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PERI-URBAN LAND USE RELATIONSHIPS –
STRATEGIES AND SUSTAINABILITY
ASSESSMENT TOOLS FOR URBAN-RURAL
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D6.2.3

Relevance of PLUREL's results to policies at EU, national, regional and local level

Christian Fertner
Thomas Sick Nielsen*
University of Copenhagen

*Responsible partner and corresponding author
Tel: +45 35331830 ; Email: sick@life.ku.dk

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Abstract

This is the second version of Deliverable 6.2.3 (Short summary report on the relevance of the emerging results to the policies at the EU, national, regional and local level) indicated in the Description of Work for month 35.

The main aim of this report is to link the PLUREL projects focus and results to policies and policy development at the EU-level, as well as the national and regional level. PLUREL has peri-urban land use relationships as its main focus. This includes analysis of drivers, consequences, policies and scenarios for the future. Even though PLUREL aims for pan-European coverage the principal focus is at the sub-regional level and balance between urban and rural land uses within Rural-Urban Regions.

The current version of the report is structured in two parts. Chapter 1 – 3 present an overview of: European principles and guidelines, EU legislation funding, and EU policy areas and their relevance for urban-rural relationships. Chapter 4 is based on issues of sustainable development stated by stakeholders involved in the project. For each issue the contribution of current and expected project results are discussed.

The EU has no explicit competence in spatial development, but goals like the Lisbon and Gothenburg agenda set the overall framework aiming for Economic growth and employment; and Sustainable development. The European ministers responsible for spatial planning have developed a set of territorial policy goals and priority topics during the last decades, documented in the ESDP, the CEMAT guidelines, and recently in the Territorial Agenda which include : Territorial cohesion, balanced development; Polycentric development; Territorial governance; Risk-management; and Ecological structures and cultural and natural resources. These are all important issues in the context of Peri-urban land use relationships.

Furthermore, several EU policies also have an indirect influence on spatial development. E.g. the rural development policy is explicitly targeting *“peri-urban areas under increasing pressure from urban centres”*, providing funds for the agrifood sector, protection and enhancement of natural resources as well as an attractive development in general. Besides these spatial relevant sector policies, the EU enforces legislation which is translated into spatial explicit instruments on sub-regional level. E.g. the Habitat and Birds Directive caused the development of Natura 2000 areas, an EU-wide network of nature protection areas. The implementation of Trans-European Networks through funding programmes is another sector policy having an impact on land-use change and rural-urban relations.

On the sub-regional scale the perception on overall goals like sustainability can be very different, depending on the viewpoint, e.g. urban or rural and conservation or development. PLUREL is not developing an ideal agenda of sustainability in peri-urban areas, but is providing a broad range of tools allowing end-users to use their own perspective on sustainability. Different agendas can then be approached in combination or even an integrated way depending on the user's value system.

Stakeholders involved in the project have raised several issues including growth management, economic, social and environmental processes, impact assessment and knowledge exchange which PLUREL is contributing to with several results. The project work is not finished yet, but a broad range of tools and methods have been investigated and developed throughout the project already now, contributing to an improved knowledge-base and extend toolbox when approaching sustainable development in peri-urban areas. This report will support the dissemination process by highlighting the connections of policies and the project results.

Location in the project

This deliverable (D6.2.3) is located in Module 6 Scientific management and co-ordination, Workpackage 6.2 Scientific co-ordination.

Partner for this deliverable report

Partici- pant no.	Participant organisation	Role related to this milestone	Contact persons	Country
1	University of Copenhagen	M6 leader WP6.2 leader	T.S. Nielsen	DK

Version history

A first version of this report, mainly consisting of chapters 1-3 (relevant issues and policies on EU level), was delivered in January 2009. The current version is extended by a chapter on issues stated by regional and local stakeholders and how PLUREL is contributing to a better understanding of those.

Classification of results/outputs

To integrate this deliverable in the PLUREL XPLOER, information on the deliverables relation to the 6 dimensions is given. However, as this is an integrative summary report, it is not possible to make clear choices in the given classification.

Spatial scale for results: Regional, national, European	All
DPSIR framework: Driver, Pressure, State, Impact, Response	All
Land use issues covered: Housing, Traffic, Agriculture, Natural area, Water, Tourism/recreation	Many (Built-up / Urban)
Scenario sensitivity: Are the products/outputs sensitive to Module 1 scenarios?	no
Output indicators: Socio-economic & environmental external constraints; Land Use structure; RUR Metabolism; ECO-system integrity; Ecosystem Services; Socio-economic assessment Criteria; Decisions	none
Knowledge type: Narrative storylines; Response functions; GIS-based maps; Tables or charts; Handbooks	Summary Report
How many fact sheets will be derived from this deliverable:	1

Introduction

The main aim of this report is to link the PLUREL projects focus and results to policies and policy development at the EU-level, as well as the national and regional level.

PLUREL has peri-urban land use relationships as its main focus. This includes analysis of drivers, consequences, policies and scenarios for the future. Even though PLUREL aims for pan-European coverage, the principal focus is at the sub-regional level and balance between urban and rural land uses within Rural-Urban Regions.

The first part of the report (chapters 1 – 3) focuses on European policies connecting to rural-urban land use relationships in different ways:

- European principles and guidelines with likely implications for peri-urban land use relationships; or explicitly mentioning peri-urban development or rural-urban balance
- EU legislation funding which are the most 'direct' instruments for Community policy
- EU policy areas affecting or explicitly dealing with peri-urban land use relationships. The EU policy areas are the frame in which the instruments are used, in addition to other policy actions of a more indirect character.

Multiple general policies, policy areas and instruments at the EU level are likely to require something from peri-urban land use relationships. These are presented on the following pages.

In chapter 4 issues stated by regional and local stakeholders reviewed and the contribution of PLUREL outcomes discussed. The issues are:

- Growth management
- Economic, social and environmental processes & future development
- Impacts and costs
- Knowledge exchange and learning

The project work is still ongoing. Many of the results discussed are still in a draft version and further details on their contribution will appear during the last year of the project.

1 European principles and guidelines

Most crucial for peri-urban land-use and urban-rural relationships are spatial development policies. Within the national states on the European continent, spatial planning is organised in various ways, giving different competences to the national, regional and local levels. The European Union does not have an authority for spatial planning nor territorial development because it is not a state and has actually no territory (Faludi 2007). Nevertheless has the EU a crucial influence on spatial development in Europe with its policies, and during the recent decades also the notion for European spatial planning resp. territorial development became an issue when discussing Europe's future development.

Lisbon and Gothenburg

The recent development of EU policies has to be seen in context of the Lisbon Strategy, adopted in 2000. It aims at developing the EU into *"the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment by 2010"* (European Council 2000). In 2005, the Lisbon Strategy was refocused on growth and jobs, while recognizing a development going *"hand in hand with promoting social or environmental objectives"* (CEC 2005). The inclusion of the latter was a result of the Council meeting in Gothenburg in 2001, where emphasis on the environmental dimension of the EU's future development was put. In Gothenburg four priorities, namely climate change, sustainable transport, health and resource management, were agreed on. The renewed Lisbon strategy and the sustainability goals of Gothenburg set the overall framework for EU policy development.

ESDP

Although, as said above, the EU has no explicit authority in spatial development, the topic is highly discussed and several steps were taken in the recent decades to define common principles and guidelines for spatial development in Europe. In 1999 the ministers responsible for spatial development in the EU member states adopted the European Spatial Development Perspective (ESDP). This document resulted from a process that started beginning of the 1990s with reports on the territorial outlook of the EU (Europe 2000 and Europe 2000+) and a series of informal meetings of the responsible ministers. The ESDP points out three spatial policy guidelines (EU Ministers responsible for Spatial Planning 1999, §19):

- Development of a balanced and polycentric urban system and urban-rural partnership
- Securing access to infrastructure and knowledge
- Sustainable development, prudent management and protection of natural and cultural heritage



The ESDP also proposes several policy options for different policy aims, whereof three are explicit dedicated to urban-rural relationships (§106), a major issue of PLUREL:

19. Maintenance of a basic supply of services and public transport in small and medium-sized towns in rural areas, particularly those in decline.

