

## **SPECIFICATION**

### **ESPON Applied Research Project 2013/1/8**

#### **European patterns of land use (2010-2012)**

##### ***(o) Territorial challenges relevant for ESPON 2013 projects***

The development of the European territory is facing several ongoing mega trends and impacts of policies:

- The integration of the EU in global economic competition is accelerating, offering regions and larger territories more options to decide their development path, as development is no longer a zero sum game for Europe.
- Interaction is growing within the EU territory and between the surrounding neighbour countries and other parts of the world. This is apparent through e.g. migration pressure on more developed countries, which are themselves confronted with population decline, and by access to and investment in new markets.
- Market forces and the evolution of society in general support a geographical concentration of activities.
- The ongoing demographic changes with an ageing European population, in addition to migration, affect regions differently and increase the competition for skilled labour.
- The occurrence of hazards due to climate change is increasing and different parts of Europe experience different types of hazards.
- Increasing energy prices and the emergence of a new energy paradigm have significant territorial impacts, some regions being more affected than others. This presents particular development opportunities for the production of renewable energy sources.
- The enlargement of the EU to 27 Member States, and potentially more, presents an unprecedented challenge for the competitiveness and internal cohesion of the Union.

ESPON results have revealed that territorial capital and opportunities for development are inherent in the regional diversity that is a characteristic of Europe. Consequently, different types of territories are endowed with diverse combinations of resources, putting them in different positions for contributing to the achievement of the Lisbon and Gothenburg Agendas, as well as to Cohesion Policy. Territorial diversity, especially in the economic base, implies that strategies other than opting for a knowledge-based economy might be more appropriate and viable for some regions.

The ESPON 2006 Programme provided integrated analysis and long-term spatial scenarios which enriched the European policy debate and knowledge base. The results and observations on territorial structures, trends, perspectives and assessment of EU policy impacts had not been fully evident before and supported a better understanding of the European dimension of territorial dynamics. This has prompted interest among policy makers and practitioners for even more information, knowledge and understanding that ESPON can offer.

The ESPON 2013 Programme shall bring this knowledge base one step further through applied research and targeted analysis, indicator development and data collection, capitalisation events presenting results, etc. All these actions will be related to an improved understanding of territorial structures, development trends, perspectives and policy impacts.

The European-wide evidence provided by the ESPON 2013 Programme will potentially benefit stakeholders at all levels throughout Europe. Policy makers dealing with territorial development require sound evidence and comparable regionalised information in addition to medium and long-term development perspectives, in order to create sustainable and efficient integrated policy responses for their territories.

Given that the European Union is moving towards a more integrated policy approach, the territorial dimension is particularly important for policy makers. The aim of territorial cohesion proposed by the Commission supports this approach by taking the territory as an element within the framework of policy making. Due to the provision of evidence based on analyses of territorial units, the ESPON 2013 Programme is of strategic importance for European policy development and cooperation.

By further developing and expanding the existing knowledge and indicators, the ESPON 2013 Programme will play a strategic role in supporting the policy process of the 2007-2013 period, and contribute to the development of Cohesion Policy.

### ***(i) General objectives of applied research projects under Priority 1***

The general objectives of applied research projects within the ESPON 2013 Programme are the following:

- Building new evidence based on comparable information about European regions and cities, including information on dynamics and flows, and covering the entire territory of EU 27, Iceland, Liechtenstein, Norway and Switzerland.
- Addressing major territorial challenges and political priorities providing comparable information covering the entire European territory, its regions and cities.
- Providing comparable regionalised information and possible policy options for making use of opportunities inherent in territorial structures; anticipating and counter balancing negative trends and structures, taking into account the diversity of the ESPON territory and considering institutional, instrumental and procedural aspects.

- Identifying types of territories, regions and cities that share common development challenges and are affected most (positively or negatively) by the identified structures, trends, perspectives and/or policy impacts.
- Contributing to the further identification of structures within the EU territory that represent options for exploring comparative advantages and provide synergy through territorial cooperation arrangements, involving regions and/or cities.
- Contributing to the improvement of the scientific platform for European applied territorial research by refining existing concepts, methodologies, indicators, typologies, European maps and models and by defining new ones.
- Providing the knowledge and competence capabilities needed to ensure scientifically validated results of the applied territorial research with the support of Sounding Boards<sup>1</sup>.
- Supporting the use and dissemination of results to an audience of policy makers, practitioners, scientist and experts.

