched and analysed within ESPON 2013. It will enable comparisons amongst regions, cities and support the understanding of European territorial diversity of potentials and challenges. The elaboration of specific territorial potentials will be a crucial element of interpretation of the findings presented in graphic and cartographic form.

The envisaged synoptic and comprehensive overview of key findings will inform national and regional policy makers about the position and situation of their regions, cities and territories in the European context and will eventually support them to find and define their tailor-made, region oriented and place-based policies. The selection and compilation of maps will be mainly based on results of ESPON Priority 1 (Applied Research) and Priority 2 (Targeted Analyses) projects, enriched in the territorial dimension by selected Priority 3 (Scientific Platform) results and indicators of the ESPON database.

With the basic and comprehensive approach, combining and visualising essential ESPON evidence, the atlas will also serve as a starting point to access the

territorial world of ESPON and will appeal for deeper studying the themes and aspects of European territorial development.

Having in mind the mission of ESPON providing evidence on territorial structures and development in Europe, the ESPON ATLAS will offer a base of information which goes in its European territorial insight view far beyond targeted policy oriented documents like the cohesion reports.

This fundamental but as well policy oriented territorial information to be provided by the atlas will open a wide range of potential use. Beyond building the base of information for politicians, practitioners and planners the content provided will offer the opportunity to deepen the territorial knowledge on Europe in different parts of the educational systems.

In schools, mainly at secondary level it might be used as introduction to European spatial structure and territorial development policy. The way of dealing with regional data and the way of presenting and visualisation territorial phenomena in ESPON, summarised in the ESPON ATLAS can also be used as entrance point for teaching how do deal and use regional data in territorial analysis. This is also true for tertiary education at universities for which the ESPON ATLAS might be used to deepen the territorial knowledge on Europe, to explore the territorial policy questions and also to enhance the analytical way of thinking in this respect. Not overestimating the function of the ESPON ATLAS too much, it might also be a kind of small format “National Atlas of Europe” which might be appreciated by a broader public.

Students from secondary schools to universities will be able to use the presented maps, figures and tables to learn about generalization, visualisation, decision-making, classification, revising and clarifying the actual secondary school or university topics. The ESPON ATLAS can be used to brainstorm on different kind of spatial topics in connection with current EU challenges.

The online interactive ESPON ATLAS will also be suitable for teachers and students as a user-friendly teaching material, where they can download and print the appropriate maps and information.

1.2 Territorial policy environment

Maps are important tools for policy makers. Maps can serve as a basis not only for territorial policy, but might act as easy-to-understand messages also to “non-spatialists”, who are less sensitive to territorial patterns. The relationship between maps and policy making is mutual: Maps deliver information on the territorial state and development which can be the base for new territorial and aspatial policies; but there are also several policy messages which could be visualised and aggregated in maps. There has been substantial progress in territorial policy in the course of the ESPON 2013 Programme which is summarised below with respect to the potential links to the ESPON ATLAS.

The "Green Paper on Territorial Cohesion - Turning Territorial Diversity into Strength" published in 2008 made a step forward to better common understanding of territorial cohesion, highlighted the unique development potentials of regions and called for concentration, connection and cooperation. The ESPON ATLAS will build on the policy approach of the Green Paper and will offer support to go further in the interpretation of territorial cohesion.

The "Europe 2020 Strategy" launched in 2010 aims at supporting the European recovery from the economic and financial crisis and to prepare the EU economy for the next decade. A key question is how the implementation of the strategy can be tailor-made to specific territorial needs. The Directors General responsible for territorial development agreed in their 2010 meeting in Seville to highlight the importance of territory in their joint document "Territory Matters to Make EU2020 a Success". Indeed, as the "Fifth Report on Economic, Social and Territorial Cohesion" presents, there is a clear territorial dimension in the opportunities of regions to contribute to the successful implementation of the Europe 2020 goals, and, cohesion policy has a key role in it. The ESPON ATLAS will reflect these goals as well.

The "Territorial Agenda 2020 (TA2020)" adopted at an informal ministerial meeting during the Hungarian EU Presidency in 2011 builds on the policy documents mentioned before. It is based on the notion of territorial cohesion as defined in the "Green Paper on Territorial Cohesion" and sets an important action oriented territorial framework for the implementation of the Europe 2020 Strategy. In this respect, it highlights the importance of cohesion policy post 2013, which shall contribute to better territorial cohesion. Since the Territorial Agenda 2020 is the most recent policy document that reflects all the previous policy developments, it will serve as a core reference point for the ESPON ATLAS.

The Ministers responsible for territorial development suggested that the “ESPON Programme should take into account the priorities and challenges of the TA2020”. For this, the ESPON ATLAS can be a key tool, synthesising the results of the ESPON Programme according to these orientations. The atlas is expected to deliver easy-to-interpret, comprehensive territorial messages which will support policy development. The ESPON ATLAS will be published at the end of 2014. So, it will be of potential use for the Latvian and Luxembourgish Presidencies, which shall review and evaluate the TA2020 in 2015 and the Dutch and Slovak Presidencies in the possible update of the Territorial Agenda. Moreover, as the atlas will be composed of policy relevant territorial information, it will help countries, regions and cities to use the territorial evidence provided by the ESPON 2013 Programme in finding their tailor-made solutions in the implementation of Cohesion Policy from 2014 onwards.

1.3 Thematic orientation

The requirement for the ESPON ATLAS is that it should be as comprehensive as possible, i.e. that ideally all ESPON projects of Priority 1 and 2 and if applicable Priority 3 would be incorporated in the atlas. In order not to get lost in the variety of the huge amount of ESPON projects, this requires a thematic structuring.

However, the ESPON 2013 Programme as such does not offer a thematic structure.

Based on the analysis of main thematic aspects defined in current territorial policy documents a proposal of the thematic structure of the ESPON ATLAS is being developed (see Section 2). This thematic structure fulfils on the one hand the requirement to reflect the current territorial policy debates. On the other hand, it is such comprehensive that is incorporates all ESPON projects. It will be the task of the next project phase to review the proposed structure, in particular by reflecting the comments received in the evaluation of the proposal and comments made by the ESPON CU, the ESPON MC and other ESPON stakeholders interested in the ESPON ATLAS project.

1.4 Function of the Inception Report

This is the Inception Report of the ESPON ATLAS project. Its main purpose is to serve as a planning document for the project and to inform about the foreseen concept and planned steps to develop the atlas. Section 2 will provide information about the proposed thematic orientation of the atlas. A brief history of atlases and atlas-type documents will be given in Section 3. Section 4 gives basic cartographic principles of the atlas. A draft table of contents of the ESPON ATLAS is proposed in Section 5. Finally, Section 6 is related to project planning by presenting the work plan, time table and deliveries of the project.

2. Themes of the ESPON ATLAS

The ESPON ATLAS will provide a wide range of comparisons among countries, regions and cities in Europe. The thematic content of the atlas has been designed in a way to highlight the actual challenges Europe is facing. These challenges are strongly emphasised in the Territorial Agenda of the European Union 2020 (TA2020). Given this political and territorial background, the atlas will present ESPON results from a more integrative and territorial point of view. Territorial diversity as a key potential will be reflected and the results of the ESPON typology compilation will be taken into account for the different elements of the atlas.

The ESPON ATLAS is envisaged to present a synoptic and comprehensive overview of key findings from ESPON Priority 1, Priority 2 and Priority 3 projects which are closely interlinked with the TA2020 goals and strategy. The proposed thematic structure of the atlas is based on the policy documents described above and meets the requirements of policy recommendations of the TA2020. Accordingly, it is proposed to organise the main body of the ESPON ATLAS in eight themes which are elaborated in more detail below (in brackets, a preliminary indication to challenges (C) and priorities (P) of the TA2020 gives first hints to the thematic policy relation).

2.1 From policies to ESPON ATLAS themes

The Green Paper on Territorial Cohesion identifies the balanced and sustainable territorial development of the EU as a whole as key challenge for the future. Strengthening economic competitiveness and capacity for growth while respecting the need to preserve natural assets and ensuring social cohesion outlines the potential path to achieve this. The EU 2020 strategy states that economic development in a smart way can only be achieved on the base of knowledge and innovation. This is the nature of the global economy. The Territorial Agenda 2020 sees economic competitiveness strongly connected with the development of globally integrated economic sectors and strong regional and local economies. Strengthening R&D, fostering regional innovation and the establishment of diversified regional economies are key tasks especially in relation to new technologies and sustainable products. The position and the potentials of the regions regarding future challenges for the regional economies in a globalised world will built the first chapter of the atlas.

The second range of topics is closely related to the global economic issues. It includes questions concerning the demographic changes, the structure and potentials of the labour force, education and the integration of different population groups. A balanced society is the access point to inclusive growth in the EU 2020 strategy to foster a high-employment economy in order to ensure besides economic also social and territorial cohesion. The TA 2020 addresses territorially diverse demographic and social challenges and the segregation of vulnerable groups as main concerns for integrated development of regions.

A third part of the ESPON ATLAS will concentrate on connections and linkages of the territory. According to the Green Paper this means not only to ensure good intermodal transport connections, but also adequate access to services and education, to energy and to information networks. Related to transport, linkages between and within cities, city-regions and regions are essential, but, as stated in the TA 2020, are also important in the global aspect. In terms of a decentralised balanced system, for example, linkages between primary and secondary poles are essential components of the integrated network.

The next part of the atlas will address questions of climate and environmental change. The strengthening of territorial potentials to mitigate effects of climate change and the use of clean and efficient energy are main issues according to the EU 2020 strategy to achieve sustainable growth and to promote a more resource efficient, greener and more competitive economy. The regional varieties of impacts and vulnerability mentioned in the TA 2020 will have to be considered; development opportunities in agriculture and renewable energies are among others elements to be integrated.

The Green Paper and other document aim at a balanced and sustainable territorial development of the EU as a whole. This implies a closer look to rural areas as well as to cities and urban regions. Their specific territorial assets and development opportunities are themes of the next two chapters of the atlas.

The variety of rural areas and unique characteristics underlined in the TA 2020 will be taken into account. In addition, the regions with specific geographical features defined in the Green Paper such as mountain regions, island regions or sparsely populated regions will be subject of dedicated presentation in the atlas. The TA 2020 outlines several aspects for this spatial category, just to mention the sustainable utilisation of the territorial capital, maintenance of economic activities by enhancing job creation, or the preservation of high quality arable land and ecological functions especially in the context of changing landscapes.

Cities and urban regions are seen as driver of economic growth. The TA 2020 emphasises their contributions to the development of their wider hinterland regions. According to this document cities are asked to form networks in an innovative manner to improve their performance in European and global competition. Polycentric and balanced territorial development of the EU is a key element of achieving territorial cohesion. Capitals, metropolitan areas, medium sized towns at national and small and medium-sized towns at regional level are the key elements in this respect.

2.2 Economic structures and global challenges

Europe's economy is in the deepest recession since the 1930s. Although signs of improvement have shown up, the end of the crisis is still hardly predictable. The integration of the EU in global economic competition and the growing interaction between the EU territory and the neighbouring countries influence the regional sensitivity and the global competitiveness of regions. The ESPON projects are taking up the new economic challenges which shall be presented in the new atlas. These projects have implemented a range of indicators which are offering information to labour markets, companies, politicians and decision makers. Projects such as SURE, TERCO, ADES, CAEE or GREECO can provide a wide variety of evidence and maps depicting the on-going economical processes. Of particular relevance is the SIESTA project on the potential contribution of the European regions to the EUROPE 2020 strategy. One of the tasks of SIESTA is to present the results in an atlas format; thus the ESPON ATLAS can benefit from a pre-selection of relevant maps in this field.

Besides economic problems, accelerating globalisation and growing vulnerability to external shocks are also threatening local and regional communities through different processes. The problematic of global environmental degradation, climate change and their effects on Europe will be taken into account according to the results of the CLIMATE, ReRISK, EU-LUPA LIVELAND etc. Europe's responsibility in this crucial issue is unquestionable. (C1, P4)

Table 1 ESPON projects dealing with economic structure and global challenges

Economic Structure and Global Challenges				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspect**
Acronym	**Title**			
ReRISK	Regions at Risk of Energy Poverty	1	done	• Economic structure • Social integration • Economic vulnerability
CAEE	The Case for Agglomeration Economies in Europe	2	done	• Competitiveness
-	Typology Compilation	3	done	• Competitiveness
-	Map updates	3	done	• Competitiveness • Globalisation
SURE	Success for Convergence Regions' Economies	2	done	• Economic structure • Territorial integration • Economic vulnerability
KIT	Knowledge, Innovation, Territory	1	done (Draft) 6/2012	• Innovation • New economies
TIGER	Territorial Impact of Globalisation for Europe and its Regions	1	done (Draft) 6/2012	• Globalisation
TERCO	European Territorial Cooperation as a Factor of Growth, Jobs and Quality of Life	1	done (Draft) 7/2012	• Territorial cooperation
ADES	Airports as Drivers of Economic Success in Peripheral Regions	2	6/2012 (Draft) 8/2012 (Final)	• Competitiveness • Globalisation
AMCER	Advanced Monitoring and Coordination of EU R&D Policies at Regional Level	2	7/2012 (Draft) 9/2012 (Final)	• Economic structure • Territorial integration • Economic vulnerability

SIESTA	Spatial indicators for a Europe 2020 Strategy Territorial Analysis	1	7/2012 (draft) 9/2012 (Final)	• Economic structure • Globalisation • Social integration • EU2020 Strategy
EU-LUPA	European Patterns of Land Use	1	6/2012 (Draft) 10/2012 (Final)	• Land use change
GREECO	Territorial Potentials for a Greener Economy	1	5/2013 (Draft) 10/2013 (Final)	• Innovation • New economies
ECR2	Territorial Impact of the Financial and Economic Crisis	1	4/2014	• Economic crises • Regional vulnerability • Sectoral vulnerability
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Future Territorial Challenges • Future territorial diversification • EU 2020 Strategy
	Economic Crises: Resilience of Regions	1	4/2014	• Economic structure • Social integration • Economic vulnerability
LIVELAND	Liveable Landscapes for Sustainable Territorial Development	2	7/2013	• Landscape protection • Socio-economic development

Source: www.espon.eu (Project presentations und call for proposals)

2.3 Society and integration

The EU has to cope with demographic decline, low natural growth and the ageing of its population. Immigration in Europe also puts serious pressure on socio-economic development. The main European policies emphasise the importance of an adequate management of these tensions among the European population.