20. Promotion of co-operation between towns and countryside aiming at strengthening functional regions.
21. Integrating the countryside surrounding large cities in spatial development strategies for urban regions, aiming at more efficient land use planning, paying special attention to the quality of life in the urban surroundings.

Although the ESDP is not a legally binding document, its aims and policy options became an important framework for succeeding policies and the discussion of European spatial planning.

CEMAT guiding principles

Since the 1960s the Council of Europe emphasized the need for co-operation in the field of spatial planning and in 1970 the first European Conference of Ministers responsible for regional/spatial planning (CEMAT) took place. A number of reference texts related to principles for spatial development have been elaborated during the years, as for example the “European charter for regional/spatial planning” (Torremolinos Charter) in 1983, which highlighted balanced social and economic development of regions, quality of life, management of natural resources and environmental protection and sound use of soil.

Since the 1980s, Europe has gone through geopolitical changes and almost all European countries are member of the Council of Europe today (22 members in 1983, 43 today). Based on the Torremolinos Charter and a variety of other documents of the council (see §9) as well as the ESDP, the CEMAT elaborated “Guiding Principles for Sustainable Spatial Development of the European Continent” (CEMAT 2000) which were adopted in 2000. The document concludes on 10 principles for a regionally more balanced development:

1. Promoting territorial cohesion through a more balanced social and economic development of regions and improved competitiveness
2. Encouraging development generated by urban functions and improving the relationship between the town and the countryside
3. Promoting more balanced accessibility
4. Developing access to information and knowledge
5. Reducing environmental damage
6. Enhancing and protecting natural resources and the natural heritage
7. Enhancing the cultural heritage as a factor for development
8. Developing energy resources while maintaining safety
9. Encouraging high quality, sustainable tourism
10. Limitation of the impact of natural disasters



Additionally, measures for the spatial development in different types of European regions (urban, rural, mountains, coastal, transport corridors etc.) are proposed. Most relevant for PLUREL are measures proposed for urban areas, e.g. controlling the expansion of urban areas/urban sprawl, managing of the urban ecosystem and an increase of building land supply within agglomerations is proposed to counter new trends towards suburbanisation (§52). Regarding cultural landscapes the document emphasizes a better integration of spatial development and sector policies to protect and manage landscapes (§50). Also measures proposed for rural areas are related to PLUREL issues regarding employment opportunities, accessibility, quality of life, natural and cultural heritage and agriculture (§53). The CEMAT principles can be understood as a step to improve co-ordination, harmonize and promote sustainable spatial development on the European continent.

Territorial Agenda

After the ESDP was published, the discussion of territorial development in Europe focused on the work within EU initiatives, like Interreg and the ESPON programme, implementing the goals of the ESDP. With the work on a constitution for the EU also the discussion on the EU's spatial development gathered again momentum. After several informal ministerial meetings – like already done during the work on the ESDP – the “Territorial Agenda of the European Union”, together with the “Leipzig Charter on Sustainable European Cities”, was adopted in May 2007 (EU Ministers responsible for spatial planning and development 2007). It is the latest development in this discussion process.

The Territorial Agenda is structured in 4 chapters and refers explicitly to the previous named documents (Lisbon Strategy/Gothenburg goals, ESDP, CEMAT principles) and incorporates them. In chapter I, “Territorial Cohesion” is stated as the future task for the EU's territorial policy. The concept of territorial cohesion aims at strengthening endogenous territorial potentials in territories to overcome imbalances between territories, both by diminishing regional inequalities and disparities and identifying and strengthening economic development potentials (BBR et al 2005).

Territorial Agenda of the European Union

Structure of the Territorial Agenda

Chapter title	Content
I. Future task: Strengthening Territorial Cohesion	Introduction emphasizing the need for territorial cohesion
II. New challenges: Strengthening regional identities, making better use of territorial diversity	Challenges for territorial cohesion
III. Territorial priorities of the development of the European Union	Main chapter, setting 6 priorities for territorial development
IV. Implementing the Territorial Agenda	Proposal of 4 actions to implement the Territorial Agenda

Chapter II lists major challenges to territorial development of the EU:

- Climate change
- Energy supply and energy efficiency
- Global economic competition
- Integration (particularly with regard to infrastructure) of Easter Europe
- Overexploitation of ecological and cultural resources (particularly through increasing sprawl and depopulation of remote areas)
- demographic change (aging and migration processes)

In chapter III, 6 priorities for the territorial development of the EU are identified:

1. Strengthening a **polycentric development** by networking of regions and cities of all sizes
2. Creating new forms of partnership and **territorial governance** between urban and rural areas
3. Promoting competitive and innovative **regional clusters** across borders
4. Strengthening and extend the **Trans-European Networks**
5. Promoting the trans-European **risk-management** (including impacts of climate change)
6. Strengthening ecological structures and **cultural** and **natural resources**

With these priorities the Territorial Agenda gives more prominence to territorial cohesion (Faludi 2007). In November 2007 the EU Ministers responsible for Spatial Planning agreed on a first Action Plan providing a framework for the implementation of the Territorial Agenda, ensuring that it is taken into consideration when assessing current and developing future policies.

Outlook on territorial cohesion policy

In the Treaty of Lisbon (resp. the Treaty on the Functioning of the European Union) of the EU, Territorial cohesion is mentioned as a formal shared competence of the EU and its member states (European Union 2008, Article 4 § 2 and Title XVIII / Article 174). It would not be a change in the EU governance philosophy but promote a more coherent approach to territorial development within EU policies (Territorial State 2007) and give the European Commission a key-role in developing relevant policies (Faludi 2007).

In October 2008, the Commission published a Green paper on territorial cohesion (European Commission 2008a), calling for more balanced and sustainable development and highlighting three challenges for the implementation of territorial cohesion:

1. Concentration: overcoming differences in density
2. Connecting territories: overcoming distance
3. Cooperation: overcoming division

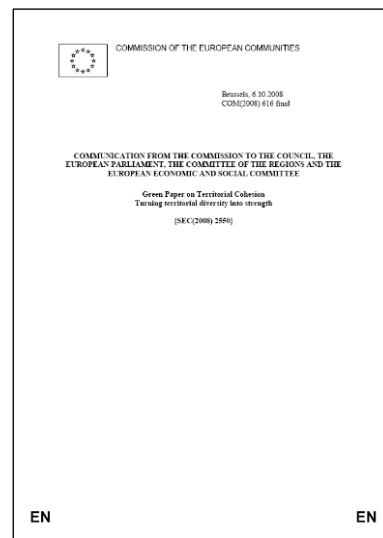
Further, regions with specific geographical features (mountains, islands, periphery) are named to pose particular challenges to territorial cohesion. The Green paper was up for debate until February 2009. In June 2009, the Commission published the “Sixth report on economic and social cohesion” (European Commission 2009), where the last chapter synthesizes the debate on the green paper. An overall aim for territorial cohesion was defined:

“The goal of territorial cohesion is to encourage the harmonious and sustainable development of all territories by building on their territorial characteristics and resources.”

Furthermore, 3 issues were identified to focus further work on:

- Better coordination and new territorial partnerships, including integrated approaches, multi-level governance etc.
- Better cooperation through instruments like the EGTC, the European integration process and cohesion policy
- Improving understanding of territorial cohesion with the work of ESPON and the Urban Audit. Cohesion should furthermore be complemented with other indicators than GDP, as e.g. sustainable development, human development, vulnerability or accessibility

The Spanish EU-Presidency, effective in the first half of 2010, announced to bring forward the discussion on territorial cohesion policy at an informal meeting of ministers in March 2010 (Spanish EU-Presidency 2010).



2 EU policies on urban-rural issues

The European Union acts in a wide range of policy areas which include solidarity policies (also known as cohesion policies) in regional, agricultural and social affairs, and innovation policies, supporting the development of state-of-the-art technologies in fields such as environmental protection, research & development and energy. To implement these policies, the EU uses a combination of mainly two sorts of instruments: Legislation including EU regulations, directives and decisions, and funding of certain activities or projects.

