

# EU-LUPA

## European Land Use Patterns

Applied Research 2013/1/8

### VOLUME XIII

## Policy options and recommendations

**Part C Scientific report |**

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This report presents the final results of an Applied Research Project conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

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

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

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## **PREFACE**

The present volume encompasses the EU-LUPA project outcomes with regard to the policy framework of the land use topic, definition of policy options and recommendations and the lessons learnt for policy development.

Chapter 1 describes the methodology followed for policy the definition of policy recommendations. The main results are presented in the subsequent chapters. Chapter 2 is devoted to the policy framework. Chapter 3 identifies the key priority areas to focus on, based on the territorial challenges and the analysis of driving forces, pressures and impacts associated to the topic of land use, by means of a conceptual used of a DPSIR analysis. Finally, policy messages and recommendations are included in Chapter 4.

Chapter 5 provides some concluding ideas and steps for further development.

## 1. OUTLINE OF METHODOLOGY

A common approach has been defined in the EU-LUPA project for the elaboration of the policy recommendations as outlined in figure 1 next page.

### Why policy recommendations?

Policy makers should rely on research evidences in order to define the most appropriate measures and policies responses in line with the EU development principles and objectives (mainly under the EU Cohesion Policy, EU2020 Strategy and the Territorial Agenda),

- to support **responsible land management**, monitoring land use intensity
- to resolve **conflicting land use demands** affecting the economic, social and environmental performance of a region
- and to **identify the potentials for improving regional competitiveness and territorial cohesion towards sustainability**

The land use characterization in the European territory undertaken in the project (See Volumes I and II) provides very valuable information with regard to the potentials and challenges of the regions and allowed us to identify the key policy areas to focus on when elaborating the policy recommendations.

It is important to highlight here that in the EU-LUPA project, land use changes and dynamics in Europe have been approached as a policy driven processes in the context of the European Spatial Development, although the evaluation of the policy impacts is definitely out of its scope.

### Where?

Having in mind the assumption that regions with similar characteristics may be addressed by a common set of recommendations and general awareness, the policy recommendations have been primarily associated to the different profiles of land use patterns resulting from the Land Use Characterization in EU (see Volume I):

- Prevailing characteristics of land use: what characterizes the land use for NUTS2/3 regions in Europe?
- Hotspots of land use change: which combines the amount of land use change: how much land is changing, and where? And intensity of land use change: what is the degree of human intervention on the land in order to meet the needs of our socio-economic activities? Hotspots provide a generalized picture of which regions stick out in terms of high levels of physical land change, in terms of the degree of human intervention on the land, or both.
- Land use change typology: what characterizes land use changes for NUTS2/3 regions in Europe?

### How?

EU-LUPA project provides policy messages for policy development. The next step for further research after this project will be the development of a set criteria for the selection of the policy interventions in each region and criteria for implementation.

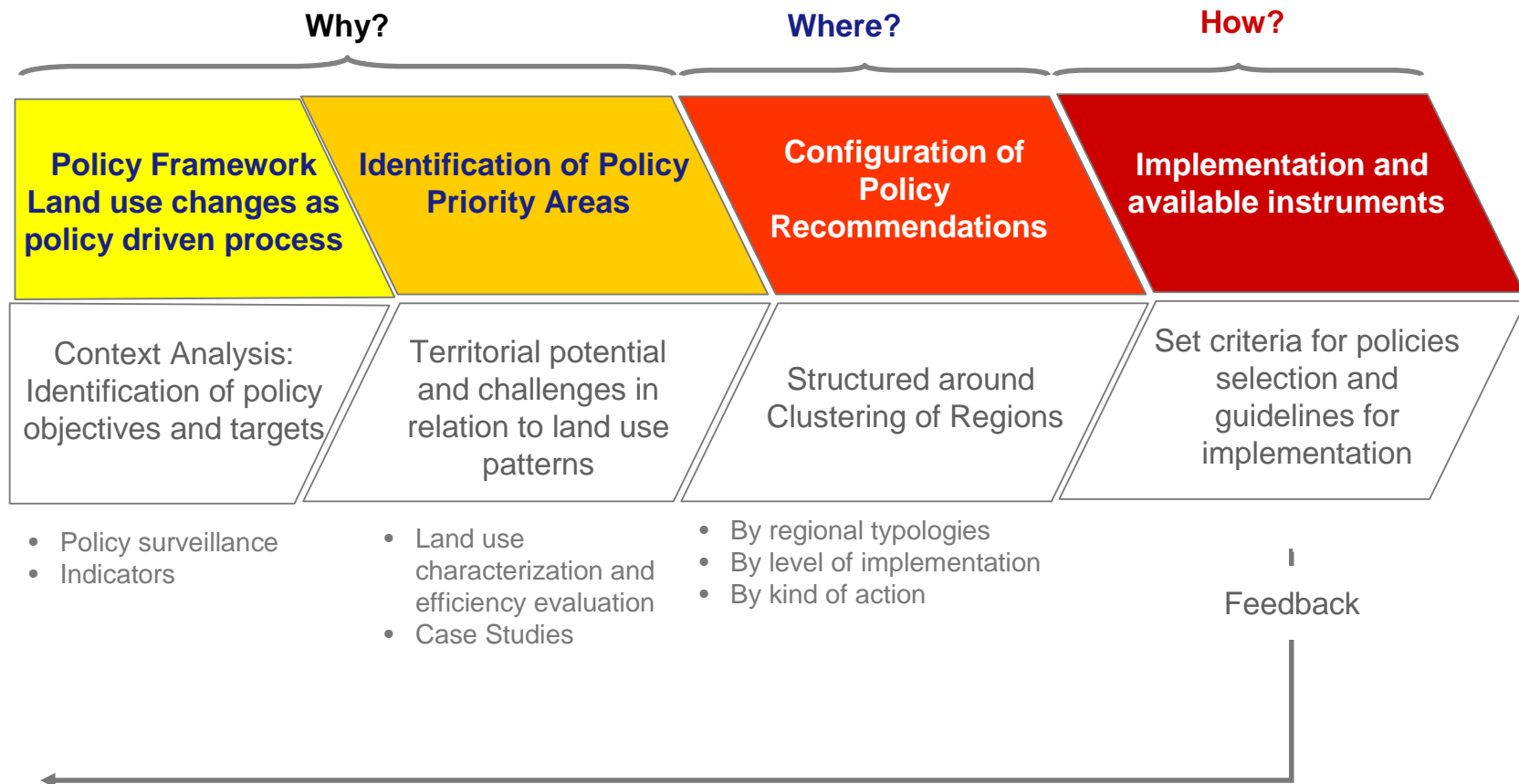


Figure 1 A common approach or strategy for the development of policy options and recommendations.



The methodology sketched for the definition of policy recommendations in the EU-LUPA project consists of four phases that are described in the following sections.

### **1.1. PHASE I European Policy Framework**

As starting point, the European Policy framework regarding land use was carried out by means of the identification of the most relevant EU policies, strategies and institutional reports.

The aim of the definition of the policy framework is:

- **Contextualization of the land use change and land use dynamics** as a policy driven processes
- **Policy relevance of the indicators used in the characterization of land use functions in EU** (as an input to project (See Volume II).
- **Identification of policy objectives, indicators and thresholds** as an input for the evaluation of Land Use Performance and Land Use Efficiency (See Volumes II and III).

The key result of this phase is the review of EU policies, policy options and strategies as key drivers for land use configuration in Europe that has been included in Annex I of the present report.

### **1.2. PHASE II Identification of policy priority areas: Potential and challenges in relation to land use patterns**

The next step in the strategy was the identification of the **policy priority areas** by means of the assessment of the potential and challenges in the EU regions with regard to their land use patterns, towards the key territorial priorities stated in the EU political agenda<sup>1</sup>.

1. Promote polycentric and balanced territorial development
2. Encouraging integrated development in cities, rural and specific regions
3. Territorial integration in cross-border and transnational functional regions
4. Ensuring global competitiveness of the regions based on strong local economies
5. Improving territorial connectivity for individuals, communities and enterprises
6. Managing and connecting ecological, landscape and cultural values of regions

Taking account of the cross-cutting nature of the land use, the idea is to prioritize the relevant **topics, themes and subjects** where policy recommendations are potentially more needed and therefore where policy makers should allocate their efforts.

A qualitative analysis of the scientific evidences resulting from the exercise of Land Use Characterization was undertaken and the potential level of relationship between the drivers/pressures of land use changes and the identified patterns assessed.

In order to better organize the analysis of the evidences, a DPSIR conceptual model (EEA, 1999; OECD, 1993) is suggested.

This conceptual model could provide an appropriate integrated approach for the evaluation of the driving forces and associated pressures that are behind certain land use dynamics, the impacts generated (performance) by some land use changes and patterns (state) and the

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<sup>1</sup> Territorial Agenda of the European Union 2020: Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions

responses (policy options) in place aiming at rectifying undesirable situations and trends or strengthen good practices .

Note that the selection of the working scale is important in the development of DPSIR models. Working at macro scale could lead to a model which could be too general to be applied at micro-scale where pressures or impacts identified at macro level are in fact, the driving forces for example.

For the project purposes the DPSIR model has been elaborated at meso-scale.

### **1.3. PHASE III Structure for the configuration of policy recommendations**

It is expected that the diversity between the regional realities within the European territory could be also reflected in their land use dynamics which in principle would obligate the analysis of each reality independently in order to be able to define meaningful policy recommendations.

However, it is out of the EU-LUPA project scope to provide a place-based approach to policy making unless for the case studies.

The hypothesis is that regions with similar characteristics may be addressed by a common set of recommendations and general awareness.

However, it could be argued that some measures that could have been implemented in a particular region without any success could imply a major successful change in others, depending on their specific regional features and the effect of the interactive mega-drivers and we must definitely have this premise in mind.

In order to systematize the process, the following step in the strategy focuses on the construction of a three-dimensional matrix which will constitute the skeleton for the configuration of policy recommendations.

#### **By kind of policy action**

Policy messages and recommendations will be organized around the key policy priority areas:

- to support responsible land management and to resolve conflicting land use demands affecting the economic, social and environmental performance of a region
- for improving regional competitiveness and territorial cohesion towards sustainability based on the region potentials

The policy actions will be understood as process and as product.

→ As process: GOVERNANCE and coordination

- Among different levels: vertical / multilevel, subsidiary / proportionality
- Between policies: horizontal coordination
- Between actors: public and private stakeholders and local communities (partnership)
- Between territories: rural-urban partnerships, metropolitan governance, city and regional networks....

→ As product: policy messages, guidance for development of instruments, plans, strategies, procedures, normative and other recommendations.

## By the Level of Implementation

Land-use planning and management decisions are usually made at local or regional level. However, although European policy does not have spatial planning responsibility or competence for planning *per se*, it sets the framing conditions of planning through different strategies and instruments. Therefore the project provides policy messages at EU level, at regional level and at local level for the project case studies.

## By Regional Typologies

Having in mind the assumption that regions with similar characteristics may be addressed by a common set of recommendations and general awareness, the policy recommendations will be primarily associated to the different profiles of land use patterns obtained in the project (See Volume I).

### 1.4. PHASE IV Formulation of policy options and recommendations

The project focuses on a better understanding of the following key policy questions,

- 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?

Based on sound scientific basis, the EU-LUPA project provides:

- **Awareness-raising** in form of key messages on how the land use dynamics and economic, social and environmental performance relate (e.g. “fast urbanizing areas face social and environmental problems”) based on the review of the policy framework in Europe and the results from the land use characterization.
- **Indication of potential and challenges** in the regions in relation to the land use patterns found, based on the evidences derived from the characterization and also the inputs from the Stakeholders’ Workshop held in Warsaw on the 10<sup>th</sup> and 11<sup>th</sup> September 2012
- **Formulation of policy measures and recommendations** for European, national, regional (and local when appropriate-mainly as case study level) authorities to

face the challenges and take advantage of the potentials, anchored in the EU Cohesion Policy and the Territorial Agenda policy objectives.

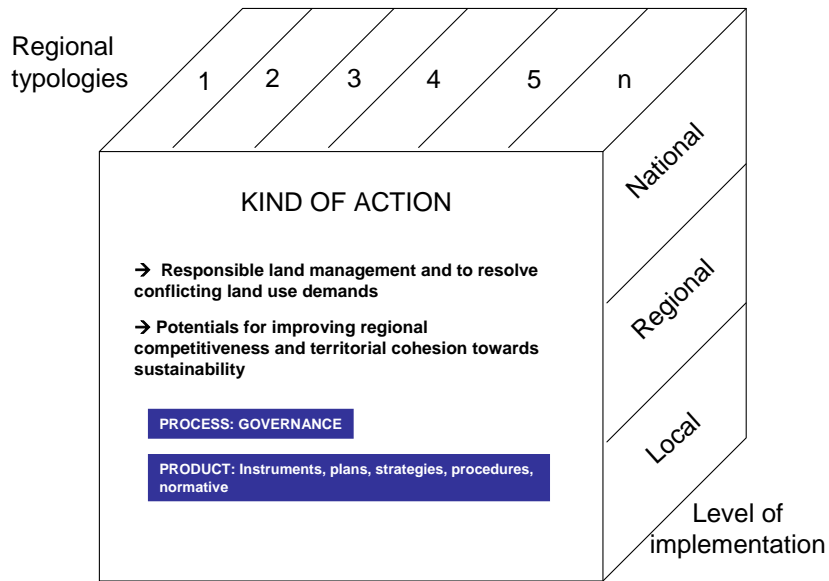


Figure 2 EU-LUPA Policy recommendations cube

The following diagram page explains the interrelationships between the different phases of the strategy.

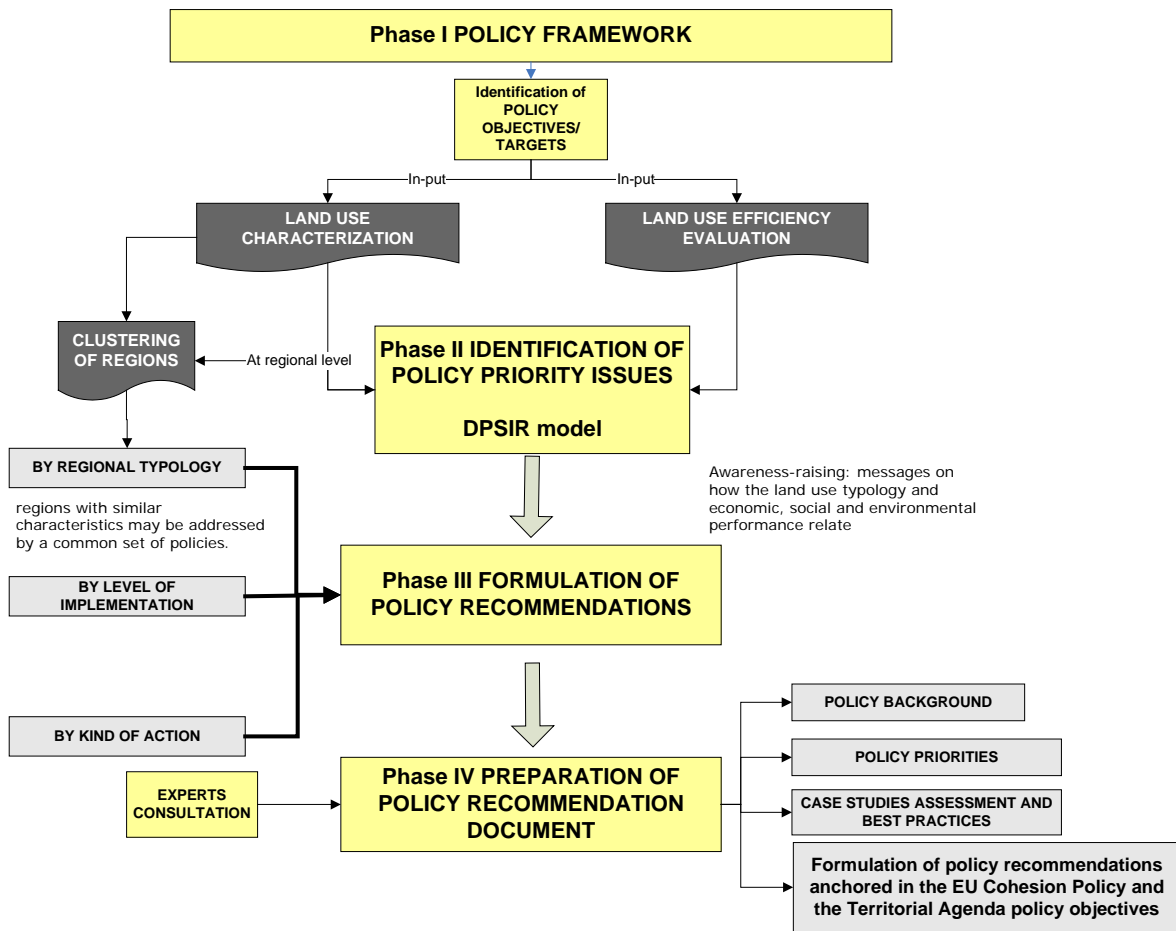


Figure 3 Methodological approach for policy recommendations task

## 2. EU POLICY FRAMEWORK: Review of EU strategies and policies as key drivers of land use configuration in EU

The aim of territorial cohesion for the European cooperation towards sustainable development is on the core of the EU political agenda, revealing an increasing interest of policy makers in a territorial approach with deeper horizontal policy integration and cross-sector perspective, over the last decades.

Although European policy does not have spatial planning responsibility or competence for planning *per se*, it sets the framing conditions of planning through different strategies and instruments. Land-use planning and management decisions are usually made at local or regional level. However, the European Commission has a role to play in ensuring Member States take environmental concerns into account in their land-use development plans. The goals<sup>2</sup> are:

- To analyse the environmental impact of proposed developments
- To improve the geographic information flow about land-use issues
- To develop and implement European urban environment strategy
- To improve the planning, management and use of Europe's coastal zones

Land use implications on the compliance of the key EU policy objectives and targets is crucial due to its cross-cutting nature touching upon many different territorial challenges such as urbanization and rural-urban relationships, climate change mitigation and adaptation, natural resource management, energy, transport, regional competitiveness and cohesion.

Back in 1999 the European Spatial Development Perspective (ESDP), a non-binding framework aiming at coordinate various European regional policy impacts, already advocated the development of a sustainable, polycentric urban system and balanced territorial development in Europe. The ESDP resulted in European policy orientations for territorial balance and cohesion, improved competitiveness, urban system with compact cities and strengthening of the partnerships between urban and rural areas; parity of access to markets and knowledge, as well as wiser management of natural and cultural resources.

Ever since, the territorial dimension is being addressed in the EU political agenda and EU policies, also at regional level, are increasingly focused on harmonious territorial development towards sustainability.

In 2007 the enlarged EU adopted a **Territorial Agenda for the European Union** which modernized the policy orientations of the ESDP and added stronger emphasis on:

- Competitiveness of regions and cities including creation of innovative clusters,
- Climate change concerns and
- Territorial cooperation and multilevel governance.

The Territorial Agenda has been followed up by an ambitious Action Plan 1, currently under implementation. The Territorial Agenda has been recently reviewed in the first half of 2011.

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<sup>2</sup> Land use environmental concerns [http://ec.europa.eu/environment/archives/land\\_use/index\\_en.htm](http://ec.europa.eu/environment/archives/land_use/index_en.htm)

Some actions are related to the themes of ESPON applied research, others are being supported by ESPON targeted analyses.

The **Leipzig Charter** (2007) builds on a process of cooperation aimed at strengthening urban development in the European context. With the Leipzig Charter the Ministers agreed on common principles and strategies for an integrated approach to urban development policy and on the need for action in socially and economically deprived urban areas as well as in cities as a whole. The complementarities between the Leipzig Charter and of the Territorial Agenda are addressed in First Action Programme.

The Leipzig charter particularly stressed the need for proposals and strategies for sustainable EU cities calling for a European polycentric urban structure.

In 2008 the Commission launched a debate publishing a **Green Paper on Territorial Cohesion**. This document puts a territorial perspective on economic and social cohesion setting the objective of a more balanced and harmonious development of the European territory. It focuses on 3 key territorial development dynamics: (1) Concentration, (2) Connections and (3) Cooperation. It pays as well particular attention to regions with specific geographical features. Mountain regions, island regions and sparsely populated areas may heavily suffer from the likely impacts of climate change, demographic change, accessibility, regional integration and energy supply.

The Green Paper on Territorial Cohesion is accompanied by a Staff Working Document and poses questions for a European wide debate that will run until 28 February 2009. This has first been visible in the 4th Cohesion Report that for the first time mentioned a new concept of “territorial cohesion” which in 2009 was ratified with the Lisbon Treaty.

The Lisbon Strategy is a dynamic strategy in which sustainability has been taken on board (climate change, energy, financial and social sustainability) making sustainable development a key objective for the EU and, in 2010, the EU renewed a number of environmental Directives to ensure they comply with it.

With the adoption of the Lisbon Treaty, territorial cohesion is added to the goals of economic and social cohesion. This new element adds and underlines a number of issues.

- It emphasizes the territorial dimension of access to services of general economic interest;
- It underlines the importance of environmental sustainability;
- It underscores the importance of functional geographies, of the problems of territories with specific geographical features, of the role of city, and of local development approaches;
- It strengthens the role of territorial cooperation and highlights the potential of macro-regional strategies.

Besides, the **Gothenburg Strategy (2009)** defines a number of key environmental objectives and target dates, both political and legislative. Major priorities include climate change, sustainable transport, public health and natural resources management.

The **Sustainable Development Strategy (reviewed in 2009)** has had an important impact on the EU political agenda as revealed by the EU's climate change and energy policies.

The EU has started to integrate the sustainability dimension in many other policy fields also. Climate change and clean energy, sustainable transport, sustainable consumption and production, conservation and management of natural resources, public health, social inclusion, demography and migration, global poverty and sustainable development challenges, education and training, research and development, financing and economic instruments.

Consequently successful management of land use is crucial in order to comply with the main goals of European sustainable development particularly in:

- Contributing to a rapid shift to a low-carbon and low-input economy, based on energy and resource-efficient technologies and sustainable transport and shifts towards sustainable consumption behaviour;
- Intensifying environmental efforts for the protection of biodiversity, water and other natural resources. Evidence shows that the destruction of biodiversity is continuing at a worrying rate. Degradation of ecosystems not only reduces the quality of our lives and the lives of future generations, it also stands in the way of sustainable, long-term economic development;

The next step in defining the future EU Cohesion Policy after 2013 is envisaged by a **5th Cohesion Report** published by the European Commission in October 2010, stressing the importance of providing more support for the less developed EU regions in line with the Union's strong commitment to solidarity and its Treaty aim of reducing regional disparities in levels of development, to foster territorial cooperation in its three dimensions (cross-border, transnational, and inter-regional) and concentration of social exclusion in urban areas.

Within the EU policies we could find specific responses to land use and land take. For instance there are specific reference in a Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (COM(2001)264); the Commission Communication 'Towards a Thematic Strategy on the Urban Environment' (COM(2004)60); the European Social Fund and the Cohesion Fund Council Regulation (EC) No 1083/2006 as well as the concept of territorial cohesion; Territorial Agenda 2020 - changes in land use (urbanisation, mass tourism, etc.) threaten landscapes and lead to fragmentation of natural habitats and ecological corridors; the Territorial Agenda Action Plan Specific actions relevant in the field of 'Land', in particular are action 2.1d: 'Urban sprawl' and action 2.2 'Territorial impact of EU policies'; the Cohesion Policy (2014-2020) – thematic objective: environmental protection and resource efficiency. Funds flow to infrastructure developments (e.g. in 2000-2006 period – 5100 km road built, 8400 km rail built, etc.); the Cohesion Policy and cities: the urban contribution to growth and jobs in the regions (COM(2006)385), the Europe 2020 (COM(2010)2020), general provisions on the European Regional Development Fund; the Roadmap on Resource Efficient Europe – milestone: sets the goal of no net land-take by 2050. Yet this mandate will mostly likely work against the goals of a number of regions; particularly those seeking to ascend the socio-economic ranks toward the most established European nations; the Rural Development Policy (towards 2020) - priorities include restoring, preserving, and enhancing ecosystems e.g. N2000, *landscapes*, soil management, etc.; the Common Transport Policy - development of transport services must take account of their possible effects on the environment; the white paper on transport, the energy efficiency plan and the communication of the EC A Roadmap for moving to a competitive low carbon economy by 2050 constitute the key deliverables under the Resource Efficiency flagship. (COM (2011)112 final)

It outlines the need for raising land use productivity sustainably: improved agricultural and forestry practices increasing the capacity of the sector to reduce GHG and preserve and sequester carbon on soils and forests. This can be achieved for instance through targeted measures to maintain grasslands, restore wetlands and peat lands, low or zero-tillage, to reduce erosion and allow for the development of forests. Agriculture and forestry are also providing the resources for bio-energy and industrial feedstock's.

The European Landscape Convention (Council of Europe, 2000) that deals with the protection, management and planning of all landscapes in Europe.

The European Commission adopted on 17 June 2010 the **Europe 2020 Strategy** the growth strategy for the coming decade. This policy document sets out a vision of Europe's economy



for the 21st century. It shows how the EU can come out stronger from the crisis and how it can be turned into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. These three mutually reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity and social cohesion. The strategy has five ambitious objectives - on employment, innovation, education, social inclusion and climate/energy.

Considering its objective on climate and energy the EU member states have committed themselves to reduce greenhouse emissions by 20%, increasing the share of renewables in the EU's energy mix to 20% and achieving the 20% energy efficiency target by 2020.

In February 2011 the EU council reconfirmed the EU objective of reducing GHG by 80-95% by 2050 compared to 1990 in the context of necessary reductions according to the Intergovernmental panel on climate change by developed countries as a group.

Although the cohesion policy has already significantly reduced economic, social and environmental disparities within the EU it has been observed that it could be more effective and it could play a crucial role in the context of the current economic crisis and to guarantee the compliance with the EU strategy 2020.

The commission intends to adopt a Common Strategic Framework delineating a comprehensive investment strategy, which translates the targets and objectives of Europe 2020 into investment priorities for Cohesion policy, covering structural funds, the cohesion fund, European fisheries fund and the European agricultural fund for rural development. Each member state would present their overall strategy for cohesion policy in line with the national reform programmes and the thematic and country specific recommendations for Europe 2020.

The EEA was adopted by the European Union in 1990 and came into force in late 1993. The EEA's task has from the start been "to provide sound, independent information on the environment", ensuring evidence based information "for those involved in developing, adopting, implementing and evaluating environmental policy, as well as the general public"; This in order to help planners and policy makers to advance informed decisions about how to improve the environment, and not the least to work towards the integration of environmental considerations into economic policies which eventually should lead EU towards sustainability<sup>3</sup>.

And to do that, the emphasis for many years was on having a better understanding of the potential long-term consequences of human actions, and design policies that stand the test of time. *"Forward studies have been developed to scan the future of agriculture, transport and energy, climate change and air pollution. And more and more governments have started to assess the impacts of their policies in a systematic manner"*<sup>4</sup>. It is interesting how landscapes even in the 2009-2013 strategy document still is considered something other activities may be impacting, but not being an integral part of the development process: *"Over the past decade the Agency has analysed conflicts over the use of space and land-based resources in Europe and observed that they will be exacerbated by urbanisation, transport growth, shifts in agricultural priorities, new forms of tourism, evolving societal aspirations around mobility and*

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<sup>3</sup> Caspersen, O. (1999): The European Environment Agency. Global environmental Change, vol. 9, issue 1. April 1999, pages 71-75. Elsevier.

<sup>4</sup> EEA 2007: Land use scenarios for Europe: Qualitative and quantitative analysis on a European scale. , Technical report no. 9, 2007, European Environment Agency. p8

*housing, demography and the continuous changes to the territorial landscape from climate change putting at risk ecological and social resilience”<sup>5</sup>.*

Similarly it is - in the Agriculture and forestry section - said that *“Our main objective: To provide integrated analyses of land use trends in agriculture and forestry through assessments of their current and future impact on water, soils, air quality, biodiversity and landscapes. This will help to assess the impact of new societal demands, demographic and technological trends on the natural environment and form a basis for policy evaluation and feedback into related sectoral and environmental policies”<sup>6</sup>.*

According, to the EEA, “these trade-offs can be tackled through integrated planning for land use and territorial planning, sector policies, as well as targeted policy instruments, such as protected area networks.” (EEA, 2010: 5).