These processes affect the regions differently and increase the competition for skilled labour leading to a more focused concentration and demographic unbalances between growth and loss of population. Their inherent effects are presented in different ESPON projects. In order to better understand migration patterns, reveal the demographic and social challenges or analyse social integration some important ESPON findings will be picked up. The results and maps of SEMIGRA and DEMIFER projects will form the basis of the demographic aspects of this subchapter. The TIPSE project is the main source for the integration part of this theme (C3)

Table 2 ESPON projects dealing with society and integration

Society and integration				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspect**
Acronym	**Title**			
DEMIFER	Demographic and Migratory Flows Affecting European Regions and Cities	1	done	• Demographic change • Balances societies • Social cohesion
-	Map updates	3	done	• Demographic change
SEMIGRA	Selective Migration and Unbalanced Sex Ratio in Rural Regions	2	done (Draft) 5/2012	• Social cohesion • Balances societies • Demographic change

ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Future Social cohesion • Future Balances societies • Long term perspective of demographic change
TIPSE	The Territorial Dimension of Poverty and Social Exclusion in Europe	1	12/2013 (Draft) 5/2014 (Final)	• risk of poverty in rural areas
	ESPON Online Mapping Tool	3	12/2013	• Map illustration

Source: www.espon.eu (Project presentations und call for proposals)

2.4 Connections and linkages of the territory

Enhancing territorial connectivity for individuals, communities and enterprises is essential in the development of a well prospering EU. Connecting the peripheries in order to ensure economic and social participation or connecting the economic centres with each other and the world are just two questions in this territorial context. These linkages between territories have become particularly important in Europe, and serve as key elements of territorial integration.

The theme of connections and linkages addresses some key policy questions from a European and regional point of view. It is essential to determine the linkage between the infrastructure, innovative thinking, policy making, networking and accessibility at different levels. The energy prices also play an important role in shaping territorial connections, which need to be taken into account in the future developments of road, rail, water and air transport. ESPON projects such as TIPTAP, TRACC or ADES offer a wide variety of territorial evidence analysing the accessibility and connectivity of regions and also the impacts of transport policies on regional development. (P5)

Table 3 ESPON projects dealing with connections and linkages of the territory

Connections and linkages of the territory				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspect**
Acronym	**Title**			
TIPTAP	Territorial Impact Package for Transport and Agricultural Policies	1	done	• Transport impacts
-	Map updates	3	done	• Structure in accessibility • Development of accessibility
TRACC	TRansport ACCessibility at regional/ local scale and patterns in Europe	1	6/2012 (Draft) 10/2012 (Final)	• Accessibility and conne-ctivity • Economic impact of transport • Bottlenecks • Global perspective of transport
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Future orientation of transport
ADES	Airports as Drivers of Economic Success in Peripheral Regions	2	6/2012 (Draft) 8/2012 (Final)	• Territorial cohesion • Development potentials
	ESPON Online Mapping Tool	3	12/2013	• Map illustration

Source: www.espon.eu (Project presentations und call for proposals)

2.5 Climate and Environment

In the last decades climate change has become one of the most challenging issues. Going hand in hand with environmental risks it will strongly influence the regional prospects, and cause significant territorial impacts. Some regions will be more affected than other, other regions will gain with a potential new economic basis. Ecological, landscape and cultural values are also considered as important aspect in this interplay as well as economic pressures and impacts.

Territorial development is regarded to be responsible for and capable of reducing regional vulnerability to climate change and environmental risks. Regions have different opportunities to utilise adaptation and mitigation in their strategies. Decarbonisation of the economy is crucial to meet the challenge of climate change mitigation and offers many opportunities for different European regions. In this context climate change vulnerability factors will be presented in this subchapter using the ESPON CLIMATE results. Changing climate and diminishing fossil fuels has led the EU to crossroads. It is envisaged that the European Union's energy dependency and energy poverty will continue to increase due to the simultaneous growth in energy consumption. These are threatening economic competitiveness and social cohesion. Therefore, it has become essential to increase the share of renewable energy-sources in the final consumption. The atlas will highlight the ongoing processes and future scenarios about European and regional level on the implications of energy poverty. The findings of ReRISK, CLIMATE, GREECO and EU-LUPA projects will come to the fore in this subchapter.

On the whole, Europe is facing with significant environmental challenges. The remnants of Europe's original natural and its varied cultural landscapes hold an essential part of the continent. Ecological values, environmental quality and cultural assets are fundamental to well-being and to economic prospects and offer unique development opportunities. The EU-LUPA, ReRISK, LP3LP and GREECO projects deal in depth with these challenges. (C4, C5)

Table 4 ESPON projects dealing with climate and environment

Climate and Environment				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspect**
Acronym	**Title**			
CLIMATE	Climate Change and Territorial Effects on Regions and Local Economies in Europe	1	done	• Climate change • Regional vulnerability • Mitigation
ReRISK	Regions at Risk of Energy Poverty	1	done	• Renewable energy • Green economy
EU-LUPA	European Patterns of Land Use	1	6/2012 (Draft) 10/2012 (Final)	• Land use change t
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Future orientation of economies • Climate change • Mitigation
GREECO	Territorial Potentials for a Greener Economy	1	5/2013 (Draft) 10/2013 (Final)	• Green economy • EU 2020 Strategy

LIVELAND	Liveable Landscapes for Sustainable Territorial Development	2	7/2013	• Landscape protection • Socio-economic development
LP3LP	Landscape Policy for the 3 Countries Park	2	11/2013	• Territorial identity and landscape
	ESPON Online Mapping Tool	3	12/2013	• Map illustration

Source: www.espon.eu (Project presentations und call for proposals)

2.6 Rural areas and changing landscapes

There are strong interactions and several relations between rural areas and changing landscapes. Improvement of the quality of life, safeguarding and sustainable utilisation of the territorial capital in rural areas, special attention paid to underdeveloped peripheral rural and sparsely populated areas (with disadvantaged segregated social groups) and encouraging the diversification of economic activities are priority tasks. The policy recommendations should follow a multi-sector design and the implementation of the strategy shall be based on the interaction between actors from different sectors of the local economy. The most often cited rural challenges are the need for diversification of rural economies and the specialisation based on local assets; the economic crisis and the related problem of territorially differentiated vulnerability; the territorial patterns of outmigration and its consequences – the rural exodus and the selective brain drain; or the territorial differences of urban-rural relationships. The ESPON ATLAS maps, based on EDORA, PURR, SEGI, ET2050, SEMIGRA, and TIPSE projects will reflect these challenges.

In terms of changing landscape the atlas needs to identify means of management, innovation and experimentation in order to guide strategic and systematic policies to address the diffuse quality of our landscape. The ESPON ATLAS will provide an instant view on these ongoing processes using the results of TeDi, TIPTAP and GEOSPECS projects.

The EU highlighted the importance of biodiversity protection as a precondition for sustainable development. The Commission's action plan addresses the challenge of integrating biodiversity concerns into other policy sectors in a unified way. The ESPON researches offer a wide scale of implications about the theme which must also be highlighted in the atlas. (C6, P6)

Table 5 ESPON projects dealing with rural and changing landscapes

Rural areas and changing landscapes				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspects**
Acronym	**Title**			
TIPTAP	Territorial Impact Package for Transport and Agricultural Policies	1	done	• agricultural policy • future scenarios
TEDI	Territorial Diversity in Europe	2	done	• special features of rural areas

EDORA	European Development Opportunities in Rural Areas	1	done	• typology of rural areas • urban-rural relations (cooperation) • changing role of rural areas • future of European rural areas
EURO ISLANDS	The Development of the Islands – European Islands and Cohesion Policy	2	done	• challenges of insulated rural areas • development potentials of specific areas
PURR	Potential of Rural Regions	2	done (Draft) 11/2011	• territorial potentials in rural regions • methodology to assess territorial potentials in rural regions • analysing territorial assets • rural development scenarios
ATTREG	Attractiveness of European Regions and Cities for Residents and Visitors	1	done(Draft) 4/2012	• attractiveness of rural regions • urban-rural relationship • economic potentials of rural regions (e.g. tourism)
SEMIGRA	Selective Migration and Unbalanced Sex Ratio in Rural Regions	2	done (Draft) 5/2012	• migration in rural regions • socio-economic consequences of rural outmigration • brain drain problem of rural regions • shrinking and ageing problems of rural areas
GEOSPECS	Geographic Specificities and Development Potentials in Europe	1	done (Draft) 7/2012	• characteristics of special kind of rural territories (e.g. mountainous areas, sparsely populated areas, inner peripheries) • territorial development potentials of specific rural regions
SeGI	Services of General Interest	1	10/2012 (Draft) 2/2013 (Final)	• unbalanced accessibility in rural areas to services of general interest
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• rural development scenarios • urban-rural relations
TOWN	Small and Medium Sized Towns in their Functional Territorial Context	1	4/2014	• urban-rural linkages • rural development policies
TIPSE	The Territorial Dimension of Poverty and Social Exclusion in Europe	1	12/2013 (Draft) 5/2014 (Final)	• “crisis areas” in rural territories • risk of poverty in rural areas
	ESPON Online Mapping Tool	3	12/2013	• map illustration

Source: www.espon.eu (Project presentations und call for proposals)

2.7 Cities, urban regions

Cities and urban regions are the main cores of economic development, engines of smart, sustainable and inclusive development. Metropolitan regions connect the European territory to the global context, representing themselves as functionally coherent integration zones. The balanced territorial development shall be based on improved urban, urban-regional and urban-rural cooperation at all territorial levels. In addition, cities shall elaborate an integrated and multilevel approach in urban development and in regeneration policies together.

Small and medium sized towns play also an important role in regional development. Their development pole function on rural areas should be strengthened, and the targeted policies should draw them into the blood flow of national and transnational level cooperation through joint projects and mutual exchange of experience. The atlas can properly show the role and importance of urban regions through evidence and maps from FOCI, POLYCE, BEST METROPOLISES, METROBORDER and SGPTD projects. (P1, P2)

Table 6 ESPON projects dealing with cities and urban regions

Cities, urban regions				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspects**
Acronym	**Title**			
FOCI	Future Orientation for Cities	1	done	• Urban disparities • core - surrounding relation • Urban economies • Urban macro regions development
CAEE	The Case for Agglomeration Economies in Europe	2	done	• Agglomeration effects
METROBORDER	Cross-Border Polycentric Metropolitan Regions	2	done	• Transnational – cross border dimensions of metropolitan areas
ATTREG	Attractiveness of European Regions and Cities for Residents and Visitors	1	done(Draft) 4/2012	• Social cohesion • Attractiveness of cities
BEST METRO-POLISES	Best Development Conditions in European Metropolises: Paris, Berlin, Warsaw	2	3/2012 (Draft) 4/2012 (Final)	• Metropolisation processes
POLYCE	Metropolisation and Polycentric Development in Central Europe: Evidence Based Strategic Options	2	done (Draft) 5/2012	• Polycentric system on regional and metropolitan level
SGPTD	Secondary Growth Poles in Territorial Development	1	done (Draft) 6/2012	• Urban system • Urban development • Social cohesion
SeGI	Services of General Interest	1	10/2012 (Draft) 2/2013 (Final)	• Spatial distribution of services • Territorial development perspective • Balanced territorial development
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Future development scenarios • Development of Cities, city regions and metropolitan regions
TOWN	Small and Medium Sized Towns in their Functional Territorial Context	1	4/2014	• City networks • Urban systems • Development perspective outside urban regions
	Typology Compilation	3	done	• Urban – rural typology • Urban system
GROSEE	Growth Poles in South-East of Europe	2	7/2013	• Role of cities in transition • Urban Concentration • urban systems
	ESPON Online Mapping Tool	3	12/2013	• Map illustration

Source: www.espon.eu (Project presentations und call for proposals)

2.8 Cohesion and territorial integration

The main goal of territorial oriented policies on European, as well as on national and regional level is territorial cohesion. The Structural Funds of the EU related transfers try to help regions to develop their economic performance, support Member States and regions to structural adjustments and development to initialise further developments and to preserve regional assets. The most relevant ESPON projects are TeDi, TPM, GEOSPECS, ESaTDOR, SMART-IST and TANGO.