Legislation and funding

The total body of the EU's legislation, also called 'acquis communautaire', comprises several acts:

- Primary legislation: Treaties of the EU
- Secondary legislation: Regulations, directives, decisions of the EU institutions
- Other like decisions of the European Court of Justice, legal acts of the Common Foreign and Security Policy, treaties of the EU with other 3rd countries

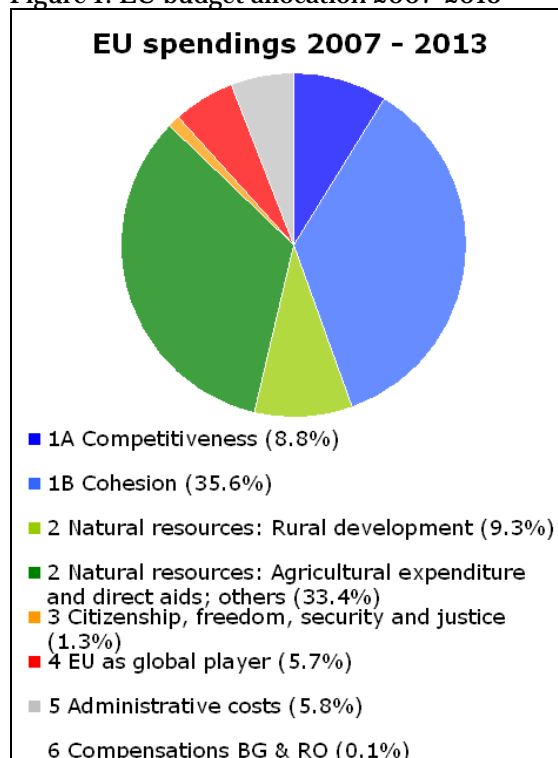
For the implementation of certain policies, the major instrument is secondary legislation which is derived from primary law, based on the treaties of the EU. The EU institutions can implement the following legal acts:

- *Regulations*, immediately effective and binding, no translation in national law necessary
- *Directives*, to be implemented by the member states within a certain period of time, allowing the member states to adjust to their own law
- *Decisions*, binding, can be directed towards member states, companies or individuals
- *Recommendations and opinions*, are non-binding guidelines which in general get implemented

The EU's budget is organised in a long-term spending programme, also known as financial framework or perspective, running for 7 years. The current financial framework covers the period from 2007 – 2013 and amounts up to EUR 975 billion.

The EU finances actions and projects in policy domains where all EU countries have agreed to act at Union level. These are grouped under 6 headings (see figure 1) and 31 different policy areas (see table 1). Most relevant for urban-rural relations are heading 1A/1B Sustainable Growth (Competitiveness and Cohesion) and 2 Natural resources (Agriculture and rural development), which are also the biggest entries. The expenditures

Figure 1: EU budget allocation 2007-2013



Source: European Commission (2008b)

under these headings are administrated by various funds as e.g. the structural and cohesion funds, financing activities under heading 1B.

The guidelines for funds for cohesion and rural development were established in Community Strategic Guidelines – council decisions on the strategic orientation of the funds and programmes. According to these guidelines, each member state has to develop its own National Strategic Reference Framework (NSRF) to ensure linkages with national policies. Each region has then to develop an Operational Programme, reflecting the region's needs, but in line with the NSRF.

EU policy areas

The guidelines on EU/European level described in the previous chapter can be understood as a framework for various (territorial) policies on various levels (EU, national, regional, local). As said before, no explicit authority for territorial development exists, but several policies have territorial relevance and are directly related to these guidelines and principles.

Table 1: EU policy areas

Economic and financial affairs	Fisheries	Development and relations with ACP countries
Enterprise	Internal market	Enlargement
Competition	Regional policy	Humanitarian aid
Employment and social affairs	Taxation and customs union	Fight against fraud
Agriculture and rural development	Education and culture	Commission's policy coordination and legal advice
Energy and transport	Press and communication	Administration
Environment	Health and consumer protection	Budget
Research	Area of freedom, security and justice	Audit
Information society	External relations	Statistics
Direct research	Trade	Pension

(Policy areas most relevant to PLUREL in bold.)

Source: http://ec.europa.eu/budget/budget_detail/policy_areas_en.htm, Dec 2008

The EU policy areas are more or less congruent with the EU commissions' directorates (DGs). In the following, 5 policy areas (see table 1) will be discussed in more detail because of their relevance to land-use change and rural-urban relationships.

Agriculture and rural development

The major aims of the agriculture and rural development policy are to stabilise markets, ensure a fair standard of living in the farming community and guarantee security of supplies. These are implemented through the EU's Common Agricultural Policy (CAP), which has been reformed several times since its beginnings in the 1960s. Since 1999, the CAP is made up of two pillars: The market policy, focusing on direct aids and income support for farmers, and the rural development policy. The rural development policy was further strengthened in the financial framework for 2007 – 2013 by the creation of an own fund, the European Agricultural Fund for Rural Development (EAFRD). Together with the European Agricultural Fund for Guarantee (EAFG) it is the major financial instrument under heading 2, natural resources, of the financial framework for 2007 – 2013 (see figure 1).

Objectives and financial instruments within heading 2 (Natural resources)

Objectives	Funds	EUR mio*
Agriculture (income support)	EAFG	317 386
Rural development (public goods)	EAFRD	91 183
Environment and quality of life	EAFRD, structural funds	2 143
Fisheries	European Fisheries Fund, others	6 752
Total EUR mio		416 525

* 2007 – 2013, Prices 2008

The rural development policy has now a single fund, the EAFRD, and a single set of programming, financing etc. which was set up in the Community Strategic Guidelines (CSG) for rural development, adopted on 20 Feb 2006 (Council of the European Union 2006a). Key areas include the agrifood economy, the environment and the broader rural economy and population. The rural development policy is built around 4 axes:

- Axis 1: Improving the **competitiveness of the agricultural** and forestry sector
- Axis 2: Improving the **environment** and the countryside
- Axis 3: Improving the **quality of life** in rural areas and encouraging diversification of the rural economy
- Axis 4: Building local capacity for employment and diversification (LEADER Axis¹, should contribute to axes 1 – 3)

Projects eligible for funding can be co-financed up to 50% (Axis 1 and 3) resp. 55 % (Axis 2 and 4) and up to 75 % resp. 80 % in convergence regions². To co-ordinate between the EAFRD and the structural funds (see section on Regional policy), demarcation criteria will be set out. In general the EAFRD focuses on supporting the diversification of rural economies at the local level, while the structural funds primarily address rural issues as part of a wider activity.

Relevance for PLUREL

The foci on a strong and dynamic agrifood sector in (Axis 1), protection and enhancement of the natural resources in rural areas (Axis 2) and the attractive development of rural areas in general (Axis 3) are relevant for PLUREL issues because of their impact on land use in peri-urban areas. Axes 1 and 2 cover all the territory of the respective programming area; axes 3 and 4 target mostly rural areas, but also includes small towns in rural areas. However, the definition of eligible / rural areas is rather broad, “*ranging from remote rural areas suffering from depopulation and decline to peri-urban areas under increasing pressure from urban centres*” (CSG RD, 2.4). The rural development policy is therefore also of importance to rural areas in proximity to cities, peri-urban areas. A specific definition of focus areas is left to the member states and the development of the NSRF, allowing to reflect specific issues of the respective geography.

Energy and transport

The energy and transport policy aims to guarantee economic growth, safety and security of supply while adjusting with environmental constraints. A major objective is the completion of the internal market by developing Trans-European networks (TEN). The

¹ The LEADER axis evolved from the former ‘Community Initiative’ LEADER I (Links between actions for the development of the rural economy, 1989 – 1993), LEADER II (1994 – 1999) and LEADER+ (2000 – 2006).

² See sub-chapter “Regional policy” for eligible areas

latest outline of objectives of the transport policy can be found in the Mid-term review of the 2001 Transport White Paper (European Commission 2006a). The following issues are prioritized:

- Mobility throughout the EU
- Environmental problems
- Energy security
- Consumer protection, safety and security of users and providers
- Efficiency and sustainability, innovative solutions
- International networking on sustainable transport policies, EU as leader in sustainable transport solutions

The energy and transport policy is implemented, as also most other policies, with a combination of funding (e.g. TEN) and legislation (e.g. legislation on tolls on emissions).

Trans-European networks - Transport

Besides networks for energy (TEN-E) and telecommunication (eTEN), a major policy aim is to improve the transport networks in Europe (TEN-T). The first plans were adopted in 1990; today there are 30 axes / European priority corridors defined. In the current financial framework EUR 20 billion of co-financing are directly dedicated to TEN-T, and TEN-T projects in regions with weaker economic performance can get further funding from structural and cohesion funds. Further, the European Investment Bank provides loans for TEN-T projects to the member states.