Similarly it is expected that the integration of the European Landscape Convention as a tool in territorial planning would become an important contribution to the planning process. Along these lines, institutional arrangements dictating land use policy in Europe include the EU objective for Territorial Cohesion – with which this project is closely connected to – the Water Framework Directive, Common Agricultural Policy (CAP), Natura 2000, and with an increasing importance, Energy 2020. Important tools for informing, monitoring and evaluating these policies and programmes are Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA), and most importantly, the advent of the CORINE land cover inventory (EEA, 2010).

The policy relevance of the indicators used in the characterization of land use changes and patterns in Europe (Volume I and Volume II) is being assessed and the review of EU Strategies, policies and institutional documents is included in Annex I of the present volume.

### **3. POLICY PRIORITY AREAS: POTENTIAL FOR TERRITORIAL DEVELOPMENT IN EU IN RELATION TO LAND USE**

Several ESPON results to date have revealed that territorial capital and opportunities for development are inherent in the regional diversity that is a characteristic of Europe. A study on ESPON Typology Compilation started in March 2009 with the purpose is to provide a compilation of existing territorial typologies and to propose a set of eight territorial typologies which can be used throughout the ESPON 2013 Programme:

- (1) urban / metropolitan regions – analysis of 8 typologies,
- (2) rural regions – analysis of 18 typologies,
- (3) sparsely populated regions – analysis of 4 typologies,
- (4) regions in industrial transition – analysis of 1 typology,
- (5) cross-border regions – analysis of 12 typologies,
- (6) mountainous regions – analysis of 6 typologies,

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<sup>5</sup> EEA 2009: EEA Strategy 2009-2013 – Multiannual Work Programme. EEA 2009, p29

<sup>6</sup> (EEA 2009, p30)

- (7) islands – analysis of 3 typologies, and
- (8) coastal regions – analysis of 4 typologies.

Following an Informal Progress Report presented in May 2009, the above listed 56 existing typologies were identified and used as basis for a proposal for eight envisaged typologies. It was concluded in the report that the project did not find any typology which would be proposed as ESPON typology for one of the eight thematic fields<sup>7</sup>. And as a consequence the authors had developed a proposal for the typologies which were supposed to bring together elements from the various typologies reviewed and eventually leading to the composition of a coherent set of eight homogenous ESPON typologies.

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.

EU policies, strategies and institutional reports consulted (see annex I of the present report) have been organized by topics and providing information about their objectives, reference source, spatial and time scale and significance for EU-LUPA project.

Due to the cross-cutting nature of the land use we have selected those policies, strategies and institutional reports that have been considered most relevant for the project development.

To date, policy objectives and targets have been identified from three key relevant documents in the EU political agenda:

- Lisbon Strategy,
- European Strategy for Sustainable Development and
- Strategy Europe 2020

The key challenges highlighted in the Territorial Agenda 2020, as those that EU territories are facing nowadays, are very much linked to the way land has been used and managed:

- Increased exposure to globalisation: structural changes after the global economic crisis
- Challenges of EU integration and the growing interdependences of regions
- Territorially diverse demographic and social challenges, segregation of vulnerable groups
- Climate change and environmental risks: geographically diverse impacts
- Energy challenges come to the fore and threaten regional competitiveness
- Loss of biodiversity, vulnerable natural, landscape and cultural heritage

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<sup>7</sup> Urban-rural typology by CURS/ESPON 1.1.2, Rural areas and their regional diversification by BBR/ESPON Atlas, Rural Development Environments, ESPON EDORA, ESPON project, MOUNTAIN AREAS (2004) by EC, study conducted by Planistat Europe, NIBR/ESPON 2.1.5

The indicators stated below are used to measure the regions' success in relation to the Lisbon Strategy:

Headline targets	Indicators
<b>Average of all individual quartiles of performance of seven regionalised Lisbon short list indicators</b>	GDP/capita
	GDP/person employed
	employment rate of 15-64 (EU 2020 range 20-64)
	employment rate of elderly
	gross expenditure on research and development
	dispersion of regional unemployment rates
	long-term unemployment rate.
<b>Average of all individual quartiles</b>	Regional Unemployment, 2008
	R&D Expenditure as Percentage of GDP, 2006
	Composite Economic Lisbon Performance, 2006; Change in Composit
	Tertiary Educated People in Labour Force, 2007
	Share of Renewables in Gross Final Consumption, 2005
Wind Power Potential, 2005	

Table 1 Lisbon Strategy and Gotteborg objectives: indicators and headline targets

The European Strategy for Sustainable Development also provide a set of indicators attached to headline targets some of which are already included in the Lisbon and Gotteborg objectives.

Headline targets	Indicators
Socio-economic development EU27 Average	Growth rate of real GDP per capita
Sustainable consumption and production EU27 Average	Resource productivity
Social inclusion	Population at-risk-of-poverty or exclusion
Demographic changes	Employment rate of older workers
Public health EU27 Average	Healthy life years and life expectancy at birth, by gender
Climate change and energy	Greenhouse gas emissions
	Share of renewable energy in gross final energy consumption
Sustainable transport EU27 Average	Energy consumption of transport relative to GDP
Natural resources EU27 Average	Common bird index
	Fish catches taken from stocks outside safe biological limits
Global partnership EU27 Average	Official development assistance as share of gross national income

Table 2 European Strategy of Sustainable Development headline targets and indicators

For the EU-LUPA project we have decided to focus on the EU2020 objectives for the assessment of the territorial performance at regional level.

Headline targets	Indicators
75 % of the population aged 20-64 should be employed	Employment rate by gender, age group 20-64
3% of the EU's GDP should be invested in R&D	Gross domestic expenditure on R&D (GERD)
The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right) EU27 target 80	Greenhouse gas emissions, base year 1990
	Share of renewables in gross final energy consumption
	Energy intensity of the economy (proxy indicator for <i>Energy savings</i> , which is under development)
The share of early school leavers should be under 10% and at least 40% of 30-34 years old should have	Early leavers from education and training by gender
	Tertiary educational attainment by gender, age group 30-34
Reduction of poverty by aiming to lift at least 20 million people out of the risk of poverty or exclusion	Population at risk of poverty or exclusion ( <i>union of the three sub-indicators</i> )
	Persons living in households with very low work intensity
	Persons at risk of poverty after social transfers
	Severely materially deprived persons

Table 3 Indicators suggested evaluating territorial performance based on Europe 2020 headline targets and indicators

The potential correlation between the performance of regions assessed by means of those indicators and the land use changes and trends found, have been analysed for the assessment of the Land Use Efficiency at regional level. (See Volumes II and III)

### **3.1. Driving forces of land use change and their territorial aspects**

Once the EU policies, strategies and institutional reports were assessed, a qualitative analysis of the scientific evidences resulting from the exercise of Land Use Characterization was undertaken. The aim was to evaluate the potential level of relationship between the driving forces behind land use changes and the identified patterns assessed.

Assessing the driving forces behind land use and land use changes is challenging and it is necessary to analysed and explained past patterns and be able to forecast future patterns. Driving forces of land use could include almost any factor that influences human activity, including local culture (food preference, etc.), economics (demand for specific products, financial incentives), environmental conditions (soil quality, terrain, moisture availability), land policy & development programs (agricultural programs, road building, zoning), and feedbacks between these factors, including past human activity on the land (land degradation, irrigation and roads).

This is definitely out of the scope of this project to investigate the full range of drivers of land use which would require to apply different methods from the natural and social sciences, including climatology, soil science, ecology, environmental science, hydrology, geography, information systems, computer science, anthropology, sociology, and policy science.

However we have undertaken a qualitative exercise by using a DPSIR model to address this issue. Firstly, we developed the DPSIR conceptually, and then we validate the model with Stakeholders and researchers during the project Stakeholders 'workshop held in Warsaw on the 10<sup>th</sup> and 11<sup>th</sup> September 2012 (See Volume XIII).

Particularly for the analysis of drivers of urban sprawl phenomena please see Volume IV chapter 2.6.

#### **DPSIR model: description**

The elements in the model could be described as follows:

##### **Interacting mega-driving forces:**

Processes such as urbanization, agricultural intensification, a-forestation, rural abandonment, land use specialization are land use processes resulting from interacting driving forces: geographical characteristics, population dynamics and future scenarios including visions and strategies matters, land prices, technology push and market pull, economic growth, planning systems, strategies and policies at different levels. (See figure 4 on page 26).

In the same way, good governance structures could favour responsible land use management through the coordination of sector policies and interests. Strategies and Policies that affect Land Use/Land Cover can be divided into two categories:

- a) Policies that directly affect land use/ land cover

- Spatial planning<sup>8</sup> understood as the methods and instruments used by the public sector to influence the distribution of people and activities in the space. It encompasses a set of regulations and determinations that specify:
  - where different types of land use can take place aiming at preventing situations where incompatible land uses occur or conflicts between different land uses demand.
  - what type of development can occur in a zone,
  - how densely development can occur, and can place limits on building height,
  - how much open space must be provided in residential developments, and
  - how many parking spaces must be provided for commercial buildings, for example.
- Transport policy. Its principal aims are to complete the internal market, ensure sustainable development, extend transport networks throughout Europe, maximise use of space, enhance safety and promote international cooperation.
- Common Agriculture Policy CAP
- EU Water Framework Directive promoting “Integrated river basin management for Europe”.
- EU Floods Directive. The directive requires flood risk mapping and affects land use through flood management plans for affected floodplain areas
- Integrated Coastal Zone Management (ICZM). The main objective is to improve the planning, management and use of Europe’s coastal zones, which promotes sustainable management through co-operation and integrated planning, involving all the relevant players at the appropriate geographic level.
- Nature conservation and Environmental Protection. NATURA 2000 network and LIFE programme contains provisions which put particular emphasis on links with spatial development and, in particular, land use. The EU-wide designation of protected areas is intended to establish a coherent integrated biological network which intervenes in land use.

b) Policies that indirectly affect the land use change and shape landscapes.

- European Spatial Development Strategy
- Strategies of sustainable development
- Cohesion Policy
- European Territorial Agenda 2020
- EU policies on climate change adaptation are directly relevant to current and future land-use practices and economic sectors depending on this: mitigation throughout reduction of CO2 emissions and adaptation strategies
- Taxation and incentives

**Pressures**

The pressures are understood as the processes that occur as a consequence of the interrelation of the driving forces previously described. Main processes identified

- Urbanization/ Concentration of human population in urban areas
- Different patterns linked to the need for housing, services, mobility needs, employment and resources including energy, food, goods and services.
- Depopulation of rural areas
- Intensification of the use of land (forest harvest, livestock grazing, agriculture),

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<sup>8</sup> 1983 European Conference of Ministers responsible for Regional Planning (CEMAT): "*Regional/spatial planning gives geographical expression to the economic, social, cultural and ecological policies of society. It is at the same time a scientific discipline, an administrative technique and a policy developed as an interdisciplinary and comprehensive approach directed towards a balanced regional development and the physical organisation of space according to an overall strategy.*"



- Abandonment of marginal land
- Infrastructures construction
- Deforestation
- Climate change
- Energy production and consumption.

### **Estate**

The state of land use in EU- land use distribution, land use changes, flows and patterns (CLC and socio-economic data) – has been analysed in the project alongside the definition of regional typologies. Having identified the main processes and dynamics with regard to land use changes in the European regions, it will be needed to explore the driving forces and pressures behind those processes, at least qualitatively in each regional typology.

### **Impact**

The positive or negative effects that could be derived from land use changes<sup>9</sup>.

The description of the main processes taking place and their incidence on sustainability it is analysed by means of Land Use Functions evaluation (See volume II).

The evaluation of regional performance and land use efficiency (See volume III) provides also light on the kind of impacts associated to land use patterns in the EU regions.

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<sup>9</sup> From the EU-LUPA perspective it could be understood as Land Use Functions approach and land use efficiency evaluation

**ENVIRONMENTAL (Mainly negative)**

- Erosion and desertification
- Biodiversity loss
- Habitat fragmentation
- Degradation of landscape and cultural heritage
- Degradation and pollution of soil, water and air
- Resource availability lacking
- Ecosystem services
- Climate change impacts and associated environmental risks

**ECONOMIC (positive/negative)**

- Productivity
- Competitiveness
- Efficiency
- GDP

**SOCIAL (positive/negative)**

- Effects on employment rates
- Effects on cohesion and potential risk of marginalization specially in urban areas
- Depopulation of rural areas
- Concentration of human population in urban areas
- Quality of life

Table 4 Potential impacts associated to land use changes (Prepared by Tecnalia)

**Response**

Response here is understood as the reaction by society and public sector to a situation. From a conceptual perspective, responses could be considered also driving forces once have been put in place.

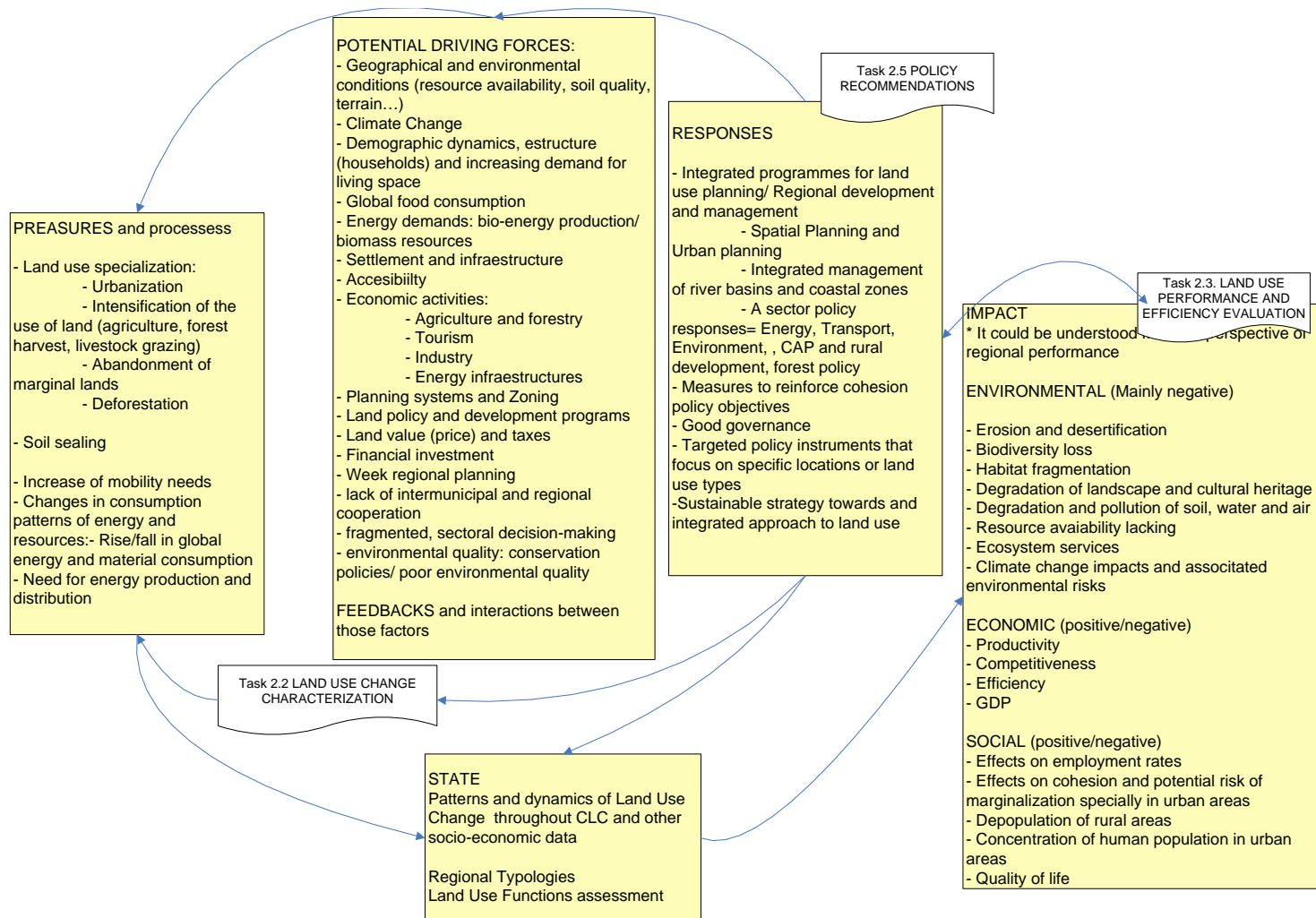


Figure 4 Adaptation of DPSIR model to EU-LUPA project. Based on OSE Report Land Use Changes in Spain. Implications for the sustainability, 2006 (Prepared by Tecnalia.)

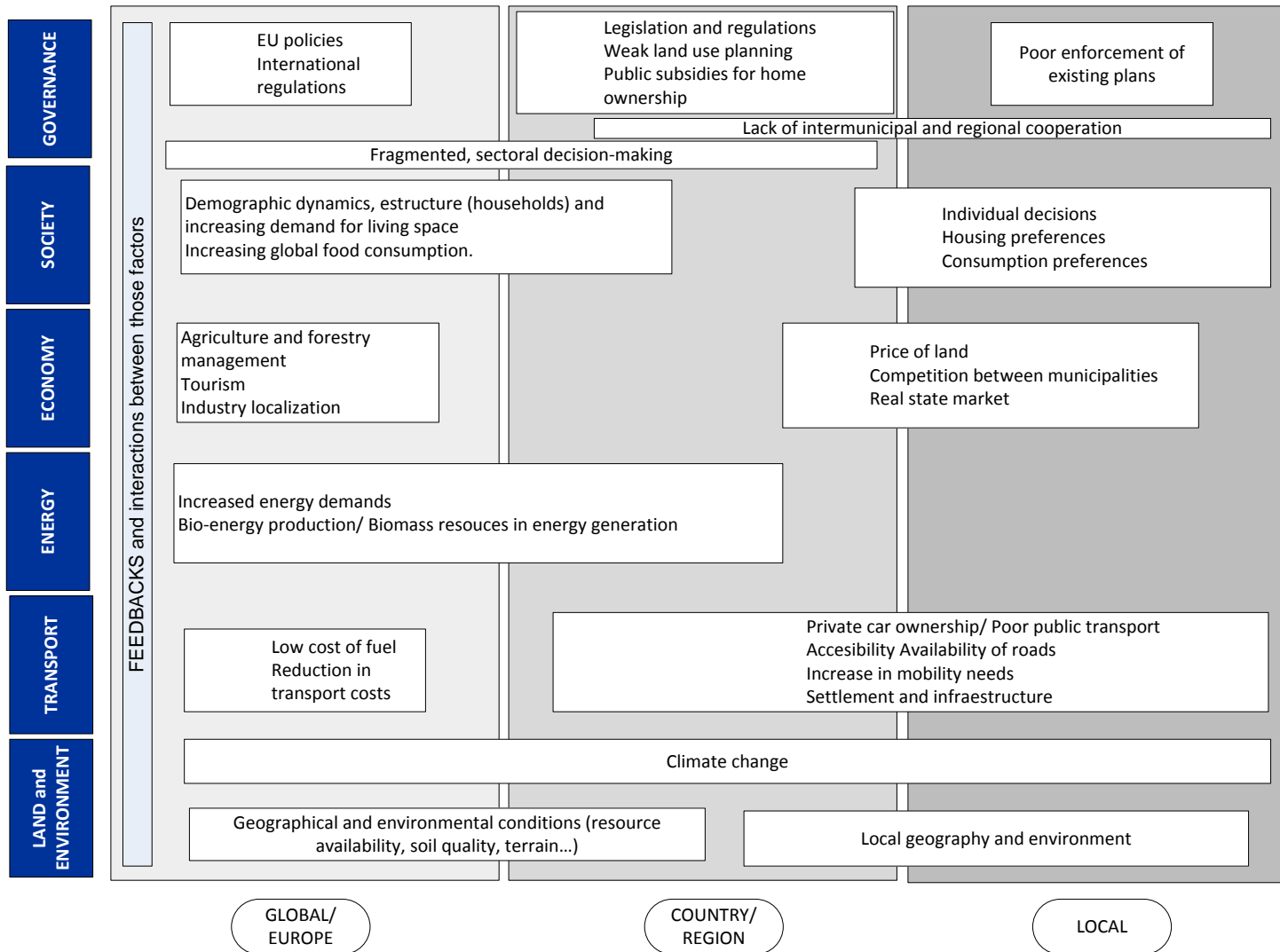


Figure 5 Drivers of Land Use Change. Own elaboration (based on EEA)

### **3.2. The government system, spatial planning policy and governance structures role in public decisions regulating land use change**

The question is: Is there any relationship between the regional land use performance and different planning systems/traditions in Europe? This is a conceptual challenge still unresolved within the EU-LUPA project.

Past and current policy decisions can influence the rate at which land use and land cover change. Our hypothesis is that different planning systems may affect land use and land cover changes in different ways: Centralized vs decentralized planning systems alongside spatial planning traditions: regional economic planning approach (France, Portugal and Germany); comprehensive integrated approach (Nordic Countries and Austria); Land use management (UK, Ireland, Belgium); urbanism tradition (Mediterranean countries) (EC The EU compendium of spatial planning systems).

At case study level it has been analyzed and also interpreted what kind of planning system is in place influencing the performance of the region. See Volumes VI to VIII)

In EU there are different spatial planning cultures, governance structures and system which has been analysed by many studies. The most remarkable ones being the classification based on the concept of families of nations developed by Newman and Thornley (1996), the traditions of spatial planning described in the European Compendium of Spatial Planning Systems and Policies (1997), the macro-regional perspectives on European Spatial Planning, analysed by Rivolín and Faludi (2005), the four-dimensional “hypercube” of territorial approach, developed by J. Farinós and described in ESPON 3.1 project 10, and the classification suggested by ESPON 2.3.211 based on devolution of spatial planning powers.

In each country the system of territorial government has their peculiarities with regard to the size of the different units (local municipalities, supra-local entities such as countries, regions), the basic functions they perform, the planning competences ascribed to each NUTS level. However, it is possible to identify some common characteristics among countries.

The key question is to identify which level or levels play the key role in land use changes. Generally speaking the local municipalities have a strong weight in decision-making, although the balance between the power of local and supra-local levels might differ among countries.

One of the most recent and remarkable analysis of planning policies and governance across EU countries is being undertaken by the PLUREL project which provides a category of countries through a joint evaluation system, bringing the government and planning aspects together<sup>12</sup>. Two dimensions are analysed: the functioning of the government system (fragmented/ consolidated) and the planning policy system (strong/ weak control through regional/ national level)

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<sup>10</sup> ESPON Project 3.1 Integrated tools for European Spatial Development

<sup>11</sup> ESPON Project 2.3.2 Governance of territorial and urban policies

<sup>12</sup> Deliverable report 2.2.1 National spatial planning policies and governance typology Ivan Tosics, Hanna Szemzo, Dora Illes, Antal Gertheis (Metropolitan Research Institute, Hungary) Konstantinos Lalenis, Dimitris Kalergis (University of Thessaly, Greece)

The level of fragmentation of the administrative government system regarding land use changes is expressed as the function of the size of the local and supra-local level which has a role to control such decisions. The strength of the spatial planning policy by the assessment of how strong influence the supra-local levels have on land-use changes (e.g. by means of spatial planning on this level, importance of local plans or veto power on local decisions). The type of regional/ spatial planning policy can be: weak level control, medium level control and strong and controlled spatial policies.

The results show a high diversity of government and planning systems in the EU countries from the perspective of land-use change. Regarding the potential control resulting from the national government and planning systems, Northern European countries (e.g. Denmark, the UK and the Netherlands) to show higher levels mostly because of their consolidated local government systems, while Southern European countries showing a higher potential (such as Cyprus, Greece or Portugal) have more fragmented local government systems, but stronger control by supra-local levels. Most new member states show a weak control potential, with the notable exemptions of Lithuania (where the tradition of strong planning is based on the presence of the former Western Soviet planning institutions) and Bulgaria (with a consolidated local government system).

Studies on other factors influencing the strength of the public control can be found in deliverables D2.2.2 and D3.3.10, studying the interests of public sector and its further instruments influencing land use change (E.g. financial incentives) and the role of governance respectively.

The results show different values regarding the potential control resulting from the national government and planning systems. However, these values don't show the real strength of the public control over land-use change, as in practice these powers can be effectuated in different ways. Because of this, these values should be seen as a potential resulting from the government and planning systems. A weak potential control is hard to overcome even if the willingness is given, while a high potential may or may not be used entirely, depending on the intentions of the public bodies in power.

Control mechanisms from supra-local levels of the planning system	Most important supra-local level (from land-use change perspective)	Local level	Countries	Value
<b>c) Strong, controlled spatial policies</b>	Large (>1M)	any		<b>7</b>
	Medium-sized (0,5-1M)	any	Portugal	<b>6</b>
	Small (<0,5M)	any	Cyprus, Greece, Lithuania	<b>5</b>
<b>B) Medium level of control</b>	Large (>1M)	Large (>30)	Denmark, The Netherlands, United Kingdom	<b>6</b>
		Medium-sized (10-30)	Belgium, France, Germany	<b>5</b>
		Small (<10)	Italy, Spain	<b>4</b>
	Medium-sized (0,5-1M)	Large (>30)	Ireland	<b>5</b>
		Medium-sized (10-30)		<b>4</b>
		Small (<10)	Austria	<b>3</b>
	Large	Large (>30)	Sweden	<b>4</b>
		Medium-sized (10-30)	Finland	<b>3</b>
		Small (<10)	Estonia, Latvia, Luxembourg, Malta	<b>2</b>
<b>A) Week level of control</b>	Any	Large (>30)	Bulgaria	<b>3</b>
		Medium-sized (10-30)	Poland, Slovenia	<b>2</b>
		Small (<10)	Czech Republic, Hungary, Romania, Slovakia	<b>1</b>

Table 5 Potential control resulting from the national government and planning systems

## Potential strength of public regulation over land use change in EU countries



ESPON © EU-LUPA Project, 2012

EUROPEAN UNION  
Part-financed by the European Regional Development Fund  
INVESTING IN YOUR FUTURE

Regional level: NUTS 0  
Source: Own elaboration, 2012  
Origin of data: PLUREL Deliverable report 2.2.1  
© EuroGeographics Association for administrative boundaries

### Legend

■ No data

■ 1

■ 2

■ 3

■ 4

■ 5

■ 6

Value	Countries
7	
6	Denmark, The Netherlands, Portugal, United Kingdom
5	Belgium, Cyprus, France, Germany, Greece, Ireland, Lithuania
4	Italy, Spain, Sweden
3	Austria, Bulgaria, Finland
2	Estonia, Latvia, Luxembourg, Malta, Poland, Slovenia
1	Czech Republic, Hungary, Romania, Slovakia

Map 1 Potential strength of public regulation over land use change in EU countries, based on level of fragmentation of the administrative government system and the type of the regional/ spatial planning policy. PLUREL integrated project, Deliverable 2.2.1, 2010.



#### 4. AWARESS RISING, POLICY MESSAGES AND RECOMMENDATIONS

From the policy framework review and the conceptual approach to land use drivers, the policy priority areas to focus on have been defined as follows:

Policy Priority Areas		
<b>Territorial Cohesion</b>		
Land policy & development programs	Cohesion policy and regional development policies and strategies	
<b>Territorial development</b>	EU sector policies Most policies have significant territorial impacts, influencing the development opportunities of territories in different ways	Energy policy
		Environment policy (WFD, ICZM, Floods directive...)
		CAP Common Agriculture policy
		Transport policy
		Sustainable development strategies
	Socio-economic processes and interactive driving forces	Demography: <ul style="list-style-type: none"> <li>• Population growth (natural)</li> <li>• Migration patterns</li> <li>• Depopulation of rural areas</li> </ul>
		Urbanization/ Urban sprawl
		Economic development
		Industrialization
		Intensification of agriculture vs abandonment of marginal lands)
		Energy challenges (production and supply)
		Social challenges
		Globalization
		Growing interdependences of regions
	Regional competitiveness	
Environmental conditions (including past human activity on the land)	Soil quality	
	Biodiversity loss, vulnerable natural, landscape and cultural heritage	
	Land degradation	
	Climate change and associated environmental risks	
<b>Land Use Planning and Planning Systems</b>		
	Spatial Planning Instruments and their catalysing potential	
	Governance	

Table 6 Policy priority areas in the EU-LUPA project. Own elaboration.