Policies regarding themes such as cohesion and territorial integration can have a wide range of effects on Europe. The atlas can illustrate these territorial effects in several ways based on the results of INTERCO, ET2050, RISE and ARTS projects. Deepening of EU integration is particularly challenging due to basic factors such as regions divided by administrative borders, and differences in fiscal discipline and commitment between Member States. (C2, P1, P3)

Table 7 ESPON projects dealing with cohesion and territorial integration;

Cohesion and territorial integration				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspects**
Acronym	**Title**			
TEDI	Territorial Diversity in Europe	2	done	• Territorial diversity as a tool for strengthening cohesion; • Potentials of regions (demographic, economic, environmental, governance, connectivity and accessibility); • Policy relations.
METROBORDER	Cross-Border Polycentric Metropolitan Regions	2	done	• Aspects of functional integration; • Cross-border integration of the economy; • Urban (metropolitan) aspects of integration; • Cross-border commuting.
INTERCO	Indicators of Territorial Cohesion	3	done	• Selection of useful indicators on territorial cohesion; • Multidimensional and political concept; • Extension of cohesion to local and global level.
-	Typology Compilation	3	done	• Typology of Cross-border regions; • Political relevance.
EUROISLANDS	The Development of the Islands – European Islands and Cohesion Policy	2	done	• Understanding the strengths and weaknesses, which a specific region possesses;
ARTS	Assessment of Regional and Territorial Sensitivity	1	done (Draft)	• Territorial impacts of regional directives towards cohesion; • Analysis about encouragement of regional development within the EU.
ATTREG	Attractiveness of European Regions and Cities for Residents and Visitors	1	done(Draft) 4/2012	• Territorial accessibility of regions • Territorial capital contributes to overall cohesion.
RISE	Identifying and Exchanging Best Practice in Developing Regional Integrated Strategies in Europe	2	done (Draft) 4/2012	• Policy coordination as key driver of cohesion; • Aspect of Innovation.

SMART-IST	Smart Institutions for Territorial Developments	2	4/2012 (Draft) 6/2012 (Final)	• Institutional factors; • Capacity building in connection with cohesion
TANGO	Territorial Approaches for New Governance	1	6/30/13 (Draft) 11/30/13 (Final)	• Territorial governance as means of achieving cohesion; • Good practices.
TPM	Territorial Performance Monitoring	2	done (Draft) 5/2012	• Challenges of the regions • Economic performance as indicator of cohesion.
GEOSPECS	Geographic Specificities and Development Potentials in Europe	1	done (Draft) 7/2012	• Geographical specificities represent a strength; • Understand how each type of specificity may influence socio-economic development processes in terms of cohesion; • Mountains, islands, and sparsely populated regions that face particular development challenges; • Border areas.
EU-LUPA	European Patterns of Land Use	1	6/2012 (Draft) 10/2012 (Final)	• Territorial land use challenges affecting cohesion and integration; • relationship between policy objectives (including cohesion) and land use patterns observed in Europe; • Cohesion in spatial planning.
ESaTDOR	European Seas and Territorial Development, Opportunities and Risks	1	9/2012 (Draft) 1/2013 (Final)	• Inter-linkages between marine and terrestrial areas; • Maritime policy's important and integral role in cohesion policy;
SeGI	Services of General Interest	1	10/2012 (Draft) 2/2013 (Final)	• Uneven development as a key trigger of spatial inequality; • Distribution of economic and social resources; • Indicators.
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Cohesion and polycentricity indicators of NUTS3 regions; • Future scenarios on cohesion and integration
ITAN	European Neighbour Regions	1	4/2014	-
KITCASP	Key Indicators for Territorial Cohesion and Spatial Planning	2	7/2013	• Key indicators of territorial cohesion;
	EU Territorial Monitoring and Reporting	3	3/2014	-
	Detecting Territorial Potential and Challenges	3	6/2013	-
	ESPON Online Mapping Tool	3	12/2013	-
	Territorial Monitoring in a European Macro Region - A test for the Baltic Sea Region	3	2/2014	-

Source: www.espon.eu (Project presentations und call for proposals)

2.9 Governance, territorial cooperation and EU policies

Governance, territorial cooperation and the harmonisation of EU policies are among the main challenges in Europe. There is a constructive connection between transnational cooperation programmes and the territorial evidences, carried out by ESPON projects, like TERCO, TIGER, CAEE, and TransMEC.

The products of this knowledge base shall be transformed to policy recommendations. The atlas will contribute and present these processes. The projects also contain a wide range of assets of recommendations on how to enhance economy, prevent environmental degradation and solve the social problems in Europe etc. The utilisation of these assets in the governance shall be also reflected. The related projects are SMART-IST, TANGO and ET2050. (C2, P3, P3)

Table 8 ESPON projects dealing with governance, territorial cooperation and EU policies

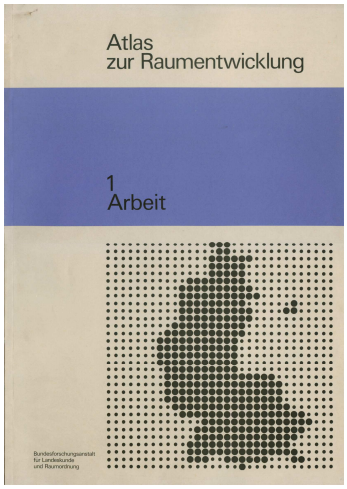
Governance, territorial cooperation and EU policies				
ESPON project		**Priority**	**Delivery of final report**	**Thematic aspects**
Acronym	**Title**			
TIPTAP	Territorial Impact Package for Transport and Agricultural Policies	1	done	• Territorial impact assessments • Methodological improvements • Options for policy development
CAEE	The Case for Agglomeration Economies in Europe	2	done	• Future policy implication; • Metropolitan/city-regional governance; • Governance arrangements.
SS-LR	Spatial Scenarios: New Tools for Local-Regional Territories	2	done	• Options for policy developments; • Policy scenarios; • Local and regional policies.
ARTS	Assessment of Regional and Territorial Sensitivity	1	done (Draft)	• Territorial sensitivities of EU directives; • Governance as an explaining factor for territorial impact; • Options for policy development
TransMEC	Transnational Support Method for European Cooperation	2	done	• Territorial aspects of EU Cooperation Programmes; • General limitations and potentials in transnational cooperation; • Intensity of different cooperation;
EATIA	ESPON and Territorial Impact Assessment	2	2/2012 (Draft) 4/2012 (Final)	• TIA Governance; • Administrative and governance frameworks; • Territorial characteristics and typologies
ULYSSES	Using applied research results from ESPON as a yardstick for cross-border spatial development planning	2	2/2012 (Draft) 4/2012 (Final)	• Lessons learnt for policy development; • Strategies for enhanced cross border cooperation;

RISE	Identifying and Exchanging Best Practice in Developing Regional Integrated Strategies in Europe	2	done (Draft) 4/2012	• Regional Integrated Strategies in Europe; • Governance consolidation; • Multi-level governance
BEST METRO-POLISES	Best Development Conditions in European Metropolises: Paris, Berlin, Warsaw	2	3/2012 (Draft) 4/2012 (Final)	• Models of governance; • Social participation in development; • Spatial planning; • Development strategies; • Development trends.
SMART-IST	Smart Institutions for Territorial Developments	2	4/2012 (Draft) 6/2012 (Final)	• Capacity building policies; • Institutional cooperation
TANGO	Territorial Approaches for New Governance	1	6/30/13 (Draft) 11/30/13 (Final)	• Support future territorial development policies; • Analysis of territorial governance; • Relation between spatial planning and territorial governance.
TIGER	Territorial Impact of Globalisation for Europe and its Regions	1	done (Draft) 6/2012	• The impacts of globalisation on Europe (from several point of view); • Territorial policies which can help to improve the position of Europe in the world.
TERCO	European Territorial Cooperation as a Factor of Growth, Jobs and Quality of Life	1	done (Draft) 7/2012	• Insight to the policy relevance of territorial co-operation; • Typology and analysis of territorial co-operation; • Impacts of territorial co-operation; • Territorial co-operation thematic areas.
AMCER	Advanced Monitoring and Coordination of EU R&D Policies at Regional Level	2	7/2012 (Draft) 9/2012 (Final)	• Coordination and impact assessment of a specific policy (R&D).
	Territorial Governance - Best Practices for New Perspectives	1	9/2013	• Supporting policy-makers in a long-term territorial development vision.
ET2050	Territorial Scenarios and Visions for Europe	1	2/2014 (Draft) 6/2014 (Final)	• Territorial development vision for the future.
KITCASP	Key Indicators for Territorial Cohesion and Spatial Planning	2	7/2013	• Usage of ESPON data and researches in national spatial planning strategies and by government.
North Sea STAR	North Sea - spreading Transnational Results	2	7/2013	-
	Territorial Evidence Packs for Structural Funds Programmes	3	12/2013	• Programming process of the 2014-2020 period, territorial evidences.

Source: www.espon.eu (Project presentations und call for proposals)

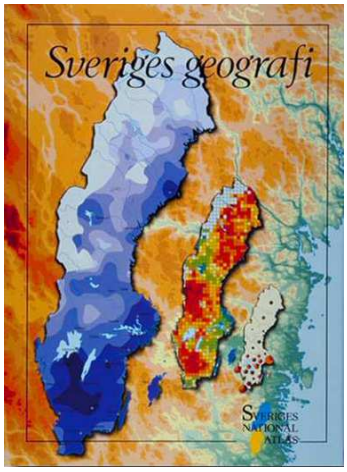
3. Presenting spatial knowledge in maps

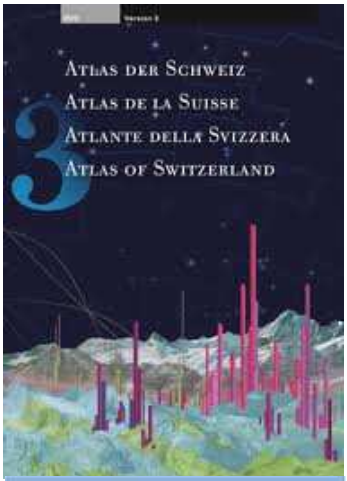
3.1 A short history of atlases and spatial oriented documents



Talking in maps gains more and more importance in communication processes related to territorial phenomena in the geopolitical, the social and economic and last but not least also the environmental dimension. In fact, maps accompany almost every-men's live, the latest maybe starting in school, nowadays perhaps more realistic, starting on the back seat of the parent's car watching the screen of the navigation system.

Related to school, pupils start learning to explore the world in maps beginning in the home region, widening the territorial perspective in the following years up to the global view. This is the time they will get in contact with this book of maps called atlas perhaps for the first time. For many, the first school atlas means the entering point to the unknown world, following Huckleberry Finn down the Mississippi: the atlas will tell the topographic story behind. The times they are changing, but in recent times the atlas is still asked to spot the location of Hogwarts in Harry Potter, somewhere in Scotland following some railway lines.





Unless following more or less the same structure, from the detailed view of the home country, Europe and finally the world view, the diversity of school atlases is based on very specific national traditions and schools of cartographic representation. Generation of pupils grew up with the Atlas Larousse in France, the Philips' Certificate Atlas or the Collins Longmann Atlas in the UK, the De Grote Bosatlas in the Netherlands, the Diercke Schulatlas or the List Schulatlas in Germany, the Österreichische Oberstufenatlas by Ed. Hölzel or the Schweizer Weltaltlas in Switzerland by E. Imhof. These are in many cases distinct national synonyms for atlases and the mental exploration of the world, travelling with the fingertip around the world.

The era of school atlases in Europe started at the end of the 19th century as topographic and shaded relief map compendiums of the physical world, thematically oriented only to climatic explanations and political maps,

putting in many cases special interest in the representation of colonial importance.

This kind of explanation of the world changed in the 1920s. In this time, the school atlases started to develop towards thematic atlases including maps which showed the spatial distributions of very selected territorial structures like population development, raw material deposits and industrial locations, agricultural land use or main crops. First time series of maps showed for example the development of the built environment and the urban sprawl of capital regions or main economic centres like coal mining areas. By this, first cartographic attempts were made to explain the manifestation of human activities in space in maps.

Over the years, the theoretical framework of thematic cartography got more and more solid and in parallel the school atlases developed to the most important thematically oriented cartographic products in a broader everyday context.

High production costs caused by hand crafted techniques in map making limited the production and the use of maps, especially of thematic maps, in print media beyond atlases mainly to scientific publications and the use in planning processes.

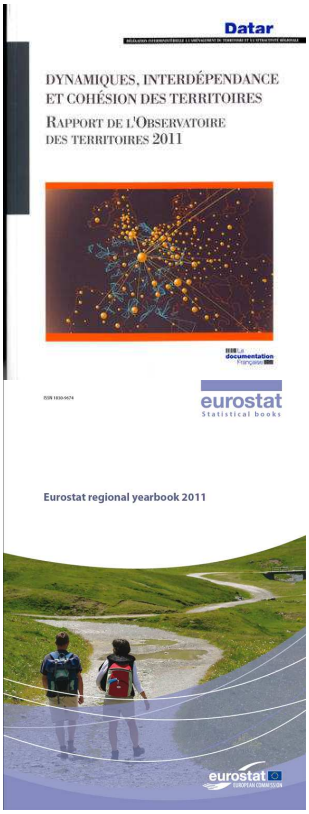
In the national contexts of different countries in Europe and elsewhere in the world comprehensive approaches to regional structures and developments in a broader thematic orientation took mainly place in national atlases. Thematically, these were mostly organised in different volumes, published by national institutions and agencies dealing with questions of territorial development or cartography.