This project shall contribute to these general objectives during its implementation, and in doing so make best use of existing ESPON results, new results in other ESPON projects as well as other research results and relevant studies.

### ***(ii) Relation of this project to the ESPON 2013 Programme***

The priorities describing the work-programme of the ESPON 2013 Programme are structured in four strands:

1. **Applied research on territorial development, competitiveness and cohesion: Evidence on European territorial trends, perspectives and policy impacts**  
The applied research projects will create information and evidence on territorial challenges and opportunities for success in the development of regions. Cross thematic applied research will be a major activity integrating existing thematic analysis and adding future analysis of new themes. Territorial impact studies of EU policies will be another focus under this priority.
2. **Targeted analysis based on user demand: European perspective on development of different types of territories**  
This priority responds to a clear demand of practitioners for user and demand driven actions within the ESPON 2013 Programme. By convening an analytical process where ESPON findings are integrated with more detailed information and practical know-how, new understanding of future development opportunities and challenges may arise, which could be transformed into projects and actions.
3. **Scientific platform and tools: Territorial indicators and data, analytical tools and scientific support**  
The scientific platform and analytical tools built up within the ESPON 2006 Programme will be maintained and further expanded. New actions shall be

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<sup>1</sup> For each applied research project a Sounding Board will be set up, accompanying the project throughout its life cycle and giving advice to the TPG on both, scientific issues as well as relevance for policy makers. Sounding Boards will normally be made up of one scientist and one practitioner. Their tasks will consist of assessing project proposals, giving continuous feedback to TPGs and commenting on their reports.

undertaken to develop current achievements and make use of existing indicators, data and tools.

#### **4. Capitalisation, ownership and participation: Capacity building, dialogue and networking**

Under this priority, actions are foreseen that will make the evidence and knowledge already developed operational through raising awareness and involving stakeholders in the results and practical application of them.

A strong coordination and interlinkage with other ongoing ESPON projects is crucial for achieving comprehensive results. A close cooperation with the appointed Sounding Board and the Coordination Unit must also be established as part of the project implementation.

This project belongs to the first priority. It holds a key position in developing a common understanding of land use patterns from a European perspective, their changes and their policy implications in Europe. Knowledge on these issues is vital for targeted policy development in the light of Cohesion Policy aiming, inter alia, at job creation and tackling social changes.

#### ***(iii) Thematic scope and policy context***

Land use can be understood as the territorial reflection of social and economic behaviour and the ecological borders they meet. The land use of a territory is described by the functions that occupy it and/or the activities it is used for. The categories of functions that are mainly used are: industry and economic activity, housing, agriculture, nature, infrastructure and recreation. In the context of this project specification “urban functions” refer to some of the main functions mentioned above that occur in built up areas (e.g. housing, industry, retail, etc.)

Patterns of land use can be characterised by e.g. densities, combinations of land use or mixed land use, and the spatial composition (e.g. grouped or scattered). Land use patterns vary depending on the scale they are perceived on, e.g. a specific pattern on a local scale might very well be different when looking at it on a regional scale. Land use patterns can change when land uses change.

Land use has also a dynamic aspect. Due to social, economic and environmental development changes in land use occur. Major effects of land use change include urban sprawl, soil sealing, loss of biodiversity, soil erosion, soil degradation, floods, salinisation and desertification. Moreover, land-use change is a major anthropogenic source of carbon dioxide, a dominant greenhouse gas. According to the EEA<sup>2</sup> the type of land use change varies among different types of regions. *“Urban areas and related infrastructure are the fastest growing land consumers, mainly at the expense of productive agricultural land. Rural landscapes are changing due to agriculture intensification, land abandonment and forest exploitation. Coastal and mountain areas are undergoing profound spatial reorganisations to accommodate intensive tourism and leisure activities.”* Each change leads to its own type of benefits and problems and its own type of policies to solve these problems.

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<sup>2</sup> See <http://www.eea.europa.eu/themes/landuse/about-land-use>

European countries, regions and cities have formulated spatial development strategies in order to influence land use dynamics. Although land use policies throughout Europe may vary, in general they aim at a sustainable development of space by promoting the protection of open space, the concentration of hard functions (e.g. housing and industry) in urban and economic poles and using existing infrastructure as a basis for new development. These and also some other spatial development principles have been integrated in the European Spatial Development Perspective (ESDP).