Green Paper on Urban Mobility

In 2007 the Commission published a Green Paper on Urban Mobility (European Commission 2007), where 5 key issues for the future development of urban transport were identified:

Challenges highlighted in the Green Paper on Urban Mobility

Key issue	Major problem addressed
1. Free-flowing towns and cities	Congestion
2. Greener towns and cities	Air pollution and noise
3. Smarter urban transport	Spatial and environmental constraints to infrastructure expansion
4. Accessible urban transport	Attractiveness of collective transport
5. Safe and secure urban transport	Road accidents and fatalities

In spring 2008 the green paper was open for discussion and consultation. Until end of 2008 the commission will elaborate an Action Plan on Urban Mobility to specify its implementation.

Greening Transport Package

In July 2008 the Commission announced the implementation of several “Greening Transport” initiatives. As a first step, a strategy to internalise external costs in the transport sector will be elaborated. A framework to enable member states to calculate and vary tolls according to air and noise pollution from traffic emissions will be proposed, which will also influence the traffic organization in rural-urban regions.

Relevance for PLUREL

Energy and transport are important issues in PLUREL, first as external constraints for the overall development of a rural-urban region, and second, as important elements of the internal structure of a rural-urban region having an crucial impact on local mobility and accessibility.

Environment

The priorities for the EU's current environmental policy were adopted with the sixth Environment Action Programme (Council of the European Union 2002), covering the period 2002 - 2012. In 2007, the Commission had undertaken a mid-term review, concluding that the priorities set in the 6th EAP are still the most important, but an improvement in the measures undertaken has to be done to reach the four objectives:

- Tackling **climate change**: reducing greenhouse gas emissions by 8 % by 2008 to 2012 and target global emission cuts of 20 to 40 % by 2020;
- **Nature and biodiversity**: completion of the Natura 2000 network, new sectoral biodiversity action plans, greater attention to protecting landscapes, protecting the marine environment, prevent industrial and mining accidents, strategy for protecting soils;
- **Environment and health**: fundamental overhaul of the EU's risk-management system for chemicals, a strategy for reducing risks from pesticides, protection of water quality in the Union, noise abatement and a thematic strategy for air quality.
- Sustainable use of **natural resources** and management of **waste**: increased recycling and waste prevention with the aid of an integrated product policy and measures targeting specific waste streams such as sludges and biodegradable waste.

Thematic Strategies

Additionally, the 6th EAP promised seven Thematic Strategies, which have been adopted between 2005 and 2006:

- Air pollution
- Protection and conservation of the marine environment
- Prevention and recycling of waste
- Sustainable use of resources
- Urban environment
- Soil protection
- Sustainable use of pesticides

The Thematic Strategies take a broad, strategic approach and build on the existing EU legal/regulatory framework. They focus on an integrated approach and on implementation issues. The Thematic Strategy on the Urban Environment (CEC 2006b) focuses on environmental issues in urban regions. Its main objectives are measures to improve the communication and exchange of environmental policies and the co-ordination with other policies on the local level. Further, it highlights the need for an integrated development of cross-cutting issues of urban environmental policy like climate change, nature and biodiversity, quality of life and the use of natural resources. The commission supports these measures mainly with guidance and training.

Environmental legislation

A central instrument for the implementation of the EU's environmental policy is by EU legislation. The most important directive of the EU's environmental policy is the Habitats and Birds Directive, established in 1992. Following this directive an EU-wide network of nature protection areas (Natura 2000 areas) was and is developed, aiming at the long-term survival of most valuable and threatened species and habitats. Natura 2000 is not strictly excluding human activities; however, specific rules related to nature protection apply to every activity.

Other important directives which can affect land use and the location of activities are the Framework Directives on Air Quality and Water, and the Directive on Strategic Environmental Assessment (SEA), which introduced the systematic assessment of the environmental effects of strategic land use related plans and programs.

Relevance for PLUREL

Especially in peri-urban and rural areas many areas are designate to nature protection through EU or national law, having a strong impact on the land use in these areas. Also because these natural landscapes are often very sensitive to land use changes. In PLUREL the impacts on the environment resulting from urbanisation are a major concern.

Regional policy

The EU's regional policy focuses on transfers of funds from rich to poor countries to promote development in regions lagging behind or suffering of structural problems. These activities are placed under heading 1B – Cohesion of the current financial framework (see figure 1), organised in three objectives and financed by the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund.

Objectives and financial instruments within heading 1B (Cohesion)

Objectives	Funds	EUR mio*
Convergence	ERDF, ESF, Cohesion Fund	282 856
Regional competitiveness and employment	ERDF, ESF	54 964
Territorial co-operation (cross-border, transnational, interregional)	ERDF	8 722

* 2007 – 2013, Current prices

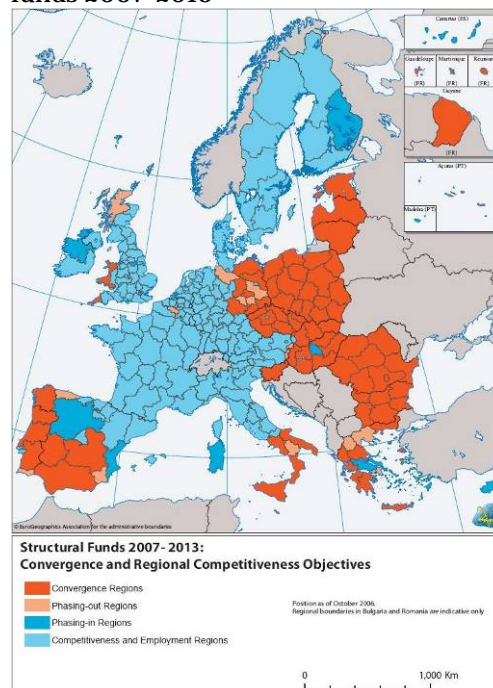
The Convergence objective is to promote development in the least-developed regions³, financed by the ERDF and the ESF (see figure 2). Further, the Cohesion Fund co-finances infrastructure projects in 15 countries⁴ of the EU.

Funds under the Regional competitiveness and employment objective are available to all other regions in the EU which are not covered by the Convergence objective. The objective is to promote innovation, entrepreneurship, environmental protection, accessibility, adaptability and improvement of job markets.

The aim of the Territorial co-operation objective is to promote joint, cross-border problem solving in urban, rural and costal development and to improve economic relations and networking between small and medium-sized enterprises.

The contextual and organisational guidelines for the structural and cohesion funds were

Figure 2: Eligible areas to structural funds 2007-2013



Source: DG Regio

³ Eligible are 84 regions with a GDP/capita of less than 75 % of EU average, 16 “phasing-out” regions with a GDP/capita slightly above

⁴ Eligible are Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia and Spain (only to a phase-out fund)

defined in the Community Strategy Guidelines on cohesion, adopted on 6 October 2006 (Council of the European Union 2006b). The actions should promote sustainable growth, competitiveness and employment, having regard to the Lisbon Strategy. The CSG on cohesion stress 3 priorities:

1. Making regions more **attractive** places in which to invest and work
2. Improving knowledge and **innovation** for growth
3. More and better **jobs**

The priorities are further defined by sub-guidelines (see table 2).