They all suffered, like school atlases and other printed map compilation, from high costs in the layout and map making phase, which exceeded the final printing costs by far. Also common was the problem being up-to-date with the information presented in the beginning of the publishing phase when completing the last volume. In most cases the national atlases remained one time insight view in territorial structures and developments.

In the 1960s and 1970s with the emerging era of comprehensive planning and the planners' thinking that planning of everything might be possible, a new kind of territorial presentation arose: spatial indicator based maps. Whereas the spatial representation of the classical maps in school atlases showed spatial distributions as surface representations of the distribution of values, the maps in planning processes were based more and more on indicators referring to administrative areas in choropleth maps. These kinds of maps were hand made productions as any other map before.

The use of administrative areas paved the way for automation of map-making. Having the areas defined as polygons once, only data and indicators had to be added to make the map. In consequence cartography changed dramatically during the last decades, computer cartography took over map generating almost completely, also in the graphic generation of maps. And finally, geographic information systems developed originally as analytical instrument with only rudimental cartographic options improved theier map-making facilities very much and are used nowadays in many cases for mapmaking only.

The time needed to generate map based knowledge decreased, the production of maps, based mainly on surface representation or regional administrative areas in form of dasymetric or choropleth maps or using proportional symbols increased inversely proportional. The possibilities of computer cartography with user-friendly software puts in many cases and to some extent expert systems in the hands of experienced amateur at the best.



What happens now? The acceleration of the production process, the large number and the variety of spatial information which is now available, has escalated the number of maps and of map producers. Cartographic publishers become less important in their traditional markets and explore new strategies in publishing maps and related product. So did others like newspaper publisher, research institutes, consultancies or universities, looking for possibilities and ways to spread their knowledge in maps to the broader public.

At the same time territorial related analytical reports and spatial policy documents from national and also European institution contained more substance related to territorial information and explanations of territorial structures. Following the philosophy that political recommendations and decisions should be based on analytical evidence and also to satisfy the growing demand for regional information, spatial oriented reports on national level but also on European level have tended to appear more frequently as an atlas-like

representation. Even some statistical offices and also the European Statistical Office took leave of their sheer numbers and statistical tables and started to provide their data, especially their regional data, visualized in map form.

Atlases in whatever form or however named are still the main source for territorial information. Their appearances changed over time and the differences between atlases in their traditional form, especially between the national atlases and spatial planning reports are blurring. The function of classical school atlases continuously exists in the introduction to the world of geography and mapping. That this does obviously not fully satisfies the demand for territorial information is reflected in the emergence of mostly thematically focused atlas publications from publishers and science community side: These atlas formats are developed in a way to reach a broader public. The obvious lively demand for such products forced school atlas publishers to add comparable products to their existing product lines.

The future of national atlases which suffered from long production times and costs with their comprehensive approach is uncertain, at least as print products. The range of cartographic products on offer dealing with spatial structures and developments is getting broader, the thematic diversity increases with the increasing individual interest of distinct groups.

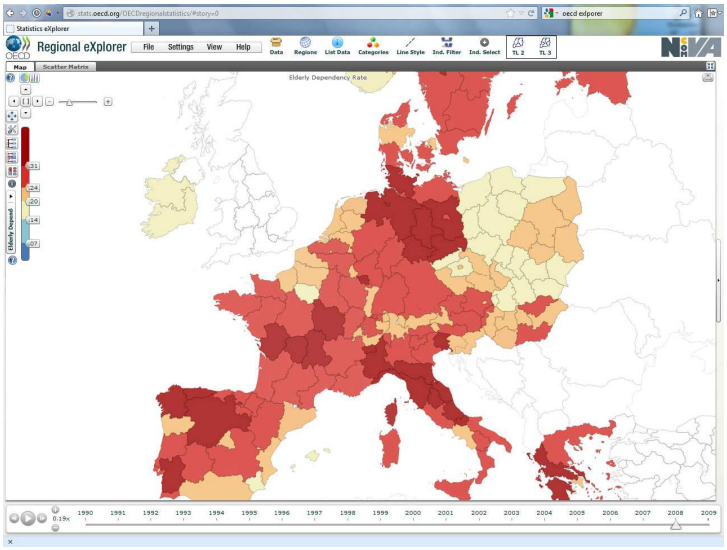
Not to be overlooked in this short atlas review is the ESPON ATLAS 2006 which is the starting point of this new atlas project. The main approach of the first ESPON ATLAS was to combine the spatial knowledge generated in different projects. Related to the cartographic representation in most of the ESPON projects, ESPON was mainly living in a choropleth world. This is not meant pejoratively, this has been the task of the ESPON projects and this has been the way a lot of the atlases mentioned before presented their spatial knowledge as well. It is in some respect the state of the cartographic art, which as such is already difficult enough. The step ahead in cartographic presentation of ESPON results of the ESPON ATLAS 2006 was, to use a broader range of cartographic means and ways of visualisation. This approach will be further elaborated in this edition based on the experiences made previously in ESPON.

3.2 A brief overview on digital atlases

The development of computer technology and in particular of the internet during the last two decades enabled also a new form of presenting spatial information in form of digital atlases, which are mostly available online. The new technology enabled not only the use of a different presentation device, the computer screen instead of paper pages in a book, but offered in addition a couple of enhancements compared to the static paper version. These improvements include among others:

- ***Dynamics.*** Contents of maps must not be static any longer. Animated maps are able to show developments over time or other dynamic aspects.
- ***Interactivity.*** The user is not any longer guided by the atlas authors what to look at in which way. The user usually has a number of options concerning the selection of maps, the selection of map elements or even the combination of indicators and the definition of legend classes and colour schemes.
- ***Pan- and zoom functions.*** The atlas reader is not any longer bound to a pre-given map extent. Part of the interactivity are also functions to zoom-in or out of a map or to move the map on the screen to display areas and their extent as demanded.
- ***Individual map output.*** The atlas user is in many cases not dependent on a pre-defined map output. In many digital atlases it is possible by using the enhancements described above to create and output very individual maps.

Nowadays, there are several national or trans-national digital atlases available. Below are a couple of examples; a more thorough analysis will be given in the Interim Report of the ESPON ATLAS project:

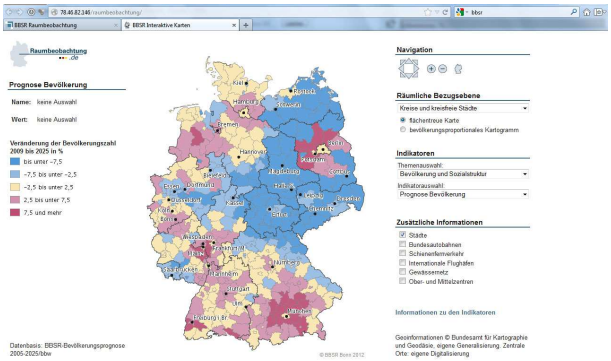


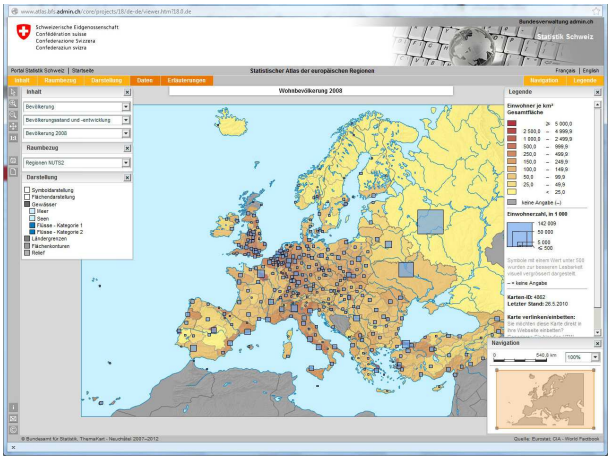
- The OECD put the Regional eXplorer online which allows the interactive analysis of several topics world-wide with maps often at a regional scale and other visual forms of data presentations (http://stats.oecd.org/OECD regionalstatistics/#).

- Another interactive visualisation of world data is provided by StatSilk (http://www.statsilk.com/maps/world-stats-open-data).

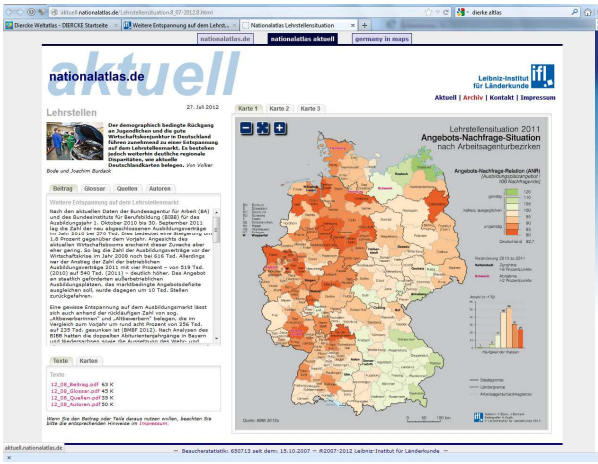
- The Statistical Office of Switzerland provides one example of several European online atlases by presenting data down to the NUTS-2 level for Europe (http://www.atlas.bfs.admin.ch/core/projects/18/de-de/viewer.htm?18.0.de).

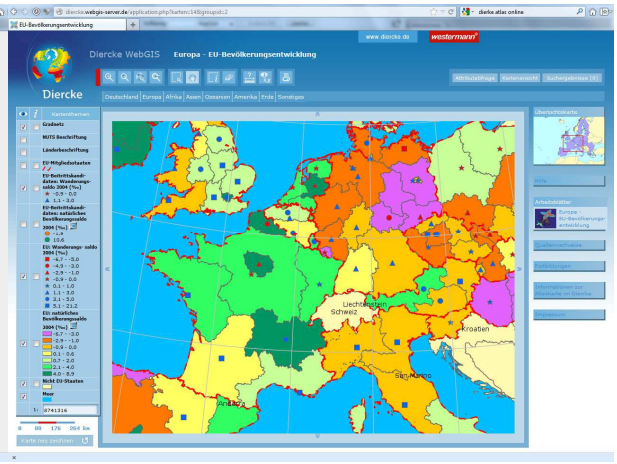
- One example for a digital atlas of a transnational cooperation area is the online atlas of the upper Danube area (http://www.glowa-danube.de/atlas/atlas.php).





- The German Raumbeobachtung.de of the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) is one example of a digital national spatial information system being put online with several interactive element (http://78.46.82.146/ raumbeobachtung/).
- The German National Atlas covering a wide range of spatial topics is also available as a digital version on CD-ROM, part of the information has also been prepared as an online atlas (http://germany-in-maps.de).
- The online version of the Diercke Atlas is one of several examples of putting a traditional school atlas online by covering a wide range of themes and by enabling many interactive interventions of the user (http://diercke.webgis-server.de/application.php?karten=1&groupid=1).





4. Basic cartographic principle of the atlas

To put in brief in the beginning: The proposed overall structure of the ESPON ATLAS is a combination of thematic and territorial orientations on the one hand and a territorial translation of policies on the other hand.

4.1 Map design and ESPON Mapping Guide

The ESPON mapping guide, in fact a short handbook on how to make good maps, outlines what has to be done related to maps in ESPON but also what can be done creatively. The suggestions related to the enhancement of information, how to use maps as communication tool and the improvement of the efficiency of maps are welcome and will be considered in the work of the project.

The list of references of this guide will be used as the starting point for further investigations to evaluate the cartographic possibilities and languages the ESPON ATLAS project has to deal with beyond the more or less single indicator cartographic guidance of this guide. Opportunities and challenges, but also limits in the cartographic representation of synthetic maps showing and combining different territorial aspect in one map will be explored. The ESPON ATLAS 2013 will be based also on the ESPON cartographic language to be renewed in a separate project.

4.2 ESPON ATLAS elements

Thematic and territorial analysis concluded by policy translations

Most maps of the ESPON ATLAS will deal with territorial structures and dynamics in Europe and will cover in a comprehensive way all themes addressed in the analyses of ESPON projects in Priorities 1 and 2. This will give a topic related European picture on the basis of Priority 1 projects and a deeper view with the help of a ‘zoom-in’ on the basis of Priority 2 projects in case being thematically related. A second type of maps of the atlas will focus on a territorial translation of policies taking into account main policy objectives and aims in relation to the European Territorial Development.

The interpretation of the phenomena studied and displayed by maps will be thematically and territorially accurate. Maps will be designed in a highly communicative and understandable way and presented in an appropriate style for policy makers, however, which can also be used for teaching purposes. Maps will be accompanied by selected diagrams and a textual analysis and interpretation linked to key messages and relevant policy observations at different geographical levels and for different types of regions.