Although the cohesion policy has already significantly reduced economic, social and environmental disparities within the EU it has been observed that it could be more effective and it could play a crucial role in the context of the current economic crisis and to guarantee the compliance with the EU strategy 2020.

The commission intends to adopt a Common Strategic Framework delineating a comprehensive investment strategy, which translates the targets and objectives of Europe 2020 into investment priorities for Cohesion policy, covering structural funds, the cohesion fund, European fisheries fund and the European agricultural fund for rural development. Each member state would present their overall strategy for cohesion policy in line with the national reform programs and the thematic and country specific recommendations for Europe 2020.

Considering the objectives of the European Territorial Agenda of:

- Better coordination between the spatial policies of the Member States by introducing a European dimension and defining and implementing common priorities;
- Improved coherence between European Union policies and the spatial development policies within the Member States by influencing European Union policies from a territorial cohesion point of view;
- Better understanding of the spatial system and territorial trends at European Union level;
- Improved vertical and horizontal coordination and participation of private and public sectors towards a more responsive territorial governance.

#### **4.1. REFLECTIONS, MESSAGES AND CONSIDERATIONS FOR POLICY DEVELOPMENT**

In the light of the project results we recognized some general reflections and considerations for policy development.

Based on the evidences found in EU-LUPA results the following messages in line with both territorial cohesion and territorial development principles have arisen.

<b>Policy priority area: TERRITORIAL COHESION</b>
<b>The enlargement of the EU to 27 Member States presents an unprecedented challenge for the competitiveness and internal cohesion of the Union.</b>
<b>EU-LUPA EVIDENCE</b>
The assessment of the intensity of Land Use Change (see Volume I chapter 3.2) revealed that there is a clear east-west dimension that could be partly explained due to the enlargement of the European Union in the nineties. A couple of examples are provided which illustrate such phenomena. Large volumes of land use extensification are almost exclusively found in Eastern European member states, particularly in Poland, The Czech Republic and Hungary. This pattern is very dominant in the period 1990-2000 but continues in 2000-2006 as well. The land ownership reforms in Eastern Central Europe during the 1990s resulted in marked changes, a process which was further fuelled by the expectations regarding future membership of EU in the period up to and after the membership in 2004.
Besides, it also revealed that some of the most significant changes between 1990 and 2000

took place on the Iberian Peninsula. Considering that the agrarian reforms in such regions began during the 1970's and ended in the late 1980's, the changes could be partly explained likely due to the ascension of Spain and Portugal to the EU in 1986.

These are important observations because they highlight the types of changes that can be expected by current or future candidate countries.

**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.**

The social performance is high in the *Blue Banana* corridor. Interestingly, the regions where changes in economic performance are found do not coincide with those regions showing changes in environmental or social performance. This indicates that the three dimensions are not following the same development patterns. The economic aspects show a decrease in performance in Southern Finland, Northern Denmark, North France, Cataluña (North-eastern Spain) and central Italy, and increases in southern Norway and Levante (eastern Spain).

In the analysis of Land Use Functions, the two mainly economic LUFs (LUF1 Provision of work, and LUF2 Leisure) show a high and stable performance in the Blue Banana corridor, as it could be expected, although some negative changes in LUF 1 are observed in the fringes, e.g. in the Netherlands and East Germany, Eastern France and Barcelona. Positive changes are scattered except in Scandinavia and the Baltic countries. Other countries showing positive development are eastern Turkey, western Spain and central Europe.

LUF2 Leisure shows a more general trend to increase the performance than to decrease. In general, coastal areas and the Canarias islands improve. Romania and Bulgaria increase from low to medium, showing developments in the tourist sector in the previous years to their entrance in the EU (2007).

**Interaction is growing within the EU territory and between the surrounding neighbor 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.

Borders are almost synonymous with political, demographic and economic remoteness, the meeting place of different competences, structures, legal and social affairs and they also behave as functional and territorial discontinuities (ULYSSES Final Report).

From the reading of the EU-LUPA maps there are very clear disparities between neighboring countries, but also high differences between many neighboring regions. For instance, for France vis-à-vis Spain we know that large amounts of building, infrastructure development and agricultural changes have taken place in Spain while, apart from selected regions in France land use has been very stable. Similarly we see marked differences in the volume of land change in between old East and West Germany since the fall of the Berlin Wall.

Thus, on one hand, visualization of these differences only reaffirms the importance of considering land use implications in the border regions when assessing the feasibility or appropriateness of policy. And therefore how can these developments, e.g. through cooperation initiatives, be coordinated and create a development potential?''.

See section 4.2 of the present report

**LAND USE CHANGE TYPOLOGY**

Particularly oriented to:

Type 5: Moderate/low intensification - mainly rural conversions with low levels of land take

Type 7: Extensification- rural conversions with significant levels of farm withdrawal

Mainly characterizing the land use changes in selected regions in selected Eastern European Member States

**POTENTIAL POLICY RESPONSES**

<b>Complementary potentials towards territorial development and competitiveness</b>	More research is needed to detect territories with complementary potentials, often neighboring, which can join forces and explore their comparative advantages together creating additional development potential.
	<b>Level of implementation</b> EU Level
<b>Territorial diversity</b>	<b>Solidarity between regions and territories</b> is in line with § 3 and § 8 of the Territorial Agenda. 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.
	<b>Level of implementation</b> The adoption of this principle reinforces solidarity between States and regions and expresses the commitment to apply a cohesive and integrated approach adapted to territorial diversity when influencing or deciding on the priorities and funding of territorial and urban development policies at European Union, national, regional and local levels.
<b>Recommendations for cooperation in border regions</b>	Go to chapter 4.2 of the present report to see ULYSSES project policy messages
	<b>Level of implementation</b> n/a

**Policy priority area: TERRITORIAL DEVELOPMENT**

**Interactive mega-drivers at pan-European scale provoke territorial processes at regional and local scale**

**EU-LUPA EVIDENCE**

Changes in land use and land cover date to prehistory and are the direct and indirect consequence of human actions to secure essential resources. This may first have occurred with the burning of areas to enhance the availability of wild game and accelerated dramatically with the birth of agriculture, resulting in the extensive clearing (deforestation) and management of Earth’s terrestrial surface that continues today. More recently, industrialization has encouraged the concentration of human populations within urban areas (urbanization) and the depopulation of rural areas, accompanied by the intensification of agriculture in the most productive lands and the abandonment of marginal lands. All of these causes and their consequences are observable simultaneously around the world today.

Processes such as urbanization, agricultural intensification, a-forestation, rural abandonment, land use specialization are land use processes resulting from **interacting driving forces**

The assessment of the prevailing characteristics of land use in Europe at grid level highlights that with an average coverage of 32.4% of Europe, “Rural forest” is the most extensive land type, followed by “Arable land in predominantly rural areas” accounting for an average of 22.36% and “Pastures, agricultural mosaics and mixed forest” in predominantly rural areas covering an average of 21.61% of Europe.

The production cycle of many decades or even centuries related to forestry is responsible for a substantial part of the major changes registered in for instance Sweden and Finland, but also in Latvia, Estonia, Portugal, Spain and southwest France. It is also very interesting to see the different stages of the felling-afforestation-re-felling transformation cycle the four regions appear to be situated. While a relative dominance of afforestation appears to be taking place on the Iberian Peninsula and in southern Finland, recent felling appears as dominant in southern Sweden and especially in Latvia. It is clear that situations with continued felling without a balance of afforestation are an unsustainable land cover trend.

For agricultural withdrawal, abandonment processes have been most pronounced in the central-south and north-east regions of Hungary (between 2000 and 2006), on the Italian island of Sardinia (between 1990-2000), and in Ireland southern Portugal to differing degrees throughout the 1990-2006 period.

LUF3 Provision of food, timber and biofuels shows negative developments in several regions, especially in the Mediterranean countries, which could be associated to land abandonment and decrease in area harvested (mainly due to conversion of rural areas into urban). In contrast, there are positive changes in Scotland and central Europe. It is interesting to see the different geographical patterns in Sweden, with a high and stable performance in the North (associated to forestry production), and a negative performance in the south (linked to agricultural production).

The on-going mega trends are to some extent linked to the implementation of certain policies. Certain EU policies are affecting land use changes and will do so in the future in different ways: some of them tend to homogenize the European territory and others, as the Common Agricultural Policy provoking regional inequities as it is the case of eastern Poland in the Ukraine frontier or border Germany-Denmark reflecting different approaches to such policy, as derived for the assessment of the project case studies.

**LAND USE CHANGE TYPOLOGY**

Applies to all types but particularly oriented to:  
 Type 5: Moderate/low intensification - mainly rural conversions with low levels of land take  
 Type 7: Extensification- rural conversions with significant levels of farm withdrawal  
 Mainly characterizing the land use changes in selected regions in selected Eastern European Member States  
 Type 6: Low intensification - rural conversions with negligible land take. Some agricultural withdrawal, characteristic for continental Europe and Baltic sea regions.

**POTENTIAL POLICY RESPONSES**

<b>Strengthen research on territorial impacts</b>	Research is needed on the effect of mega-trends at regional and local scale including impact of policies
	Level of implementation EU
<b>Assessment of territorial impact of sector policies at regional level and beyond</b>	Research is needed and also more data with regard to the territorial effects of the implementation of certain policies. To date is very difficult to isolate policy implementation from other interacting mega- drivers.
	<b>Level of implementation</b>

EU	
<b>Policy priority area: TERRITORIAL DEVELOPMENT-SECTOR POLICIES</b>	
<b>There is a need for a more integrated policy approach towards sustainable land use</b>	
<b>EU-LUPA EVIDENCE</b>	
<p>European economies depend on natural resources, including raw materials and space (land resources). The EU thematic strategy on the sustainable use of natural resources includes space as a resource. It applies to areas of land and maritime space that are needed for production purposes (e.g. minerals, timber, food,..) and for various socio-economic activities. These interests are often competing for the same territorial resource.</p> <p>It is increasingly understood that a more integrated, comprehensive and up-to-date policy approach is needed, able to boost European territorial development towards sustainability through increased efficiency and multi-functionality.</p> <p>There are a number of trade-offs between many sector policies that try to manage economic, social and environmental processes and dynamics. In particular, this includes activities relating to: industry, transport, energy, mining, forestry, agriculture (EEA, 2010), as well as recreation and environmental protection/conservation. Policy decisions that shape land-use involve trade-offs between sector interests, including industry, transport, energy, mining, agriculture, forestry (SOER, 2010) as well as protection/ conservation and recreation activities. There is a lack of a comprehensive and integrated approach that takes those trade-offs between many sector, social and environmental issues into consideration.</p> <p>We could suggest many examples of trade-offs between different land uses and territorial conflicts. For instance, the territorial conflicts between hydropower generation and goals of the Water Framework Directive, the indirect land-use effects of bioenergy production, the wind power generation and landscape or and impacts on bird life, and at a large scale the urban sprawl phenomena and the goal of polycentrism.</p> <p>One of the main failures to effectively control urban sprawl is the lack of horizontal (space) and vertical (institutional) integration of policies (EEA, 2006). City boundaries are becoming diffuse increasing the complexity of levels of governance (e.g. intermediate metropolitan administrations).</p>	
<b>LAND USE CHANGE TYPOLOGY</b>	
Applies to all Land Use Change Types	
<b>POTENTIAL POLICY RESPONSES</b>	
<b>Integrated programmes for land-use planning/ regional development and management</b>	<p>European policy, although having no spatial planning responsibility, sets the framing guidance for planning.</p> <p>Institutional arrangements dictating land use policy in Europe include the EU objective for Territorial Cohesion – with which this project is closely connected to – the Water Framework Directive, Common Agricultural Policy (CAP), Natura 2000, and with an increasing importance, Energy 2020.</p> <p>It has been said that territorial cohesion supports the coordination of sector policies and can be regarded as a spatial representation of sustainability (EEA, 2010)</p> <p>According, to the EEA, “these trade-offs can be tackled through</p>

	<p>integrated planning for land use and territorial planning, sector policies, as well as targeted policy instruments, such as protected area networks.” (EEA, 2010: 5).</p>
	<p><b>Level of implementation</b> It is a recommendation applicable at regional and local scale where legal competencies derive from European directives.</p>
<p><b>Policy integration</b></p>	<p>ESPON RISE<sup>13</sup> Regional Integrated Strategies for Europe enhancing integration of sectoral policies and creating sectoral plans in cooperation with territorial ones. Addresses the need to integrate policy across different sector planning domains. Defines policy integration as a process either of coordinating and blending policies in a unified whole, or of incorporating concerns of one policy into another.</p> <p>Integration of sector policies within land use planning processes could involve:</p> <ul style="list-style-type: none"> <li>• Mobility management (sustainable transport) <ul style="list-style-type: none"> <li>○ Hard measures s new sustainable developments</li> </ul> </li> <li>• Energy</li> <li>• Water management (including ICZM) See, for example, DG Environment News Service 2/2010, Special Issue on “Coastal Management”.</li> <li>• Forest management (private – Finland/ public owner)</li> </ul> <p><b>Level of implementation</b></p> <p>Applicable basically at regional scale and local scale considering land use planning processes</p> <p>Constraints</p> <ul style="list-style-type: none"> <li>• Legal and technical frameworks</li> <li>• Differing planning traditions</li> </ul>
<p><b>The integration of cross-sector policies of land use, energy and water management into a single planning instrument at regional level, based on an understanding of territorial dynamics</b></p>	<p>This will help regions to advance towards a more sustainable territorial management, in line with § 10, § 11, § 23 and § 27 of the Territorial Agenda. The adoption of this principle expresses the acknowledgement of the specific responsibilities of sectoral policy-makers and the will to cooperate with and influence them in order to ensure a stronger territorial and urban focus when conceiving and delivering the thematic policies. The goal is to better fine-tune specific thematic actions, to facilitate their coordination and to reduce undesired externalities. Initiatives with this perspective have already been established, for instance the ICZM (Integrated Coastal Zone Management). This is a necessary tool for planning the development of coastal areas, where conflicts may arise when planning off-shore wind parks or other ocean technologies, which may interfere with security issues, fishing interests, cargo traffic, tourism or protection of marine biodiversity.</p>

<sup>13</sup> ESPON RISE Regional Integrated Strategies in Europe Draft Final Report 26/03/2012

	<p>Level of implementation</p> <p>Regional level</p>
<p><b>Good governance for coordination of different sector policies and various policy levels.</b></p>	<p>a) horizontal coordination of sector administrations and policies  b) vertical coordination of different levels of responsibilities and also  c) public participation</p> <p><b>Multi-level governance</b> is in line with § 5 and § 17 of the Territorial Agenda. The adoption of this principle expresses the commitment to structure proper channels of communication, participation and cooperation in order to make the territorial assessment, planning and management a fully democratic, transparent and efficient process.</p> <hr/> <p>Level of implementation</p> <p><b>Subsidiarity</b> is in line with § 30 and § 33 of the Territorial Agenda. The adoption of this principle states that the full and efficient achievement of the aims of the Territorial Agenda can best be pursued according to the institutional arrangements within each Member State, through a strong involvement of national, regional and local powers and stakeholders and a dialogue with the European Commission and the other European institutions.</p>
<p><b>Policy priority area: TERRITORIAL DEVELOPMENT</b></p>	
<p><b>There is still a double-sided relationship between land and growth in most of the regions in the European territory</b></p>	
<p><b>EU-LUPA EVIDENCE</b></p>	
<p>We need land to grow, but our growth puts pressure on the social, economic and environmental services we can obtain from it. But it also shows that the drivers, the enablers and the ingredients of what we require for development are the very things pressuring the over-consumption of land. This pressure cannot continue to escalate as we continue to develop and it means that a growth model that is blind to the host of thresholds related to land and its resources cannot continue sustainably.</p> <p>European economies depend on natural resources, including raw materials and space. Land is a limited resource. Different sector interests are often competing for the same territorial resource.</p> <p>Europe's Resource Efficient Strategy sets the goal of no additional land consumption after 2020, yet this mandate will mostly likely work against the goals of a number of regions; particularly those seeking to ascend the socio-economic ranks toward the most established European nations. The fact that the magnitude of land change has been more or less maintained throughout the period from 1990 to 2006, and prospective new members of EU appear ready to make use of land change as a vehicle for economic progress, it seems that measures of compensating any limitations in this respect would be needed. Therefore, it is both an unlikely and unrealistic goal for a number of European regions.</p>	
<p><b>Economic growth matters</b></p>	
<p>The behaviour of macro-economic sectors such as tourism, industry development, agriculture, energy (production, supply, distribution and consumption) and transport is translated into land use changes in EU.</p>	



Considering the amount of change, within the entire 16-year time period analyzed in the EU-LUPA project it is notable that some very significant levels of land change have taken place - in some regions almost 30% of the total area has reported change. The spatial distribution of these changes is also quite territorialized, where vast changes are especially evident in areas such as Spain, Portugal, the Czech Republic, The Netherlands and Ireland.

In terms of per capita urban land take, the main influences are the existence of second homes, large touristic infrastructures and a dispersed settlement structure. Relatively large shares of second homes are notable to varying degrees in the Mediterranean regions, as well as in Finland, Estonia, Denmark and Sweden, often tied to coastal or mountainous areas where former small scale primary sector activities (fisheries, farming, forestry) have been or are in decline. Meanwhile, extensive touristic infrastructure coupled with a very high average population density is the driver of such a high degree of urban land take in Malta and coastal zones especially around the Mediterranean Sea.

The shift from 1990-2000 to 2000-2006 also relates to changes in mobility, where halted subsidies for dwellings and an increase of suburbanization have been influential on the slowing down and decline in extensification (Vobecká 2010), an issue which is dealt with further in connection with the Land Change Hotspots. In the 2000-2006 time series from very significant intensification is especially notable in particular regions of Norway. These are regions that, we know have undergone relatively little amounts of land change (by area); however the changes that have taken place were very intensive. This is due to the development on intensive mining, hydrocarbon extraction and other heavy industrial activities in rural and remote locations. Interestingly, these intensifications are not taking place in parallel with extensification of other land covers in these areas, which indicate that these are “new” economic activities that are taking place on previously stable and unchanged land.

Quite high rates intensification is notable for many regions in Spain in all three time series. The highest levels of intensification have taken place for coastal regions along the Mediterranean and for the island regions. This is clearly related to the growth of artificial surfaces in urban areas. CLC flow data and EEA land cover analysis (EEA, 2011) indicates that much of this intensification is due to the sprawl of economic sites and infrastructures (which both construction areas and transport infrastructure are grouped).

European tourism is an activity requiring still larger areas, and the development of the Spanish coastline illustrates that it is not only a question of short term changes, but seems to have been a consistent development process throughout the whole period from 1990 to 2006.

### Geographical intrinsic features and physical conditions matters

And this is particularly relevant in border regions for instance. The geographical features and conditions of a region determine the availability of resources, including existing land for the development of certain activities which are highly dependent on the demand of specific locations (including land productivity) such as agriculture, aquiculture, forestry, tourism, energy production (particularly renewal), and associated industrial sectors (raw material depending industries- iron and steel industries, mining activities). Most of these categories are included in the CORINE LAND COVER classification. The use of land is seen here as a means of production.

## Land price matters

One of the lessons learned: land is still too cheap for new development, while redevelopment is too expensive (e.g. regeneration of brownfields). However, at long term redevelopment of urbanized areas and containing new development is the only sustainable approach.

Real estate market is an important player from the supply side. According to Bertaud land price profile follows approximately the population density profile in market economies. This promotes the urbanisation of the less dense areas within a certain time distance of the main centre.

The differential price between agricultural land and already urbanised land discourages the revitalisation or recycling of built space generating derelict land. It also has a strong impact in fertile flat areas where accessibility generates a conflict of uses leading to a marginalisation of agriculture.

High volumes of land use intensification are especially notable in countries such as The Netherlands, Brussels, Spain, Portugal and Croatia. In Spain, this is especially evident for regions along the south and east coast as well as the island regions. On regional/territorial level it is evident that intensification is associated with the growth (sprawl) of urban areas and their associated artificial surfaces. But furthermore – and in a very high degree in, for instance in Portugal, Spain and other Mediterranean areas, the issue of ownership reforms and characteristics of land tenure are a driver of intensification. This issue will be dealt with in more detail in relation to the identification of land change hotspots. Intensification also appears to take place in a greater degree for coastal regions (cf. in Spain, France, Croatia). It is possible that this pattern is related to the growth of the coastal tourism in these regions, but additional validation is necessary.

A change in the price of agricultural and forest products and also in the prices of land for housing or industrial site location, can affect landowners' decisions whether to keep the land in those uses.

## Technology push and market pull matter

Market forces and the evolution of society in general support a geographical concentration of activities.

The on-going demographic changes with an ageing European population, in addition to migration, affect regions differently and increase the competition for skilled labour.

Yet all things considered, the most dramatic land change process taking place in Europe is predominantly driven by Europe's path of socio-economic development, which is taking place due to globalization and its effect on the global division of labour. The result has been the continued decline of land-based economic production – i.e. agriculture, forestry, mining and quarrying, etc. – in favour of knowledge-intensive, innovation-driven and service-based economies on the other hand. And this is where the notion of intensity adds to the understanding of processes and mechanisms behind land changes.

While missing data for Sweden, Finland and Norway for the period 1990-2000 does not allow a comparison between the two periods, an important issue of the effects of increasing activities related to resource extraction, especially in relation to oil and gas development, is very apparent for the 2000-2006 period shown for Norway. While fisheries used to be a mainstay for coastal communities in Norway the picture today is a high degree of dependency on the sea, but in relation to energy resource extraction. This leads to the

inclusion of large areas for on-shore production facilities, but requires at the same time related economic activities – processing, investigation, planning, education etc., which shows through inclusion of still larger areas for housing.

Ireland being a “hotspot” for IT development during the 1990’s had some spin-off in relation to increased intensification of activities related to land use. Partly because the attraction of labour force away from direct land use to industrial activities required adjustment in land related activities requiring technology to replace the missing workforce. With a partly collapse of the IT-adventure after 2000 the process described above came to a halt, and the shift is apparent when comparing the 1990-2000 and the 2000-2006 situations.

## Population dynamics and future scenarios including visions and strategies matters

Population growth or decline, due to both natural and migratory processes, implies changes in the need for housing, services, employment, resources including energy, food, goods and services. It is also important to bear in mind that the demand of housing units is also determined by the average number of people living in a household which is a changing variable.

As has been seen in the previous sections population growth is not the only determinant the outward expansion of built-up areas. There are other elements related to cultural aspects and individual decisions modulated by the supply side and other external conditions (price, transport, and cost).

The feedback between drivers and urban process can be seen in the case of population dynamics:

- Population change is an important consequence of urban conditions, especially the availability of economic opportunities (Green and Owen, 1995; Champion and Fisher, 2004; Storper and Manville, 2006). Migration is a response to differences in employment or the quality of life between places, even if the process of adjustment is inefficient. The bigger the differences, the more worthwhile it may be to move, subject to barriers such as distance, legal restrictions, housing constraints and information on the opportunities available. The propensity of people to move is affected by their age, qualifications, financial resources and sense of attachment.
- Population change is also an important influence on urban economic conditions (Glaeser et al., 2001; Glaeser, 2005; Florida, 2004; Krugman, 2005). There is evidence that sheer population size and deep labour pools increase agglomeration economies and productivity (Rosenthal and Strange, 2004; Rice et al., 2006). Loss of population has certainly caused wider economic and environmental problems for cities (Cheshire and Hay, 1989; Begg et al., 1986). Shifts in the level of population affect local jobs through demand for consumer goods and services, housing, schools, etc. Changes in working age residents also affect the supply of skills, which may influence mobile investment decisions. The composition of the new population is bound to have an important bearing on the scale and nature of the economic impact.

## Urban growth matters

Urban growth is at expenses of other land uses. In the core cities there is a clear dominance of new building development on previous agricultural land. This is due to several factors. Firstly most of the available land for urban growth is agricultural. Secondly, agricultural land

is in most cases technically more suitable for construction than forest areas both topographically and in economic terms. Thirdly, natural areas are often considered as valuable recreational areas and hence cities have protected them from building activities. Grouping cities by regions highlights some specificities like in Eastern countries about 30% is developed on previous forests. In the large urban zones the agricultural land is still the primary source. However, in Eastern cities most of the land is developed on forests. (See Volume IV chapter 3)

### Subsidies, funding and investment matter

In the Czech situation it is interesting to point out the seemingly high degree of rural extensification being countered by urban-related intensification in the capital region of Prague. Further, when comparing the 1990-2000 and the 2000-2006 results, even while taking into account the much larger time span in the former time period it appears that extensification processes have slowed for the country as a whole. EEA country analyses show that the main driver of extensification has been the conversion of different crop areas into land for pasture. This is a process which has been driven by national policy that uses subsidies to encourage the grassing of arable and extensive grassland management.

The situation in Poland was, however also affected through the lack of funding for investments in many of the small farms functioning more as subsistence bases for a still older population – a situation that can be found in rural areas, not the least in regions remote to the capital regions or in mountainous areas in most of the former “East Block”. And several of the regions where this has been the dominating characteristic has continued being regions of decreasing intensity through the 2000-2006 period as well. One important element in this connection has in Poland been the small size of a substantial part of the already private farms. The advantage in other parts of East-central Europe has been that in the aftermath of the first round of extensification the new private farms were able to establish themselves not as subsistence activities but as professional and capital intensive farms on previous state or cooperative owned large scale farms. And similar situations have appeared in relation to other types of land use.

### Land ownership and land tenure matter

The question of land ownership and land tenure has been extremely important in relation to the registered changes in Southern Europe, and especially on the Iberian Peninsula. Both Spain and especially Portugal land ownership was until the late 1970s and 1980s characterized by Latifundias, i.e. extremely large private estates with the owner usually living in the larger cities. Even providing job opportunities to workers and to some extent leasing out land to tenants, this type of land use has mostly been characterized by very low land use intensity. In Portugal the Agrarian Reform in 1975 being an important part of the “Carnation Revolution” laid down the principles for the expropriation of land from the Latifundias and distributing ownership to former workers or tenants. Even some intensification took place the attempts to establishing cooperatives had limited effect, and a break-through in relation to market based economy followed by the reformed Agrarian law enacted by the parliament in late 1988. This enabled the new ownerships to move towards more intense production structures. At the time of EEC membership in 1986, low land and labor productivities were the most striking features of Portuguese agriculture, reaching

before entry only 46% and 13% of EU-10 average, respectively (Mykolenko, Raymond, & Henry, 1987). Especially in areas close to urban centres were the first places to take advantage of the opportunities connected to the CAP (Diogo and Koomen, 2010).

As an important consequence all regions in Portugal are identified as hotspots – albeit to differing degrees – in all of the time series'. Consultation with the maps showing total land change by area shows that this is mainly due to the fact that all regions show very high levels of overall change. This is by the high levels of ongoing changes related to forest management. Conversely, the intensity maps above show more stable patterns with the exception of two regions. Lisbon and Alentejo. In the former, intensification is predominantly related to residential sprawl between 1990 and 2000; a process that has slowed considerably since then (EEA, 2011). In Alentejo, relatively high land change is characterized as an extensification process. This is due to the fact that land abandonment due to the withdrawal of farming activities (EEA, 2011).

Besides processes similar to the above described, where a clear divide between latifundios (dominating in the south) and minifundios (dominating in the north) both have been characterized by low productivity the membership of EU has had some of the same land use consequences as in Portugal. Intensification due to structural changes in land ownership has been an important factor, and this combined with the CAP accounts for much of the intensification taking place in rural areas. As emphasized by Molina (2002, p2), however, "Land tenure is, after decentralization, the second most important supporting/impeding factor for National/Regional Forest Programmes in the Mediterranean regions". In the case of rural Spain the changes can be illustrated through the example of the Dehesas, a traditional, low-input, extensive agroforestry system (Meeus 1995, here from Plieninger and Schaar, 2008) combining forestry with extensive livestock grazing and farming. Low productivity and low intensity has been an easy target for intensification where the most influential force being the Common Agricultural Policy, which supported the production of cereals and cattle, sheep, and goat husbandry in the dehesas. Again an important process adding to explaining the changes in intensification.