Table 2: Structure of the CSG on cohesion

<p>1. INTRODUCTION: GUIDELINES FOR COHESION POLICY, 2007-2013</p> <p>1.1. Guideline: Making Europe and its regions more attractive places in which to invest and work</p> <p>1.1.1. Expand and improve transport infrastructures</p> <p>1.1.2. Strengthen the synergies between environmental protection and growth</p> <p>1.1.3. Address Europe's intensive use of traditional energy sources</p> <p>1.2. Guideline: Improving knowledge and innovation for growth</p> <p>1.2.1. Increase and better target investment in RTD</p> <p>1.2.2. Facilitate innovation and promote entrepreneurship</p> <p>1.2.3. Promote the information society for all</p> <p>1.2.4. Improve access to finance</p> <p>1.3. Guideline: More and better jobs</p> <p>1.3.1. Attract and retain more people in employment and modernise social protection systems</p> <p>1.3.2. Improve adaptability of workers and enterprises and the flexibility of the labour market</p> <p>1.3.3. Increase investment in human capital through better education and skills</p> <p>1.3.4. Administrative Capacity</p> <p>1.3.5. Help maintain a healthy labour force</p> <p>2. THE TERRITORIAL DIMENSION OF COHESION POLICY</p> <p>2.1. The contribution of cities to growth and jobs</p> <p>2.2. Support the economic diversification of rural areas, fisheries areas and areas with natural handicaps</p> <p>2.3. Cooperation</p> <p>2.4. Cross-border cooperation</p> <p>2.5. Transnational cooperation</p> <p>2.6. Interregional cooperation</p>
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Relevance for PLUREL

The regional policy uses a European-wide perspective, focusing on inter-regional difference than on intra-regional structures. However, cohesion is crucial for the overall development of European city-regions, shifting attractiveness and with it also a certain pressure on land use between regions. Besides the general question of the significance of the EU regional policy for cohesion, it should be considered as a driver for certain land use changes.

Research

The research policy is placed under heading 1A – Competitiveness of the financial framework for 2007 – 2013 with a total budget of EUR 86 billion. More than 60 % of the budget is dedicated to the 7th research framework programme (FP7), aiming at enhancing research and innovation capacities and supporting cross-border research activities.

The broad objectives of FP7 have been grouped into four categories: Cooperation, Ideas, People and Capacities. The major budget of the FP7 (~ EUR 30 billion) is going to integrate research projects under the objective Cooperation in the following areas:

- Health
- Food, Agriculture and Fisheries, Biotechnology
- Information & communication technologies
- Nanosciences, nanotechnologies, materials & new production technologies
- Energy
- Environment (including Climate Change)
- Transport (including aeronautics)
- Socio-economic Sciences and Humanities
- Space
- Security
- Coordination of Research Activities
- Joint Technology Initiatives

Within the objective Capacities the FP7 is also funding the development of research infrastructure which can have a particular impact on spatial development on the micro scale.

Additionally to research placed under heading 1A of the financial budget, the structural funds (heading 1B, see figure 1) are also co-financing certain research activities, e.g. through the objective Territorial Co-operation (former Interreg initiatives).

Relevance for PLUREL

The research policy has no particular objective to influence rural-urban relationships. Still, similar to the regional policy, certain investments in research and research infrastructure can have a considerable impact on spatial development on micro, and in the long run also on macro scale.

3 The European policy framework

As illustrated in the two previous sections, the EU has no explicit competence in spatial development. However, its guidelines and policies are of importance for the general development. European policies have an impact on various levels of spatial development; figure 3 illustrates the different layers of spatial relevant policies. The Lisbon and Gothenburg agenda set the overall framework for all EU policies by emphasizing the two general goals:

- Economic growth and employment
- Sustainable development

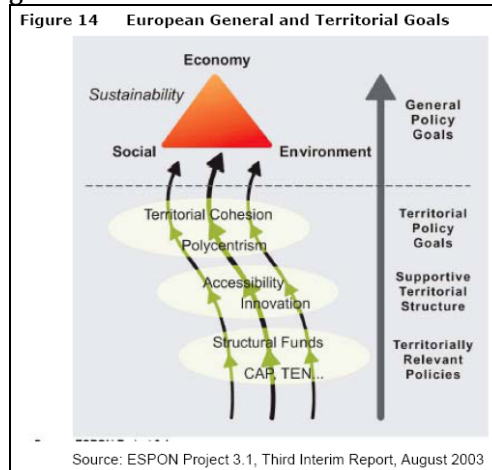
Further, the agreements of the European ministers responsible for spatial planning developed a set of territorial policy goals and priority topics during the last decades, documented in the ESDP, the CEMAT guidelines, and recently in the Territorial Agenda:

- Territorial cohesion, balanced development
- Polycentric development
- Access to infrastructure and knowledge
- Territorial governance
- Innovative regional clusters
- Trans-European Networks
- Risk-management
- Ecological structures and cultural and natural resources

Additionally to these overall goals and principles, relevant for land use change and rural-urban relationships, several EU policies have an indirect but important influence on spatial development. The rural development policy is explicitly including “*peri-urban areas under increasing pressure from urban centres*”, providing funds for the agrifood sector, protection and enhancement of natural resources as well as an attractive development in general. Though, the explicit implementation is left to the member states and the regional programme managers. Similar to the rural development policy works the regional or cohesion policy. However, the cohesion policy might not have an impact on intra-regional development as such, but by enhancing attractiveness of regions it also results in a change of land use pressure inside certain regions.

Besides these spatial relevant sector policies, the EU enforces legislation which is translated into spatial explicit instruments on sub-regional level. E.g. the Habitat and Birds Directive caused the development of Natura 2000 areas, an EU-wide network of nature protection areas. The implementation of Trans-European Networks through funding programmes is another sector policy having an impact on land-use change and rural-urban relations. The mentioned guidelines and policies act as an overall policy framework for land-use change in Europe. For PLUREL they set the scene as well as PLUREL's results will respond to the existing policies and their impact as well as possible future policies.

Figure 3: European general and territorial goals



Source: BBR et al (2005)

4 Relevance of PLUREL results for stakeholders on national and regional levels

European-wide challenge, case-specific developments

Research within the PLUREL project on national, regional and local level is focused on the 7 case studies. However, peri-urban land-use change and rural-urban relationships are important issues for sustainable development in many countries and regions. Van den Berg et al. (2007) concluded from a comparative urban policy study, that the continuous pattern of sub-urbanisation is a major challenge for most EU member states. As a central issue they identified transport infrastructure which is not designed to cope with urban sprawl, leading to problems of congestions and related environmental (air) pollution. In some metropolitan areas this leads to the extensive and inefficient use of land. The results from PLUREL's case studies can therefore be seen as examples for regions suffering of developments related to peri-urban land-use change.

In the previous sections, policies related to peri-urban land use on EU-level were summarized. Besides these, a range of other policies from different sectors and on different levels shape peri-urban space. Thus, the scope of relevant policies reaches from European policies on e.g. agricultural development, to national and regional development strategies and local planning instruments. In the Manchester region for example, policies and programmes from 5 different levels are relevant to peri-urban development (see table 3).

These complex policy framework and generally common as well case-specific problems related to peri-urban land use constitute major challenges for sustainable development and for those working with it. During the project and especially the co-operation with stakeholders several issues of concern arose, summarized in the project reports D4.1.1 and M5.2.5 (PLUREL 2009a; PLUREL 2009c). From these

Figure 3: The 7 case studies



Table 3: Peri-urban policies and programmes relevant for Manchester

Strategy or policy	
European level	Lisbon Agenda, 2005 European Agricultural Fund for Rural Development (EAFRD), 2007-13
UK national level	Rural Strategy, 2004 Rural Development Programme for England (RDPE), 2007-13 Strategy for Sustainable Farming and Food
North West Rural context	Northwest Regional Economic Strategy 2006 Northern Way North West Rural Delivery Framework 2006 RDPE – Implementation Plan for England's Northwest 2007-13 Northwest Regional Forestry Framework 'Agenda for Growth' and 'Making it Happen'
Sub-regional level	Manchester City Region Development Programme Manchester City Region Sub-Regional Statement and Action Plan RDPE – Implementation Plan for Greater Manchester, 2007-13 Greater Manchester Green Infrastructure study programme & consultation.
Local authority level	Local economic development: infrastructure, leisure and amenity: etc.

Source: D3.3.6, p. 41 (Analysis report Manchester, J. Ravetz)

reports, four major issues for planners and decision-makers dealing with peri-urban areas can be identified:

- Issue 1: Growth management
- Issue 2: Economic, social and environmental processes & future development
- Issue 3: Impacts and costs
- Issue 4: Knowledge exchange and learning

In the following, these issues will be summarized and the contribution of PLUREL discussed. Crucial to keep in mind when discussing these issues, are development goals as used in the overarching EU policy framework. The goals included in these policies mirror a general understanding of territorial development, including key-concepts like sustainability, cohesion, accessibility, governance, risk-management, resource-efficiency etc.