The EEA report on urban sprawl (EEA, 2006) describes urban sprawl as the spreading of cities in a scattered way. A conclusion of this report is that urban sprawl is not driven principally by population growth but by changing lifestyles and consumption patterns as well as lenient, service-driven planning policies at local/regional level. Moreover, structural EU policies had inadvertent socio-economic effects that have promoted the development of urban sprawl.

One of the conclusions of the final report on Progress on EU Sustainable Development Strategy (2008) of the European Commission is that *“Certain areas of relevance to SD are not explicitly covered; e.g. spatial planning/land use/urban development or addressing wastelands (New Member States) receive only limited attention.”* One of the problems identified receiving less attention overall is that the *“integration of land-use planning and transport planning can be improved, as this is a domain which is closely related to the daily mobility patterns of European citizens. Urban sprawl ... contributes to less effective public transport systems, increased utilisation of the car, cross-commuting and increased congestion overall.”* Finally, the report points out that *“land-use changes and the encroachment of built-up areas still jeopardize the long-term viability of Europe’s trees, .... The fragmentation of ecosystems remains one of the most important factors behind declining biodiversity and hence reduced economic and physical values of ecosystem services they produce.”*

Two of the three policy responses mentioned in the Green Paper on Territorial Cohesion (2008) are “Concentration” and “Connection”. Concerning “Concentration”, the Green Paper indicates that the settlement pattern of the EU is unique because its relatively dense urban network contains few very large cities. This settlement pattern has many advantages. The pattern of economic activity, however, is far more uneven than that of settlements. Concerning “Connection”, the Green Paper indicates that intermodal transport connections are essential to address the special needs of disadvantaged groups. Actually, the same holds true for valuable natural areas. The sixth priority of the Territorial Agenda (2007) concerns strengthening ecological structures and cultural resources. In order to deal with these two policy topics it is important to first have an overview on the present status of “Concentration” and “Connection”. The structures of urban, economic and natural concentrations have to be investigated and mapped as well as the (inter)connections between urban, economic and natural areas. Only then the types of concentrations and connections that are suitable for regional and economic development can be determined.

Concerning land use and land cover in Europe several sources are available at a very detailed level, including the CORINE and the LUCAS database, the Soil Sealing Map and the Urban Atlas. However, from a European point of view, these are hard to use in policy development since they don’t link to administrative levels. This project is about

combining and aggregating land use, land cover and administrative data into meaningful typologies that can be used for policy design at European, national and regional level.

Against this backdrop, the project should strive to achieve a better understanding of the following key policy questions, for which it should produce supporting information and evidence:

- What does the current European land use look like, what are the current land use patterns on the European territory, where are certain patterns dominant and in what particular types of regions or countries?
- What are the changes of land use, the main dynamics and trends, over the last 16 years (1990-2000-2006)? Where are the main changes in typical land use patterns? And what are the main driving forces behind these land use and land use pattern changes?
- To what extent are existing land use patterns throughout Europe in line with the general spatial development principles as formulated in most territorial policy documents (e.g. ESDP)? How will this picture look like if no extra policy action is taken and new territorial dynamics come into play?
- What are the relations between land use patterns (and more specifically urban land use patterns) and drivers of development such as geographical, demographic and cultural influences, climate change, transport, employment, GDP and other economic structures. How and to what extent are land use patterns efficient in relation to these aspects? And what are the relations between urban areas and open space (non-build areas)?
- Are there typical land use developments and patterns in particular types of regions such as border regions? How can these developments, e.g. through cooperation initiatives, be coordinated and create a development potential?

Coordination should take place with other relevant ongoing ESPON projects (above all the projects on “Rural Areas’ Development (EDORA)”, “Territorial Impact Assessment (TIA)” and “Climate Change and Territorial Effects on Regions and Local Economies”. Results deriving from the ongoing targeted analysis “Spatial scenarios: new tools for local-regional scenarios (SS-LR)” (under Priority 2 of the ESPON 2013 Programme) are to be taken into account as well. Some ESPON 2013 projects that start in parallel with this project might also generate relevant information, in particular the ones on “Attractiveness of European Regions and Cities for Residents and Visitors” and “European Perspective on Specific Types of Territories”.