On the Iberian Peninsula, but definitely also in other parts of Southern Europe, a starting point characterized by very low land use intensities in rural areas and farming practices more related to subsistence and local markets than to European and World Market conditions have been an obvious starting point for a process of land use intensification in rural areas that took off before 1990, peaked in the period 1990 to 2000, and now being more or less "normalized" except for regions in Portugal where intensification of rural areas are still ongoing. And instead of rural intensification related to rural activities many of former rural areas – especially in coastal areas – are exposed to a new category of intensification related to urban sprawl.

In contrast to the situation on the Iberian Peninsula, the immediate effects of the inclusion of East-Central European countries - previously part of the "East Block" mostly characterized by state and cooperative ownerships - are reflected through a drastic decline in intensity over substantial areas in the period from 1990 to 2000. In contrary to the situation in Spain and Portugal the basic land reforms distributing former estate land to small and medium scale farming had taken place pre Second World War, and in many cases during the 19<sup>th</sup> century. The structural changes connected to the post WW2 reforms in ownership instead resulted in the establishing of state farms and cooperatives. It had some immediate consequences in relation to both intensity and productivity, and was paralleled by regional policies in relation to rural areas due to the state interests in maintain a high level of

production to serve the requests from the Soviet Union through COMECON. And as a consequence transfer payments and subsidies enabled intensities and productivities that were unrelated to market conditions. So the development from 1990 and onwards abandoning the former state and cooperative ownerships forms has had some immediate consequences in relation to intensity. On one hand that many of the new private farms were small and did not have the necessary means to ensure a high intensity in land use. And on the other hand that the larger farms with intensification potentials in many cases involved foreign investments which did not necessarily lead to intensifications. The situation in Poland being different in this respect because of a dominance of private land use activities, and as a consequence effects as described above only relating to the relatively smaller areas owned by cooperatives and a few state holdings as well.

**LAND USE CHANGE TYPOLOGY**

It applies to all Land Use Change types

**POTENTIAL POLICY RESPONSES**

<b>Research and studies for the Identification of conflicting land use demands.</b>	In order to be able to resolve such conflicts and to guide land use intensity to support sustainable land management.
	Level of implementation Local and regional

<b>Economic instruments for land use planning</b>	Legal framework, land taxation systems, cadastral systems, territorial planning, etc. in place Taxation, fees & charges imposed on undesired land-use practices Tradable permit systems - option for land consumption targets Payments for ecosystem services Open space & green field developments through taxation
	Level of implementation n/a

<b>Policies supporting agricultural prices as an incentive to keep land in farming</b>	Environmental. motivated subsidies for specified land use
	Level of implementation EU

<b>Integration of sector policies</b>	See page 40 of the present document
	Level of implementation n/a

**Policy priority area: TERRITORIAL DEVELOPMENT- ENVIRONMENT**

**The occurrence of hazards due to climate change is increasing and different parts of Europe experience different types of hazards.**

**EU-LUPA EVIDENCE**

Artificialisation and sprawl intensification patterns in regions with foreseen urban climate risks could increase their vulnerability.

Forest and agriculture land use changes (extensification or intensification) in regions with

foreseen changes in agricultural productivity or ecological niche due to climate should explore the potentials or define how to reduce vulnerability (soil degradation, hydrological cycle regulation, economic activities).

Land use change plays a major role in climate change at global, regional and local scales by increasing the release of carbon dioxide to the atmosphere and other greenhouse gases by means of the alteration of soils and natural vegetation, the modification on the hydrology and the elimination of forest cover.

At global scale, land use change is responsible for releasing greenhouse gases to the atmosphere, thereby driving global warming. Land use change can increase the release of carbon dioxide to the atmosphere by disturbance of terrestrial soils and vegetation, and the major driver of this change is deforestation, especially when followed by agriculture, which causes the further release of soil carbon in response to disturbance by tillage. Changes in land use and land cover are also behind major changes in terrestrial emissions of other greenhouse gases, especially methane (altered surface hydrology: wetland drainage and rice paddies; cattle grazing), and nitrous oxide (agriculture: input of inorganic nitrogen fertilizers; irrigation; cultivation of nitrogen fixing plants; biomass combustion).

Though land use changes certainly plays a critical role in greenhouse gas emissions, the complexity and dynamic interplay of land use processes favouring net accumulation versus net release of carbon dioxide and other greenhouse gases makes it a poorly constrained component of our global budgets for these gases; an active area of current research. A further source of uncertainty in estimating the climate changes caused by land use change is the release of sulphur dioxide and particulates by biomass combustion associated with agriculture, land clearing and human settlements. These emissions are believed to cause regional and global cooling by the reflection of sunlight from particulates and aerosols, and by their effects on cloud cover.

Land cover changes that alter the reflection of sunlight from land surfaces (albedo) are another major driver of global climate change. The precise contribution of this effect to global climate change remains a controversial but growing concern. The impact of albedo changes on regional and local climates is also an active area of research, especially changes in climate in response to changes in cover by dense vegetation and built structures. These changes alter surface heat balance not only by changing surface albedo, but also by altering evaporative heat transfer caused by evapotranspiration from vegetation (highest in closed canopy forest), and by changes in surface roughness, which alter heat transfer between the relatively stagnant layer of air at Earth's surface (the boundary layer) and the troposphere. An example of this is the warmer temperatures observed within urban areas versus rural areas, known as the urban heat island effect. Apart from comfort, there are other health problems that could be derived from climate change and influenced by changes on land use, and those are the as the shift in the distribution of ticks, vectors of the Lyme disease and tick-borne encephalitis. Other examples include the extended range in Europe of the Asian tiger mosquito, a vector of several viruses, with a potential for further transmission and dispersion under the changing climate conditions.

Land use practices and development planning could have a major impact on hydro-morphological alterations and therefore on water scarcity and adverse ecological consequences and social impacts. The issues of water quantity and quality, irrigation water demand, water-use conflicts, environmental and socioeconomic aspects and risk management aspects can be better integrated in the institutional and political systems.

<b>LAND USE CHANGE TYPOLOGY</b>	
It applies to all Land Use Change types but particularly to: Type 1: Very high intensification - land take, often from natural areas Type 2: High intensification - continued urban land take from rural land Type 3: Moderate/high intensification - urbanizing areas while maintaining rural functions	
<b>POTENTIAL POLICY RESPONSES</b>	
<b>Land use policy towards adaptation to climate change impacts</b>	Reinforce the role of spatial planning and development and the importance of adopting a territorially-based approach when addressing the issue of adaptation to climate change, one of the challenges mentioned in the Territorial Agenda. The UNFCCC Kyoto Protocol promotes among others practices that reduce emissions of methane and nitrous oxide from agricultural land.
	Level of implementation EU and national scales
<b>Promoting climate change adaptation strategies EU policies on climate change adaptation are directly relevant to current and future land-use practices and economic sectors depending on this.</b>	Adaptation strategies include banning new construction in vulnerable areas with high risk of flooding, minimizing flashy runoff from impervious surfaces, changing the requirements for stormwater retention structures in new developments, and protection of wetlands that buffer runoff from heavy rainstorms.
	Level of implementation Mainly regional and local scales
	Land use planning to reduce urban heat effects, through maintenance of green areas, use of different building materials.
	Level of implementation Local scale
	Land use policies discouraging shoreline building allowing communities to be more flexible to deal with sea level rise.
Level of implementation Regional and local	
<b>Policy priority area: TERRITORIAL DEVELOPMENT-SECTOR POLICIES</b>	
<b>There are development opportunities for the production of renewable energy sources</b>	
<b>EU-LUPA EVIDENCE</b>	
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.	
ReRisk project on the implications of energy poverty in EU regions for economic competitiveness and social cohesion.	
The original indicators used to measure economic and social vulnerability, as well as dependence on (motorized) transport have been completed with data on the climate characteristics in the regions (important for heating and cooling demand), and the potential to develop renewable energy resources (PV and wind).	
<b>LAND USE CHANGE TYPOLOGY</b>	
It applies to all Land Use Change types	



<b>POTENTIAL POLICY RESPONSES</b>	
<b>Prepare for climate change impacts in the regional energy infrastructure</b>	Climate change will vary from region to region - with coastal and mountain areas and flood plains particularly vulnerable – and therefore many of the adaptation measures will need to be carried out regionally <sup>10</sup> . Impacts are likely to be severe in the Southern regions belonging to Spain, Greece, Portugal and France, both in terms of energy production and demand. In these regions, summers are going to be complicated for energy companies, due to diminishing water reserves, higher average temperatures and heat waves, and consequently, forest fires. The supply problems will coincide in time with higher peaks of electricity demand, derived from a more extended use of air-conditioning.
	<b>Level of implementation</b> Depending on the competences for energy sector in each EU country. Generally speaking at National level but also regional.
<b>Policies to accelerate deployment of renewable energy sources</b>	Evaluate the feasible potential of all renewable sources in the most vulnerable regions Regions should thoroughly evaluate the “feasible” potential of the different technologies available, including concentrated solar, geothermal, wave / tidal technologies, biomass, and hybrid solutions. Regions with different types of potential for renewable energy can cooperate to improve the reliability of energy supply from these sources. The generation of “maps of untapped energy reserves” can be of great use for developing longer-term plans in the regions.
	<b>Level of implementation</b> EU level
<b>Sustainable use of biocrops</b>	Making extended use of biofuels in the region could lead to social and ecological problems [EEA 2005]. Biocrops compete with other uses for scarce resources, such as land and water, in agriculture, forestry or natural sites. Specializing on certain types of plants with high energy yield could jeopardize other objectives of agricultural policy, such as that of promoting a higher level of regional sufficiency with regard to food production (by growing subsistence crops). Large-scale biomass plants could accelerate deforestation or endanger the local biodiversity. Apart from choosing technologies and crops that are appropriate in a given regional context and robust with regard to possible climate change impacts (droughts), attention must also be paid to the parallel development of local social and educational skills, which will be needed to manage and maintain the installed facilities.
	<b>Level of implementation</b> It is a recommendation applicable at national scale where legal competencies derive from European directives.
<b>Policy priority area: TERRITORIAL DEVELOPMENT- ENVIRONMENT</b>	
<b>The way land is used has impacts on biodiversity and ecosystem services</b>	
<b>EU-LUPA EVIDENCE</b>	

The way land is used is one of the principal drivers of environmental change, having impacts on climate, biodiversity and ecosystems services and cause degradation and pollution of water, soil and air. (EEA, 2010a) and in turn, environmental change, particularly climate change, will increasingly influence the way we use land as communities strive to adapt to and mitigate the effects of a changing climate (EEA, 2010b).

Changes in land use could be seen as a driving force and also as an impact, to the environment, biodiversity, climate change, natural resources. For instance, a change in the land use resulting from urbanization or from converting forest into agriculture may have an impact on ecosystems, biodiversity and also on the climate (affecting carbon balance).

### **Biodiversity loss**

Biodiversity is often reduced dramatically by land use changes. When land is transformed from a primary forest to a farm, the loss of forest species within deforested areas is immediate and complete. Even when unaccompanied by apparent changes in land cover, similar effects are observed whenever relatively undisturbed lands are transformed to more intensive uses, including livestock grazing, selective tree harvest and even fire prevention. The habitat suitability of forests and other ecosystems surrounding those under intensive use are also impacted by the fragmenting of existing habitat into smaller pieces (habitat fragmentation), which exposes forest edges to external influences and decreases core habitat area. Smaller habitat areas generally support fewer species (island biogeography), and for species requiring undisturbed core habitat, fragmentation can cause local and even general extinction. Research also demonstrates that species invasions by non-native plants, animals and diseases may occur more readily in areas exposed by land use changes, especially in proximity to human settlements.

The increase on the demand for food, fibres, energy, water and other resources, derived from changes in lifestyle is expected to continue although demographic scenarios for Europe forecast stabilization in the population growth over the next decades. This is putting a great pressure on biodiversity particularly derived from intensification of land use, directly through, for example, habitat destruction and resource depletion, or indirectly through, for example, fragmentation, drainage, eutrophication, acidification and other forms of pollution.

In fact, developments in Europe might have a global scale effect, since the demand for natural resources nowadays exceeds Europe availability and production.

From the analysis of the urban dimension in the EU-LUPA project (see Volume IV) it can be observed that slow developing cities are more common in urban cores and metropolitan areas. It reflects to a certain extent the limits of growth of current metropolitan areas because of physical constrain –no more space to growth, but often also related to more strict planning and development of green infrastructures which delineates new boundaries. This is complemented with the lowest percentage of very rapid growing cities. The rapid growing cities are found on the suburban areas and arable land in peri-urban. This reflects the current trend of new developments close to existing poles either in the periphery (suburban areas) or in regions that used to have a more compact distribution of cities in a rural context.

### **LAND USE CHANGE TYPOLOGY**

It applies to all Land Use Change types but mainly to:

Type 1: Very high intensification - land take, often from natural areas

Table 1 Type 2: High intensification - continued urban land take from rural land

Type 6: Low intensification - rural conversions with negligible land take. Some agricultural withdrawal  
 Type 7: Extensification - rural conversions with significant levels of farm withdrawal

**POTENTIAL POLICY RESPONSES**

<p><b>Green infrastructures for enhancing and protecting biodiversity in urban areas</b></p>	<p>The concept of Green Infrastructures offers a promising way to integrate biodiversity and ecosystem services in urban planning and governance, in a variety of contexts and purposes. Green Infrastructures is understood as a network of natural and semi-natural areas, features and green spaces in rural, peri-urban and urban, terrestrial, freshwater, coastal and marine areas, which together enhance ecosystem health and resilience, contribute to biodiversity conservation in an integrated manner, and benefit human societies through the maintenance and enhancement of Ecosystem Services. (Naumann et al., 2011a). In urban areas, Green Infrastructures covers a diverse array of green spaces, ranging from parks, green roofs and walls to urban farms and forests.</p> <p>The multiple benefits of Green Infrastructures are recognized by many high-level initiatives, such as the EU's 2020 Biodiversity Strategy, The New Charter of Athens, the Leipzig Charter, and EU soil sealing guidelines. Green Infrastructures has also begun to be implemented through policy and planning instruments (EC, 2012b). The relationships among relevant Green Infrastructures features and objectives, and their multiple impacts on biodiversity and Ecosystem Services, are the subject of much existing research. However, more work is needed to enhance the evidence base for the maintenance, restoration, enhancement and sustainable use of urban biodiversity so as to translate the broad concepts of Green Infrastructures into operational and implementable frameworks, methods, and tools for integrating Green Infrastructures into urban planning and governance.</p> <p>The role of green infrastructure and site protection under Natura 2000 as well as the re-use of land are also important aspects of land resource management. Green infrastructures and its provision of ecosystem goods and services are linked to land take issues.</p> <ul style="list-style-type: none"> <li>• It contributes to minimising natural disaster risks, surface water run-off to reduce the risk of flooding, preventing soil erosion, connecting habitats, mitigating urban heat island effects, etc.</li> <li>• Land take / spatial planning - key role in facilitating and delivering Green Infrastructures.</li> </ul>
<p><b>Land use policy to reduce impacts on agriculture and forestry</b></p>	<p>Forest management (private – Finland/ public owner)          Suitability of agriculture production (selection of species vs productivity)</p>
	<p><b>Level of implementation</b>          Regional and local</p>

**Policy priority area: TERRITORIAL DEVELOPMENT- ENVIRONMENT**

**The way land is used has impacts on land degradation, and pollution on water, soil and air**

**EU-LUPA EVIDENCE**

Monitoring and mediating the negative environmental consequences of land use while sustaining the production of essential resources is a major priority of policy-makers around the world.

Land is one of the environmental conditions that, right alongside energy resources, water and climate, we need to use within a sustainable level in order not to endanger our continued development. But we could even go a step further to say that land is the most tangible of these conditions. Like many resources, we continue to be dependent on land and its resources. We rely on it in the sense that land type is one of the most integral components for determining how land is used.

Changes in land use and land cover are important drivers of water, soil and air pollution. Perhaps the oldest of these is land clearing for agriculture and the harvest of trees and other biomass. Vegetation removal leaves soils vulnerable to massive increases in soil erosion by wind and water, especially on steep terrain, and when accompanied by fire, also releases pollutants to the atmosphere. This not only degrades soil fertility over time, reducing the suitability of land for future agricultural use, but also releases huge quantities of phosphorus, nitrogen, and sediments to streams and other aquatic ecosystems, causing a variety of negative impacts (increased sedimentation, turbidity, eutrophication and coastal hypoxia). Mining can produce even greater impacts, including pollution by toxic metals exposed in the process. Modern agricultural practices, which include intensive inputs of nitrogen and phosphorus fertilizers and the concentration of livestock and their manures within small areas, have substantially increased the pollution of surface water by runoff and erosion and the pollution of groundwater by leaching of excess nitrogen (as nitrate). Other agricultural chemicals, including herbicides and pesticides are also released to ground and surface waters by agriculture and in some cases remain as contaminants in the soil. The burning of vegetation biomass to clear agricultural fields (crop residues, weeds) remains a potent contributor to regional air pollution wherever it occurs, and has now been banned in many areas.

Other environmental impacts of land use changes include the destruction of stratospheric ozone by nitrous oxide release from agricultural land and altered regional and local hydrology (dam construction, wetland drainage, irrigation projects, and increased impervious surfaces in urban areas). Perhaps the most important issue for most of Earth's human population is the long-term threat to future production of food and other essentials by the transformation of productive land to non-productive uses, such as the conversion of agricultural land to residential use and the degradation of rangeland by overgrazing.

*LUF5 abiotic resources* shows scattered changes as it describes broad environmental issues linked to air, water and soil quality. Therefore variations are difficult to explain without assessing the changes in the specific indicators affecting the LUF.

**LAND USE CHANGE TYPOLOGY**

It applies to all Land Use Change types

**POTENTIAL POLICY RESPONSES**

<b>Balance between the production of essential sources</b>	Land-use planning and management are powerful and essential to better reconcile land use with environmental concerns and resolve potential conflicts between sectoral interests and potential uses.
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<p><b>and the negative environmental consequences of land use</b></p>	<p>Important tools for informing, monitoring and evaluating these policies and programmes are Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA), and most importantly, the advent of the Corine land cover inventory (EEA, 2010).</p> <p>Integration of land-use planning &amp; environmental policy:</p> <p><b>Level of implementation</b> n/a</p>
<p><b>Environmental protection and risk prevention</b></p> <p><b>Environmental objectives in spatial planning policy Strengthen of EIA/ EEA procedures</b></p>	<p>Efforts to modify land-use practices to reduce non-point pollution of air and water include integrated river basin management and, in particular, the Nitrates Directive.</p> <p>The new European Floods Directive addresses the risk of flooding caused by the construction of impervious surfaces (e.g. buildings and roads) and provoked by extreme weather events.</p> <p>The EU rural development and regional policies also emphasised the cross-cutting nature of land use. Future directions on the EU CAP and implementation of renewable energy targets will have a significant impact on forest and agricultural land use and its intensity.</p> <p><b>Level of implementation</b> n/a</p>
<p><b>Policy priority area: TERRITORIAL DEVELOPMENT-SOCIO-ECONOMIC PROCESSES vs ENVIRONMENT</b></p>	
<p><b>Growth is possible without major new land in take</b></p>	
<p><b>EU-LUPA EVIDENCE</b></p>	
<p>The correlation between population growth rates and land take (2000-2006) shows that in most regions the pattern has been that the increase in the average population growth has gone together with an increase in the average annual growth rate of land take. Land take is growing faster than population. However in certain regions mainly of Spain, The Netherlands and Ireland, the urban development has been a fast phenomenon particularly during the analysed period with irrelevant population growth At the European level, housing, services and recreation made up a third of the overall increase in urban and other artificial area between 2000 and 2006. (LEAC Database (based on Corine Land Cover 2000-2006 changes, version 13, 02/2010), ETC/LUSI, (EEA, Land Take GDI 5 March 2012) In western European countries but in particular in Spain, Ireland, Portugal suffered an unsustainable rise in the price of real state from the 1990s to 2008, commonly known as property bubble.</p> <p>House ownership in Spain is above 80%. The desire to own one's own home was encouraged by governments in the 60s and 70s, and has thus become part of the Spanish psyche. In addition, tax regulation encourages ownership: 15% of mortgage payments are deductible from personal income taxes. Certain parallelisms between increase in employment rates and land artificialization could be seen in several Spanish, Irish and Portuguese regions. Again this could be explained due to those countries dependency on construction/building sector</p>	
<p><b>Green growth</b></p>	
<p>Today, it is widely acknowledged that the economy has grown so great and global that it is transforming all other activity on earth. As presented by UNEP: "The concept of a green economy does not replace sustainable development, but there is now a growing recognition that achieving sustainability rests almost entirely on getting the economy right". Therefore, it is recognised that to change the way society functions there is a need for a new economy, perhaps even a new paradigm, incommensurate with current values and ideas. A Green Economy, or a Green Growth, builds on the idea of developing cleaner production processes,</p>	

developing new products and energy solutions and reducing waste. At the same time it takes into consideration the planning of societies, structural changes needed to facilitate this transition and the distributional impacts of such vast changes.

The territorial dimension to Green Growth captures the interaction of resources, people, structures, etc. and the possibility of a nation or a region to become greener in production and consumption. The transformation to a green economy is both driven by the need to reduce emissions and resource use, but also by a recognition that there are opportunities for investment and growth in wealth and jobs.

One view of sustainable rural development considers agriculture as an important driving force in developing sustainable rural communities in Europe<sup>14</sup>. Knickel and Mikk<sup>15</sup> maintain that farming, more than any other rural activity, has a role to play in integrating the natural environment with the cultural landscape and socio-economic development. Petrezelka, Korsching and Malia<sup>16</sup> discuss what they call ‘the sustainable agricultural paradigm’, stating that sustainable farming is concerned with the protection of the environment and the place of the community. Parallel to this, the ESPON EU-LUPA project presents a typology on land use functions going beyond agriculture and at the same time emphasize that at least four types of linkages is needed in connection with the definition of land use categories: The use of land as a means of production where qualities of the land itself becomes an important contributor; The use of land as locus standii for production purposes which includes activities that are localized, but not necessarily directly linked to a “consumption” of the qualities and productive forces of the land itself. Instead, qualities such as accessibility, proximity, water, sewage disposal, etc. are important issues; The use of land as a means of recreation includes land areas where the consumption of land areas is important in relation to recreational purposes in a dual perspective, both in terms of environmental functions for recreation in the current society but also in terms of recreating (preserving) the environment for future development. Besides qualities of nature the land consumption is directly connected to socio-economic growth through housing, recreational parks, amusement parks, sports facilities not only in near-urban areas, but also including summerhouses and second homes in rural areas.

**LAND USE CHANGE TYPOLOGY**

It applies to all Land Use Change types

**POTENTIAL POLICY RESPONSES**

<p><b>Green economy principles</b></p>	<p>The green economy can be either understood as (i) an overarching development framework aiming at the consecution of sustainable development goals including environmental, economic and social targets; (ii) as a means for achieving a more resource-efficient production model, thus mainly focusing on the environment-economy interface, or; (iii) as a number of concrete economic activities that jointly form a growing economic sector,(a “new green economy”) which in the mid-term is supposed to bring about an implicit environmental benefit.</p>
	<p>Level of implementation n/a</p>

<sup>14</sup> (Marsden et al., 2002)

<sup>15</sup> Knickel and Mikk (1999)

<sup>16</sup> Petrezelka, Korsching and Malia (1996)

**EU-LUPA EVIDENCE**

Urban sprawl is identified with some of the most critical and negative impacts of current model of territorial development including increasing greenhouse gas emissions, social exclusion and biodiversity loss. Key political concerns with climate change and uncontrolled urban sprawl are all fundamentally related in the interconnected land-use - transport - environment nexus of urban development.

The analysis of the prevailing characteristics of land use at regional resulted in 10 classes, from which 3 included most of the analysed cities. These typologies are shortly described below as a recapitulation:

- Urban cores and metropolitan areas – 29 regions – regions in this type are generally smaller regions which can be characterized as regional city-states, where peri-urban areas and rural hinterland is accounted for in neighbouring regions. Thus, the urban land features in this type are influential not only for the social, economic and environmental performance of regions within this type but also those regions within near proximity.
- Suburban or peri-urban areas – 53 regions – either situated in near proximity to large urban centres – such as London or Paris – or are similar to the previous land type in the sense that they have a higher urban land component because of the relatively small area of the region. The urban and infrastructural component typically covers around 15% (and up to 20%) of the land. Relatively high levels of artificial surfaces are also evident in certain regions where large urban areas are situated in relatively large regions (by physical size).
- Arable land in peri-urban and rural areas cover more than 70% of the land in the 41 regions characterized by this type. The historic role of the agricultural production potential of this land use type for Northern Europe, Central Europe and the Balkans is clearly indicated through its distribution as the immediate hinterland around the major urban centres in the Central-North, and the matrix which constitutes the core population areas along the rivers in the Balkan area.

When analysing the evolution of urban areas in EU for the period 2000-2006, at first look at the overall changes in the European cities indicates an increase in the land that has undergone some urban development (See Volume IV chapter 2.4) However, the areas under redevelopment have significantly increased in both core city and large urban zone during the period 2000-2006. The development of new residential areas has been reduced, while industrial and commercial areas are still increasing and becoming the main source of urban expansion. This is a general trend observed in the last 20 years where urban sprawl is less and less associated to increase of residential areas and more to other economic developments. However, there are some exceptions like the Mediterranean coast, and specifically in Spain where second homes and speculation have been driving factors for urban sprawl still in the period 2000-2006. Many Eastern cities also show a differential trend being the development of new residential areas dominant over new industrial and commercial ones.

All in all, the densification process (redevelopment + infilling) is slightly increasing in the overall balance.

Coming to the question to what extent compacity is relevant for the different typologies the conclusion is that the existing structure can modulate future evolution, but not to the extent

to overcome other driving forces like land price, people's preferences and style of life. However, from the policy and planning perspective it is always desirable to keep as much as possible this compact structure to avoid impacts that can last long. One of those legacies of the past are: brownfields, lands and buildings in urban areas which have lost their original use and have the ecological costs. Very often they are associated with abandoned industrial areas with potential problems of contamination. Their extension is quite variable depending on the country. For example in Belgium (Flanders) were estimated to represent around 0.5 % of the total area of the country, while in Romania reached the 4%. The redevelopment of brownfields is often marginally or not economically viable as compared to greenfield development. To increase its competitiveness, there is a need for the implementation of a complete package of measures, including economic, legal and fiscal incentives. In the period 2000-2006, the Structural funds expended for the EU25 were of 2.25 billion EUR for the rehabilitation of industrial sites and about 2 billion EUR for the rehabilitation of urban areas.

LUF4 Housing and infrastructure shows a high stable performance in the Blue Banana, similarly to the economic LUFs, indicating significant urban and infrastructure developments in the European Megalopolis. Coastal areas in the Mediterranean show as well a high and stable performance and even an increase in some regions. Increases are also observed in southern Spain, southern Italy and eastern Germany, as well in main cities in central Europe (Budapest, Bratislava and surroundings). Decrease is found in few rural areas of Romania, Poland, South Sweden and Lleida (Spain).

LUF6 biotic resources shows significant improvement in central Spain and north-western France. There are more negative developments than in the other environmental LUF. For example, in some regions of the Ducth 'randstad' (industrial and metropolitan conurbation occupying west-central Netherlands) where significant infrastructure and urban development has taken place. This trend appears as well in the Southern Alps including the densely populated Po valley.