Sustainability is an important concept for rural-urban relationships and takes a central role in policy discussions on all levels as well as in the PLUREL project. However, it is also a multi-dimensional concept (PLUREL 2009b), inconsistent to some extent depending on the place of departure in the urban-rural space. Peri-urban areas, constituting transitional and in-between type of areas, have to deal with competing 'sustainability agendas'. As illustrated in table 4, peri-urban issues lie on the crossing of urban and rural agendas, and approaches between development and conservation. An integrated approach to sustainability is therefore a major issue for peri-urban areas and in the PLUREL project.

Table 4: Different sustainability agendas relevant to peri-urban areas

Agendas	Urban	Rural
Development	urban development agenda a growth and modernization perspective – this aims towards a zone of enterprise, innovation and quality of life in meeting the needs of urban areas	rural development agenda a more local policy perspective, which aims at a zone of indigenous development, with policy and investment targeted at rural communities and businesses
Conservation	urban conservation agenda a containment and regeneration perspective: aims at a managed zone via Green Belt and similar policies, in order to protect and enhance urban areas	rural conservation agenda an environmental protection perspective, which aims at a zone of landscape restoration, resource conservation and local produce

Source: Ravetz (2000), in PLUREL (2009b, 12)

PLUREL cannot deliver an overall sustainability agenda for peri-urban areas. Nevertheless, the project contributes to an extensive and comprehensive understanding of different agendas playing into peri-urban development and how these can be integrated. The work within the case studies illustrates different agendas and how they can be dealt with in practice. Accordingly, the main task of PLUREL is to identify strategies which are able to create linkages between those agendas, creating win-win solutions to promote sustainable land use systems in the peri-urban areas. To achieve this, PLUREL integrates a broad range of methods and tools into final products like the integrated Impact Analysis Tool (iIAT), allowing end users to use their own perspective on sustainability. The different agendas can then be approached in combination or even an integrated way depending on the user's value system.

Issue 1: Growth management

In peri-urban areas a number of different interests meet, as also illustrated in table 4. Planning in these areas is difficult because they are, by definition, not located within clear policy frameworks like dense urban areas or deeply rural areas usually are, but on the edge of them. Furthermore there is often a strong pressure for urban development in the areas closest to urban areas, beard by powerful actors. Questions of the accommodation and location of different, partially conflicting, land uses arise. Sub-questions within this issue are:

- How to coordinate planning and decision making in complex situations with many actors with competing interests?
- How to integrate conflicting land use demands (e.g. existing farming at the fringe, regional growth and green space, pressures on rural settlements)?
- How to steer land use development in a region with growth and decline (e.g. often green field development preferred to brown fields and inner city renewal)?

Co-ordination of planning and decision making

Planning legislation and governance is very diverse in Europe. All EU member states have developed their own planning regulations, often supplemented or even substituted by several further planning regulations on a sub-regional level like it is the case in the more federal structured countries in Europe. In PLUREL research is conducted on planning systems and competencies regarding peri-urban land use on all 27 EU member states (D2.2.1). Further, selected areas and instruments are discussed in more detail (D2.2.2). The first results of a European planning policy typology are shown in Table 5.

Table 5: Government structure and spatial policies in the EU27 member states

Government deciding on land use change	Type of regional/spatial planning policy		
	a) Non-interventionist, laissez-faire systems	b) Medium level of control	c) Strong, controlled spatial policies
A. Small compared to the RUR region	Czech Republic Hungary Slovakia	Bulgaria Ireland Latvia Luxemburg Malta Romania	Cyprus
B. Medium size, partly covering the RUR	Estonia Poland Slovenia	Austria Belgium Finland France Italy	Greece Portugal
C. Large, covering the RUR region	Spain	Denmark ¹ Germany [The] Netherlands Sweden United Kingdom	Lithuania

Source: M2.2.5

Besides these analyses focusing on planning systems and distribution of competences in the EU member states, planning and decision-making will also be looked on from a more generic perspective. In PLUREL several techniques of modelling and simulation are used to reproduce planning scenarios. Agent-Based-Modelling (D4.2.2) is used to illustrate benefits and detriments of co-operative and individualistic behaviours in land-use decisions.

Conflicting land use demands

Urban expansions and low-density housing, spacious commercial and logistical activities and natural resource management, transport infrastructure and nature reserves – all those functions are accommodated in peri-urban areas. Peri-urban land is exposed to a high pressure on development or conservation from many different and opposing interests. The handling of those interests can be difficult and filled with conflicts, which also often caused by a lack of information. In PLUREL several tools were used and developed to improve the basis for decision making. The modelling tools MOLAND LIGHT and ABMland, progress in Cost-benefit analysis and various results on background processes (see Issue 2: Economic, social and environmental processes & future development) support an evidence based decision making, pointing out impacts of land use changes. Moreover, different spatial policies are analysed and compared in the case studies, offering a set of tools and strategies regarding peri-urban land use, reaching from economic support for green open space to urban containment strategies and infrastructure policies. In the policy brochure (D5.4.5) different options will be summarized.

Steering the location of urban growth

In the project, growth management policies are further looked on in more in detail in the PLUREL case studies. The strategies in the case studies are diverse, resulting from different history and context. Still, common approaches and patterns can be found and are further elaborated on (D2.4.1). So far three major issues in urban growth regulations have been identified:

- Agricultural and urban fringe land use changes
- Urban structure re-arrangement
- Green structure regulation

A joint analysis of the planning contexts and instruments regarding peri-urban land use (D3.3.10) will summarise the results.

Reference Box 1: Growth management

Product	Deliverable	Contact
The relation of planning systems in the EU27 member states to peri-urban land use change	D2.2.1 (M2.2.5)	Konstantinos Lalenis
Further instruments with indirect effect on regulation of peri-urban land uses	D2.2.2 (M2.2.6)	Iván Tosics
Review of growth management strategies	D2.4.1 (M2.4.6)	Gertrud Jørgensen
Assessment of European regional governance and government approaches to maintain green open space in the urban fringe	D3.3.8	Carmen Aalbers
Instruments and strategies for sustainable land use in peri-urban areas (integration of WP2.2 and WP2.4)	D3.3.10	Carmen Aalbers
Conceptual and implemented agent-based model for a generic Rural-Urban region to analyse the influence of communication patters on urban land use change	D4.2.2	Dagmar Haase
Book on peri-urban development	D5.4.3	Stephan Pauleit
Policy brochure on peri-urban development	D5.4.5	Iván Tosics, Annette Piorr

Issue 2: Economic, social and environmental processes & future development
Urban-rural regions are characterised by a wide range of interrelated processes and dynamics. In peri-urban areas results of many of those processes are getting manifested in land-use changes. A comprehensive knowledge of drivers and pressures is an important basis for decision making. Furthermore, it contributes for a discussion on possible future scenarios, as well as scenarios themselves are an important input for discussion and elaboration of ideas. The following sub-questions arose in this issue:

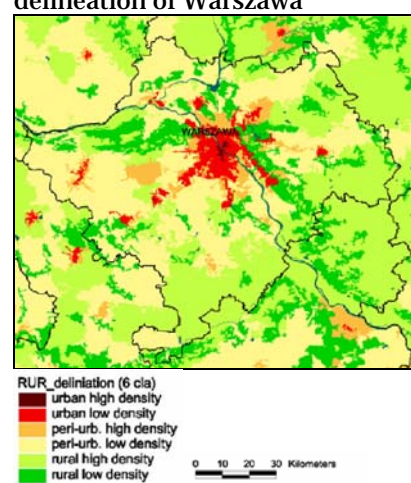
- What is the identity and landscape character of the urban fringe?
- How are and which individual decisions are affecting land use?
- How to build scenarios and models for future development, and how to use them?

Identity & landscape character

One approach to characterize peri-urban areas is by delineating them from urban and rural areas to identify specific features. For this purpose, two delineations were developed in PLUREL and applied to the territory of the EU 27. While the generic rural-urban-regions type delineation on NUTS3 level⁵ can be used to compare different regions across Europe (see Issue 4: Knowledge exchange and learning), a sub-regional delineation was developed to characterise the space within urban-rural regions.