#### ***(iv) Analytical framework and deliveries expected***

The project shall start off with an investigation on what land use data already exists. An overview shall be given on existing databases, the location/owner of these data bases, the temporal dates available, if the data is available for ESPON, to what extent it covers the ESPON territory and if it can be used in this research. The project is expected to provide on this basis definitions for land use and land use functions that are relevant within the focus of this project allowing for European wide comparison and policy relevant analysis.

The project shall continue with an inventory on land use patterns, typologies, dynamics and inter-linkages. This inventory shall include an overview on what is known on European land use patterns, possible definitions of land use patterns for specific land use types and a comprehensive SWOT analysis of various types of land use patterns. For urban land use, not only the spread of urbanised areas or the fragmentation of landscapes shall be taken into account, but also the densities of traffic-inducing settlement structures, their proximity to public transport and other factors that lead to non-efficient and unsustainable use of land (eg.: settlement growth vs. agricultural/rural uses). This inventory will lead to an overview of various types of land use patterns and possibilities to measure them, an overview on existing and for this research suitable definitions and typologies for rural land use, urban land use and open space (non-built areas), and to an overview of methods, indicators and/or concepts that can be used in territorial research at European scale. The policy relevant typologies for land use developed by EEA and CEMAT shall be used as a starting point. More specifically for urban land use the inventory will also give an overview on the characteristics of sprawl, a clear definition of sprawl, indications on how sprawl can be measured and one or more indicators for sprawl.

The inventory will also look into the dynamics of land use; how can changes in land use and land use patterns be measured and visualised. Existing methods and visualisation techniques will be described and evaluated in order to find suitable methods for the European territory and its policy makers.

Finally, the inventory shall include an overview of possible relations between specific land use patterns and the economic, social and environmental performance of European regions. This overview will also describe and analyse existing methods, indicators and/or concepts to indicate these relations and their relevance to be used in territorial research at European scale. Moreover, methods will be sought, developed and described that could measure land use efficiency in relation to aspects such as population, transport, employment, GDP and other economic structures.

A source for the inventory that should be taken into account is the EEA report (2006) on urban sprawl in Europe. The report, for example, lists drivers of urban sprawl, classifies cities in compact/sprawled, describes the impacts and indicates what might be possible responses. However, the focus is only on urban development, other land use changes such as extension of economic sites and infrastructures, forests creation and management, etc. have not been analysed. The EEA report, however, lacks a clear methodology of how to identify and measure sprawl and its analysis of changes over time does not sufficiently take into account the issues related to the relatively low resolution of the CORINE and the combination of high change threshold with large difference in the number of years between the two dates of measurement. Furthermore, the EEA supports their findings through maps and data on a more local level. Considering these lacks, the ESPON project on European land use patterns should improve the EEA research done on urban sprawl and pull it up to a higher level, by looking at land use change in general and by using a 4-level-approach (European, transnational/national, regional and local) for the analysis and when presenting conclusions.

This project will also benefit from the additional information available through the EEA Soil Sealing Layer and the Urban Atlas as well as from a brand new CORINE land

cover map. Concerning the CORINE land cover map, this project will develop a strategy in order to measure land use change in a sufficiently reliable way taking into account the low resolution and the high change detection threshold used in the previous analysis of CORINE 1990 and 2000.

After these inventories, use shall be made of already available database(s) to develop a for ESPON suitable land use database. This database should at least incorporate two reference dates in order to make it suitable to study land use dynamics. The database should at least have the following functions incorporated: artificial surfaces divided in urban fabric, industrial and others, agricultural and rural areas, forest and semi-natural areas, wetlands and water bodies. The land use data in this database can now be used to answer the key policy questions described before and test the concepts and methods defined and analysed in the inventories. A European land use map should be created and, based on the land use data in this database, an overview shall be made of often occurring patterns of land use. The typologies, indicators, dynamics and interlinkages discussed above and resulting from the inventory and SWOT analyses shall be tested using the land use data.

In order to obtain information on land use that is useful on administrative level different data layers should be combined. Therefore, research shall be conducted on how land use data and land use patterns can best be combined with data on administrative level. One of the options that should be examined is to transform data of land use and land use patterns on grid level into land use data on administrative level (NUTS3). This research could then be used to analyse the importance of land use and its patterns as an indicator for showing the link between territorial phenomena and socio-economic developments.