The assessment of the urban phenomena in the EU-LUPA project (see Volume IV) reveal that city form, and city compacity, is the result of the history and evolution of urban areas including geographic and cultural factors. The available information indicates that several factors confluence in the more compact cities:

- Higher proximity of urban patches to the city centre or core city
- Mixed uses of land

However, more dynamic indicators like soil sealing per capita reveals that urban morphology and compacity alone does not explain the complexity of the system. Moreover, urban development in the last decade shows that intermediate cities are the most dynamic ones at the risk of being less efficient on use of land resources (soil sealing per capita).

<b>LAND USE CHANGE TYPOLOGY</b>	
Type 1: Very high intensification - land take, often from natural areas	
Type 2: High intensification - continued urban land take from rural land	
Type 3: Moderate/high intensification - urbanizing areas while maintaining rural functions	
<b>POTENTIAL POLICY RESPONSES</b>	
<b>Reusing/optimizing existing urbanized land</b>	The coming high-level conference on 'Soil remediation and soil sealing' (DG ENV, Brussels 10-11 May) highlights the crosscutting component of this intensive use of the land. This could not be tackled by a single policy, but rather a crosscutting element that needs better integration across policies.  Establish urban planning principles for regeneration of abandoned



	<p>sites</p> <p>Stronger links between EU urban and soil policies are needed (e.g. following up respective 6th EAP Thematic strategies).</p>
	<p><b>Level of implementation</b></p> <p>Local</p>
<p><b>Green infrastructure for enhancing biodiversity in urban areas and improved land use management</b></p>	<p>The role of green infrastructure and site protection under Natura 2000 as well as the re-use of land are also important aspects of land resource management. Green infrastructures and its provision of ecosystem goods and services are linked to land take issues.</p> <ul style="list-style-type: none"> <li>• It contributes to minimising natural disaster risks, surface water run-off to reduce the risk of flooding, preventing soil erosion, connecting habitats, mitigating urban heat island effects, etc.</li> <li>• Land take / spatial planning - key role in facilitating and delivering Green Infrastructures.</li> </ul> <p>Go to page 56 for the definition of Green Infrastructures concept and policy relevance.</p>
	<p><b>Level of implementation</b></p> <p>Regional and local</p>
<p><b>Protecting and enhancing cultural landscapes</b></p>	<p>Integration of landscape into spatial planning for the protection, management and planning of landscapes (including urban heritage) towards more responsible land use consumption.</p>
	<p><b>Level of implementation</b></p> <p>Mainly local but also regional</p>
<p><b>Brown-field remediation</b></p>	<p>Demand for new urban areas may be partly satisfied by brown-field remediation relieving pressure on rural areas and green-field sites, reducing pollution costs, and more efficient energy use and natural resource consumption, facilitating economic diversification and emerging habitat (housing) requirements (The OECD Territorial Outlook 2001). Recycling of artificial surfaces in several countries in Europe reach 30 % or more if compared to total area of land take (CORINE LC 2006 results).</p>
	<p><b>Level of implementation</b></p> <p>Mainly local</p>
<p><b>Using tradable planning permits to reduce land consumption in urban areas</b></p>	<p>Investigated options for tradable planning permits to reduce land consumption<sup>17</sup> Example: German research project (RAFINA)</p> <p>Municipalities entitled to buy or sell their share of land consumption rights Rationale: Municipalities in need of larger development areas would acquire rights from other communities equivalent to refunds from revenues gained from development activity.</p> <p>This would assure that plans for land development are based on cost-effectiveness – permits not traded on a one-to-one basis – but at a level where effects on environmental quality, etc. are involved.</p>
	<p><b>Level of implementation</b></p> <p>Mainly local Prerequisite: Only for communities that have urban land use plans that follow best practice to prevent a wild flurry of</p>

<sup>17</sup> Example German research project RAFINA

	urban development.
<b>Implement Urban Metabolism procedures</b>	<p>“Urban metabolism” is a new way of describing the functioning of modern cities and could be an interesting tool for local energy planning. “The concept of an urban metabolism provides a means of understanding the sustainable development of cities by drawing analogy with the metabolic processes of organisms. The parallels are strong: “Cities transform raw materials, fuel, and water into the built environment, human biomass and waste” (Decker et al. 2000). In practice the study of an urban metabolism (in urban ecology) requires quantification of the inputs, outputs and storage of energy, water, nutrients, materials and wastes. “</p> <p>Procedures related to urban metabolism assess urban dynamics, services, functions, flows and cities’ capacity of response with two purposes: a) to avoid alteration of the ecological, social and economical conditions of a city and also b) to reduce vulnerability by optimizing energy consumption. This is particularly interesting in highly urbanized regions with severe ecological footprints.</p> <p><b>Level of implementation</b> It is a recommendation applicable at local scale where legal competencies derive from European directives.</p>
<b>Research for gathering data on traffic at EU level</b>	<p>From the transport perspective, compacity relates to increased use of public transport to work. However, more data is required to have a complete overview on all traffic in European cities. Current efforts done by the EC in this sense are very relevant. All these factors are reflected in air quality, which indicates better conditions in more compact cities. Cities are concentrators of population, knowledge and economy, but also of waste (Bugliarello, 2006). In order to overcome the negative aspects there is a need for local energy generation, more efficient management of energy use and readjustment of living patterns.</p> <p><b>Level of implementation</b> EU and national levels</p>
<b>Policy priority area: TERRITORIAL DEVELOPMENT- SOCIO-ECONOMIC PROCESSES</b>	
<b>Urbanization in central and eastern countries</b>	
<b>EU-LUPA EVIDENCE</b>	
<p>Political changes occurred at the end of the 1980s and 1990s in the former socialist countries represent a special case because the factors that shaped cities in the previous period were very different from the rest of Europe. The centralised planning and the non-existence of land markets resulted in more compact cities compared to the western counterpart. By 2000 most of the cities were still below 100 000 inhabitants (25% between 100 000 and half a million, 6 between half a million and one million; and only 3 with more than one million -Budapest, Warsaw, Prague).</p> <p>Although regional differences exist and the process has taken different pace depending on the cities, some commonalities have been found:</p> <ul style="list-style-type: none"> <li>• General decline in population in the last decade except in Poland, Slovakia and Slovenia.</li> <li>• Privatisation of the housing stock. After the transformation, a large number of the dwellings were sold to the inhabitants at low prices. As a consequence the new</li> </ul>	

member states show the highest number of owner-occupied dwellings in Europe (96.7% in Lithuania in 2001). The exception is the Czech Republic (47% in 2001) that has never introduced such privatisation plans (vanKempen et al., 2005).

- Gradual deterioration of housing blocs as consequence of low income of many new owners, unable to repair and maintain the dwellings (Murie et al., 2005).
- Progressive deterioration of city centres. Increase of pollution because inadequate transport policies.
- Changes in the economic basis in the cities, increasing the opportunities in the service sector. However, the workers required for the service sector are not always those who have lost their job in another sector.
- Commercial development constitutes an important force that has substantially contributed to a massive reorganisation of land use patterns. Such development has been recognised as a tool of local economic regeneration and growth, often supported by government policies.
- Revitalisation of city centre has raised the prices in the inner city, becoming too expensive (e.g. Lithuania).

Disparity in prices between capitals, more expensive and regional cities.

All these elements have led to the current situation:

- Increased suburbanisation and sprawl, although most of the cities are still more compact than in the Western Europe. The acceleration of city sprawl is evident in Hungary, as well as in Poland and the Czech Republic.
- The situation is more dramatic in cities where sprawl has been combined with decline implying a strong environmental impact (e.g. Budapest).
- Social, and sometimes ethnic, polarisation.

Policy responses are needed to respond to the major constraints to further improve the situation in these countries.

**LAND USE CHANGE TYPOLOGY**

n/a

**POTENTIAL POLICY RESPONSES**

<b>Remediation and regeneration strategies</b>	<p>Brownfield Former industrial sites that have been abandoned and in most cases have serious problems of contamination. The cost of remediation of these sites is very high. It has been estimated that 40% of the Budapest area can be characterised as brownfield land (Baross 2007). The EC's Thematic Strategy on the Urban Environment<sup>1</sup> recognises brownfield regeneration as a major means to achieve a sustainable urban environment</p> <p>Existing "frozen land" (Bertaud 2004): It consists of either a) areas with "fuzzy" tenure, or b) areas owned by government but not occupied by a legitimate government function. This prevents their timely renovation or recycling.</p> <p>Residential estates of high density panel housing located in the suburbs.</p> <p>Weak and poorly maintained infrastructure which is inadequate to support the high residential densities found in the centre.</p>
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	<p><b>Level of implementation</b></p> <p>Mainly local</p>
<p><b>Policy priority area: TERRITORIAL DEVELOPMENT</b></p>	
<p><b>Land use characteristics are becoming increasingly multi-functional, crossing not only sectors but also administrative borders</b></p>	
<p><b>EU-LUPA EVIDENCE</b></p>	
<p>The expression “multifunctional landscapes” refers to areas serving different functions and combining a variety of qualities, i.e. that different material, mental, and social processes in nature and society take place simultaneously in any given landscape and interact accordingly. Multi-functionality in landscape, therefore, means the co-existence of ecological, economic, cultural, historical, and aesthetic functions. Thus, landscape multi-functionality is not necessarily synonymous with multiple land uses.</p> <p>Thus, landscape multifunctionality is not necessarily synonymous with multiple land uses. Different land uses can be a criterion for multifunctionality in landscapes, but even a single land use can involve numerous functions. Different land uses can result in different functions, but not all functions can be expressed as land uses. The problem in this connection, however, is that the concept “land use” often – as emphasized in the report - is only related to the physical characteristics of the land cover identified through for instance the Corine land cover characteristics and the economic activities related to its use.</p> <p>Different land uses can be a criterion for multi-functionality in landscapes, but even a single land use can involve numerous functions. Paracchini et al. (2011)<sup>18</sup> therefore emphasizes that the concept of multifunctional land use provides a favourable approach based on the recognition of that in order to maximize the benefits obtained from a given parcel of land, a more equitable balance of the competing economic, environmental and social demands on land is more sustainable in the long-term than an unbalanced system based on individual sector based rationale. In such a context there is, however, also a need for evaluation tools which allow a more sensible approach to the assessment of whether competing demands in a multifunctional land use system are sustainable or not. In particular, there is a need to integrate information and data from a wide variety of sources into a single evaluation framework, recognizing that different land uses can result in different functions, but not all functions can be expressed as land uses.</p> <p>The approach to “land use” should therefore not only be seen from the land cover perspective but also from the perspective of “functionality”, which provides linkage with other transversal issues. “Functionality” could be a motivating approach in the integration of land cover, land use management, socio-economics, transportation, energy conservation, water management and climate change. While the concept of “land use” traditionally has been considered (to some extent) to be binary, i.e. one land use activity would exclude other activities, the situation in Europe is that the functionality of land areas has been increasingly diversified: on one hand towards exclusiveness with mono-functional large scale production, and on the other hand towards inclusiveness, which stresses the fact that different activities co-exists.</p>	
<p><b>Planning systems, strategies and policies at different levels matters</b></p>	

<sup>18</sup> Paracchini, M.L., Pacini, C., Laurence, M., Jones, M., Pérez-Soba, M. (2011): An aggregation framework to link indicators associated with multifunctional land use to the stakeholder evaluation of policy options. Ecological Indicators. Vol. 11, Issue 1, January 2011. P 71-80. Elsevier

Past and current policy decisions can influence the rate at which land use and land cover change. Our hypothesis is that different planning systems may affect land use and land cover changes in different ways. Centralized vs decentralized planning systems alongside spatial planning traditions: regional economic planning approach (France, Portugal and Germany); comprehensive integrated approach (Nordic Countries and Austria); Land use management (UK, Ireland, Belgium); urbanism tradition (Mediterranean countries) (EC The EU compendium of spatial planning systems).

**LAND USE CHANGE TYPOLOGY**

n/a

**POTENTIAL POLICY RESPONSES**

<b>Land use planning and planning systems</b>	Policy and planning should develop methods where the question of harmonious and disharmonious functionalities could be a way of improving the planning process.
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	<b>Level of implementation</b> Regional and local
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<b>Turning (multi)functions into policy</b>	<p>One of the key topics of rural research is the proper functioning and development of local communities. To a large extent rural development involves resources, civil society, institutions, structures and norms<sup>19</sup>, and as described by Marsden<sup>20</sup> is about “active structural change and behavioural change in the rural economy that raises its competitive capabilities in the face of cost price squeezes, sustainability and vulnerability”.</p> <p>In recognizing this OECD talks about a new rural paradigm where embracing the new rural policy challenges requires co-ordination across sectors and levels of governance, as well as between public, private and non-profit stakeholders. “The defining characteristics of this new rural paradigm are a focus on places rather than sectors and an emphasis on investments instead of national transfers and subsidies”<sup>21</sup>.</p> <p>Linking this to sustainable development may be considered vague or diffuse as the concept reflects the need of involving interests of many different disciplines and institutions<sup>22</sup>. A pragmatic approach to sustainable development, involving simultaneously taking account of the three dimensions of development: ecological (or environmental), economic and social, provide a platform for a proper inclusion of the concept.</p>
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	<b>Level of implementation</b> n/a
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<b>Landscape as a key</b>	As a preamble to the upcoming discussions in relation to the
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<sup>19</sup> (Formas, 2006)

<sup>20</sup> Marsden (2009, pp. 124)

<sup>21</sup> (OECD, 2006)

<sup>22</sup> (Bruckmeier and Tovey (2008); Koutsouris (2008))

<b>territorial development towards sustainable land use management</b>	<p>European Landscape Convention in 2000 the Pan-European Biological and Landscape Diversity Strategy<sup>23</sup> Landscape is recognized as an active part in the spatial development:</p> <p><i>““Spatial impact“ or “regionally significant“ in this context means that Community measures modify the spatial structure and potentials in the economy and society thereby altering land use patterns and landscapes.” (p 13).</i></p> <p>The recognition of landscape as a policy issue was the European Landscape Convention<sup>24</sup>, adopted on 20 October 2000 in Florence in co-operation with the Council of Europe. It became binding in 2007The integration of the European Landscape Convention as a tool in territorial planning would become an important contribution to the planning process.</p>
	<p><b>Level of implementation</b> Mainly regional but also local</p>

<sup>23</sup> Council of Europe (1996): Pan-European Biological and Landscape Diversity Strategy. Nature and Environment, No. 74, Council of Europe Press

<sup>24</sup> Council of Europe 2000: European Landscape Convention, CETS No. 176.

## 4.2. The border effect

Borders are almost synonymous with political, demographic and economic remoteness, the meeting place of different competences, structures, legal and social affairs and they also behave as functional and territorial discontinuities (ULYSSES Final Report).

**Cooperation on territorial matters** is in line with § 35 of the Territorial Agenda. The adoption of this principle recognises the importance to develop and support interregional, transnational and cross-border cooperation initiatives, aimed to actively promote territorial integration. Territorial cooperation must consider the territorial and urban dimensions of economic and social development and include the EU neighbouring countries, namely in the context of EU Programmes for European Territorial Cooperation.

From the reading of the EU-LUPA maps there are very clear disparities between neighboring countries, but also high differences between many neighboring regions.

- The internal EU 15 borders are, from a structural point of view, still more favorable for cross-border governance than, for example, external EU borders.
- The borders seem to keep functioning as a limit for the diffusion effects of development poles. This essentially indicates that, besides the European effort in promoting territorial cohesion, the national level maintains a prime role in regional development.
- Key driver is Spatial planning cultures and traditions: For instance, for France vis-à-vis Spain we know that large amounts of building, infrastructure development and agricultural changes have taken place in Spain while, apart from selected regions in France land use has been very stable. Similarly we see marked differences in the volume of land change in between old East and West Germany since the fall of the Berlin Wall. Pyrennees Spain-France With regard to territorial development and spatial planning, the two systems of France and Spain are quite different. From an institutional point of view, France has a much more centralised system, while Spain is much more focused on the Autonomous Communities. On the content side, France has traditionally focused on the comprehensive approach of *aménagement du territoire* whilst Spain is following to some extent a land use regulation approach without an excessive degree of regulation.
- Upper Rhin metropolitan region (France- Germany) The economic situation of the rural areas concerning agriculture is in comparison to other European regions strong and has a relatively solid added value. This is due to concentration on winery and arable crops. The area used for agricultural use however is shrinking on an average level. The available data does not allow getting an insight in conflicts of land use. Due to topographical circumstances agglomeration takes place in the plain Rhine valley. Urban development and agriculture have to share the most valuable soil, so there are conflicts which cannot be described with the data.
- Oresund case study. Strongly developed zone of summer houses along sea coast during many decades. Now landscape conflict with needs of wind power plant on the sea and spatial conflict about needs of access to sea coast and recreation, which is a barrier for further residential zone enlarging and intensifying. Urban sprawl according spatial plans (controlled by law). Transformation of regional industry and economy appearing in deconcentration of high-tech economy and R&D sector activities connected with demanding of clean environment, improving conditions of

work and spatial accessibility, lowering costs and decreasing role of agglomeration profits.

- Poland Ukraine. Chełmsko-Zamojski region is located in the south-eastern borderland of Poland in Lubelskie voivodeship by the Ukrainian border. Both, geographical and historical context have a significant impact on the current economic structure. Localization of the region is one of the most important factors of its economic structure. From one side it used to be a peripheral region for over two centuries, among the others, in the industrialisation period in 19th century it was a borderland of the Russian Empire. From the other side, there are very favorable conditions for the development of agriculture in the region. Currently the region remains fully peripheral in the European and country scale as it is located relatively far from Lublin, the core of Lubelskie voivodeship. On the other hand, there are three Polish-Ukrainian border crossing points and three main routes are passing across the region. They are attained mainly by vehicular traffic and are forming the main axis of development in the region. The local cores of development are Chełm and Zamość. However, their influence on the surrounding rural areas is rather weak and of a narrow range. Considering the economic activation of the region issue, its localization is a strong barrier for further development. This is reflected by an insignificant foreign investment dynamics, tourism development etc.
- While many border regions used to be characterised by differences in land use due to the influence of differences in national land use policies, the CAP has contributed to a withering of many of these differences and are instead in a process where differences in land use patterns tend to be much more reflecting combinations of natural potentials, settlement patterns and infrastructural characteristics, less dependent on national policies. As a small scale example the previously very marked border between Denmark and Germany could be mentioned. With the incentive of EU membership of Denmark a marked intensification in cattle and milk production in the border region of Southern Jutland developed, while the land use south of the border continued to be characterized by extensive land use. Today the differences in land use characteristics have been considerable reduced. As a large scale example the above mentioned East-West divide in land use characteristics due to previous differences in economic systems could be emphasized. A general characteristic in this connection is the process of de-population and retracting/extensification of agricultural activities from mountaneous and sparsely populated areas, and replacing it with tourism – often in combination with agriculture and other traditional land use.(See Volume I Chapter 3.2)
- In the need for strengthen territorial cohesion particular emphasis should be placed on the role of cities, local development and the macro-regional strategies.

Thus, on one hand, visualization of these differences only reaffirms the importance of considering land use implications in the border regions when assessing the feasibility or appropriateness of policy. Tailored measures and policy instruments for specific locations or land-use types are needed. And therefore how can these developments, e.g. through cooperation initiatives, be coordinated and create a development potential?"



**Borders matter:** The evidence collected by ULYSSES project shows as (i) borders keep playing a major role in explaining the behaviour of the different regions; (ii) border effects are clearly perceivable at the national and regional levels; (iii) cross-border commuting levels between different regions still tend to be low, and; (iv) borders seem to keep functioning as a limit for the diffusion effects.

**Geography matters:** Regional/local geographic conditions impact on territorial development within cross-border areas in many ways. Indeed, borders are very diverse across Europe and may have different implications depending on the sometimes neglected geographical features that characterise such borders (seas, rivers, mountains, etc.).

**Regional delimitation matters:** The territorial analyses made evident as the regional statistical units available for statistical purposes across Europe, namely NUTS 2 or 3 regions, have totally different connotations depending on the area.

**Scale matters:** Evidence have shown that (i) the geographic scale at which data is produced/collected conditions the final results of the analysis in various ways; (ii) many of the topics covered would require further analysis based on fine-grained data; (iii) ESPON data is a precious asset in approaching the cross-border issue at the European level, but its reference scale seems somehow inappropriate for designing regional/local strategies.

**Cohesion matters:** Both the multi-thematic analyses and the governance analysis show clear differences between the different parts of each border region, between the border regions and their domestic hinterland, and amongst the border regions across Europe. The goal of a balanced territorial development remains a challenge.

**Diversity matters:** The diversity of the involved territories must not be regarded as a barrier to a successful territorial development but as an opportunity for economic development, complementary labour markets and cultural richness. The challenge is to enact place based approaches that make use of the territorial potential.

**Territorial cooperation matters:** All ULYSSES regions have a certain experience with bi- and multi-lateral cross-border institutions. In all regions, the institutional setting shows the overarching importance of the structural funds, in particular with regard to the INTERREG programme. Moreover, the new European tool of the European Grouping for Territorial Cooperation (hereafter EGTC) is broadly tested and adopted within the ULYSSES regions.

**Spatial development strategies matter:** ULYSSES experience proves that the knowledge basis for cross-border regions is not comparable with the ones of domestic regions, and that most regions have already formulated strategic elements for territorial development, either in form of more analytical studies or of joint political declarations. However, we see a certain tendency that these documents are often quite abstract and not always institutionalised in a political way.

**Knowledge matters:** Reciprocal knowledge of current territorial trends by all parties is essential in order to boost successful strategies. This calls for a joint effort for producing focused, complementary and tailor-made analyses within all the CBA.

**Institutionalisation matters:** Cross-border strategies related to spatial planning will only be able to influence later territorial development if the key messages will be institutionalised in political way. On top of aligning agendas and priorities at regional and local levels, this would allow the CBA to have a shared strategic objective to lobby national or European authorities in support of local actions.

### 4.3. Policy options and recommendations at case study level

The analysis of the project case studies can be found on Volumes VI to XII.

We must start this section with some considerations when interpreting case study results and developing policy recommendations for these territories.

- Key issue to be considered when interpreting the case studies results is the difference in the size of the administrative regions being analysed e.g., in the Øresund region with small administrative regions in Denmark and a bigger one in Sweden; the same situation is also occurring in the Basque Country (Spanish and French border);
- In the regions characterised by the domination of mono-functional land use, the Land Use Change Typology identified correct types of changes;
- In the regions characterised by multifunctional land use the Land Use Change Typology identified "medium" types of changes;
- The effect of current changes in the land use is a deeper diversification of land use function and land use intensity;
- The changes of land use characterise the process of spatial polarisation;
- Sometimes average level does not show important changes;
- If we go on the lowest level we should use other groups of indicators;
- Differences between country policies are noticed on maps (different kind of land use and land use changes).
- It is remarkably important to be cautious when elaborating policy recommendations since, at case study level, some dynamics could be covered by average results at the EU level.

During the stakeholder's workshop held in Warsaw on the 10<sup>th</sup> of September 2012 a validation of the drivers in each of the project case study region alongside the identification of the key policy responses to their challenges was undertaken. The results are now included. (See also Volume XII).

#### 4.3.1. The Øresund Region Case Study

For details on policy context of land management for the Øresund Region case study please See volume VI chapter 6)

##### *Influences of regional/local planning*

The spatial planning legislation in Denmark dated from the 1960s. Local and regional planning in Denmark has significantly changed during the last 20 years. The planning system is more complex nowadays, and it has moved from a sector planning towards a more integrated territorial approach.

The country has suffered also an administrative reform, which entitled the enlargement of Danish municipalities and the strengthening of the local responsibilities and competences with regard to spatial planning. However it is too early to suggest that this could act as a driving force for the current land use change trends.

Generally speaking, it could be said that the current local and regional administrations are effective in land planning and management as well as in preventing and solving spatial conflicts. Several initiatives could be mentioned to illustrate this statement. There are examples of responsible land use management as for instance, a local initiative concerning the conversion of industrial sites in areas for leisure activities in Hedeland.

There is also a well-developed monitoring system which consists on the periodic reporting of the major land use changes at municipality level, which need to be accepted by the local government and included into the municipal plan. The local level has a strong role in land use planning, which in turn guarantees in the Danish case, the monitoring of land use changes and also the consistency with the spatial planning.

Current Danish government is characterized by a new transformation which is influencing land use changes in Denmark: environmental protection is at the core of the social priority, avoiding the privatization of the access to healthy environment.

As an example in Nykøbing Falster, a new suburb was built – Slotsbryggen – which is close to the town centre and has green areas and views overlooking the water. There is room to move about – for cyclists, pedestrians, sailors, café - and cinema-goers. All of this exists within a relatively compact area.

### ***Challenges and policy recommendations (2020 perspective)***

The major direction in the future policy should take into consideration transition of the region from high developed but with more traditional directions of land use changes, like e.g. urban sprawl, summer houses areas increase, transport corridors development, agriculture intensification and post-industrial areas reclamation, to more modern trends, which are facing with the new world challenges. This process means acceleration of the land use changes and new challenges regarding spatial planning. The most important sign of the transition are the turning directions of the changes in each of the strictly connected branches of regional economy, what must have an impact on the land use changes.

First of all, the concentration of urban sprawl in some isochrones from railway stations trend should be still consequently supported. It helps to develop more effective railway transport and modal shifting among daily commuting population. In the areas declared as rural (between the “fingers”) any forms of bicycle as the most common used vehicle should be supported.

Facing with summer houses areas development and pressure on new areas is becoming past challenge, because the most valuable areas for such purposes are already exploited and in the peripheral parts of the region more rural depopulated areas will appear and shall create an opportunity for such purposes due to permanent young people emigration and local populations ageing there. As a consequence, functions of such areas which are relatively well connected with agglomeration centre should be gradually transformed.

Intensification of agricultural production in the Øresund region is probably another process of the past. Retreating of agricultural productive function is already being observed. Converting rural areas should be conducted dually, depending on the strengths of given area. In the first direction, areas relatively well connected with agglomeration of the region should be transformed into leisure activities for citizens or summer houses areas. In the case of rest of such areas function of green energy production should be introduced, deriving from wind power plants or plant for bio-fuel cultivation. It is a necessary challenge to be faced with, due to predicted future energy prices rising. On the other hand, such function of rural areas is hard to co-exist with traditional rural landscape.

The last recommendation is strictly connected with predicted increasing significance of high-tech services, high-tech industry, and research activities in the region. These forms of activities usually demand clean environment and close-to-natural landscape is desired. These processes will be relying on both R&D expenditures made and adequate areas created. This is the next driver of demand to create aesthetic landscape areas in the agglomeration neighborhood. It should be one of the most crucial aims of future complex regional planning.

Researchers of EU-FP6 project PLUREL made scenarios for urban development in Europe, based on the IPCC scenarios, well-known for climate change modeling. The scenarios were described in detail with storylines and then modeled with demographic and economic models, and finally with the “Regional Urban Growth” model, developed by the University of Edinburgh, to calculate their effect on land use change for the years 2005 – 2025.

All scenarios show higher loss of natural surface around Copenhagen and in North of Zealand region than in the rest of Øresund region. In the B-scenario, “Peak Oil” and “Fragmentation”, the developments are more concentrated around Copenhagen compared to the A-scenario. This decrease in population density and the related risk of urban sprawl will be a major challenge for spatial planning.

The first map illustrates a superregional structure of cities, terminals and business environments connected by the rail network that will exist according to current plans for investments up to 2025. The second one is the competitiveness scenario map, which illustrates the infrastructure that could exist in 2025 after the expansion of fast land connections North of the Fehmarn Belt, Ring 5 and the HH connection.