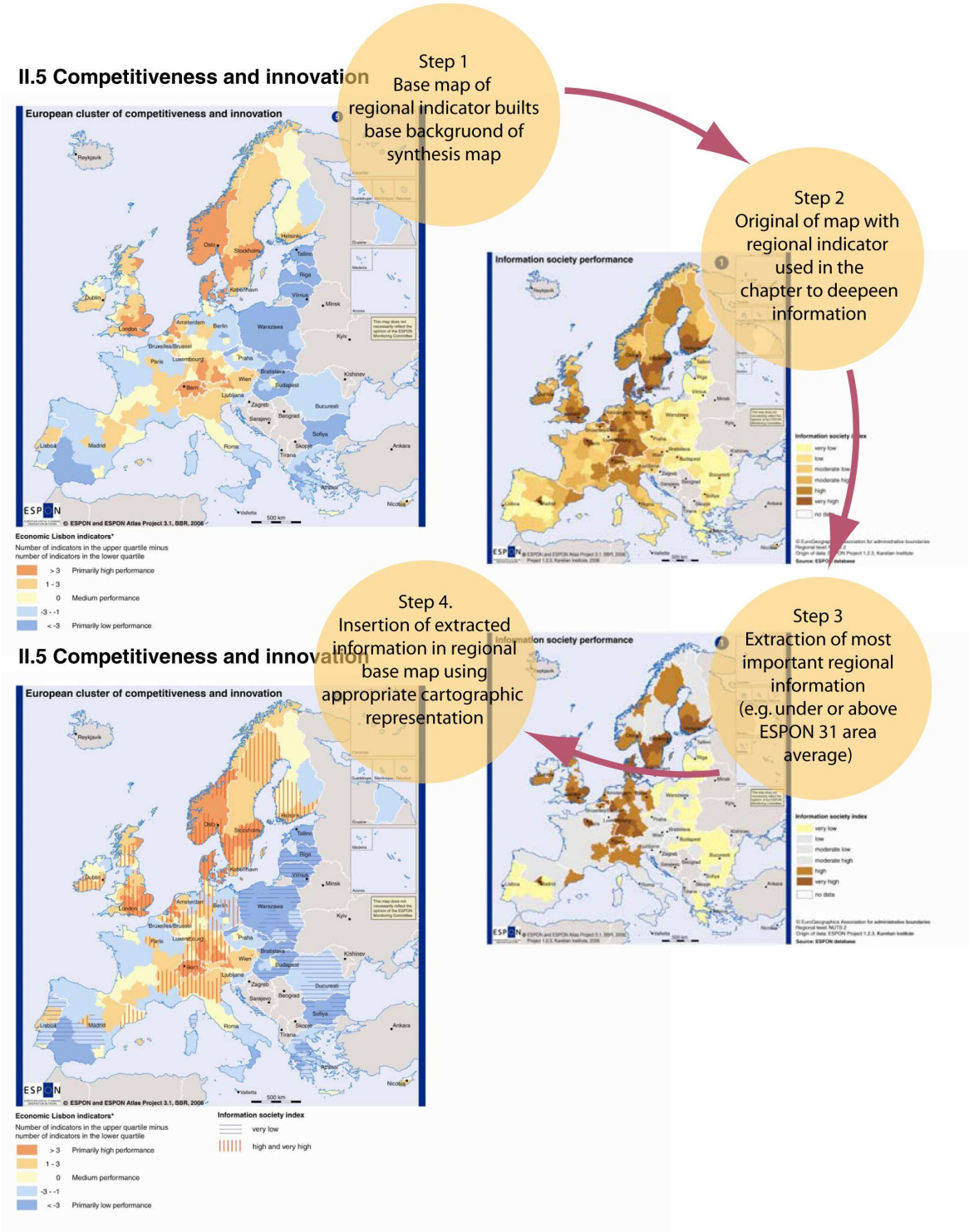
Synoptic mapping - Combining territorial knowledge

The main map of a thematic chapter will be full page, preferably in landscape format in order to better meet further use in presentations. This map type will combine in a didactic manner selected evidence of the chapter, already introduced in the single maps, in combination with important thematic related basic regional information, newly introduced in this map. The information layer will be formed as a choropleth map.

The synoptic cartographic accumulation of regional information will not be done one by one putting simply information of several maps into one. A process of information selection and combination will have to avoid of getting maps too complex. Too complex maps would exceed the individual capacities of visual information processing. Keeping in mind that maps should be easy to read, but also that maps must not completely neglect a certain degree of complexity, a context related selection of information will support the interpretation of the maps.

To do this, the information of the maps already introduced in the chapter will be condensed to the most important regional phenomena. The selection of regional information depends on the related regional sensibility, involvement or thematic classification and could be extracted using area thresholds or averages. To enable the cartographic overlay of information, the representation of these additional aspects will have to change from choropleth mapping towards the use of hachures and symbols, the latter graduated or proportional in case. Figure 1 shows an illustration of this process taken from the ESPON ATLAS 2006.

Figure 1: Synoptic cartographic representation

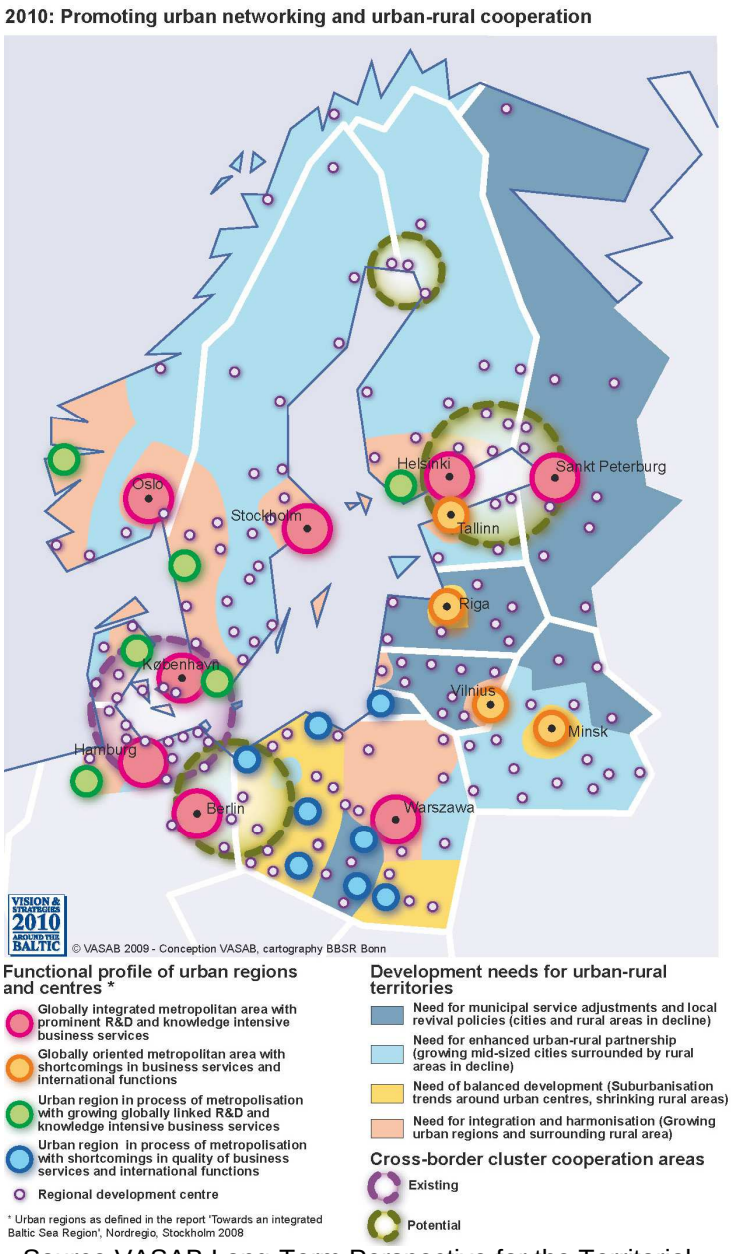


Source: Based on ESPON ATLAS 2006

Territorial translation of policies

The ESPON Programme as one of the most important information sources for Europe-wide comparable territorial analysis is always asked to translate evidence based territorial findings into policy language. Already in the Study Programme on European Spatial Planning (SPESP), the ESPON test phase from 1998 to 2000, a cartographic task force dealt with the elaboration of spatial pictures and the visualisation of European Spatial Policy. Images of the territory were seen to be settled in between the analytical cartographic representation and the visualisation of spatial concepts or spatial visions, something like the cartographic link between the mapping of economic power in the central area of Europe by share of GDP and the 'Blue Banana'.

Figure 2: Sample sketch map for cartographic policy related translations



Source VASAB Long-Term Perspective for the Territorial Development of the Baltic Sea Region

In 2009 the VASAB Committee on Spatial Development published the Long-Term Perspective for the Territorial Development of the Baltic Sea Region (LTP). Based on a Background Synthesis Document, territorial evidence has been cartographically grouped to prepare the single aspects of the perspective in the end. Figure 2 is an example for an policy issue related to functional profiles of cities and the urban rural development needs, both extracted from several maps of the background document.

The ESPON ATLAS will extract and cartographically visualise in a comparable manner fundamental policy oriented territorial knowledge according to the eight main topics of the thematic and territorial orientations outlined before. Like in the VASAB LTP, this will include interpretations of territorial structure and development. It is quite evident, that the amount of information visualised in this way must be restricted to the most important messages.

This highly selective process and the translation in a sketchier spatial picture will bring selected policy discussion ‘on the map’. Therefore discussion within the ESPON community in a circle of people interested, for example at one the coming ESPON seminars will support this process already in an initial phase.

5. First draft table of content of the ESPON ATLAS

Like the former ESPON ATLAS 2006, each topic within a thematic chapter will consist in general of 2 pages with a potential extension of up to 4 pages. Each chapter will include one full page map and some maps and illustrations of smaller size of one or two columns widths. Taking into account around 10 pages for legal notes and introduction at the beginning as well as references and a glossary at the end, the atlas with altogether have around 100 pages. Approximately 90 pages will transport ESPON results and will cover altogether around 40 topics. The atlas will include about 60 key maps in total and text with key messages related to the interpretation of each map and additional topic related illustrations. The territorial structures and dynamics will be represented by about 50 maps, the more policy oriented translation and interpretation will add up to 10 maps.

In this chapter, a first draft of the table of contents of the ESPON ATLAS is presented. The development of the final draft table of content is foreseen for the Interim Report to be delivered in March 2013. In order to take into account the major addressees of the atlas, an intensive thinking and discussion process on the main messages to be transported by the atlas is necessary, both for the thematic and the political orientations. The design of the future structural funds, the political topics related and the need to consider actual discussions and being open and flexible to potentially new upcoming policy developments to put territorial potentials and challenges appropriate in the policy context might let look the formulations of a table of content at this stage of the project in fact premature. The project is actively looking forward to the dialog with the ESPON stakeholders to reflect on this.

The first draft table of content proposed below should be considered a first collection of ideas. It is only roughly sketched at the moment in its main overall structure in the following way. Each of the proposed chapters is accompanied by a headline of potential subchapters and a table of map candidates on the basis of those projects only, which have delivered their final reports and draft final reports already. This means that map candidates of other projects will be added once the (draft) final reports will be available.

Theme 1 Introduction

Chapters:

- Scope of the ATLAS
- Extending territorial knowledge
- Policy relevance

Theme 2: Thematic and Territorial Orientation

Chapter 2.1 Economic Structures and Global Challenges

Subchapters:

- Europe and its regions on the global stage
- Innovative regions vaccinated against crisis

- Aware of the endogenous regional strength in the smart future
- New regional economies new opportunities
- How long to 2020 – Where European regions stand (Policy synopsis)

Table 9 Map candidates - Economic Structures and Global Challenges

Project	Illustration number	Title	Source	Page Number
ReRisk	Map 1	Regional GVA in industries with High Energy costs, 2005	FR	30
ReRisk	Map 5	Disposable Income in Households in the EU Regions (NUTS II, 2005, in pps)	FR	39
ReRisk	Map 15	Percentage of Employment in Industries with High Energy Purchases in the EU Regions (NUTS II, 2005)	FR	202
CAEE	Figure 1	Gross Value Added, 2006	FR	24
CAEE	Figure 2	Absolute Change in Gross Value Added, 1996 to 2006	FR	25
Typology Compilation		Regions in Industrial Transition	FR	
Map Updates Lisbon Strategy Performance	Map 2	R&D Expenditure as percentage of GDP, 2006	Territorial Observation No3	8
Map Updates Lisbon Strategy Performance	Map 3	Composite Economic Lisbon Performance, 2006	Territorial Observation No3	11
Map Updates Lisbon Strategy Performance	Map 4	Change in Composite Economic Lisbon Performance 2000-2006	Territorial Observation No3	12
INTERCO	Figure 35	Indicator-Intramural R&D expenditures	DFR	35
KIT	Map 1.4.1.	Product innovation only	DFR	11
KIT	Map 1.4.2.	Process innovation only	DFR	11
KIT	Map 1.4.3.	Marketing and/or organisational innovation	DFR	11
KIT	Map 1.1.1.	Technology-advanced regions in Europe (2007)	DFR	4
KIT	Map 1.1.2.	Scientific regions in Europe	DFR	4
TIGER	Figure 13	Regions of the world according to the importance they have for Europe and the nature of their links	DFR	31