A methodological framework should be developed that could be used to analyse where, and in which way, on a European, (trans)national, regional and local level, land use change took place. This methodological framework should be applied on the data available. Within this analysis the time frame, the extent and the reasons (internal, e.g. politics, or external, e.g. globalisation) of these changes should be taken into account. At the same time the consequences (economic, social and environmental) of EU policy for land use changes should be analysed. The focus in this analysis should be on the various typologies defined before.

Based on the various land use patterns, different typologies of land use and land use change shall be created. The links between various types of land use, for example the link between natural areas and urban areas, should be analysed. A SWOT analysis of the various typologies should be performed identifying the strong and weak points and indicating opportunities and threats. The SWOT analysis should be focused on territorial, environmental, economic and social aspects and their interrelation. Based on this analysis, improvements in EU policy to enhance sustainable territorial development of each of the typologies should be identified. The latter can support policy makers in addressing land-use related issues when drafting territorial development strategies. Moreover, tools should be identified and described that could be used to support the policy development process to manage land use change in general and urban sprawl specifically.

The project should consider existing data and indicators for the analysis. The data, indicators and maps of the ESPON 2006 Programme are one important source in this



respect. This project shall in particular be informed and make use of relevant results from the following previous and current ESPON projects:

- ESPON project 1.1.1 on “Potentials for polycentric development in Europe” provides an overview of the European urban system with regards to functional specialisations and current degrees of polycentricity. It also made a prospective analysis of possible effects of regional polycentric integration in different parts of Europe. Finally, the different applications of polycentricity in national policies have been reviewed.
- ESPON project 1.4.3 on “Study on Urban Functions” first assessed the results of project 1.1.1 where after the delimitation of Functional Urban Areas (FUA) and its typologies have been adjusted. Finally the polycentricity issue has been discussed.
- ESPON Project 1.1.2 on “Urban-rural relations in Europe” developed a typology based on population density, FUA ranking and land cover. It discusses topics such as urbanisation, rural restructuring, the urban-rural characteristics, the relations between urban and rural areas and finally urban sprawl.
- ESPON Project 1.4.1 on “The Role of Small and Medium-Sized Towns (SMESTO)” builds on and deepens the discussions initiated by ESPON 1.1.1 and ESPON 1.1.2. It discusses the role of SMESTOS within the spatial organisation of European cities and towns, identifying relevant nodes and analysing the way in which they structure the territory.
- ESPON Project 2.1.3 on “Territorial impact of CAP and Rural Development Policy” concluded that in aggregate the Common Agricultural Policy (CAP) of the European Union (EU) has worked against the ESDP objective of balanced territorial development, and has not supported the ESDP objectives of economic and social cohesion.
- ESPON Project 2.2.1 on “Territorial effects of structural funds” addressed the spatial impacts of Structural Funds with a particular focus on polycentricity and territorial cohesion in Europe.
- ESPON Project 2.4.1 on “Territorial trends and impacts of EU Environment Policy” interpreted the CORINE Land Cover data, combined socio-economic data, information on infrastructure and data of the Natura 2000 network and proposed a feasible Territorial Impact Assessment (TIA) of EU Environmental Policy.

The project shall strive for a comprehensive and integrated research approach, taking into account social, cultural, environmental, and economic aspects. The analysis shall be guided by a 4-level-approach (European, national, regional and local) of which the first three are commonly used by all ESPON applied research projects.

The project shall also strive for delivering innovative results which can support the policy development in the field of territorial development, competitiveness and cohesion. It should demonstrate an inventive approach with regard to the scientific answers to the policy questions and should aim at showing new development opportunities for the European territory. There should be a combination and interrelation of various sectors and territorial insights on the development in order to contribute to the creation of new development paths and visions.

In the concrete design of the applied research project and its work packages, the project is expected to answer the following key research questions:

- What is the current situation of existing spatial data and information related to the aspects of land use (urban, non-urban, rural, natural, etc.), land use patterns (sprawl, compact and ribbon development, rural-urban development, etc.), land use change (dynamics and trends) and policy-relevant typologies? What are suitable and reliable methods to measure these aspects and to monitor land use change?
- Based on the land use data gathered, what does the European map look like regarding land use, land use patterns and their changes and where in Europe can typical land use patterns be found, such as sprawl, compact and ribbon development for urban land use and fragmentation, connected areas and stepping stones for rural land use and high quality open space?
- What relations can be found, for instance, between specific land use patterns and the territorial, economic, social and environmental performance of European regions, between urban areas and open space at a certain distance, between urban sprawl and specific features, such as mountains and rivers and between land use efficiency and aspects such as population, transport, employment, GDP and other economic structures? And how can these relations be measured and visualised and which of these relations are suitable to use in territorial research at European scale?
- Is it possible to detect specific land use development patterns in cross-border regions? If this is the case, where are they situated and how can they be explained? Are the differences between patterns inside neighbouring cross-border regions and between border regions and inland regions significantly different?