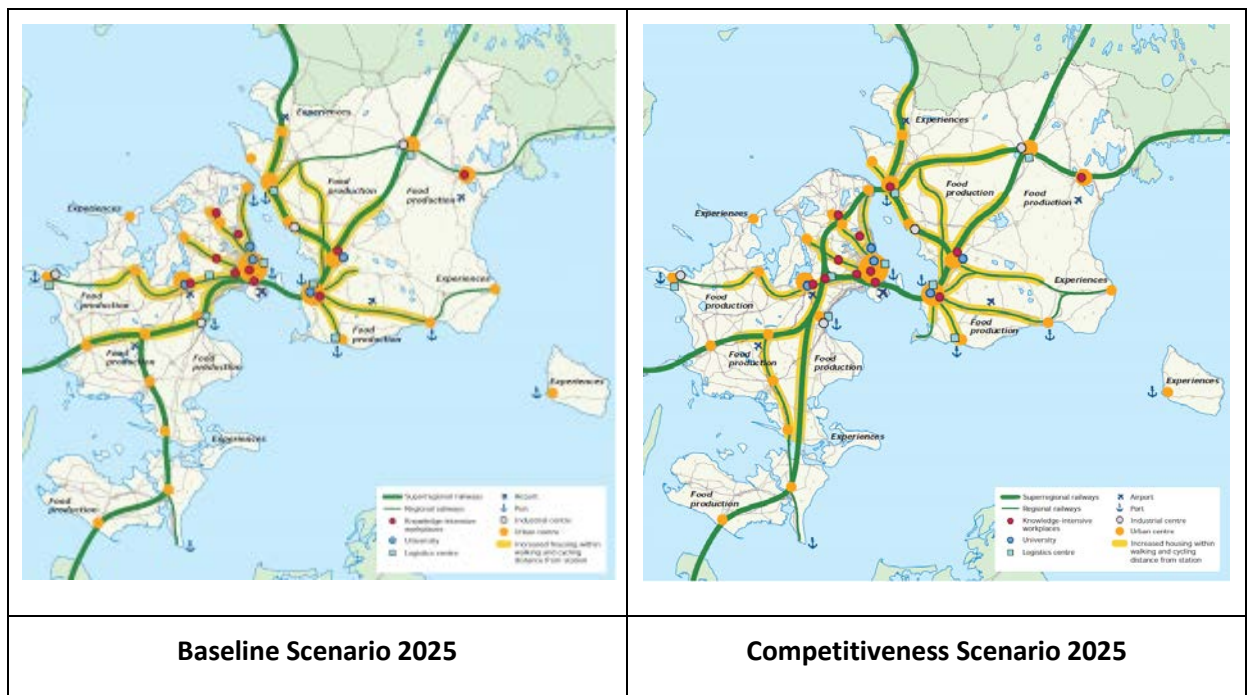
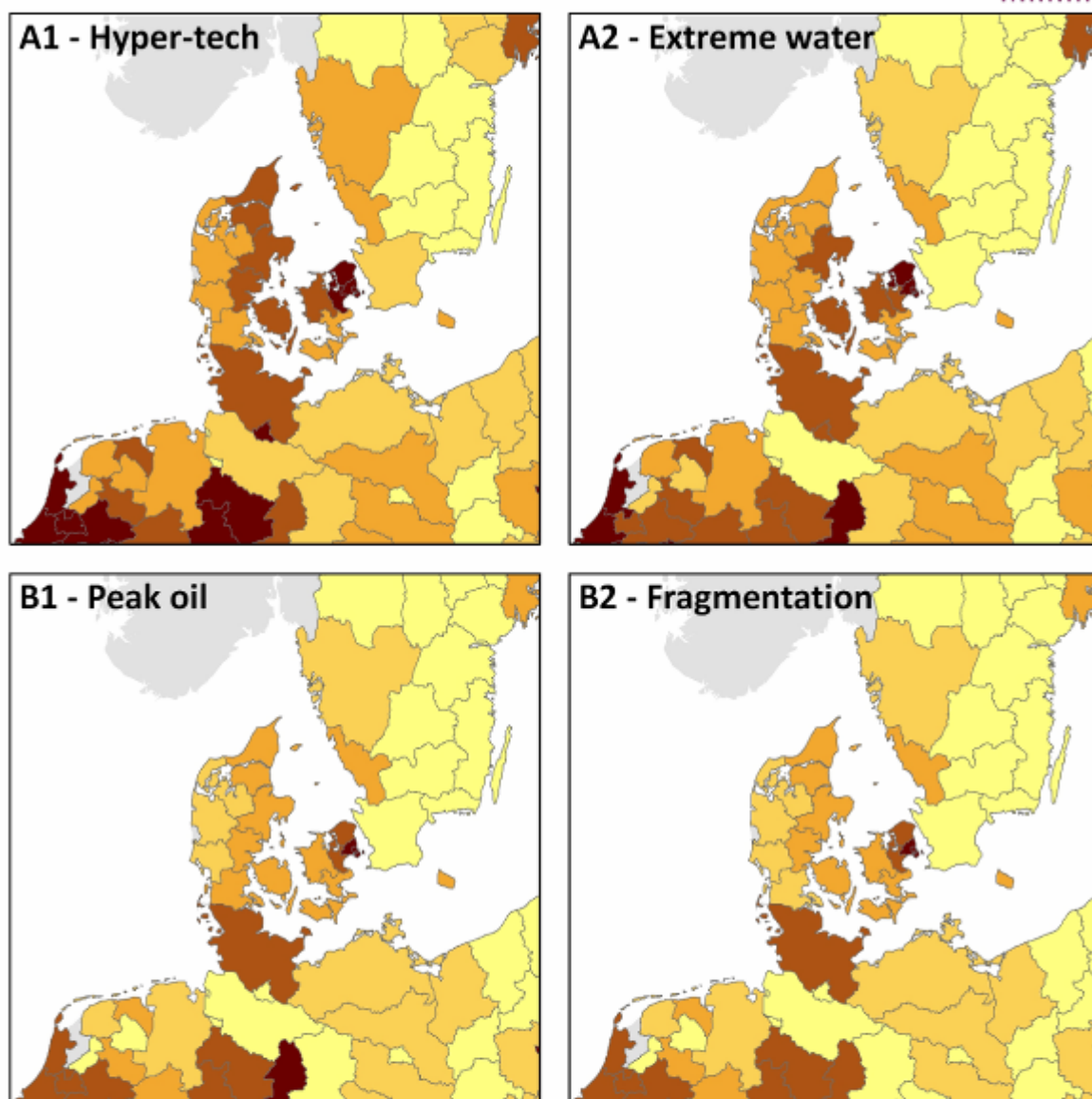


Figure 1 Scenarios for the Øresund region

Source: The Øresund region in 2025. Scenarios for Traffic and Urban Development. Skåne region.

## Tab af naturområder 2005 - 2025

PLUREL  
Landscape



< 1 %
  1 - 2,5 %
  2,5 - 5 %
  5 - 10 %
  > 10 %

Andel af ikke-bebyggede arealer i NUTS X regioner der vil blive bebyggede arealer.

Kilde: EU-FP6 PLUREL, University of Edinburgh, Austrian Institute of Technology



**Figure 2 - Loss of natural areas 2005-2025**

Share of non-residential areas in the NUTS X regions will change either built-up areas

Source: Peri-urbanization in Europe. Towards a European Policy to Sustain Urban-Rural Futures. PLUREL Synthesis Report. 2011

Oresund Region	
<u>Key drivers</u>	<u>Policy responses</u>
<p>Regional competitiveness: accessibility and leading certain economic sectors;</p> <p>Housing and land prices: promotes the importance of multi-functionality. Decrease in the value of the agricultural land has driven the people to sell the land for housing. Also wind energy production;</p> <p>Increasing wealth lead to greater number of second houses, a lot of pressure to limit farming activities and develop second houses and leisure activities.</p>	<p>Strength and increasing accessibility;</p> <p>Focus on clean technology as a economic sector with a long term perspective (renewable energy mainly but not solely);</p> <p>Significant exporting of the clean tech strategy even out of the country:</p> <ul style="list-style-type: none"> <li>○ Infrastructure development for connection with Hamburg, Copenhagen and Malmo and biodiversity offsets protecting landscape or land use somewhere else in the region.</li> </ul> <p>CAP is not able to include notion of multifunctional and additional land functions out of farming;</p> <p>Transport corridor in the EU from Oslo to Oresund and Berlin or even Warsaw for example.</p>
<p><u>Discussion:</u></p> <p>Most of the policies emphasized the continuation of the ongoing strategies: increasing accessibility and focus on clean tech;</p> <p>Improving the planning particularly in Denmark with innovative instruments related to landscape and natural resources, this is already taking place in case of National Parks and landscape plans;</p>	<p>Tax system: is problematic since some people are working in one place and living in another. The system should be addressed to them individually and somehow improved;</p> <p>Suburbs around Malmo and Copenhagen concentrating immigration which causes some conflicts, leading to spatial segregation- how to manage the growth from a social perspective;</p> <p>For instance in the Basque country around 20% of the new urban development should be social housing supporting housing.</p>

### 4.3.2. The Eurocity in the context of the Basque Country Region

For details on policy context of land management for the case study please See volume VII chapter 6)

#### *Influences of regional/local planning*

Process of renewal have generated opportunities for the creation of attractive spaces that have allowed, particularly in Bilbao, to recover the dynamism population in central areas, forming a more vital space and diverse city in its overall image and functions. The achievements of these projects, which have been highlighted in recent years, are an excellent indicator of the actions that can still be undertaken in the coming years: the completion of the Estuary Project, the renovation of the Bay of Pasaia, the new landscape linked to major logistic platforms of Araba, renovation of obsolete space, defining a future land use in the three cities, opportunities associated with construction of new stations of high speed train, etc. The recent housing programme from the period 2002-2005 supports people with low income in the acquisition of a house and also simulates the rental sector in order to improve labour force mobility. This kind of policy influences land use: investors need more and more land for infrastructure and housing estates.

One of the above-mentioned examples is the revitalization of the Bay of Pasaia. It used to be a harbour and industrial area. The project drawn up by the winning architecture company from the Netherlands (KCAP Architects&Planners) proposes that within the next 10 years the 70 ha of industrial area will be transformed into an open recreational and residential area. The visualization of the project can be found on the figures below.





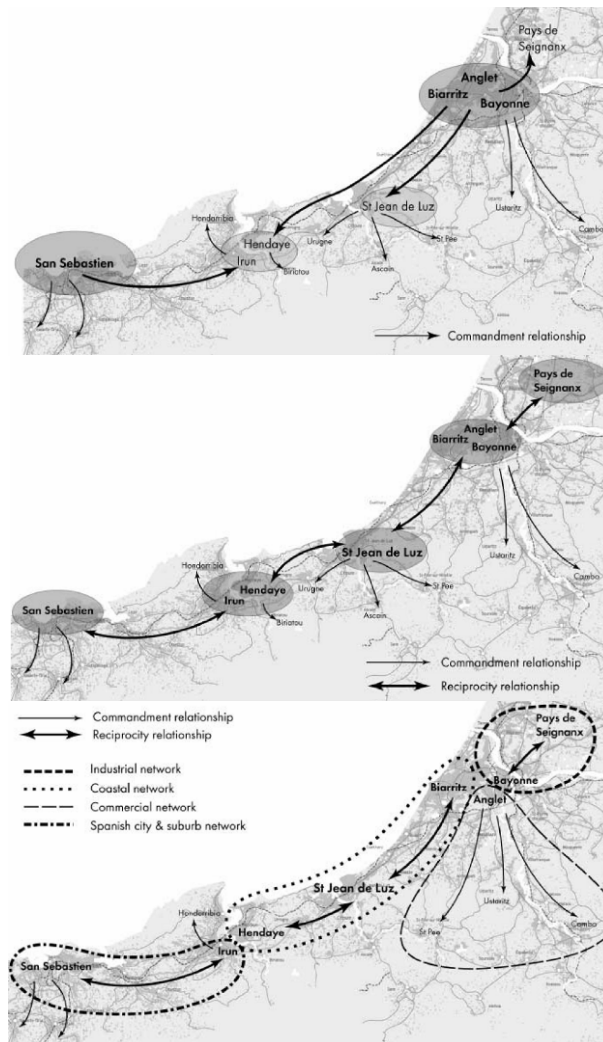
**Fig. 33. Location and visualization of the project of revitalization of the harbour in the Bay of Pasaia**

Source: <http://www.sztuka-architektury.pl/>

### ***Challenges and policy recommendations (2020 perspective)***

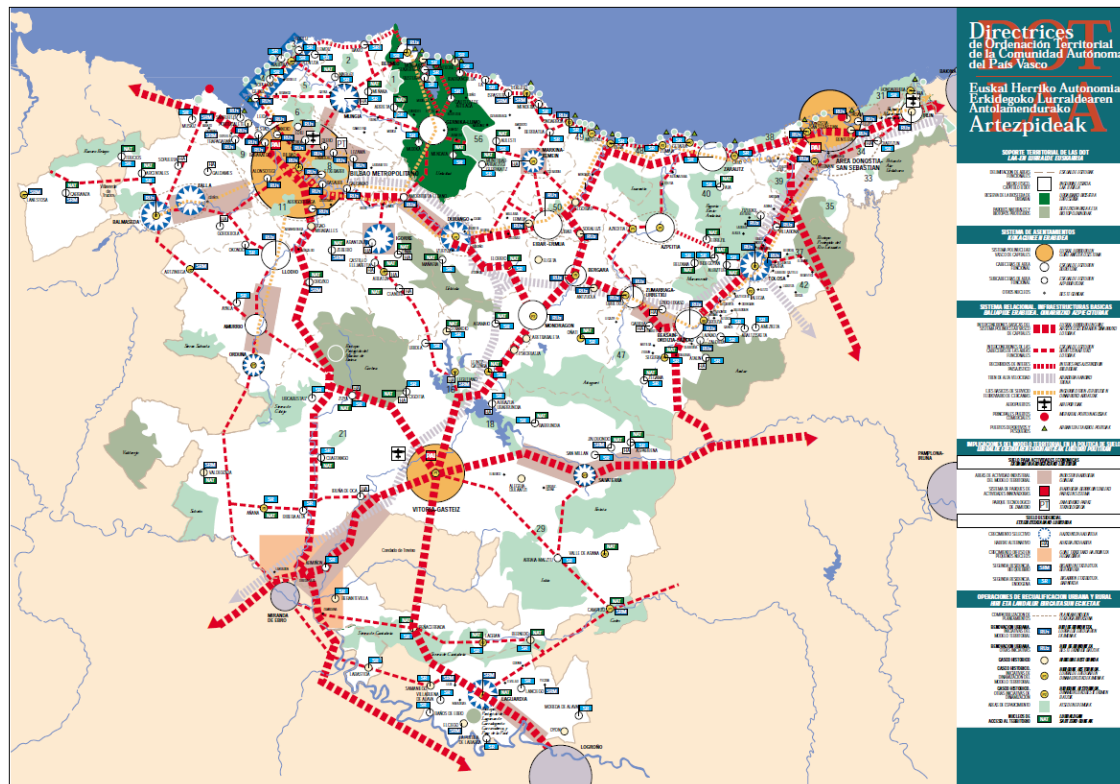
In the article, *Biarritz – Anglet – Bayonne – San Sebastian: How to organize and territory town?* (Dubois-Taine, 2004), the French author proposed three possible concepts of development of the Eurocity. The main aim of the development should be promotion of polycentric system with an extensive system of links. The first concept we can call “core model” – where the development is based mainly on two big conurbations – Bayonne and San Sebastian. Second model we can call “polycentric”, where Bayonne and San Sebastian function as a bi-pole structuring the whole area, and the other towns (eg. Irun, Saint Jean de Luz) have the complementary functions. The public policies implemented are oriented toward setting up an equilibrium and complementarity between all these centres, not essentially, in terms of population but rather of a distribution of functions. And the third model can be called “territory town” - each of the towns tries to maintain its own identity, but there is a division of the main functions among them (eg. production, R&D, commercial, leisure activities, industrial, cultural activities) (Dubois-Taine, 2004).





**Fig. 34. Visualization of three possible models of spatial development and cooperation within Eurocity Bayonne – San Sebastian**  
 Source: Dubois-Taine (2004)

This example is a good introduction for the identification of challenges and possible recommendations for the policy. The challenges for the Basque Country lie in its division into three provinces and the level of responsibilities that each of these has, and the responsibilities that are exercised by regional government, as was said by one of the interviewed persons: *“there are four points of view in the Basque government: Vizcaya, Guipuzcoa, Araba and the Basque point of views. The parties are also different in each region”*. There is a possibility that each of the main cities (Bilbao, San Sebastian and Vitoria-Gasteiz) will create its own policy, influence, in socio-economic terms, their own province and try its best to carry out as many functions as possible. But there is also another possibility of creating the network between all the main elements of the settlement system. Connection and cooperation between these three main cities are of key importance. Thanks to such situation increased functional specialization and better cooperation between the cities can be developed. Thanks to that level of development, each of the functions can be much improved as well as be much more competitive on a national and EU level. In case, when each of the cities will develop the same set of functions, unfortunately, they will be on a much lower level. However, such investments are highly expensive, and if there is a cooperation within the network of these cities, it will be significantly easier to stimulate the development of the whole region.



**Fig. 35. The general concept of spatial development of Basque Country**  
 Source: *Directrices de Ordenación Territorial* (1997).

As was written in the DOT (*Directrices de Ordenación Territorial/Territorial Master Plan*) that was approved in 1997 – the development of the Basque Country should be based on criteria of interconnection (spatial and sectoral) and fulfil the main objectives such as: reinforce and rebalance urban system, improve urban areas and stimulate creation of medium cities network. The most important innovation that was added in 2006 was the concept of “Euskal City” (Bilbao, San Sebastian and Vitoria) which tries to create an Euro-region capable to compete in an European context. One of the ways of realisation of such a concept is a Basque “Y” Transport System. The Basque Universities’ faculties are divided between the three main cities. Thus the concept of development that is pursued in the present-day strategic documents of the Basque Country represents, more or less, the “polycentric model” described above.

According to the interviewed persons, the Basque Country in the future will:

- be more urbanized in the valleys’ bottoms and more forested in the rest of the territory;
- have better connection between capital cities and the rest of medium cities;
- have better public transport, with more people making use of it;
- not develop more transport infrastructure elements;
- decrease the balance of the urban system;
- have better knowledge, better instruments and tools for property managing in the coastal area, where marine coastal planning is an important issue;

- increase the importance of tourism and marine energy, but decrease the significance of fishery;
- have very well developed links between three biggest cities;
- establish much stronger cooperation between different provinces and cities;
- have even better spatial planning.

Taking into account all of the mentioned circumstances, we can give three very simple and also very important recommendations for the proper land use policy management in the Basque Country - since all of these recommendations have a much broader character, their applicability extends also to other territories:

- holistic development of the region requires a very good planning system which is complex on the horizontal and vertical level – this means that sectoral plans should be created in cooperation with territorial ones (cohesion in spatial planning);
- very detailed planning on the municipality level – thanks to that there will not be many conflicts of functions;
- cooperation between different parts of the regions and division of functions within the territory – development of stronger functions of some particular towns has an important influence on the whole region. There should be a regional competitiveness and not competitiveness within region.

Basque Government- San Sebastian- Bayonne	
Drivers	Policy responses
<p>Good performance indicators compared to the EU average;</p> <p>Non-aggressive urban processes; Strong spatial planning systems, controlling the urban development;</p> <p>Investment on public infrastructure;</p> <p>CAP is not influencing the Basque country since it is not receiving subsidies but is developing the organic farming with quality labels for traditional products and production; Forest management - pines and eucalyptus;</p> <p>Traditional industrial settlements located in rural areas, helping in maintaining economic activities. Linked with the steel sector located in the vicinity of to mining activities;</p> <p>Social phenomena: cooperatives;</p> <p>Successful urban regeneration;</p> <p>An above average social and economic performance comparing to other Spanish regions could explain why the income from urban taxes was not the key element for municipality income.</p>	<p>Common agricultural strategy is needed to coordinate rural activities and reinforce agricultural production related to quality products certification;</p> <p>Primary sector is about 1% of the GDP and the government wants to reinforce this;</p> <p>Forestry policies needed;</p> <p>Improvement of the coherence among policy sector and spatial planning;</p> <p>Improvement of coherence and the level of competence;</p> <p>Innovative planning instruments: landscape, sustainable transport plans, climate change adaptation;</p> <p>Strengthen the land use restrictions: delimitation of urban perimeters focused on regeneration and non-artificiality.</p>
<p><u>Discussion</u></p>	<p>Ageing should be included as a general driver with significant consequences.</p>

### 4.3.3. Chełmsko-Zamojski Region

#### ***Influences of regional/local planning***

In the case of Chełmsko-Zamojski region, future plans are assuming no general changes of land use with multifunctional development of rural areas especially in the Western Roztocze Hills region and Northern outskirts of Chełmsko-Zamojski region, where tourism based on environmentally valuable areas can develop.

The regional plans have a relatively low influence on the spatial pattern of the region due to limited pressure for the large scale land use changes.

The major role for the reasonable land use lies in the hands of municipal and local plans which should organise investments and spatial pattern of functions but with natural resources preserving including unique landscape and natural values. Especially in the suburbs and in the environmentally valuable areas they are playing an important role. Unfortunately, the system in such cases does not function properly so far, because of lack of municipal plans in some communes and needs to be made by municipal authority and individual decisions concerning building conditioning and limitations. This system is more flexible and convenient in the case of the need of attracting the investors but at the same time it provokes a danger of making some incorrect decisions and puts pressure of individual interests on local government as well. The most common spatial conflicts took place in the cases of decisions concerning dispersing of residential functions in the areas of high environmental values lacking network infrastructure and decisions dealing with permission for building the wind power stations or mobile phones transmitters.

#### ***Challenges and policy recommendations (2020 perspective)***

The level of economic development of Chełmsko-Zamojski region is one of the lowest in Poland. There are a number of demographic and economic processes of negative sense. Thus, it is very important to find an optimal scenario for the future development and cope with the main challenges of the region allowing to release the principal, potential directions for development. Therefore, a fundamental aim of policy is to develop a proper spatial diversification concerning the functions. First of all, a general direction of the strategic development should lead from mono-functional agricultural to multifunctional and as a consequence, with zoning the areas of the best conditions for different possible directions of functions co-existence. The entire region has a favourable environmental conditions for agriculture but its linkage with function of residential sprawl, energy production, services, tourism and recreation or nature and cultural landscape preservation can take place effectively only in some specific areas. For this reason a greater attention should be paid for the non-agricultural functions development but with a realistic potential evaluation and reasonable spatial planning restricting and supporting of different multi-functionality combinations in different parts of the region. It seems to be a long term goal and a challengeable task in the region where socio-demographic and infrastructural problems interact. The recent years are showing, that in spite of it, development of diversified functions is possible. However, the major task is to begin organising future spatial multifunctional pattern today what will more effectively use an endogenous potential at regional scale.

In spite of considerable technical infrastructure development in the last years, it is still one of the most important fields of investments. It can bring profits in a long term perspective and become a first necessary step of gradual limitation of young people outflow, improving the demographic structure and developing the activity other than farming on rural areas. In

the framework of infrastructural development of rural areas absolutely one of the most important is improving of internet access.

Another strategic challenge is to improve significantly the opportunities in acquisition of higher education in Chełm and Zamość related to supporting of initiating career in the profession learned within the region, even if creating of self-employment would be necessary. This is a system of mutual relations but working effectively guarantees not only improvement of the level of education but also recovery of regional demographic situation and level of qualified services in the region, helping in development of towns based on their more up-to-date functions. Currently a group of small farms owners and their children, statistically have the lowest level of education but the same group needs to be shifted to services firstly as well. Special support for such families willing to acquire an education and stay in the region would be probably reasonable.

Major future challenges:

- Evaluation of real opportunities for diverse directions of multifunctionality development in different parts of the region;
- System of supporting the acquisition of higher education and starting professional career within the region;
- Implementing services on rural areas;
- Supporting the traditional agriculture in some areas and marketing of regional rural tourism;
- Co-existence of the agriculture development and unique values of environment;
- Exploitation of the energy sources with co-existing unique regional character.

Chełmsko-Zamojski Region	
<u>Drivers</u>	<u>Policy responses</u>
Administrative division; Food processing industry; EU agricultural policy; Strengthen of external border; Competition of foreign food; Urban sprawl; Outmigration of young and educated people; Ageing of rural societies; Collapsing of state farms.	Strengthen the sub-regional function of Chełm and Zamość (culture, education, tourism); Special economic zone (bio-energy); Support for alternative energy production (e.g., rape as a biofuel source); Support for traffic services; Promotion of organic farms, concentration of land ownership; Strengthen of spatial planning; Social policy of state; Supporting of enlarging medium sized farms.
<u>Discussion</u>	More general ideas that could be applied in all cases Financial bubble particularly in wealthy countries, after the crisis those regions have societies of the highest debt; Public debts and financial bubble.

#### **4.3.4. Jeleniogórski Subregion**

##### ***Influences of regional/local planning***

The influences of regional and local planning on land use are registered on many levels. The lack of detailed local spatial plans leads in some places to creation of spatial chaos - thus giving privilege to economic development over the sustainable, territorial one. In addition, some problems faced in vertical cooperation (between different tiers of government) also lead to some conflicts – for example some areas are protected as national park or the state wants to build an anti-flood system. In such cases the state is taking over some part of the competences of the local self-government, which results in the situation that commune leaders cannot develop some parts of its territory as they would wish to do.

Nowadays, the regional office of the Dolnośląskie Region wants to connect spatial planning with socio-economic one – to make it much more coherent and compact. That will certainly help to develop the region in a more sustainable way and preserve, to a some extent, the spatial harmony. However, for now this is only an idea that has to be implemented in the future. Thus far these two parts of planning – sectoral and territorial is rather separate on each spatial level.

Concluding, generally the problems with planning are in the areas where there are spatial conflicts, where many functions are competing for the same space. From the one standpoint, the number of conflicts points to the attractiveness of the subregion land and shows the possibilities of development. From the other standpoint, it indicates that legal framework falls behind the real changes in land use and land use functions and those liberal elements of free economy are prevailing over the harmonious and more stable elements of spatial planning.

##### ***Challenges and policy recommendations (2020 perspective)***

The main challenge for the proper land management in the Jeleniogórski subregion is a complex and holistic planning – combining sectoral planning (socio-economic) with territorial one. This will help to achieve the sustainability in planning. Those two parts of strategic planning – sectoral and territorial – should be equal to each other and at the same time treated in a coherent way.

Another important thing, partly connected with the first one, is that on regional and local levels the permanent, annual monitoring of spatial organization should be conducted in such spheres as: environment protection, industry investments, housing, cultural landscape and infrastructure. Nowadays, spatial monitoring is under operation only for the keeping records of the borders of the houses and plots – simple cadastre. It is rather keeping records of the situation, and not being a tool for planning of development and creation of new functions. Obviously, in the future that system should evolve to a more complex and holistic tool for spatial management.

Another challenge for spatial planning is the fact that actually the low and institutional assets are not effective in appropriate spatial planning. The easiest thing to do will be to impose national regulations on all the settlements to adopt the obligatory local plans of spatial organization. Maybe, generally the whole planning procedure is correct and transparent, but, because it is not obligatory, is ineffective. This will undoubtedly help to solve some spatial conflicts in the future.

Then, the last main challenge is connected with the higher activity of local institutions – local self-government has to have the initiative. It is difficult from the perspective of regional or

national government to show and decide what kind of functions are to be developed in each commune. Regional government, in generally, can support the development of parts of its territory, but this is the responsibility of the local government to utilize to maximum degree the endogenous potential and exogenous sources. Thus the local governments cannot wait for the decisions and initiatives of the higher levels of government bodies, but have to be very active in creation of new possibilities of development.

According to the interviewed persons the Jeleniogórski subregion, in the future, will be still a very multifunctional area. In some parts, a domination of one function (eg. agricultural or forest) will be noted, while, in some places, there will be concentration of many of these (industry, housing, tourist, transport, services of general interests, etc.). So the challenge for the local and regional government is to manage that region in such a way that will help to overcome the demographic, social and economic problems of transformation period and at the same time to harmonize the spatial organization of that subregion.

Taking into account all of the mentioned challenges and situations described in the Jeleniogórski subregion, it can be given following recommendations for the proper land use policy management in this area (since all of them have a broader character they should be also useful and applicable to other territories):

- holistic development of the region requires a very good planning system, which will be complex on the horizontal and vertical level – this means that sectoral plans should be created in cooperation with territorial ones (cohesion in spatial planning);
- equal importance of sectoral and territorial planning;
- very detailed planning on the municipality level – thanks to that there will not be many conflicts of functions;
- cooperation between different parts of the regions and division of functions within the territory – development of stronger functions of some particular towns has an important influence on the whole region. There should be regional competitiveness and not competitiveness within region;
- permanent monitoring of socio-economic and spatial changes in the region and its communes;
- coherent visions of development of communes, counties and region – there should be some hierarchical way of planning of strategies of development, because thanks to that the “added value” of a larger scale of development will be created and enhanced;
- engaging many institutions, local actors, representatives of main institutions that are important in spatial planning and creation of socio-economic development – thanks to this social consultancy the whole process of planning will be more coherent, transparent and complex;
- good management – giving priority to public needs and public goods over the private benefit.