TIGER	Figure 19	Typology of regions according to their specialisation and competitiveness in the trade of goods	DFR	44
TIGER	Figure 30	Typology of European gateways	DFR	79
TIGER	Figure 29	Vulnerability of European territories in the global economy	DFR	78
TIGER	Figure 13	Disparities in Term of GDP per inhabitant in NAFTA, ESPON and ASEAN3	DFSR	22
TIGER	Figure 19	The geography of trade of European regions/nations, 2007-2009	DFSR	30
TIGER	Figure 20 a to d	The three first components and the typology of the geography of regional trade	DFSR	32

Chapter 2.2 Society and Integration

Subchapters:

- Bridging generations – The younger and the elder
- Demographic change – Organising the regional balance of losses and growth
- Education and labour skills preparing the regional ground
- Balanced societies – reducing poverty and foster integration
- Social cohesion – Anchor points of integration (policy synopsis)

Table 10 Map candidates - Society and Integration

Project	Illustration number	Title	Source	Page Number
DEMIFER	Map 3	Typology of the demographic status in 2005	FR	10
DEMIFER	Map 7	LFS Typology of the Demographic Status	DFR Annex D3	59
DEMIFER	Map 2	Annual change in working age population 2000-2007 (%)	FR	8
DEMIFER	Map 1	Net migration by components, 2000-2007	FR	6
TIGER	Map 6	Typology of the Population Development 2001-2005	DFR Annex 3	33
DEMIFER	Map A4.05	Foreign Population in 2007	FR Annex D3	131
DEMIFER	Map A4.06	Foreign Population from EU27 Countries in 2007	FR Annex D3	132
DEMIFER	Map A4.07	Foreign Population from NON-EU Countries in 2007	FR Annex D3	133
DEMIFER		Population Change 2005-2050, STQ Scenario	FR Annex D11 Atlas	9
DEMIFER		Cluster Analysis of Demographic Growth	FR Annex D11 Atlas	145
DEMIFER		Change in Child Ages 0-14 in 2005-2050, STQ Scenario	FR Annex D11 Atlas	77
DEMIFER		Change in Working Age 15-64 in 2005-2050, STQ Scenario	FR Annex D11 Atlas	85
DEMIFER		Change in Older Ages 65+n 2005-2050, STQ Scenario	FR Annex D11 Atlas	92
SEMIGRA	Map 1	Regional youth unemployment rate relative to the national mean 2010	DFR Annex 1	21

SEMIGRA	Map 13	Typology of regional sex ratio structures	DFR Annex 1	53
SEMIGRA	Map 14	Average regional household income in purchasing power parities relative to the national mean, 2008	DFR Annex 1	57

Chapter 2.3 Connections and Linkages of the Territory

Subchapters

- Global integration - the linkages of regions
- Centre and periphery revisited - the European accessibility of regions
- Mobility demand for daily life - local and regional accessibility patterns
- Territorial impacts of transport policy - regions between competitiveness, cohesion and sustainability
- Policy synopsis t.b.d.

Table 11 Map candidates – Connection and linkages of the territory

Project	Illustration number	Title	Source	Page Number
TIPTAP	Map 5.2.1.1	Territorial impacts of Transport policy - economic growth	FR	94
TIPTAP	Map 5.2.1.10	Territorial impacts of Transport policy - landscape fragmentation	FR	107
TIPTAP	Map 5.2.2.1	Territorial impacts of Transport policy - territorial efficiency	FR	112
TIPTAP	Map 5.2.2.2	Territorial impacts of Transport policy - summative impacts	FR	114

Chapter 2.4 Climate and Environment

Subchapters:

- Land use change - ever lasting pressure on regional resources
- Climate change - regions between exposure and response capacity
- Greening of the economy - new regional potentials
- Policy synopsis t.b.d.

Table 12 Map candidates – Climate and Environment

Project	Illustration number	Title	Source	Page Number
CLIMATE	Map1	Change in annual mean temperature	FR	21
CLIMATE	Map 9	Change in regional exposure to coastal storm surge events	FR	29
CLIMATE	Map 10	Change in regional exposure to river flooding	FR	30
CLIMATE	Map 39	Aggregate impact of climate change on Europe's regions	FR	108

CLIMATE	Map 48	Overall capacity to adapt to climate change	FR	137
CLIMATE	Map 49	Potential vulnerability to climate change	FR	147
CLIMATE	Map 58	capacity and GHG emissions of European regions	FR	171
CLIMATE	Map 59	Response capacity of European regions		176
EU-LUPA	Map 3	Regional typology of the prevailing characteristics of land use	DFR	43
EU-LUPA	Map 5	Regions with cumulative land cover change that is above the European Average 2000-2006	DFR	61
EU-LUPA	Map 8	Land use intensity change 1990-2006	DFR	69
EU-LUPA	Map 11	Hotspots of land change 2000-2006	DFR	73
EU-LUPA	Map 14	Land use change typology 2000-2006	DFR	84
EU-LUPA	Map 17	Amount of land change per region 2000-2006	DFR	91

Chapter 2.5 Rural Areas and Changing Landscapes

Subchapters:

- Unique characteristics and vulnerability of rural territories
- The main challenges of changing landscapes in Europe
- Integrated governance and planning process of urban-rural interdependence
- Challenges of peripheral and sparsely populated rural areas
- Development potentials of primarily agricultural rural areas
- Policy synopsis t.b.d.

Table 13 Map candidates – Rural Areas and Changing Landscapes

Project	Illustration number	Title	Source	Page Number
EDORA	Map 1	The Dijkstra-Poelman Urban-Rural Typology	FR (Part A and B)	17
EDORA	Map 2	Structural Typology	FR (Part A and B)	19
EDORA	Map 3	Performance typology	FR (Part A and B)	20
EDORA	Map 1	Agrarian rural economy indicators	FR (Part C)	752
EDORA	Map 2	Consumption Countryside Indicators	FR (Part C)	753
EDORA	Map 3	The Secondary to Market Services Ratio (GVA)	FR (Part C)	754
GEOSPECS	Map 2	Time distances to the nearest urban core area	DFSR	37

GEOSPECS	Map 12	Degree of urbanisation and sparsely populated and poorly connected LAU2	DFSR	86
EU-LUPA	Figure 4	Prevailing characteristics of land use in Europe (1990□2006)	DFR	29
EU-LUPA	Figure 6	Land use change typologies (1990-2006)	DFR	34
EU-LUPA	Map 1	Grid typology for the Prevailing characteristics of land use (1990-2006)	DFSR	36
EU-LUPA	Annex 5, indicator 3	Harvested agricultural areas (2006)	DFSR (Chapter 2)	84
EU-LUPA	Annex 5, indicator 7	Gross value added at basic prices - agriculture and fisheries (2006)	DFSR (Chapter 2)	90

Chapter 2.6 Cities, Urban Regions

Subchapters:

- European poles of global integration
- Metropolitan regions in Europe - Future orientation of growth
- European network of cities – safeguarding territorial potentials
- Small and medium-sized cities – Strong points in the rural areas
- Urban Europe – Development and potentials (policy synopsis)

Table 14 Map candidates – Cities, Urban Regions

Project	Illustration number	Title	Source	Page Number
Typology Compilation		Urban-Rural-Typology	FR	
Typology Compilation		Metropolitan Regions	FR	
FOCI	Figure 1	Typology of intra-urban dynamics in European LUZ, in the years 2000	FR	26
FOCI	Figure 2	Typologies of urban development (1990-2000)	FR	28
FOCI	Figure 3	Districts inequalities in European cities	FR	34
FOCI	Figure 4	A typology of European cities in term of sectoral structure 2006	FR	36
FOCI	Figure 9	Population dynamics in core and peripheral European cities, first half of the year 2000	FSR	64
FOCI	Figure 1	Unemployment rate by LUZ in 2007	FSR	79
FOCI	Figure 1	GDP per inhabitant in 2005	FSR	107
FOCI		Typology of macroregions-population change (2000-2005)	FSR	266
FOCI	Figure 10	Demographic situation in metropolis-region context (2000-2005)	FSR	268
FOCI	Figure 19	Classification of metropolitan areas-map	FSR	308
POLYCE	Figure 36	POLYCE ranking of 50 MEGA in Europe including 5 POLYCE metropolises by key	FSR	73

		policy development characteristics		
SGPTD	Map 3	Net Migration Rate 2007	DFSR	22
SGPTD	Map 6	Capital and Second tier cities-GDP per capita in PPS, 2007	DFSR	38
SGPTD	Map 7	Capital and Second tier cities-GDP in PPS per person employed, 2007	DFSR	42
SGPTD	Map 11	Unemployment rates 2009 in European Metro-Regions	DFSR	69

Chapter 2.7 Cohesion and Territorial Integration

Subchapters:

- Smart, sustainable and inclusive growth – achieving territorial cohesion
- Growing interdependence of regions as a key challenge of EU integration
- Integrated development of territories
- Territorial diversity - potentials for strengthening cohesion
- Territory's connectivity
- Policy synopsis t.b.d.

Table 15 Map candidates – Cities, Urban Regions

Project	Illustration number	Title	Source	Page Number
TeDi	Map 10	Sparsely populated NUTS 3 regions overlaid with population potentials within a 50 km radius	FR	129
TeDi	Map 12	Access to large urban cores	FR	134
TeDi	Map 39	Accessibility vs economic performance	FR	207
INTERCO	Figure 43	Accessibility potential by road	DFSR	48
INTERCO	Figure 46	Accessibility potential by rail	DFSR	51
INTERCO	Figure 49	Accessibility potential by air	DFSR	54
INTERCO	Figure 84	Unemployment rate % 2007 classes and GDP 2007 classes per NUTS-2 regions of the ESPON space	DFSR	107
ATTREG	Figure 8	Regional typology by mobility of age cohorts, 2001□07	DFR	42
ATTREG	Figure 9	Regional typology by endowments of territorial capital	DFR	46
TERCO	Map A12	INTERREG B and C (III and IV) Partners per 100,000 population	DFR-MR	73
SS-LR	Map 3.2.1.	Annual average regional GDP growth rates in the Reference scenario	DFR	26
ReRISK	Map 5.	Disparities in Household Incomes in the EU Regions (in pps)	FR	39
ReRISK	Map 20	Percentage of Workers Commuting to Another Region (NUTS II,2005)	FR	209

TIPTAP	Map 5.2.1.1.	Territorial impact of Transport Policy - Economic growth	FSR	94
TIPTAP	Map 5.2.1.2.	Territorial impact of Transport Policy - Regional integration	FSR	96
TIPTAP	Map 5.2.1.10.	Territorial impact of Transport Policy - Landscape fragmentation	FSR	107

Chapter 2.8 Governance, Territorial Cooperation and EU Policies

Subchapters:

- Integrated governance and planning
- Multi-level governance - managing functional territories and ensuring balanced coordination
- Policy contribution to economic, social and territorial cohesion
- Territorial dimensions of different policies
- Territorial cooperation towards the long term objectives of territorial cohesion
- Policy synopsis t.b.d.

Table 16 Map candidates – Governance, Territorial Cooperation and EU Policies

Project	Illustration number	Title	Source	Page Number
TIPTAP	Map 2.2.1	Territorial impact of CAP 90 policy - Economic Growth	FR	16
TIPTAP	Map 2.2.2	Territorial impact of CAP policy - Tourism dissemination	FR	17
TIPTAP	Map 2.2.3	Territorial impact of CAP policy - Environmental quality	FR	18
TIPTAP	Map 2.2.4	Territorial impact of CAP policy - Risk of Soil Erosion	FR	19
TIPTAP	Map 2.2.5	Territorial impact of CAP policy - Territorial Efficiency	FR	23
TIPTAP	Map 2.3.1	Territorial impact of Transport Policy - Economic Growth	FR	36
TIPTAP	Map 2.3.2	Territorial impact of Transport Policy - Congestion costs	FR	37
TIPTAP	Map 2.3.3	Territorial impact of Transport Policy - Market Opportunities	FR	39
TIPTAP	Map 2.3.4	Territorial impact of Transport Policy - Landscape Fragmentation	FR	40
TIPTAP	Map 2.3.5	Territorial impact of Transport Policy - Territorial Efficiency	FR	42
TIPTAP	Map 2.3.8	The Flag model: warnings about emissions in the baseline scenario (a)	FR	50
ARTS	Map B 8	Territorial Impact of Directive 5 (branch b) on economic growth (GDP/capita)	DFR	59
ARTS	Map B 12	Territorial Impact of Directive 11 (branch b) on economic growth (GDP/capita)	DFR	71

ARTS	Map C 1	Territorial Impact of Directive 1 on economic growth (GDP/capita)	DFSR	108
ARTS	Map C 6	Territorial Impact of Directive 3 on disposable income in PPS/capita	DFSR	120
TIGER	Figure 17	Openness to extra-ESPON and neighbourhood trade of European regions, average 2007-2009	DFR	41
TIGER	Figure 20	Relocation of clothing industry within the Euro-Mediterranean Space, 1968 – 2008	DFR	46
TIGER	Figure 23	Relocation of the automotive industry within the Euro-Mediterranean Space, 1968 - 2008	DFR	51
TIGER	Figure 26	Weight and share of ESPON-related flows at external ports in 2004 (all commodities)	DFR	61
TIGER	Map 7	Trade agreements of European Union (2011)	DFSR WP18	14
TERCO	Map 1	Intensity of Twinning Cities co-operation at NUTS2 level	DFR	11
TERCO	Map 2	Twinning City agreements per 1 million EUR GDP	DFR	11
TERCO	Map 5	INTERREG C III and IV partners	DFR	14
TERCO	Map 6	INTERREG C III and IV lead partners	DFR	14
TERCO	Map 7	Number of partners in INTERREG IIIB	DFR	15
TERCO	Map 8	Number of partners in INTERREG IVB	DFR	15
TERCO	Map 11	Typology of regions based on territorial co-operation determinants	DFR	21
TERCO	Map A12	INTERREG B and C (III and IV) Partners per 100,000 population	DFR	73

Chapter 3 Future territorial perspectives

The thematic orientation of this chapter depends to a great extent on the results of the ET2050 project. The findings related to the future oriented and integrated scenarios and their implication to cohesion and their territorial dimensions will sketch the subchapters. To which extent future oriented results from other projects will be integrated is part of further investigations.