The geographical coverage of the project should encompass all the countries participating in the ESPON 2013 Programme. Furthermore, the TPG should assess the data situation for their field of research in the EU candidate countries (i.e. Croatia, the Former Yugoslav Republic of Macedonia, Turkey) and/or the other countries of the Western Balkans (i.e. Bosnia and Herzegovina, Serbia, Montenegro, Albania, Kosovo under UN Security Council Resolution 1244) and report on their findings in the inception report. Depending on the respective data situation these countries would then be included in the analysis.

The deliveries of the project should make use of and complement the existing scientific platform and tools of ESPON, which are accessible on the ESPON website.

The project is expected to enhance the scientific platform of ESPON with at least the following deliveries:

- Data input to the development, update and extension of the ESPON database by additional data on potential accessibility gathered within the project, particularly in relation to the new Partner States, Iceland and Liechtenstein. Indicators need to offer compatibility with a map-making facility, to provide a consistent, homogenous, reliable, and up-datable database.
- Indicators offering additional information on land use patterns, sprawl and the link between territorial phenomena and socio-economic developments.
- Typologies developed by this project for land use, land use patterns, sprawl and land use change.

- European maps revealing (1) different patterns of land use functions, (2) changes of land use patterns, (3) efficiency of land use patterns, (4) the typologies defined, (5) the links between various types of land use, (6) land use changes at EU, national, regional and local level, and, (7) land use development patterns in cross border regions.

Regarding the development of new data and maps and/or the use of existing data, the TPG is expected to cooperate closely with the TPG in charge of the development of the ESPON 2013 Database. The TPG is also expected, in coordination with the ESPON CU, to contribute to the INSPIRE data specifications development process with specific reference to the data theme land use (INSPIRE annex III). Travel budget for participating in at least two INSPIRE meetings should be included.

The results and conclusions of the applied research within the project should be formulated in relation to policy orientations present at European level and make use of the new maps resulting from the project.

In order to create coherence with project findings of other ESPON applied research projects, the project should present the main final results in relation to different types of regions and cities, using existing typologies for the urban system, rural areas, mountain areas, islands, coastal areas and outermost regions.

Following the logic of the Territorial Agenda of the EU, orientations for policy makers should refer to the respective territorial development opportunities and the available options to mobilise these for the benefit of the regions in question. In this respect, references to future policy options should take account of European Cohesion Policy orientations, in particular expressed in the Community Strategic Guidelines on Cohesion 2007-2013 and the Fourth Report on Cohesion.

Project findings should make clear which impact the use of the identified development opportunities could have on the competitiveness and socio-economic situation of European regions as well as on the realisation of economic, social and territorial cohesion in Europe.

Finally, the project should consider avenues for further applied research on the theme.

### ***(v) Outputs and timetable***

One of the main objectives of the ESPON 2013 Programme is to focus on research with policy relevance and to contribute to the development of relevant policies. Therefore, the outputs of the research project should be highly operational and coordinated in time, as far as possible, to fit into the relevant political agenda.

The proposal for the project is expected to reveal individual work packages on project coordination, research activities, and dissemination, as well as a schedule for project implementation based on the following indicative<sup>3</sup> timetable and specification of outputs:

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<sup>3</sup> The final timetable for the project will depend upon the exact date of the project's Kick-off Meeting. At this meeting, the exact delivery dates for all project reports will be agreed upon with the Lead Partner.

**June/July 2010 (Inception report):**

Twelve weeks after the Kick-off Meeting, a more in-depth concept should be submitted by the TPG allowing for a detailed overview on the research approach to be applied, the methodology and hypothesis for further investigation, as well as a review of the main literature, data sources, etc. It shall as well include an overview of more detailed deliveries and outputs envisaged by the project as well as an indication of likely barriers that the project implementation might face. The report shall give clear orientation for the applied research previewed towards the Interim report. The research team should also report on the findings regarding the assessment of the data situation in the EU candidate countries (i.e. Croatia, the former Yugoslav Republic of Macedonia, Turkey) and/or the other countries of the Western Balkans (i.e. Bosnia and Herzegovina, Serbia, Montenegro, Albania, Kosovo under UN Security Council Resolution 1244) and, on that basis, determine the geographical coverage of their research. Finally, the TPG should outline how it envisages making use of existing ESPON results that are relevant for this project.