Jeleniogorski region	
Key drivers	Policy responses
<p>Demography (out-migration, decrease of natural increase);</p> <p>Industrialisation at the beginning of the 1900s. and a decline from the 1950s.;</p> <p>Historical heritage- period of the People's Republic of Poland and a transformation of the political system;</p> <p>Tourism attractiveness;</p> <p>Local drivers:</p> <ul style="list-style-type: none"> <li>○ mountainous area, good quality of soils, landscape,</li> <li>○ poor accessibility,</li> <li>○ coexistence of numerous functions.</li> </ul> <p>No strategic policy for the region;</p> <p>Lack of vertical cooperation;</p> <p>No land use plans;</p> <p>Natural &amp; environmental conflicts.</p>	<p>Regional plan already exists, but it is a very weak formal document with no significant influence;</p> <p>Subregional programs related to certain problems and conflicts but these are informal planning thematic strategies;</p> <p>Policy based on social trust rather than legal framework;</p> <p>Efficient governance needed;</p> <p>Bottom- up planning system approach rather than top-down required;</p> <p>Vertical cooperation needed;</p> <p>Real local consultancy;</p> <p>Horizontal cooperation among municipalities;</p> <p>Strong monitoring: both socio-economic and land use;</p> <p>Regional umbrella needed.</p>
<p><u>Discussion:</u></p>	<p>Stronger regulation and strategic perspective;</p> <p>Multilevel distribution of competences;</p> <p>Bottom-up is not enough, top-down regional is needed;</p> <p>Participation at local level in the definition of regional planning is crucial;</p> <p>New policy fields: integrated approach, landscape, clean technologies etc.</p>



## 5. CONCLUSION

- European policy, although having no spatial planning responsibility, sets the framing guidance for planning.
- It has been said that territorial cohesion supports the coordination of sector policies and can be regarded as a spatial representation of sustainability (EEA, 2010)
- European economies depend on natural resources, including raw materials and space. Land is a limited resource. Different sector interests are often competing for the same territorial resource.
- Policy responses are needed to help resolve conflicting land use demands and to guide land use intensity to support sustainable land management
- Coordination of different sector policies and various policy levels is therefore crucial: good governance.
- Land-use planning and management are powerful and essential to better reconcile land use with environmental concerns and resolve potential conflicts between sectoral interests and potential uses.
- Due to the cross-cutting nature of land use, integrated programmes are needed to guarantee the EU objective for territorial cohesion.
- Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) are the important tools for evaluating programmes and projects that have impacts on land resources.
- In the need for strengthen territorial cohesion particular emphasis should be placed on the role of cities, local development and the macro-regional strategies.
- A shift in the land management concept from linear to land use cycling has been gaining priority across the EU Member States, especially in the context of the EU 2020 Strategy.
- The enlargement of the EU to 27 Member States presents an unprecedented challenge for the competitiveness and internal cohesion of the Union.
  - 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 neighbor countries and other parts of the world.
- Interactive mega-drivers at pan-European scale provoke territorial processes at regional and local scale
  - Processes such as urbanization, agricultural intensification, a-forestation, rural abandonment, land use specialization are land use processes resulting from interacting driving forces
  - There is a need for a more integrated policy approach towards sustainable land use
  - There is still a double-sided relationship between land and growth in most of the regions in the European territory
  - Economic growth matters

- Geographical intrinsic features and physical conditions matters
  - Land price matters
  - Technology push and market pull matter
  - Population dynamics and future scenarios including visions and strategies matters
  - Urban growth matters
  - Subsidies, funding and investment matter
  - Land ownership and land tenure matter
- Monitoring and mediating the negative environmental consequences of land use while sustaining the production of essential resources is a major priority of policy-makers around the world.
- The occurrence of hazards due to climate change is increasing and different parts of Europe experience different types of hazards.
  - There are development opportunities for the production of renewal energy sources
  - The way land is used has impacts on biodiversity and ecosystem services
  - The way land is used has impacts on land degradation, and pollution on water, soil and air
- Growth is possible without major new land in take: This is possible by reusing/optimising existing urbanised land. The coming high-level conference on 'Soil remediation and soil sealing' (DG ENV, Brussels 10-11 May) highlights the crosscutting component of this intensive use of the land. This could not be tackled by a single policy, but rather a crosscutting element that needs better integration across policies.
- Land use characteristics are becoming increasingly multi-functional, crossing not only sectors but also administrative borders
- It is necessary to consider the governance structures and planning systems in place in each territorial reality in order to define the most appropriate level of implementation of policy messages and recommendations. The question is: Is there any relationship between the regional land use performance and different planning systems/traditions in Europe? This is a conceptual challenge still unresolved within the EU-LUPA project.
- Tailored measures and policy instruments for specific locations or land-use types are needed.

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## ANNEX I EU STRATEGIES, POLICIES AND INSTITUTIONAL DOCUMENTS

### EU STRATEGIES

<b>Topic: Sustainable Development Strategies</b>
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#### EU Strategy for Sustainable Development

##### Objectives:

- Sustainable development is linked to a successful management of land use.
- The EU's climate change and energy policies are evidence of the impact that sustainable development strategy has had on the political agenda.
- The EU has started to integrate the sustainability dimension in many other policy fields also.
- Climate change and clean energy, Sustainable transport, Sustainable consumption and production, Conservation and management of natural resources, Public health, Social inclusion, demography and migration, Global poverty and sustainable development challenges, Education and training, Research and development, Financing and economic instruments.
- Main goals:
  - Contributing to a rapid shift to a low-carbon and low-input economy, based on energy and resource-efficient technologies and sustainable transport and shifts towards sustainable consumption behaviour;
  - Intensifying environmental efforts for the protection of biodiversity, water and other natural resources. Evidence shows that the destruction of biodiversity is continuing at a worrying rate. Degradation of ecosystems not only reduces the quality of our lives and the lives of future generations, it also stands in the way of sustainable, long-term economic development;
  - Promoting social inclusion. The most vulnerable in society are at risk of being the most badly hit by the economic crisis and its effects may linger longest for them unless effective measures are provided.
  - Strengthening the international dimension of sustainable development and intensifying efforts to combat global poverty.

Potential indicators: The Sustainable Development Indicators (SDIs) are used to monitor the EU Sustainable Development Strategy (EU SDS) in a report published by Eurostat every two years. They are presented in ten themes.

##### Headline indicators

Of more than 100 indicators, eleven have been identified as headline indicators. They are intended to give an overall picture of whether the European Union has achieved progress towards sustainable development in terms of the objectives and targets defined in the strategy. For a more complete picture it is necessary to look at the progress of all indicators within a theme.

- Growth rate of real GDP per capita.
- Resource productivity.
- Population at-risk-of-poverty or exclusion.
- Employment rate of older workers.
- Healthy life years and life expectancy at birth, by gender.
- Greenhouse gas emissions.
- Share of renewable energy in gross final energy consumption.
- Energy consumption of transport relative to GDP.
- Common bird index.

- Fish catches taken from stocks outside safe biological limits.
- Official development assistance as share of gross national income.

Reference source: <http://ec.europa.eu/environment/eussd/>

Regional reference: NUTS 0 National level.

Time reference: 1990 -2009. On 2010 midterm review of the EU Rural Development Policy.

Significance for EU-LUPA: Basis for the indicators used in the characterization of land use functions at NUTSX in the European territory and their policy relevance.

Sustainable development strategies at country level could give light to case studies interpretation. Besides at Supra-national level there are two interesting documents that could be addressed: Agenda 21 for the Baltic Sea Region - Baltic 21 (1998)<sup>25</sup> ; Mediterrean Strategy for Sustainable Development (2005)<sup>26</sup> ; Nordic Strategy for Sustainable Development (2005)<sup>27</sup>

<b>Topic: Territorial Development</b>
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### **European Spatial Development Perspective (ESDP)**

Objectives: Long term sustainability of Europe's land use. the objectives of the ESDP are in line with the three following fundamental goals of European policy:

- Economic and social cohesion;
- Conservation of natural resources and cultural heritage; and
- More balanced competitiveness of the European territory.
- Development of a balanced and polycentric urban system and a new urban-rural relationship;
- Securing parity of access to infrastructure and knowledge; and
- Sustainable development, prudent management and protection of nature and cultural heritage.

Potential indicators: See ESPON project 2.3.1.

Reference source:

[http://ec.europa.eu/regional\\_policy/sources/docoffic/official/reports/som\\_en.htm](http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/som_en.htm)

Regional reference: The objectives set out in the ESDP should be pursued by the European institutions and government and administrative authorities at national, regional and local level.

Time reference: 1999.

Significance for EU-LUPA: Understanding sustainability of land use in Europe.

### **Territorial Agenda of the European Union (TAEU)**

Objectives: The Ministers of the European Union responsible for spatial planning and development, on the occasion of the Informal Ministerial Meeting on Urban Development and Territorial Cohesion, held under the German EU Presidency in Leipzig on 24 / 25 May 2007, agreed on the Territorial Agenda of the European Union (TA) and entrusted Portugal with the task of preparing the First Action Programme (AP1) for its implementation. This agreement culminates a process of cooperation between the Ministers aimed at establishing a common policy framework for addressing territorial matters within the

<sup>25</sup> [http://www.baltic21.org/attachments/b21\\_main\\_report\\_no.\\_1\\_98\\_english.pdf](http://www.baltic21.org/attachments/b21_main_report_no._1_98_english.pdf)

<sup>26</sup> [http://www.mzopu.hr/doc/Mediterranean\\_str\\_28022006.pdf](http://www.mzopu.hr/doc/Mediterranean_str_28022006.pdf)

<sup>27</sup> <http://www.norden.org/pub/ovrigt/baeredygtig/uk/ANP2004782.pdf>

European Union. In June 2006, a dialogue with the major stakeholders was started, giving the TA a broad basis of consensus. The TA takes on and relates in different ways to several other relevant EU policy documents. Key aims are:

- Strengthen territorial cohesion
  - Development of a balance and polycentric urban system.
  - Strengthening polycentric development and Innovation throughout networking of cities and regions.
  - New forms of partnerships and territorial governance between rural and urban areas.
  - Securing parity access to knowledge and infrastructure.
  - Promote regional clusters of competition and innovation in Europe.
  
- Strengthen trans-European networks
  - Sustainable development, prudent management and protection of nature and cultural heritage.
  - Trans-European risk management including the impacts of the climate change.
  
- Strengthen ecological structures and cultural resources as the added value for development

Potential indicators: n/a

Reference source: <http://www.eu-territorial-agenda.eu>

Regional reference: European institutions and government and administrative authorities at national, regional and local level.

Time reference: 2007-2011.

Significance for EU-LUPA: Changes in land use (urbanisation, mass tourism, etc.) threaten landscapes and lead to fragmentation of natural habitats and ecological corridors. Framing land use and land use changes within spatial planning and development.

## **Action programme for the implementation of the Territorial Agenda of the European Union**

### Objectives:

#### *Solidarity between regions and territories*

The adoption of this principle reinforces solidarity between States and regions and expresses the commitment to apply a cohesive and integrated approach adapted to territorial diversity when influencing or deciding on the priorities and funding of territorial and urban development policies at European Union, national, regional and local levels.

#### *Multi-level governance*

The adoption of this principle expresses the commitment to structure proper channels of communication, participation and cooperation in order to make the territorial assessment, planning and management a fully democratic, transparent and efficient process.

#### *Integration of policies*

The adoption of this principle expresses the acknowledgement of the specific responsibilities of sectoral policy-makers and the will to cooperate with and influence them in order to ensure a stronger territorial and urban focus when conceiving and delivering the thematic policies. The goal is to better fine-tune specific thematic actions, to facilitate their coordination and to reduce undesired externalities.

#### *Cooperation on territorial matters*

The adoption of this principle recognises the importance to develop and support interregional, transnational and cross-border cooperation initiatives, aimed to actively



promote territorial integration. Territorial cooperation must consider the territorial and urban dimensions of economic and social development and include the EU neighbouring countries, namely in the context of EU Programmes for European Territorial Cooperation.

#### *Subsidiarity*

The adoption of this principle states that the full and efficient achievement of the aims of the Territorial Agenda can best be pursued according to the institutional arrangements within each Member State, through a strong involvement of national, regional and local powers and stakeholders and a dialogue with the European Commission and the other European institutions.

#### Potential indicators:

Action Plan 1, currently under implementation. The main purpose of the First Action Programme (AP1) is to provide a framework to facilitate the implementation of the Territorial Agenda. First Action Programme takes in consideration the review of the Territorial Agenda in the first half of 2011.

Reference source: <http://www.eu-territorial-agenda.eu>

Regional reference: European institutions and government and administrative authorities at national, regional and local level.

Time reference: 2007.

Significance for EU-LUPA: understanding land use and land use changes within spatial planning and development

### **The Lisbon Treaty**

#### Objectives:

The Lisbon Strategy aims at improving the competitiveness of the European economy in parallel with a clear commitment to the European social model and to the management of environmental pressures and conflicts. The Lisbon Strategy emphasises the objectives of growth and jobs, setting out a large number of measures and goals in a wide range of different areas. While to date territorial cohesion is not explicitly considered within the objectives of the Lisbon Strategy, its evaluation stresses the relevance of the territorial approach and the role of the regional and local administrative levels in achieving the Lisbon's objectives First Action Programme for the Implementation of the Territorial Agenda of the European Union and goals. A multi-level and coordinated approach between the European, national and regional/local levels, in line with the subsidiarity principle, is seen as a key factor of success for territorial governance, an issue that is central and cross-cutting in the implementation of the Territorial Agenda.

The Lisbon Strategy is a dynamic strategy in which sustainability has been taken on board (climate change, energy, financial and social sustainability).

With the adoption of the Lisbon Treaty, territorial cohesion is added to the goals of economic and social cohesion. This new element adds and underlines a number of issues.

- It emphasizes the territorial dimension of access to services of general economic interest.
- It underlines the importance of environmental sustainability.
- It underscores the importance of functional geographies, of the problems of territories with specific geographical features, of the role of city, and of local development approaches.
- It strengthens the role of territorial cooperation and highlights the potential of macroregional strategies.

The Lisbon Treaty (2007) made sustainable development a key objective for the EU and, in 2010, the EU renewed a number of environmental Directives to ensure they comply with the Lisbon Treaty.

Potential indicators:

See ESPON Project 3.3 y TO 3. Indicators:

- GDP/capita.
- GDP/person employed.
- Employment rate of 15-64 (EU 2020 range 20-64).
- Employment rate of elderly.
- Gross expenditure on research and development.
- Dispersion of regional unemployment rates.
- Long-term unemployment rate.
- Regional Unemployment, 2008.
- R&D Expenditure as Percentage of GDP, 2006.
- Composite Economic Lisbon Performance, 2006; Change in Composite Lisbon Performance 2000-2006.
- Tertiary Educated People in Labour Force, 2007.
- Share of Renewables in Gross Final Consumption, 2005.
- Wind Power Potential, 2005.

Reference source: [http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en\\_GB/-/EUR/ViewPublication-Start?PublicationKey=FXAC07306](http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=FXAC07306)

Regional reference: NUTS 2.

Time reference: 2009.

Significance for EU-LUPA: Basis for the indicators used in the land use characterization in the European territory and their policy relevance. Evaluation of Land Use Efficiency by means of the correlation between land use change patterns and trends with regional performance.

**Gotteborg objectives**

Objectives:

The Gothenburg Strategy defines a number of key environmental objectives and target dates, both political and legislative. Major priorities include climate change, sustainable transport, public health and natural resources management. These areas are most relevant to the territorial challenges and priorities set in the Territorial Agenda.

Potential indicators:

See ESPON Project 3.3 y TO 3. Indicators:

- GDP/capita.
- GDP/person employed.
- Employment rate of 15-64 (EU 2020 range 20-64).
- Employment rate of elderly.
- Gross expenditure on research and development.
- Dispersion of regional unemployment rates.
- Long-term unemployment rate.
- Regional Unemployment, 2008.
- R&D Expenditure as Percentage of GDP, 2006.
- Composite Economic Lisbon Performance, 2006; Change in Composite Lisbon Performance 2000-2006.
- Tertiary Educated People in Labour Force, 2007.
- Share of Renewables in Gross Final Consumption, 2005.
- Wind Power Potential, 2005.

Reference source: [http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en\\_GB/-/EUR/ViewPublication-Start?PublicationKey=FXAC07306](http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=FXAC07306)

Regional reference: NUTS 2.

Time reference: 2009.

Significance for EU-LUPA: Basis for the indicators used in the land use characterization in the European territory and their policy relevance. Evaluation of Land Use Efficiency by means of the correlation between land use change patterns and trends with regional performance.

### **Europe 2020 strategy**

#### Objectives:

Europe 2020 is the EU's growth strategy for the coming decade. In a changing world, we want the EU to become a smart, sustainable and inclusive economy. These three mutually reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity and social cohesion.

Five ambitious objectives on employment, innovation, education, social inclusion and climate/energy.

Potential indicators: The strategy provides the following indicators:

- Employment rate by gender, age group 20-64.
- Gross domestic expenditure on R&D (GERD).
- Greenhouse gas emissions, base year 1990.
- Share of renewables in gross final energy consumption.
- Energy intensity of the economy (proxy indicator for Energy savings, which is under development).
- Early leavers from education and training by gender.
- Tertiary educational attainment by gender, age group 30-34.
- Population at risk of poverty or exclusion (union of the three sub-indicators below).
- Persons living in households with very low work intensity.
- Persons at risk of poverty after social transfers.
- Severely materially deprived persons.

Reference source: [http://europa.eu/press\\_room/pdf/complet\\_en\\_barroso\\_007\\_-\\_europe\\_2020\\_-\\_en\\_version.pdf](http://europa.eu/press_room/pdf/complet_en_barroso_007_-_europe_2020_-_en_version.pdf)

Regional reference: NUTS 1 National level.

Time reference: 2010.

**A Resource Efficient Europe 2011:** Flagship initiative under the Europe 2020 Strategy

Milestone: sets the goal of no net land-take by 2050. Yet this mandate will mostly likely work against the goals of a number of regions; particularly those seeking to ascend the socio-economic ranks toward the most established European nations.

Significance for EU-LUPA: Basis for the indicators used in the land use characterization in the European territory and their policy relevance. Evaluation of Land Use Efficiency by means of the correlation between land use change patterns and trends with regional performance.

### **Thematic strategy on the sustainable use of natural resources**

#### Objectives:

European economies depend on natural resources, including raw materials and space (land resources). The EU thematic strategy on the sustainable use of natural resources includes space as a resource. It applies to areas of land and maritime space that are needed for production purposes (e.g. minerals, timber, food) and for various socio-economic activities. These interests are often competing for the same territorial resource.

It aims to launch a debate on a framework for using resources which supports the objectives of the Lisbon strategy and the EU's sustainable development strategy.

Potential indicators:

The relations between resource use and environmental impact are only partially known at present. Furthermore they change with time, for example, as a result of technical or social developments. Differences in regional conditions and use patterns need also to be considered. In addition, environmental impacts related to the use of different resources vary widely. So, initially the strategy has to determine which resources at any given time are of biggest concern, e.g. the resources with the greatest potential for environmental improvement, taking into account technological possibilities and socio-economic aspects. To perform the functions described above, and to take account of continuously evolving patterns of environmental impacts of resource use, the strategy will comprise three strategic elements that will apply continuously throughout its life:

#### *Knowledge gathering*

The entire life-cycle of resources, from their extraction, through their use in the production of goods and services and the subsequent use phase, to the waste phase, gives rise to environmental impacts. Any given raw material can take numerous different pathways through the economy. Aluminium, for example, can be transformed into goods as diverse as window-frames, aircraft bodies and beverage cans, and these all interact in very different ways with the environment. Knowledge about these pathways and impacts is presently dispersed between many actors, and significant gaps exist. The Resources Strategy has to ensure that knowledge is readily available to decision-makers and that gaps are being filled.

#### *Policy assessment*

The use of natural resources is influenced by numerous environmental policies, including for example strategies on the marine environment, soil protection, biodiversity and the urban environment, as well as climate change policy, the water framework directive and many others. In addition, many non-environmental policies strongly influence resource use - sometimes unintentionally. Examples include fiscal, transport, agricultural and energy policies. However, there is currently no mechanism for assessing how far policy-choices in these different areas are compatible with the overall aim of decoupling economic growth from the impacts of resource use. The Resources Strategy will make these assessments, raise awareness of potential trade-offs, and suggest alternatives wherever possible.

#### *Policy integration*

To bring the strategy to life, concrete actions will need to be taken on the basis of the information generated by the previous two strategic elements. This will involve political judgements on the relative importance of different impacts and environmental targets, taking into account wider sustainable development considerations and identifying measures with the greatest potential for environmental improvement of resource use. The Resources Strategy will therefore work towards increasing the integration of resource-related environmental issues into other policies that influence the environmental impacts of the use of natural resources, in particular under the Cardiff Process.

Reference source: <http://ec.europa.eu/environment/natres/>

Regional reference: n/a

Time reference: 2005.

Significance for EU-LUPA: Potential challenges in relation to land use consumption as natural resource.

## **Thematic strategy on the urban environment**

### Objectives:

The Thematic Strategy on the Urban Environment was adopted by the Commission on 11 January 2006.

The Strategy is accompanied by an Impact Assessment covering its social, economic and environmental consequences.

The Strategy is based on the results of extensive consultations with a wide range of stakeholders. Consultations began in 2002 with expert working groups on different issues, a large meeting with stakeholders and research reports. See here for details.

An interim Communication "Towards a Thematic Strategy on the Urban Environment" was adopted in February 2004 to seek the views of stakeholders on the ideas under consideration.

To develop further some of the key ideas contained in the interim Communication, expert working groups were established in 2004 to consider technical issues for environmental management plans, sustainable urban transport plans and for future priorities for research and training. An additional public consultation exercise was held in autumn 2005.

Throughout the development of the Thematic Strategy, the EU Expert Group on the Urban Environment has also been consulted.

### Potential indicators:

The main actions under the strategy are:

- Guidance on integrated environmental management and on sustainable urban transport plans. The guidance will be based on cities' experiences, expert views and research, and will help ensure full implementation of EU legislation. It will provide sources of further information to help prepare and implement action plans.
- Training. A number of Community programmes will provide opportunities for training and capacity-building for local authorities to develop the skills needed for managing the urban environment. Moreover, support will be offered for local authorities to work together and learn from each other. These should be exploited both by the Member States and local authorities.
- Support for EU wide exchange of best practices. Consideration will be given for the establishment of a new European programme to exchange knowledge and experience on urban issues under the new Cohesion Policy. The Commission will closely cooperate with Member States and local authorities. This work will be based on a pilot network of focal points on urban issues (the "European Knowledge Platform") which offers advice to local authorities across Europe.
- Commission internet portal for local authorities. The feasibility of creating a new internet portal for local authorities on the Europe website will be explored to provide better access to the latest information.

Reference source: [http://ec.europa.eu/environment/urban/thematic\\_strategy.htm](http://ec.europa.eu/environment/urban/thematic_strategy.htm)

Regional reference: n/a

Time reference: 2006.

Significance for EU-LUPA: Policy context with regard to urban environment.

## **EU POLICIES**

<b>Topic: Regional Policy</b>
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### **Cohesion Policy 2007-2013**

#### Objectives:

Cohesion Policy has one single objective: to promote the harmonious development of the Union and its regions. The policy supports this development with a clear investment strategy that increases competitiveness, expands employment and improves well-being, and protects and enhances the environment.

This approach provides a close link to the Europe 2020 objectives of smart, inclusive and sustainable growth.

While the overall objective is the same in all Member States and regions, Cohesion Policy provides more support for the less developed EU regions in line with the Union's strong commitment to solidarity and its Treaty aim of reducing regional disparities in levels of development.

Cohesion Policy will continue to foster territorial cooperation in its three dimensions (cross-border, transnational, and inter-regional).

Urban problems either related to environmental degradation or social exclusion deserve a particular response and a direct involvement of the level of governments directly concerned.

**Cohesion Policy (2014-2020)** – thematic objective: environmental protection and resource efficiency. Funds flow to infrastructure developments (e.g. in 2000-2006 period – 5100 km road built, 8400 km rail built, etc.)

Potential indicators: EU 2020 Indicators.

Main challenges with territorial dimension: accelerating globalization and market integration, ageing and migration, climate change and changing energy paradigm.

Reference source: [http://ec.europa.eu/regional\\_policy](http://ec.europa.eu/regional_policy) 5th Cohesion Report.

ESPO 2.2.1 addressed the spatial impacts of Structural Funds with a particular focus on polycentricity and territorial cohesion in Europe.

TERCO & INTERCO ESPO Projects.

Regional reference: NUTS 2.

Time reference: up to date 2010.

Significance for EU-LUPA:

Structural Funds Eligible areas in the EU under the Convergence Objective and the European Competitiveness and Employment Objective.

Identification of linkages between certain land use patterns and regions under the convergence objective.

Territorial impacts of structural funds. Cohesion Policy as driver of Land Use Changes.

## **The European Fund for Regional Development (EFRD)**

### **Regional policies: the European Social Fund (ESF)**

#### **Regional policies: Cohesion Fund**

##### Objectives:

*Convergence objective* is to promote growth-enhancing conditions and factors leading to real convergence for the least-developed Member States and regions.

*Regional Competitiveness and Employment objective* aims at strengthening competitiveness and attractiveness, as well as employment, through a two-fold approach. First, development programmes will help regions to anticipate and promote economic change through innovation and the promotion of the knowledge society, entrepreneurship, the protection of the environment, and the improvement of their accessibility. Second, more and better jobs will be supported by adapting the workforce and by investing in human resources.

*European Territorial Co-operation objective* will strengthen cross-border co-operation through joint local and regional initiatives, trans-national co-operation aiming at integrated territorial development, and interregional co-operation and exchange of experience.

##### Potential indicators:

- Regionalization of EU27 according to Convergence objective.
- Percentage of population living in cross-border areas .

Reference source: [http://ec.europa.eu/regional\\_policy/funds/feder/index\\_en.htm](http://ec.europa.eu/regional_policy/funds/feder/index_en.htm)

Regional reference: NUTS 2.

Time reference: 2000-2006.

Significance for EU-LUPA: Investments as potential driver of land use changes.

<b>Topic: Rural development</b>
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## **Rural Development policy 2007-2013**

##### Objectives:

Council Regulation (EC) No. 1698/2005.

Under this Regulation, rural development policy for 2007 to 2013 is focused on three themes (known as "thematic axes"). These are:

- Improving the competitiveness of the agricultural and forestry sector.
- Improving the environment and the countryside.
- Improving the quality of life in rural areas and encouraging diversification of the rural economy.

The Strategic Guidelines for Rural Development 2007-2013 consider that rural development policies must complement other policies, such as cohesion and employment policies, while also playing an important role in the sustainable development of rural areas and in the achievement of a more balanced territorial model within the European Union.

Rural Development Policy (towards 2020) - priorities include restoring, preserving, and enhancing ecosystems e.g. N2000 , *landscapes*, soil management, etc.

Potential indicators: to be defined.

Reference source: [http://ec.europa.eu/agriculture/rurdev/index\\_en.htm](http://ec.europa.eu/agriculture/rurdev/index_en.htm)

Regional reference: NUTS 2

Time reference: 2007-2013. On 2010 midterm review of the EU Rural Development Policy.

Significance for EU-LUPA: Territorial Impact of agricultural policies on the environment and land uses. CAP and Rural Development Policy as driving forces behind land use changes and dynamics.