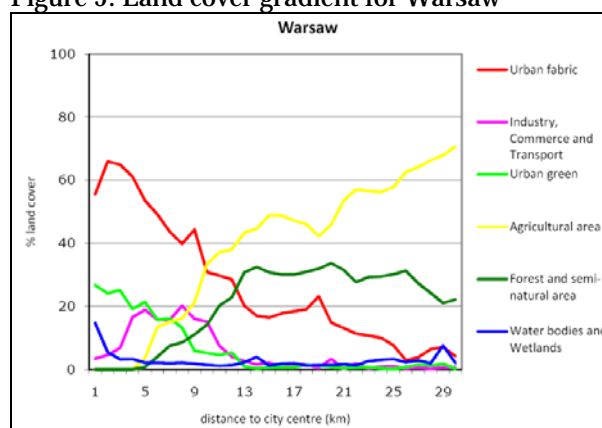
Rural-urban regions can further be studied by analysing the distribution of relevant landscape functions with gradients (see Figure 5). Gradients are a suitable tool to relate spatial heterogeneity caused by urbanisation with ecological processes and can be used to calculate a number of indicators. A very quick and simple example is the calculation of an urban sprawl index for the case study regions, relating the population of a city to its extend of certain land covers. Figure 6 shows the index of the 6 European case studies. With the scenarios results from MOLAND (see further below) it is possible to evaluate impacts of projected land use changes.

Figure 4: Sub-regional delineation of Warszawa



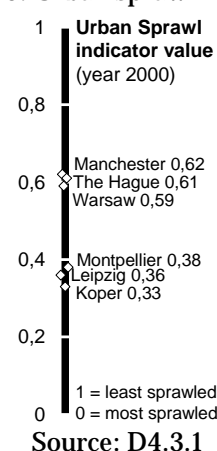
Source: D2.1.4

Figure 5: Land cover gradient for Warsaw



Source: D4.3.1

Figure 6: Urban sprawl indicator



⁵ Nomenclature of Territorial Units for Statistics; NUTS 3 corresponds to European territorial units of approx. 150,000 to 800,000 inhabitants, the EU27 consists of around 1,300 NUTS3 regions.

Individual decisions affecting land use

Land use changes are results of many different decisions. Individuals, choosing to live or work in a certain place and using the land in a certain way base their decisions on a range of different factors. For the choice of housing for example, factors like accessibility to green space, air quality, noise pollution, crime, housing prices, closeness to the labour market etc. play a role. However, the different factors are weighted different between people, often depending on their demographics and lifestyle choices. Figure 7 illustrates the different weighting of factors influencing housing choices. In PLUREL the method of Adaptive Conjoint Analysis is used to examine the housing preferences in the case studies. With this survey technique the perceived importance of quality of life indicators can be measured and related to certain segments in the population such as older people or groups of immigrants. The Quality of Life-simulator, an output of the Adaptive Conjoint Analysis, will act as a predictive tool for reactions to the consequences of different land use change scenarios, informing planning and decision making processes.

The individual choice of living is also reflected in transport choices and commuting patterns. Commuting is a central issue reflecting and leading to in land use change. In Workpackage 2.3 of PLUREL commuting is analysed in different urban structures, including the case studies. Urban structures are the framework within individuals make their choice on commuting and the mode of transport (see Figure 8). The results will contribute to a better understanding of the relationship of urban structure and transport and its characteristics in peri-urban areas.

Scenarios and models for future development

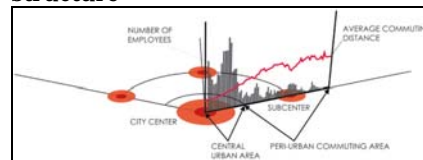
Scenarios are an important tool to discuss future development and implications for policy making. In PLUREL, scenarios are used on two levels to discuss a global and a regional future development. As global scenarios, four IPCC-SRES⁶ scenarios were used and adapted to issues relevant to PLUREL, reflecting urbanisation processes, spatial policy, urban-regional governance, and other important drivers (Figure 9). These scenarios are elaborated and translated into quantitative drivers by experts and form the basis for the simulation of future land use change

Figure 7: Different social situations illustrated by variations of a painting from P. Gauguin (Landscape in Bretagne with Swineherd 1888)



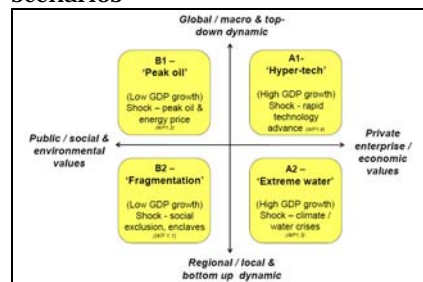
Source: M6.2.7

Figure 8: Model of commuting distance, population density and distance to the centre of an urban structure



Source: M2.3.12

Figure 9: The adapted IPCC-SRES scenarios



Source: D1.3.2

⁶ Intergovernmental Panel on Climate Change 2000, *Special Report on Emissions Scenarios* Cambridge University Press

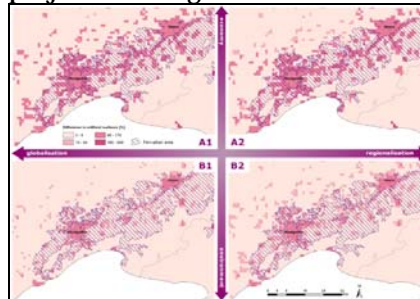
(Figure 10). The general functioning and e.g. vulnerability of systems and can be tested and assessed, which is done in PLUREL for the whole of the EU27 territory for different land use change topics by response functions (see Issue 3: Impacts and costs).

Opposite to this top-down approach which is mainly used for modelling purposes, locally adapted scenarios in each case study were developed in a participatory way, including researchers as well as regional stakeholders. In the case of Leipzig, five scenarios were developed, distinguished by their economic growth and their development of planning policies (see Figure 11). The scenario development was done in several workshops, leading to a general discussion on planning approaches in the case studies. Further, the locally adapted scenarios were also translated into quantitative drives in several case studies to feed a local land use change model, which is implemented with cellular automata and agent-based models.

The cellular automata-based land use model MOLAND (Figure 12) is widely used, however, it is a complex tool which needs extensive training. It is therefore mainly used by researches and modellers, also in PLUREL. Stakeholders which have a high interest in modelling results usually cannot use such tools on their own. Furthermore, a lot of data is required in advance which can often be a problem. Together with stakeholders a simple version of MOLAND will be developed in PLUREL which will allow doing simple modelling without or very little training. The MOLAND LIGHT application will considerably improve the integration of modelling results into planning practice.

Another approach to simulate land use changes is with Agent-based models (ABM). In PLUREL the "ABMLand" is developed which incorporates decision making process of households and key stakeholders on land use issues at local and regional scale into a land use model. This method is used to investigate pathways for land use change based on communication of different key actors of a rural-urban region. Based on interviews and strategy assessment in the PLUREL case studies, ABMLand will be a generic full version model that can simulate typical decisions on land use issues.

Figure 10: Land-use change projections for global scenarios



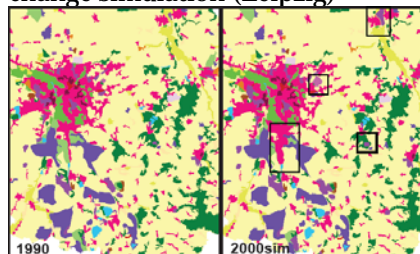
Source: D1.4.3

Figure 11: Locally adapted scenarios for Leipzig

Locally adapted scenarios	No restrictions	Planning instruments implem.	Strong planning
Growth	»Hyper-tech« scattered growth		Smart growth
Baseline		»Business as usual« Baseline	»Eco-environmental« Compact eco
Decline	Give-up shrinkage		Smart decline

Source: Newsletter 5 and D3.4.8

Figure 12: MOLAND land use change simulation (Leipzig)



Source: D2.4.4

Reference Box 2: Economic, social and environmental processes

Product	Deliverable	Contact
Sub-regional delineation	D2.1.4	Wolfgang Loibl
Indicators for land use change	D4.3.1	Felix Müller
Adaptive Conjoint Analysis, Quality of Life sim.	D4.4.3, M6.2.7	Simon Bell
Commuting patterns	D2.3.3 (7), M2.3.12	Mika Ristimäki
Global scenario framework	D1.3.2	Joe Ravetz

Land use modelling based on global scenarios with the RUG model	D1.4.3	Mark Rounsvell Sopie Rickebusch
Regional scenarios (example Leipzig)	D3.4.8	Dagmar Haase
Land use change simulation with MOLAND	D2.4.4	Francisco Escobar
MOLAND LIGHT	D5.5.2	Hedwig van Delden
ABMland	D4.2.2	Dagmar Haase

Issue 3: Impacts and costs

Land-use changes are usually of long-term effect. The cost and burden or the benefits of changes are therefore important indicators for the stakeholders (municipalities, regions, individuals). Moreover, land-use changes have also an impact on other factors of sustainability like health, accessibility, quality of life, natural quality, ecosystem integrity etc. A comprehensive analysis of those is necessary to provide a profound evidence base for future land use change decisions. The sub-questions to this issue are:

- How to do impact analysis of land use changes and what is actually impacted?
- What is the costs and burden of certain land use changes?