**November/December 2010 (Interim report):**

The content of the Interim Report shall reflect the orientations given in the Inception Report as well as the results of the discussions having taken place with the Sounding Board. The report is envisaged to include elements such as:

- a) Preliminary results on the basis of available data, developed indicators, typologies, and European maps, including
  - Inventory on existing land use data covering the ESPON territory together with an analysis on what land use data is available and can best be used in this research and how it can best be combined with data on administrative level
  - Proposal for reference dates to analyse land use changes.
  - Inventory on existing policy relevant typologies for land use together with an analysis on what policy relevant typologies can be usefully combined with ESPON data
  - First definitions and typologies for land use, sprawl (and compact and ribbon development), open space and land use change
  - Draft methodology to measure land use change, land use patterns and sprawl (and compact and ribbon development)
  - First overview of types of land use patterns that often occur
  - Proposal for a useful indicator for sprawl (and compact and ribbon development)
  - Inventory on suitable methods, indicators and/or concepts used on a national level to indicate the link between territorial phenomena (such as mentioned above) and socio-economic developments that can be used in territorial research at European scale
  - First overview of the impacts of urban areas at a certain distance of open space (and natural areas) considering the quality of natural areas, the touristic, recreational possibilities and urban expansion possibilities
  - Draft methodology to measure the impacts mentioned above and a first overview of where the areas with potentials and risks are situated
  - First analysis to detect specific land use development patterns in cross border regions and to detect significant differences between patterns in cross border regions and inland regions

- First analysis of the relation between land use and land use patterns and other aspects such as the economic, social and environmental performance of European regions
  - Proposal on how to measure land use efficiency in relation to aspects such as population, transport, employment, GDP and other economic structures
  - Data collection achieved, including an overview on statistical and geographical data collected by EUROSTAT, and national Statistical Institutes etc.
  - Draft European maps.
  - First indications on the conclusions and policy relevant options that could be the outcome of the project.
- b) Plan for the applied research towards the draft Final Report as well as the Table of Content envisaged.

**November/December 2011 (Draft Final Report):**

The Draft Final report will take into account feed-back on the Interim report from an ESPON seminar and by the Sounding Board. The report is supposed to include elements such as:

- c) Report (max. 50 pages) on the main results, trends, impacts, projections and options for policy development, including key analysis/diagnosis/findings and the most relevant indicators and maps (any additional information should be included in a scientific report). Particularly important are options for policy makers, which could provide the basis for interventions related to opportunities for improving European competitiveness and cohesion.
- d) An executive summary (max. 10 pages) summarising the main results of the applied research that can be communicated to a wider audience of stakeholders. This summary should be based on the report mentioned above.
- e) Scientific report documenting the scientific work undertaken in the applied research including elements such as:
  - Literature, definitions and methodology/theory used.
  - Methodologies, typologies and concepts developed and used.
  - Data collected and indicators used, including calculation algorithms and tables with the exact values of indicators.
  - Maps produced in support of the results, covering the territory of EU 27, Iceland, Liechtenstein, Norway and Switzerland.
  - Tools and models used or developed.
  - Future research avenues to consider, including further data requirements and ideas of territorial indicators, concepts and typologies as well as on further developments linked to the database and mapping facilities.

**April/May 2012 (Final Report):**

- f) Revision of the Draft Final Report on the basis of comments received.

**May/June – November/December 2012 (Dissemination):**

- g) Dissemination of project results by the TPG in the framework of international conferences and seminars, e.g. transnational activities of the ECP Network, events organised by the CU. These activities need to be reflected in the budget proposed by the TPG for the implementation of the project.

The ESPON 2013 Programme foresees in Priority 4 also capitalisation of project results including events, printed reports, website facility, etc. The Programme includes, in other words, substantial dissemination activities at Programme level which all projects should make use of and support. This means that the project's dissemination activities shall ensure consistency and avoid overlaps with and repetition of respective activities organised at Programme level. The project team shall refer to the objectives of Priority 4 of the ESPON 2013 Programme "Capitalisation, ownership and participation: Capacity building, dialogue and networking" when considering dissemination activities and closely coordinate these with the ESPON CU.