## **Common Agricultural Policy (CAP)**

##### Objectives:

The initial objectives were set out in Article 39 of the Treaty of Rome:

1. To increase productivity, by promoting technical progress and ensuring the optimum use of the factors of production, in particular labour;
2. To ensure a fair standard of living for the agricultural Community;
3. To stabilise markets;
4. To secure availability of supplies;
5. To provide consumers with food at reasonable prices.

The CAP recognised the need to take account of the social structure of agriculture and of the structural and natural disparities between the various agricultural regions and to effect the appropriate adjustments by degrees.

The CAP needs reforming (2008-2013): so as to better address the challenges of: food security; climate change and sustainable management of natural resources; and keeping the rural economy alive.

- To help the farming sector become more competitive and to deal with the economic crisis and increasingly unstable farm-gate prices.
- To make the policy fairer, greener, more efficient and more effective and more understandable.

From the financial perspective, the CAP alongside the Cohesion Funds, is the most important policy measure of the EU.

Potential indicators: Measures to maintain grasslands, restore wetlands and peat lands, low or zero tillage, to reduce erosion and allow for the development of forests. Agriculture and forestry are also providing the resources for bio-energy and industrial feedstocks are addressed in the CAP legislative proposals for 2013, of which the positive impacts have not yet been taken into account in the analysis.

Reference source: <http://www.europolitics.info/sectoral-policies/agriculture-a-fisheries.html?view=contenu>

Regional reference: See ESPON 2.1.3: Territorial impact of CAP and Rural Development Policy.

Time reference: 2008-2013.

Significance for EU-LUPA: Territorial Impact of agricultural policies on the environment and land uses. CAP and Rural Development Policy as driving forces behind land use changes and dynamics.



## Topic: Energy policy

### Energy policy for a competitive Europe

#### Objectives:

Energy policy for a competitive Europe: The Treaty of Lisbon places energy at the heart of European activity. It effectively gives it a new legal basis which it lacked in the previous treaties (Article 194 of the Treaty on the Functioning of the European Union (TFEU)).

The aims of the policy are supported by market-based tools (mainly taxes, subsidies and the CO2 emissions trading scheme), by developing energy technologies (especially technologies for energy efficiency and renewable or low-carbon energy) and by Community financial instruments. Furthermore, in December 2008 the EU adopted a series of measures with the objective of reducing the EU's contribution to global warming and guaranteeing energy supply.

- Renewal energy.
- Energy efficiency.
- Security of supply.
- Technology and innovation.
- Trans-European Networks (TEN).

#### Potential indicators:

- *Renewable potential:* Map 16 Wind potential on NUTS 0 (source EWEA, Meteotest, WASP [www.wasp.dk](http://www.wasp.dk)). Map 22 Biomass potential at NUTS 3 in 2002 (GJ).
- *Energy efficiency:* Map 34 Number of Regional Energy Agencies by NUTS 2. Source: European Commission, ManagEnergy Initiative. Table 7 Summary of main energy features for new Member States.
- *Security of supply:* to be defined.
- *Technology and innovation:* to be defined.
- *Energy infrastructures:*
  - Making Europe's electricity grid fit for 2020.
  - Diversified gas supplies to a fully interconnected and flexible EU gas network.
  - Ensuring the security of oil supply.
  - Roll-out of smart grid technologies.

Reference source: [http://ec.europa.eu/energy/index\\_en.htm](http://ec.europa.eu/energy/index_en.htm)

#### *Energy infrastructures:*

[http://ec.europa.eu/energy/infrastructure/strategy/2020\\_en.htm](http://ec.europa.eu/energy/infrastructure/strategy/2020_en.htm)

Regional reference: See ESPON 2.1.4. Territorial trends of energy services and networks and territorial impact of EU energy policy. Energy infrastructures: See TIPTAP - Territorial Impact Package for Transport and Agricultural Policies (July 2008- October 2009) under Priority 1 of the ESPON 2013 Programme.

Time reference: 2002 and 2010 for *energy infrastructures*.

Significance for EU-LUPA: Evaluation of Land Use Efficiency by means of the correlation between land use change patterns and trends with regional performance. Infrastructures as driving forcers behind land use changes and dynamics.

## Topic: Transport

### Transport Policy

#### Objectives:

Transport is one of the European Union's (EU) foremost common policies. It is governed by Title VI (Articles 90 to 100) of the Treaty on the Functioning of the European Union. Since the

Rome Treaty's entry into force in 1958, this policy has been focused on removing borders between Member States and thus contributing to the free movement of individuals and of goods. Its principal aims are to complete the internal market, ensure sustainable development, extend transport networks throughout Europe, maximise use of space, enhance safety and promote international cooperation. The Single Market signalled a veritable turning point in the common policy in the area of transport. Since the 2001 White Paper, which was revised in 2006, this policy area has been oriented towards harmoniously and simultaneously developing the different modes of transport, in particular with co-modality, which is a way of making use of each means of transport (ground, waterborne or aerial) to its best effect.

Trans-European Networks (TEN): Development of the TENs is contributing to economic and social cohesion. The requirements of the peripheral regions have been taken into account in this development, and the emphasis placed on airports on islands and in remote areas. The next step is to enhance the role of ports so as to assist the integration of shipping into a global network. It is also necessary, in the peripheral regions, to undertake complementary investment in secondary networks, in order that those regions may gain maximum benefit from the TENs.

Potential indicators:

See Cohesion and Transport policy

[http://europa.eu/legislation\\_summaries/transport/bodies\\_objectives/l24207\\_en.htm](http://europa.eu/legislation_summaries/transport/bodies_objectives/l24207_en.htm)

Land take by transport infrastructure (<http://www.eea.europa.eu/data-and-maps/indicators/land-take-by-transport-infrastructure-1>)

Reference source:

[http://europa.eu/legislation\\_summaries/transport/bodies\\_objectives/l24484\\_en.htm](http://europa.eu/legislation_summaries/transport/bodies_objectives/l24484_en.htm)

Regional reference: n/a

Time reference: 2007.

Significance for EU-LUPA: Transport policy and urban sprawl.

## **Green Paper: Towards a new culture for urban mobility**

### Objectives:

This Green Paper is the product of wide public consultation initiated in 2007. It opens up a second consultation process which lasts until 15 March 2008. With urban mobility being an asset for growth and employment, as well as an essential condition for a sustainable development policy, the Commission will use the consultation undertaken to subsequently propose an overall strategy in the form of an action plan.

The target audience for the consultation process is vast: it includes people living in towns and cities, transport users, transport company employers and employees, industry, public authorities and relevant associations. The resulting strategy will also be supported by the experience acquired by the Commission in this field with the CIVITAS initiative and with the 1995 Green Paper and its communication on "a Citizens Network".

A central idea of the forthcoming strategy is the need to integrate the various urban mobility policies in a single approach. Examples of European added value could be to:

- Promote the exchange of good practice at all levels: local, regional, national and European.
- Underpin the establishment of common standards and harmonisation.
- Offer financial support to those who are in greatest need of such support.
- Encourage research, the application of which would enable an improvement in mobility.
- Simplify legislation, if necessary.

The Commission proposes to encourage the emergence of a real "urban mobility culture" integrating economic development, accessibility and improvement to quality of life and the environment.

### Potential indicators:

For this purpose, the Green Paper identifies five challenges:

- Improve fluidity in towns.
- Reduce pollution.
- Intelligent urban transportation.
- Accessibility.
- Safety and security.

The Green Paper also stresses the need to elicit an urban mobility culture by means of education, training and raising awareness.

### Reference source:

[http://europa.eu/legislation\\_summaries/transport/bodies\\_objectives/l24484\\_en.htm](http://europa.eu/legislation_summaries/transport/bodies_objectives/l24484_en.htm)

Regional reference: n/a

Time reference: 2007.

Significance for EU-LUPA: Transport policy and urban sprawl

## **White paper: European transport policy for 2010**

### Objectives:

This document aims to strike a balance between economic development and the quality and safety demands made by society in order to develop a modern, sustainable transport system for 2010.

The Commission has proposed 60 or so measures to develop a transport system capable of shifting the balance between modes of transport, revitalising the railways, promoting transport by sea and inland waterway and controlling the growth in air transport. In this way, the White Paper fits in with the sustainable development strategy adopted by the European Council in Gothenburg in June 2001.

The European Community found it difficult to implement the common transport policy provided for by the Treaty of Rome. The Treaty of Maastricht therefore reinforced the political, institutional and budgetary foundations for transport policy, inter alia by introducing the concept of the trans-European network (TEN).

The Commission's first White Paper on the future development of the common transport policy, published in December 1992, put the accent on opening up the transport market. Ten years later, road cabotage has become a reality, air safety standards in the European Union are now the best in the world and personal mobility has increased from 17 km a day in 1970 to 35 km in 1998. In this context, the research framework programmes have been developing the most modern techniques to meet two major challenges: the trans-European high-speed rail network and the Galileo satellite navigation programme.

However, the more or less rapid implementation of Community decisions according to modes of transport explains the existence of certain difficulties, such as:

- Unequal growth in the different modes of transport. Road now takes 44% of the goods transport market compared with 8% for rail and 4% for inland waterways. On the passenger transport market, road accounts for 79%, air for 5% and rail for 6%.
- Congestion on the main road and rail routes, in cities and at certain airports.
- Harmful effects on the environment and public health and poor road safety.

Economic development combined with enlargement of the European Union could exacerbate these trends.

Potential indicators: n/a

Reference source:

[http://europa.eu/legislation\\_summaries/transport/bodies\\_objectives/l24007\\_en.htm](http://europa.eu/legislation_summaries/transport/bodies_objectives/l24007_en.htm)

Regional reference: n/a

Time reference: 2010

Significance for EU-LUPA: Transport policy and territorial cohesion.

The European Environment Agency (EEA): Indicators and fact sheets about Europe's environment. <http://www.eea.europa.eu/data-and-maps/indicators/#Outlook>

### **Climate Change**

#### Objectives:

EU policies on climate change adaptation are directly relevant to current and future land-use practices and economic sectors depending on this.

EU Climate Change policy key objectives: mitigation throughout reduction of CO2 emissions and adaptation strategies

Potential indicators: Renewal energy production and greenhouse gas emissions.

Reference source: <http://www.eea.europa.eu/themes/climate/policy-context>

Regional reference: unknown.

Time reference: 2007.

#### Significance for EU-LUPA:

Identification of environmental challenges derived from land use patterns that should be addressed by policy recommendations

Land use changes are one of the key drivers of environmental change.

Land use impacts on climate, biodiversity and ecosystems services. It can also cause degradation and pollution of water, soil and air: It has a major role in climate change at the global, regional and local scales, by increasing the release of CO2 to the atmosphere when soils and natural vegetation are disturbed. But also with regard to the emissions of other greenhouse gases, especially methane (by alteration of surface hydrology and elimination of forest cover), and nitrous oxide (through agriculture).

On the other hand environmental policy is a driver for land use changes in Europe and also the cross-cutting nature of land use is emphasized by the Environmental policies.

### **Water Framework Directive 2000/60**

#### Objectives:

Integrated river basin management for Europe. The key objectives of the WFD are the following:

- Prevent deterioration of the status of waters.
- Protect, enhance and restore all bodies of surface waters and ground waters.
- Promote sustainable water use (through effective pricing of water services).
- Progressively reduce discharges of priority substances and cease or phase discharges of priority hazardous substances for surface waters.
- Ensure progressive reduction of pollution of groundwater.
- Mitigate the effects of floods and droughts.
- Ensure sufficient supply of water.
- Protect the marine environment.

Efforts to modify land-use practices to reduce non-point pollution to water include integrated river basin management and in particular the Nitrates Directive.

Integrated river basin management plans are mandatory and need to include land use in the catchments.

Potential indicators: to be identified; in relation to mitigation of floods and droughts.

Reference source: [http://ec.europa.eu/environment/policies\\_en.htm](http://ec.europa.eu/environment/policies_en.htm)

Regional reference: unknown.

Time reference: 2000.

Significance for EU-LUPA:

Identification of environmental challenges derived from land use patterns that should be addressed by policy recommendations

Land use changes are one of the key drivers of environmental change.

Land use impacts on climate- precipitation, biodiversity and water ecosystems services. It can also cause degradation and pollution of water, alteration of surface hydrology and elimination. On the other hand environmental policy is a driver for land use changes in Europe and also the cross-cutting nature of land use is emphasized by the Environmental policies.

### **EU Floods Directive**

Objectives:

Flooding caused by the construction of impervious surfaces (e.g. buildings and roads) and provoked by extreme weather events is addressed by a new European Floods Directive.

Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007. This Directive now requires Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. With this Directive also reinforces the rights of the public to access this information and to have a say in the planning process.

The directive requires flood risk mapping and affects land use through flood management plans for affected floodplain areas.

Potential indicators: to be identified: in relation to mitigation of flood risk.

Reference source: [http://ec.europa.eu/environment/water/flood\\_risk/index.htm](http://ec.europa.eu/environment/water/flood_risk/index.htm)

Regional reference: unknown.

Time reference: 2007

Significance for EU-LUPA:

Identification of environmental challenges derived form land use patterns that should be addressed by policy recommendations

Land use changes are one of the key drivers of environmental change.

Environmental policy is a driver for land use changes in Europe and the cross-cutting nature of land use is emphased by the Environmental policies.

### **Coastal zone policy**

Objectives: Integrated Coastal Zone Management (ICZM).

The main objective is to improve the planning, management and use of Europe's coastal zones, which promotes sustainable management through co-operation and integrated planning, involving all the relevant players at the appropriate geographic level.

During 2006 and the beginning of 2007 the Commission reviewed the experience with the implementation of the EU ICZM Recommendation. The Commission Communication of 7 June 2007, COM(2007)308 final presents the conclusions of this evaluation exercise et sets out the main policy directions for further promotion on ICZM in Europe:

Commission Communication on the evaluation of Integrated Coastal Zone Management (ICZM) in Europe, COM(2007)308 final of 7 June 2007.

Potential indicators: to be identified.

Reference source: <http://ec.europa.eu/environment/iczm/home.htm>

Regional reference: unknown.

Time reference: 2007.

Significance for EU-LUPA:

Identification of environmental challenges derived form land use patterns that should be addressed by policy recommendations

Land use changes are one of the key drivers of environmental change.

Environmental policy is a driver for land use changes in Europe and also the cross-cutting nature of land use is emphasized by the Environmental policies.

### **EU Landfill Directive**

Objectives:

The aim of the Directive is to provide for measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment including the greenhouse effect, as well as any resulting risk to human health, from land filling of waste, during the whole life-cycle of the landfill. This is to be achieved through stringent operational and technical requirements on the waste and landfills.

Potential indicators: Landfill waste levels.

Reference source: [http://ec.europa.eu/environment/policies\\_en.htm](http://ec.europa.eu/environment/policies_en.htm)

Regional reference: n/a

Time reference: 1999.

Significance for EU-LUPA:

Identification of environmental challenges derived form land use patterns that should be addressed by policy recommendations

## **Nature conservation and Environmental Protection**

### Objectives:

NATURA 2000 network and LIFE programme contains provisions which put particular emphasis on links with spatial development and, in particular, land use. The EU-wide designation of protected areas is intended to establish a coherent integrated biological network which intervenes in land use.

Potential indicators: Spatial distribution of Natura 2000 sites, LIC's & ZEPA's. Correlation between land use changes and Natura 2000 network.

Reference source: <http://www.natura.org>

Regional reference: ESPON 2.4.1 interpreted the CORINE Land Cover data, combined socio-economic data, information on infrastructure and data of the Natura 2000 network and proposed a feasible. Spatial information (vector) NUTS 3.

Time reference: up to date 2010.

### Significance for EU-LUPA:

Identification of environmental challenges derived from land use patterns that should be addressed by policy recommendations

On the other hand environmental policy is a driver for land use changes in Europe and also the cross-cutting nature of land use is emphasized by the Environmental policies.

## **EU Landscape convention**

### Objectives:

The European Landscape Convention - also known as the Florence Convention, - promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues.

Potential indicators: quality, protection and management objectives

Reference source:

[http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/default\\_en.asp](http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/default_en.asp)

Regional reference: unknown

Time reference: came into force in 2004

Significance for EU-LUPA: multifunctionality of land use



## INSTITUTIONAL REPORTS

<b>Topic: Cohesion policy and territorial development</b>
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### **Green Paper on Territorial Cohesion**

#### Objectives:

The green paper constitutes an open debate on territorial cohesion, in response to the demands from the European Parliament, the ministerial meeting in Leipzig in 2007 and the contributions that many stakeholders made during the public consultation on the 4th Cohesion Report. The paper also builds on the Territorial Agenda and its Action Programme, during 2007.

The goal a better and shared understanding of territorial cohesion and its implications for policy.

#### Potential indicators:

Territorial diversity of the EU is seen as a vital asset that can contribute to the sustainable development of the EU as whole. To turn this diversity into strength, we have to address territorial cohesion through focusing on new themes, new sets of relationships binding EU territories at different levels and new forms of cooperation, coordination and partnerships. These ideas constituted the main issues for the proposed debate.

- Viewing cohesion from a territorial angle calls attention to themes such as sustainable development and access to services. Also underlining that many issues do not respect administrative boundaries and may require a coordinated response from several regions or countries, while others need to be addressed at a local or neighbourhood level. Building on the experience of the European Territorial Cooperation objective we can now look at the ways to further improve the co-operation between regions within the Union and with the neighbouring regions outside.
- An integrated place-based approach pursued by Cohesion Policy is ideally suited to respond to complex and strongly embedded issues, such as regional development but in order to maximise synergies better coordination with sectoral policies is necessary. Territorial cohesion also stresses the added value of partnership with a strong local dimension, which ensures that policies are designed and implemented with local knowledge.

Reference source: [http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0616:FIN:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0616:FIN:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0616:FIN:EN:PDF)

Regional reference: n/a

Time reference: 2008.

Significance for EU-LUPA: Policy context. Policy relevance of the indicators used within the project for the characterization of land uses in EU and identification of potential indicators to evaluate territorial performance.

## **Conclusions of the 5<sup>o</sup> Cohesion report**

### Objectives:

Cohesion policy could play an crucial role in the context of the current economic crisis and to guarantee the compliance with the EU strategy 2020. Although the cohesion policy has already significantly reduced economic, social and environmental disparities within the EU it has been observed that it could be more effective.

### Potential indicators:

The most relevant issues addressed are the following:

- The cohesion policy needs to be closely coordinated with the Europe 2020 strategy.
- Be more focused on few key priorities closely linked to EU 2020 to be more effective, especially in the more developed regions, be more selective.
- It would be necessary an ex-ante definition of clear an measurable objectives, targets and indicators (per member programme).
- On-going evaluation (monitoring) to assess performance towards these objectives. The idea is strengthening performance throughout incentives and conditions.
- Strength territorial cohesion, already addressed by the Lisbon treaty alongside the goals of economic and social cohesion, with particular emphasis on the role of cities, local development and the macro-regional strategies.

The commission intends to adopt a Common Strategic Framework delineating a comprehensive investment strategy, which translates the targets and objectives of Europe 2020 into investment priorities for Cohesion policy, covering structural funds, the cohesion fund, European fisheries fund and the European agricultural fund for rural development. Each member state would present their overall strategy for cohesion policy in line with the national reform programmes and the thematic and country specific recommendations for Europe 2020.

The Coordination of structural funds is crucial but not enough. The commission intends also to significantly strengthen the involvement of other EU policies in preparing the strategic documents.

### Reference source:

[http://ec.europa.eu/regional\\_policy/sources/docoffic/official/reports/cohesion5/index\\_en.cfm](http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion5/index_en.cfm)

Regional reference: n/a

Time reference: 2010.

Significance for EU-LUPA: Policy context. Policy relevance of the indicators used within the project for the characterization of land uses in EU and identification of potential indicators to evaluate territorial performance.

## **EEAC conference 2010 on sustainable land use**

### Objectives:

The EEAC believes that the concept of “sustainable land use” is a crucial component for sustainable development, as it involves integrating the different uses that are being made of natural resources and their interaction within relevant scales. It also provides new insights on how the governance of natural resources can be improved – at the landscape or other appropriate territorial levels (such as watersheds) – as part of balancing the involvement of multiple interests. We therefore recommend that the concept of “sustainable land use” should form one of the main topics to be taken forward within the context of the EU Sustainable Development Strategy.

### Potential indicators:

Sustainable land use depends on functioning governance structures and adequate policies at all levels.

Land use has a cross-cutting nature so apart from Environment policies other EU policies have implications for sustainable land use.

The CAP is a crucial policy field in relation to sustainable land use. Sustainable land use is not yet sufficiently incentivised in such a way that farmers, foresters and other land managers and workers are adequately rewarded for the protection and enhancement of biodiversity, climate change adaptation and mitigation and the provision of water management services. Scientific methodology and datasets required.

EU Strategy on Green Infrastructure after 2010, as a key tool to address the ecosystem services dimension of biodiversity.

Reference source: <http://www.eeac-net.org>

Regional reference: n/a

Time reference: 2010.

Significance for EU-LUPA: Policy context. Policy relevance of the indicators used within the project for the characterization of land uses in EU and identification of potential indicators to evaluate territorial performance.

## **A roadmap for moving to a competitive low carbon economy in 2050**

### Objectives:

Intergovernmental work done by Belgium for the Territorial Agenda and the revised Territorial Agenda itself expected to be ready spring 2011.

Transition towards a competitive low carbon economy.

It represents a roadmap for possible action up to 2050 which could enable the EU to deliver greenhouse gas reductions in line with the EU objective of reducing GHG by 80-95% by 2050.

### Potential indicators:

This will build on the established EU energy policy and the EU 2020 Strategy.

It outlines the need for raising land use productivity sustainably: by improved agricultural and forestry practices can increase the capacity of the sector to reduce GHG and preserve and sequester carbon on soils and forests. This can be achieved for instance through targeted measures to maintain grasslands, restore wetlands and peat lands, low or zero tillage, to reduce erosion and allow for the development of forests. Agriculture and forestry are also providing the resources for bio-energy and industrial feedstocks.

Reference source: [http://ec.europa.eu/clima/policies/roadmap/index\\_en.htm](http://ec.europa.eu/clima/policies/roadmap/index_en.htm)

Regional reference: n/a

Time reference: 2011.

Significance for EU-LUPA: Policy context. Policy relevance of the indicators used within the project for the characterization of land uses in EU and identification of potential indicators to evaluate territorial performance.

**Leipzig Charter for an integrated sustainable urban development**

Objectives:

The Leipzig Charter builds on a process of cooperation aimed at strengthening urban development in the European context. With the Leipzig Charter the Ministers agreed on common principles and strategies for an integrated approach to urban development policy and on the need for action in socially and economically deprived urban areas as well as in cities as a whole. The complementarities between the Leipzig Charter and of the Territorial Agenda are addressed in First Action Programme.

The Leipzig charter is a document of the member states, that commit themselves to:

- Initiate a political debate in their states on how to integrate the proposals and strategies of the Leipzig charter on sustainable EU cities into national, regional and local development policies.
- To use the tool of integrated urban development and the related governance for its implementation and establish any necessary framework at national level.
- To promote the establishment of a balance territorial organization based on European polycentric urban structure.

Potential indicators:

Making greater use of integrated urban development policies approaches.

Strategies for action:

- Creating and ensuring high quality public spaces.
- Modernizing infrastructure networks and improving energy efficiency.
- Proactive innovation and educational policies.
- Special attention to deprived neighbourhoods. Strategies for:
  - Upgrading the physical environment.
  - Strengthen the local economy and the local labour market policy.
  - Proactive education and training policies for youngs and children.
  - Promotion of efficient and affordable public transport.

Reference source: [http://www.eu2007.de/en/News/download\\_docs/Mai/0524-AN/075DokumentLeipzigCharta.pdf](http://www.eu2007.de/en/News/download_docs/Mai/0524-AN/075DokumentLeipzigCharta.pdf)

Regional reference: n/a

Time reference: 2007.

Significance for EU-LUPA: Policy relevance of the Urban dimension. Identification of policy challenges.

### **Promoting sustainable urban development in Europe - April 2009**

Objectives: DG Regio reports on the urban dimension.

The Commission communication to the Council and the Parliament “Cohesion Policy and cities: the urban contribution to growth and jobs in the region” (COM (2006) 385, 13.07.06) stresses that cities concentrate both needs and opportunities. While attracting investments and jobs and supporting innovation, entrepreneurship and the knowledge economy, cities face important problems in the context of the evolution of the global economy: unemployment, migration, social exclusion, increasing disparities within cities. New forms of territorial governance are required to foster a better integrated approach and a flexible cooperation between different territorial levels.

Potential indicators: n/a

Reference source:

[http://ec.europa.eu/regional\\_policy/sources/docgener/presenta/urban2009/urban2009\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/presenta/urban2009/urban2009_en.pdf)

Regional reference: n/a

Time reference: 2009.

Significance for EU-LUPA: Policy relevance of the Urban dimension. Identification of policy challenges.

### **Fostering the urban dimension: Analysis of the Operational Programmes co-financed by the European Regional Development Fund 2007-2013. November 2008**

Objectives: DG Regio reports on the urban dimension.

The Commission communication to the Council and the Parliament “Cohesion Policy and cities: the urban contribution to growth and jobs in the region” (COM (2006) 385, 13.07.06) stresses that cities concentrate both needs and opportunities. While attracting investments and jobs and supporting innovation, entrepreneurship and the knowledge economy, cities face important problems in the context of the evolution of the global economy: unemployment, migration, social exclusion, increasing disparities within cities. New forms of territorial governance are required to foster a better integrated approach and a flexible cooperation between different territorial levels.

Potential indicators: n/a

Reference source:

[http://ec.europa.eu/regional\\_policy/sources/docoffic/2007/working/urban\\_dimension\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docoffic/2007/working/urban_dimension_en.pdf)

Regional reference: n/a

Time reference: 2008.

Significance for EU-LUPA: Policy relevance of the Urban dimension. Identification of policy challenges.

### **The urban dimension in Community policies for the period 2007-2013. February 2010.**

Objectives: DG Regio reports on the urban dimension.

The Commission communication to the Council and the Parliament “Cohesion Policy and cities: the urban contribution to growth and jobs in the region” (COM (2006) 385, 13.07.06) stresses that cities concentrate both needs and opportunities. While attracting investments and jobs and supporting innovation, entrepreneurship and the knowledge economy, cities face important problems in the context of the evolution of the global economy: unemployment, migration, social exclusion, increasing disparities within cities. New forms of territorial governance are required to foster a better integrated approach and a flexible cooperation between different territorial levels.

Potential indicators: n/a

Reference source:

[http://ec.europa.eu/regional\\_policy/sources/docgener/guides/urban/index\\_en.htm](http://ec.europa.eu/regional_policy/sources/docgener/guides/urban/index_en.htm)

Regional reference: n/a

Time reference: 2010.

Significance for EU-LUPA: Policy relevance of the Urban dimension. Identification of policy challenges.

<b>Topic: Environmental dimension</b>
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**Sixth Environment Action Programme of the European Community 2002-2012**

Objectives: The European environment – state and outlook 2010: synthesis.

The SOER 2010 Synthesis provides an overview of the European environment's state, trends and prospects, integrating the main findings of SOER 2010.

Potential indicators:

The key issues addressed are:

- Climate change: impacts, vulnerability and adaptation.
- Nature and biodiversity: natural capital and ecosystems. Land conversion drivers biodiversity loss and degrades soil functions.
- Natural resources and waste. natural resources management and its links to other environmental and socio-economic issues.
- Environmental health and quality of life.
- EU Environmental challenges in the global context.
- Future Environmental priorities.

Reference source: <http://www.eea.europa.eu/soer/synthesis/synthesis>

Regional reference: n/a

Time reference: 2010.

Significance for EU-LUPA: Thematic assessment on Land Use provides in put on:

- State and trends (land cover changes and urban land-take based on CLC 2000-2006).
- Impacts (land use intensity, greenhouse gas sinks, impacts of environmental change, recreational and cultural aspects of land use).
- Responses (regional planning, examples of targeted policy instruments, policy challenges and priorities).

[www.espon.eu](http://www.espon.eu)

The ESPON 2013 Programme is part-financed by the European Regional Development Fund, the EU Member States and the Partner States Iceland, Liechtenstein, Norway and Switzerland. It shall support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory.

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