Annex

This part will list contributions and references, as well as a glossary. To which extent it could be used to transport additional information related to basic territorial representation and question of visualisation has to be approached in the future steps of the project

6. Project planning

This chapter describes general and specific project planning aspects of the ESPON ATLAS project. It commences with the presentation of the work plan in terms of different tasks to be implemented, followed by a presentation of the overall project timetable and the deliveries. The next steps towards the Interim Delivery in spring 2013 are described in more detail. The section closes with an assessment of potential risks for project implementation.

6.1 Work plan

The ESPON ATLAS project structure follows the ESPON standard by devoting WP 1 to coordination, WP 2 to the content related activities and WP 3 to dissemination. WP 2 is further subdivided into single tasks and subtasks which are outlined below

Task 1: Table of contents of the ESPON ATLAS (**LP**, PP2, PP3)
The demand for the ESPON ATLAS is to include the multitude of ESPON themes and results and displaying information on territorial structures, trends, perspectives and policy impacts in a comprehensive manner. To do so, the thematic and territorial relevance, the ESPON Priority 1 and 2 Projects and selected Priority 3 will be investigated both in individual contribution and in synoptic supplementation and combination taking into account the main policy objectives and aims in relation to European Territorial Development. The relation of ESPON projects and policy fields as presented in Section 2 and 3 of this proposal is being translated into the table of content. A first outline of the table of content is included in this Inception Report in Section 6.

Task 2: Screenplay of the ESPON ATLAS (LP, PP2, PP3)
The table of content of the ESPON ATLAS will be further elaborated to the ESPON ATLAS ‘screenplay’ or sketchbook. This is a fine-tuned structure of the atlas based on a selection of key maps and their interpretations from – ideally all - ESPON projects. In this task, decisions will have to be made on how to deal with the ESPON projects' results in the atlas. As well, options of combining results of different projects in single atlas maps will be explored. The task will also deal with the question to which amount and in which way new maps have to be produced.

Task 3 Thematic chapters
This task will provide the analytical content of the ESPON ATLAS covering structures and territorial developments in Europe. The task is subdivided into eight subtasks of which each is devoted to one of the themes selected (see Section 3 for a description of the themes). Each subtask includes the selection of information and key maps for each theme, the comprehensive interpretation of the findings and eventually the development of the respective chapter of the ESPON ATLAS. The following subtasks reflect the thematic orientation of the atlas,:

- **Subtask 3.1. Economic structures and global challenges** (**LP**, PP2, PP3)
- **Subtask 3.2. Society and integration (LP)**
- **Subtask 3.3. Connections and linkages of the territory (PP2)**
- **Subtask 3.4. Climate and Environment (PP2)**
- **Subtask 3.5. Rural areas and changing landscapes (PP3)**
- **Subtask 3.6. Cities, urban regions (LP)**
- **Subtask 3.7. Cohesion and territorial integration (PP3)**
- **Subtask 3.8. Governance, Territorial cooperation and EU policies (PP3)**

Task 4: Policy oriented spatial aggregation and interpretation (**LP**, PP2, PP3)
This task will provide a more policy orientated 'new interpretation' of ESPON findings on the basis of the key maps selected in Task 3. This information will be mirrored with the main policy priorities of the eight topics chosen. To do this on a sound base, a workshop with the ESPON MC attached to the next ESPON Seminar in Cyprus will open the discussion on main policy questions and the analytical basis to be used. Preparatory work of the project in form of visual interpretation of a few selected territorial aspects and the didactic explanation of the elements of the derivation of the content will stimulate the discussion. The résumé of the workshop and the ideas for territorial investigations articulated will lead to the final definition of the content of cartographic translation efforts and the elements to be considered in the maps related to the main topics of the first part of the ESPON ATLAS.

Task 5: Production of maps and illustrations (**LP**, PP2, PP3)
The ESPON ATLAS has to appear as one unique publication on the base of the ESPON layout and publication style and the ESPON cartographic language to be renewed in a separate project. To enable this all maps selected from ESPON projects and all maps newly developed have to be produced in a common style for the atlas. This task enfolds the technical production of all maps and other types of illustrations for the ESPON ATLAS by using the related project data or data of from the ESPON database.

Task 6: Draft lay-out and editing (**LP**)
The ESPON ATLAS project is expected to produce the final version of the atlas ready for lay-out and printing. In order to provide text volumes and graphical elements as close as possible to the final lay-out, in this task the atlas will be put into the draft lay-out by using desktop publishing software to avoid the need to provide additional text and graphics later on or to skip text and diagrams. Before the ESPON ATLAS will be delivered for final lay-out and publishing, it will undergo a language editing by a native English speaker.

Task 7: The interactive version
Task 7 will transfer the paper version of the ESPON ATLAS into a digital version that provides interactive functionality for the users. The Task will consist of three Subtasks.

- **Subtask 7.1 Concept and Design (PP2)**
  The first Subtask is the definition phase of the interactive ESPON ATLAS. It commenced already with a screening of available digital atlases in order to collect examples for legibility, usability and functionality as potential inspiration for the digital ESPON ATLAS (see Section 3.2 for a brief overview of digital atlases). In this Subtask, the basic concept and structure of the digital atlas will be developed. This functional specification includes the definition of the different hierarchical levels of the navigation within the atlas and the interlinkages between different levels and parts of the digital atlas. For each level of the hierarchy of the digital atlas, the options in terms of contents, in terms of possible downloads and in terms of navigation to other parts of the atlas will be defined. In this Subtask also the basic graphical language of the digital ESPON ATLAS will be developed closely based on the print version. Another part of this Subtask is to clarify the way of integration of the digital ESPON ATLAS into the ESPON webpage. The Subtask will be done in close cooperation with the ESPON CU and, if demanded, also in cooperation with the ESPON MC.

- **Subtask 7.2 Prototype (PP2)**
  The concept and definitions of Task 7.1 will be first implemented in an offline prototype of the digital ESPON ATLAS. The prototype includes the design and graphical language defined the main opening screen and a sample with contents. This sample will transfer the contents of the exemplary 5-10 pages of the paper version to the prototype. The prototype of the digital version will be available for the Interim Delivery of the project to be scheduled for March 2013. Besides an assessment of the design and graphical language of the prototype, a usability test of the prototype by the ESPON CU, the ESPON MC and other volunteers from the ESPON family will be performed to draw lessons for the final version.

- **Task 7.3 Implementation of interactive ESPON ATLAS (PP2)**
  The final Subtask of Task 7 is the implementation of the interactive ESPON ATLAS. Based on the concept and design subtask and the prototype and the reactions received to these the draft final version will be developed. The draft final version of the digital atlas will be available with the Draft Final Report. Based on comments on this draft, the final version will be included as part of the Final Report to be published online after acceptance.

6.2 Data situation and territorial coverage

The production of the ESPON ATLAS strongly depends on the provision of information from the ESPON projects. As a first quick scan of already existing information of the final and draft final reports already delivered shows that many of the themes foreseen are already covered to some extent.

The terms of delivery of ESPON project results, especially of maps, to the ESPON CU in form of graphic files is seen in general as a solid base for the needs of the ESPON ATLAS in the phase of map production. The ESPON database will play an important role related to the support in respect to specific requests of data and will be the main source for the production of maps if no adequate graphic files exist.

One crucial point for the production of the atlas is the territorial coverage of the maps and data of the ESPON projects. In many cases the maps cover the ESPON territory, i.e. EU 27, Switzerland, Liechtenstein, Norway and Iceland. However, the scan of the first group of map candidates nevertheless showed that not all maps do fully cover the ESPON countries. Altogether 59 maps from the132 map candidates selected at the very moment showed missing territorial information related to the ESPON countries.

Table 17 Map candidates with missing information on ESPON territory

Project	Illustration number	Title	ESPON coverage
ReRisk	Map 1	Regional GVA in industries with High Energy costs, 2005	except CH, NO, IS, UK
ReRisk	Map 5	Disposable Income in Households in the EU Regions (NUTS II, 2005, in pps)	except CH, NO, IS, CY
ReRisk	Map 15	Percentage of Employment in Industries with High Energy Purchases in the EU Regions (NUTS II, 2005)	except CH, IS, DK, SI, North Eastern Scotland, Highlands
CAEE	Figure 1	Gross Value Added, 2006	except CH, NO, IS, CY, PL, Sachsen-Anhalt, Sardinien
CAEE	Figure 2	Absolute Change in Gross Value Added, 1996 to 2006	except CH, NO, IS, CY, PL, Sardinien
Map Updates Lisbon Strategy Performance	Map 2	R&D Expenditure as percentage of GDP, 2006	except Niederbayern, Oberpfalz
INTERCO	Figure 35	Indicator-Intramural R&D expenditures	except IS, CH, NO, BE
DEMIFER	Map A4.05	Foreign Population in 2007	except IS, CH
DEMIFER	Map A4.06	Foreign Population from EU27 Countries in 2007	except IS, CH
DEMIFER	Map A4.07	Foreign Population from NON-EU Countries in 2007	except IS, CH
SEMIGRA	Map 14	Average regional household income in purchasing power parities relative to the national mean, 2008	except IS, CH,NO, CY, EE, LT, LV
SGPTD	Map 3	Net Migration Rate 2007	except IS, CH, NO, UK, CY

SGPTD	Map 6	Capital and Second tier cities-GDP per capita in PPS, 2007	except IS, CH
SGPTD	Map 7	Capital and Second tier cities-GDP in PPS per person employed, 2007	except IS, CH, NO, UK
SGPTD	Map 11	Unemployment rates 2009 in European Metro-Regions	except IS, CH
CLIMATE	Map1	Change in annual mean temperature	except IS
CLIMATE	Map 10	Change in regional exposure to river flooding	except IS
CLIMATE	Map 39	Aggregate impact of climate change on Europe's regions	except CH, IS
CLIMATE	Map 48	Overall capacity to adapt to climate change	except CH, IS
CLIMATE	Map 49	Potential vulnerability to climate change	except CH, CY, IS
CLIMATE	Map 58	capacity and GHG emissions of European regions	except CH, CY, IS, NO
CLIMATE	Map 59	Response capacity of European regions	except CH, CY, IS, NO
EU-LUPA	Map 3	Regional typology of the prevailing characteristics of land use	except IC, NO
EU-LUPA	Map 5	Regions with cumulative land cover change that is above the European Average 2000-2006	except GR
EU-LUPA	Map 8	Land use intensity change 1990-2006	except GR
EU-LUPA	Map 11	Hotspots of land change 2000-2006	except GR
EU-LUPA	Map 14	Land use change typology 2000-2006	except GR
EU-LUPA	Map 17	Amount of land change per region 2000-2006	except GR
EDORA	Map 1	The Dijkstra-Poelman Urban-Rural Typology	except IS
EDORA	Map 2	Structural Typology	except IS
EDORA	Map 3	Performance typology	except IS
EDORA	Map 1	Agrarian rural economy indicators	except IS
EDORA	Map 2	Consumption Countryside Indicators	except IS
EDORA	Map 3	The Secondary to Market Services Ratio (GVA)	except IS
GEOSPECS	Map 2	Time distances to the nearest urban core area	except IS
EU-LUPA	Figure 6	Land use change typologies (1990-2006)	except IS, NO, FI, SE
EU-LUPA	Annex 5, indicator 3	Harvested agricultural areas (2006)	except IS, NO, CH, LI
EU-LUPA	Annex 5, indicator 7	Gross value added at basic prices - agriculture and fisheries (2006)	except IS, NO, CH, LI
TeDi	Map 10	Sparsely populated NUTS 3 regions overlaid with population potentials within a 50 km radius	except IS, EST, LV, LT
TeDi	Map 12	Access to large urban cores	except CY, outermost regions
TeDi	Map 39	Accessibility vs economic performance	except IS
INTERCO	Figure 84	Unemployment rate % 2007 classes and GDP 2007 classes per NUTS-2 regions of the ESPON space	except NO, IS, CH
ATTREG	Figure 9	Regional typology by endowments of territorial capital	except LV, LT
SS-LR	Map 3.2.1.	Annual average regional GDP growth rates in the Reference scenario	except IS, NO, CH

ReRISK	Map 5.	Disparities in Household Incomes in the EU Regions (in pps)	except IS, NO, CH
ReRISK	Map 20	Percentage of Workers Commuting to Another Region (NUTS II,2005)	except IS, NO, CH, Northern Scotland, SL, EST, LV, LT,
TIPTAP	Map 2.2.1	Territorial impact of CAP policy - Economic Growth	except IS, NO, CH, LI
TIPTAP	Map 2.2.2	Territorial impact of CAP policy - Tourism dissemination	except IS, NO, CH, LI
TIPTAP	Map 2.2.3	Territorial impact of CAP policy - Environmental quality	except IS, NO, CH, LI, RO, BG
TIPTAP	Map 2.2.4	Territorial impact of CAP policy - Risk of Soil Erosion	except IS, NO, CH, LI, RO, BG, FI, SE
TIPTAP	Map 2.2.5	Territorial impact of CAP policy - Territorial Efficiency	except IS, NO, CH, LI
TIPTAP	Map 2.3.8	The Flag model: warnings about emissions in the baseline scenario (a)	except IS
ARTS	Map B 12	Territorial Impact of Directive 11 (branch b) on economic growth (GDP/capita)	except DK, SI, LT, LT, EE
ARTS	Map C 6	Territorial Impact of Directive 3 on disposable income in PPS/capita	except CH, NO

The coverage of candidate countries and other countries of the Western Balkan area turned out to be rather poor. The coverage of those countries in ESPON results is in most cases not satisfactory. Only 23 of the 132 map candidates considered have included territorial information for these countries and only 10 of the map candidates covered the territories of all countries.