Irrespective of the above mentioned reports to be submitted at certain stages in the project life cycle, the TPG is expected to give presentations on the state of their research or/and the results in the framework of internal and external ESPON seminars. Therefore, when setting up the project proposal, the TPG should also allow for travel expenses for the attendance of ESPON seminars.

#### ***(vi) Budget for the applied research project***

The maximum budget foreseen for this applied research project amounts to €800.000 including VAT, if applicable. Proposals exceeding this value will not be considered.

All real eligible costs incurred for carrying out the approved project will be refunded 100% by the ESPON 2013 Programme.

#### ***(vii) Existing access points***

Synergies and use of results from outside the ESPON regime shall be sought. In particular, research activities by the EEA and JRC might be valuable for this project.

The other access points listed below can serve the purpose of providing the TPG useful information for preparing a proposal. It is by no means meant to be exhaustive, but should be considered as information that can be helpful in tracing additional useful background information.

- ESPON projects results, data and maps: [www.espon.eu](http://www.espon.eu)
- The Green Paper on Territorial Cohesion (2008)
- Progress on EU Sustainable Development Strategy: Final Report. ECORYS Nederland BV, Brussels/Rotterdam, 29 February 2008
- Statistics in Focus: New insight into land cover and land use in Europe - Issue number 33/2008 (KS-SF-08-033).
- Urban sprawl in Europe: The ignored challenge. EEA report no. 10/2006
- CEMAT, the European Conference of Ministers responsible for regional/spatial planning ([www.coe.int/cemat](http://www.coe.int/cemat))
- Urban Atlas (during 2009 via EEA, or via: [http://epp.eurostat.ec.europa.eu/pls/portal/url/page/PGP\\_DS\\_GISCO/PGE\\_DS\\_GISCO](http://epp.eurostat.ec.europa.eu/pls/portal/url/page/PGP_DS_GISCO/PGE_DS_GISCO) in Geodata tab)

- GMES: GSE Land Information Services: <http://www.gmes-gseland.info/index.php>)
- Corine Land Cover (<http://dataservice.eea.europa.eu/dataservice/>)
- Final report of a scoping study on modelling EU land-use choices and environmental impacts ([http://ec.europa.eu/environment/enveco/others/pdf/landuse\\_final\\_report.pdf](http://ec.europa.eu/environment/enveco/others/pdf/landuse_final_report.pdf))
- MOLAND project (<http://moland.jrc.ec.europa.eu/>)
- Land Use/Cover Area frame Survey (LUCAS: [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-SF-08-033/EN/KS-SF-08-033-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-08-033/EN/KS-SF-08-033-EN.PDF); [http://www.lucaslot1.com/new\\_sites/Portfolio.aspx](http://www.lucaslot1.com/new_sites/Portfolio.aspx))
- European Topic Centre on Land Use and Spatial Information (Eionet: <http://etc-lusi.eionet.europa.eu/>)
- FTS Soil Sealing ([http://terrestrial.eionet.europa.eu/CLC2006/FTSP/built-up\\_areas](http://terrestrial.eionet.europa.eu/CLC2006/FTSP/built-up_areas))
- Population density grid (via EEA): <http://dataservice.eea.europa.eu/dataservice/metadetails.asp?id=1018>
- FP6-Project on Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages (PLUREL: <http://www.plurel.net/>)
- FP6-Project SENSOR (for land-use & land-cover indicator activities see: <http://www.sensor-ip.eu/>)
- Project on Sustainable Land Use Policies for Resilient Cities (SUPER-CITIES) (<http://www.nordregio.se/1403.htm>)
- Landscape Europe and the Blue Print for EUROSCAPE 2020 (<http://www.landscape-europe.net/index.html>)
- DG Agri project on Scenario study on agriculture and the rural world (Scenar 2020: [http://ec.europa.eu/agriculture/publi/reports/scenar2020/index\\_en.htm](http://ec.europa.eu/agriculture/publi/reports/scenar2020/index_en.htm))
- INSPIRE Directive (<http://inspire.jrc.ec.europa.eu/>)
- An overview of INTERREG III programmes and results throughout Europe (<http://archive.interact-eu.net/604900/604902/0/0>)
- The Interact programme which provides information on all European Territorial Cooperation Programmes (<http://www.interact-eu.net/>)