Table 18 Map candidates including information on candidate countries and Western Balkan

Project	Illustration number	Titel	Candidate Countries	Western Balkan
DEMIFER	Map 2	Annual change in working age population 2000-2007 (%)	yes	yes
DEMIFER	Map 1	Net migration by components, 2000-2007	yes	yes
TIGER	Map 6	Typology of the Population Development 2001-2005	yes	yes
SEMIGRA	Map 13	Typology of regional sex ratio structures	yes	yes
EU-LUPA	Map 3	Regional typology of the prevailing characteristics of land use	yes	yes
EU-LUPA	Map 5	Regions with cumulative land cover change that is above the European Average 2000-2006	yes	yes
EU-LUPA	Map 8	Land use intensity change 1990-2006	yes	yes
EU-LUPA	Map 11	Hotspots of land change 2000-2006	yes	yes
EU-LUPA	Map 14	Land use change typology 2000-2006	yes	yes

EU-LUPA	Map 17	Amount of land change per region 2000-2006	yes	yes
EDORA	Map 2	Structural Typology	TR	no
EDORA	Map 3	Performance typology	TR	no
EDORA	Map 1	Agrarian rural economy indicators	TR	no
EDORA	Map 2	Consumption Countryside Indicators	TR	no
EDORA	Map 3	The Secondary to Market Services Ratio (GVA)	TR	no
GEOSPECS	Map 12	Degree of urbanisation and sparsely populated and poorly connected LAU2	TR, HR	BA
EU-LUPA	Figure 4	Prevailing characteristics of land use in Europe (1990□2006)	TR, HR	BA, MK, CS, AL
EU-LUPA	Figure 6	Land use change typologies (1990-2006)	HR	CS
EU-LUPA	Map 1	Grid typology for the Prevailing characteristics of land use (1990-2006)	TR, HR	BA, MK, CS, AL
ATTREG	Figure 8	Regional typology by mobility of age cohorts, 2001□07	HR	no
ATTREG	Figure 9	Regional typology by endowments of territorial capital	TR	no
TIGER	Figure 20	Relocation of clothing industry within the Euro-Mediterranean Space, 1968 – 2008	TR, HR	BA, MK, CS, AL
TIGER	Figure 23	Relocation of the automotive industry within the Euro-Mediterranean Space, 1968 - 2008	TR, HR	BA, MK, CS, AL

The question how to deal with this lack of territorial information is crucial for the value of the ESPON results and especially for the ESPON ATLAS. In some cases the use of alternative ESPON results will be investigated in more detail. The ESPON database will be checked also in this respect. A completion of missing territorial information is not subject of the ESPON ATLAS project, given the available resources and knowing that the specific knowledge on data can hardly go beyond the expertise of the thematic projects.

6.3 Dialogue with stakeholders

The further development of the table of content and the storyboard of the ESPON ATLAS is planned to happen closely linked to the current political debate about territorial development policies. This requires to find a balanced way between the necessary delivery of detailed information on the progress of the atlas and the need to be flexible at the same time to allow for interventions by stakeholders. So, the draft themes proposed here in the Inception Report can actually be just inputs into a discussion on relevant topics that should be considered in the ESPON ATLAS. The final formulation of the topics can only be done with the people involved in ESPON, the stakeholders of the programme; the Monitoring Committee to be mentioned in the first place.

This dialog will also be continuously conducted in meetings with the ESPON CU as a representative of the group of stakeholders of ESPON. The project furthermore envisages also workshops or sessions at the forthcoming ESPON seminars to get in dialog with stakeholders and other ESPON projects, but also with the overall ESPON community to discuss the state of the project and the policy dimensions.

Most importantly, the project sees itself in a direct dialog with the stakeholders in the Monitoring Committee, especially related to the outline of the table of content and the formulation of the storyboard of the ESPON ATLAS. Based on content related flexibility at the very moment, this dialog will connect recent policy debates with ESPON results envisaged. For this, the project aims to have a session with the Monitoring Committee at the Paphos Meeting in Cyprus to lay ground to the draft final formulation of the ESPON ATLAS table of content to be delivered with the interim report of the project in spring 2013.

6.4 Time table and deliveries

Table 9 presents the planned schedule of meetings and deliveries of the ESPON ATLAS project for the period after the Inception Report. Table 10 presents the schedule of all project activities.

Table 19 Time table of meetings and deliveries of the ESPON ATLAS project

Date	Activity
7-8 Nov. 2012	TPG Meeting (Dortmund, DE)
4 Dec. 2012	ATLAS Workshop with ESPON MC (Paphos, CY)
5-6 Dec. 2012	ESPON Seminar (Paphos, CY)
Jan. 2013	Meeting with ESPON CU (Luxemburg, LU)
Feb. 2013	TPG Meeting (Bonn or Dortmund, DE)
29 March 2013	Interim Delivery
June 2013	TPG Meeting besides ESPON Seminar (IE)
June 2013	ATLAS Workshop/Session at ESPON Seminar (IE)
Dec. 2013	ATLAS Workshop/Session at ESPON Seminar (LT)

Feb. 2014	TPG Meeting (Budapest, HU)
30 April 2014	Delivery of Draft Final Report
June 2014	Meeting with ESPON CU (Luxemburg, LU)
June 2014	ATLAS Workshop/Session at ESPON Seminar (GR)
July/Aug. 2014	TPG Meeting (Bonn or Dortmund, DE)
29 August 2014	Delivery of Final Report

The ESPON ATLAS as such can be considered as a dissemination activity of the ESPON 2013 Programme. It is expected that the ESPON CU, in particular its Communication and Capitalisation Cluster will be active to promote the result of this project, i.e. the paper and the interactive online versions of the ESPON ATLAS.

From the project side, these dissemination activities will be underpinned through the active participation in the bi-annual ESPON Seminars and through a timely provision of the project deliverables according to the specification of the atlas project.

There will be two major deliveries of the ESPON ATLAS project, an interim delivery and the Final Report (which will be first delivered as draft):

March 2013 (Interim Delivery):

-Final version of the Structure and Table of Content of the ESPON ATLAS, including draft versions of new maps proposed.
- Examples of 5-10 pages of the atlas including maps and texts that present the style of communication and cartography envisaged for the entire atlas.
- Prototype of the digital version of the atlas.
- Short reporting of the activities, both planned and realised, resolution of problems and definition of delimitations.
- Work plan until the Draft Final Report.

April 2014 (Draft Final Report):

- Draft version of the ESPON ATLAS (both in paper and digital version), including all maps and graphic elements selected/produced in accordance with the cartographic standards of ESPON, as well as analytical work related to map interpretation and presentation of key messages.
- Maps (in a vector format, preferable .ai files) and datasets produced/completed (including metadata) in the framework of this project.

August 2014 (Final Report)

- Final documentation of all aspects of the implementation of the project.
- Final version of the ESPON ATLAS (both in electronic and paper versions).

Table 20 Timetable of project activities

WP/Tasks	Subtasks	2012				2013				2014		
WP 1 Co-ordination			C T		T	C T	T	T		C T	C	
WP 2 Activities												
Task 1 Table of content of the ESPON ATLAS												
Task 2 Screenplay of the ESPON ATLAS												
Task 3 Thematic chapter	3.1 Economic structures and global challenges											
	3.2 - 3.8 All other Subtasks											
Task 4 Policy oriented spatial aggregation and interpretation												
Task 5 Production of maps and illustrations												
Task 6 Draft lay-out and editing												
Task 7 The interactive version	7.1 Concept and Design											
	7.2 Prototype											
	7.3 Implementation of interactive ESPON ATLAS											
WP 3 Dissemination 8					MC	D	W		W		D	D

C T	C: Meetings with Coordination Unit, T: TPG meeting
D W	D: Delivery W: Workshop at ESPON Seminar MC: Workshop with MC

6.5 Steps towards the Interim Delivery

The Interim Delivery due in March 2013 shall on the one hand present the final structure and table of content of the ESPON ATLAS, including draft versions of new maps proposed. On the other hand first results shall be presented in the proposed atlas format. This includes examples of 5-10 pages including maps and texts that present the style of communication and cartography envisaged for the entire atlas and also a prototype of the digital version of the ESPON ATLAS. To do so, the following steps will be undertaken in the different tasks:

- In Task 1, the table of content of the ESPON ATLAS will be further developed and refined.
- In Task 2, key maps from ESPON projects will be pre-selected and new maps will have to be defined to further develop the sketchbook of the atlas.
- In Task 3, one sample thematic chapter (Economic structures and global challenges) will be developed as a full draft to serve as a demonstration example.
- In Task 5, the technical production of the maps and illustrations for that demonstration example will be done.
- In Task 7, the concept and design of the interactive version of the ESPON ATLAS will be developed and demonstrated in a prototype for the same theme as the prototype of the paper version.

One important element in the development of the ESPON ATLAS during this phase is a workshop with the ESPON MC in December 2012 before the ESPON Seminar in Paphos, Cyprus. The objective is to discuss with the MC members the concept of the ESPON ATLAS with a specific focus on the thematic orientation to be developed further.

6.6 Potential barriers for project implementation

The production of the ESPON ATLAS covers the selection, combination and interpretation of existing ESPON results. The work therefore highly depends on the availability and the quality of input data, indicators, typologies etc. from the single ESPON projects. The data base project (M4D) is in this context of special importance, its service function for the overall ESPON is crucial for the ESPON ATLAS project, in special related to the central provision of project data as well as the geographical data. The delivery dates of project results must be promptly echoed in the ESPON data base to guarantee the ESPON ATLAS team in time access to the data. The financial and related personal capacities of the ATLAS project (compared to the database project) give no space for time consuming direct contacts with all ESPON project. It will highly depend on the support of M4D.

Related to the geographic data, the inclusion of Priority 2 results might make the mapping on LAU data necessary. In this case a seamless combination of LAU 2 and

NUTS must be guaranteed to avoid ‘cartographic moiré’ of not matching double boundaries, a case actual not wished in high quality map making.

Regarding the territorial coverage of maps, provision of territorial data from some ESPON projects for non-EU, Western Balkan and accession countries is limited. The project group will take this into account during the compilation of the atlas. However, only in case appropriate data that is missing so far would be easily accessible for the ATLAS project the data would be incorporated in the maps.

The ESPON projects are asked to provide their maps in form of Illustrator (ai) and portable network graphics (png) files according to the ESPON project terms of deliveries. In many cases, these maps will be the base for the ESPON ATLAS maps. In the ideal case, when the export in ai- or png - format was done without manipulation starting from the ESPON map template, the maps have the same size and position on the virtual piece of paper in Illustrator or other programs. Using single maps, that fact is not that important. However, it is of great importance when different ESPON maps, or to say better, selected layer of different ESPON maps will be combined for the ESPON ATLAS in one map. Then size and position are crucial to guarantee this overlay and combination.

The evaluation of project reports shows however, that there is a high creative potential in the use of the ESPON map templates concerning the size of the map and even sometimes their shape, when maps have been stretched to fit the page. If this manipulation not only happened related to questions of layout in the report, but in the original graphic files, the production of maps for the ESPON ATLAS might be complicated.

Facing the task to combine different aspects (layer) of different maps of different ESPON project, the in general useful provision respective availability of graphic files will obviously not always guarantee effective transfer and combination of maps. Especially in the expected common case, that information, selected classes of indicators or types of a typology of map will be extracted.

Two likely barriers are likely to expect in this respect. The different position of maps on the page will complicate the overlay of the maps, the grouping of the elements in one single graphic layer complicates the extraction of selected types or classes.

To overcome this problem the provision with original shapefiles of the related maps of the projects would be the ideal way. However, as this is not a compulsory delivery of the ESPON projects, the second best option is to use the exact data to be provided by the ESPON database project and to reproduce the maps for the ESPON ATLAS.

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