Impact analysis

The interactive Impact Analysis Tool (iIAT) developed in PLUREL will provide a comprehensive insight in land use change impacts. The iIAT will integrate several methods and tools developed during the project like the indicator framework, mentioned in the previous section. The basis for the combination of those is a Multi Criteria Analysis (MCA) approach. The weights of different indicators in the MCA are assigned in workshops by stakeholders to impacts and aggregate "scores" estimated for considered policy options.

Some of the indicators used are defined by response functions (D2.3.2). On the European level, those are regression functions (i.e. method to represent the relation of two or more variables) which relate indicators on spatial characteristics to the share of artificial surface for each NUTSX region. Figures 13 and 14 show the relationship of mesh size, a proxy indicator for biodiversity, and artificial surface. On the basis of modelling results (see previous section and Figure 10), the function illustrated in Figure 13 can be used to estimate impacts of future land use change on biodiversity. Each NUTSX region is additionally characterised by several typologies as for example the PLUREL RUR typology but also others like convergence regions, which allows groupwise analysis. This will be integrated in the iIAT and illustrated with maps. The iIAT will allow analysis on European and case study scale. The impact analysis is currently under progress in the project.

Figure 13: Ecological Regulation and Biodiversity on NUTSX (proxy indicator: Effective Mesh Size)

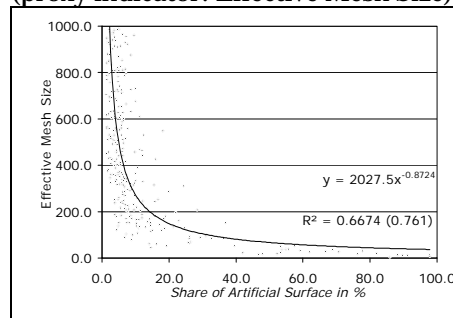
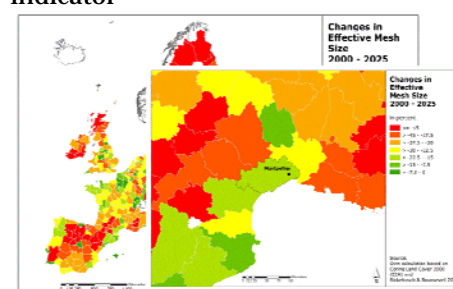


Figure 14: Map illustration of proxy indicator

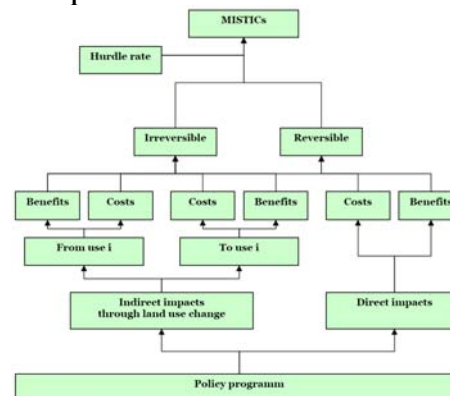


Source: Activity Report 24-35

Costs and burden

An important criterion for every policy decision is of course the monetary costs and who pays (may be also indirectly), as well as who gains. In Workpackage 4.4 of PLUREL a methodology for the assessment internal and external costs for a set of social and environmental functions and services within Rural-Urban Regions was developed (D4.4.2). This form of cost-benefit analysis (CBA) takes into consideration functional relationships between land use changes and changes in the rural, peri-urban and urban service supply from a socio-economic and environmental perspective. The role of land use diversity in shaping the production of goods and services and interregional linkages are taken explicitly into consideration. The cost-benefit procedure reflects a real option perspective dividing cost and benefits in reversible (e.g. changes in GDP), and irreversible (e.g. changes in ecosystem functioning). In the application direct impacts of a policy programme as well as indirect impacts of a policy programme through implied changes in land use are identified (see Figure 15). The newly developed methodology is currently applied to data from case study regions (D4.4.3).

Figure 15: Conceptual structure for the CBA procedure.



Source: D4.4.2

MISTIC = Maximum Incremental Social Tolerable Irreversible Costs

Additionally, a land use change valuation questionnaire to identify policy relevant land use scenarios for a choice experiment is currently developed, providing information of the Willingness-to-Pay for certain policies in the case studies (D4.4.5). All these procedures including the MCA and the indicator framework will be integrated in the iIAT, allowing users to evaluate impacts according to their specific issues.

Reference Box 3: Impacts and costs

Product	Deliverable	Contact
Methodology for response functions	D2.3.2	Annette Piorr
Methodology for Cost-Benefit Analysis of Policy Implementation	D4.4.2	Timothy Taylor
Application of the CBA in case studies	D4.4.3	Timothy Taylor
Willingness-to-pay	D4.4.5	Timothy Taylor
Integrated Impact Assessment Tools (iIAT)	D5.2.1 / D5.2.2	Annette Piorr

Issue 4: Knowledge exchange and learning

The exchange of knowledge on policies and processes as well as the aspect of learning from others are important means to develop own policies. However, the practice of transferring policies and applying others' experiences is sensitive as peri-urban areas and urban-rural relationships might have very different settings coming from case-specific characteristics like history, culture, socio-economic situation, environmental conditions etc. Several sub-questions arise within this theme:

- What are common challenges, what are differences?
- How to find comparable regions, cities, peri-urban areas?
- How to analyse them in a consistent way?
- How to exchange knowledge between stakeholders, language consideration, information systems etc.

Common and different challenges

The emergence of peri-urban areas is a global phenomenon driven by an ongoing urbanisation process. In Europe these areas are characterised by scattered built-up residential, industrial or commercial areas and dense transport networks, but also by the establishment in some places of green belts, recreational facilities, urban woodlands and golf courses, the conversion of farmstead complexes into housing and changes from conventional agricultural land uses into hobby farms and rural areas within easy reach of the city. Although peri-urban areas might look very different, many common challenges as for example urban sprawl arise. With the development of global (D1.3.2) and regional scenarios (D2.4.3) to simulate further land use changes, PLUREL will explore common future challenges and also differences related to case specific situations (D3.3.9).

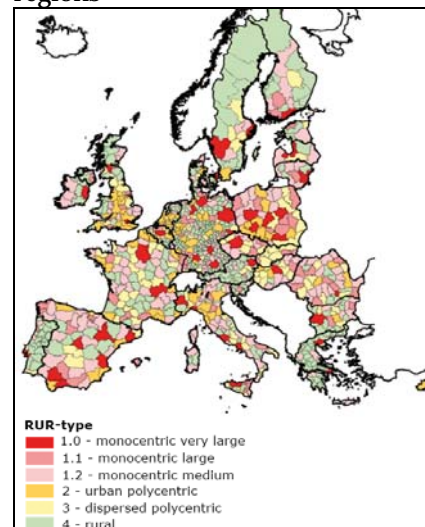
Comparing regions

In many regions different approaches have been developed to deal with peri-urban land use changes. In PLUREL a typology of rural-urban regions was developed (Figure 13) to identify pressure patterns typical for certain region types as response to land-use and interactions. The typology is based on three spatial characteristics:

- Morphology: regional distribution of core city and related sub-centres;
- Spatial dynamics: core city versus surroundings growth- and decline-patterns; and
- Core city shapes: compactness versus fractality of major cities.

With this typology different driver-pressure relations can be quantified and specific response functions (see previous issue) calibrated. It can also be used as a simple tool to compare the urban structure of different regions and a first assessment of possibilities for policy transfer.

Figure 13: Typology of rural-urban regions

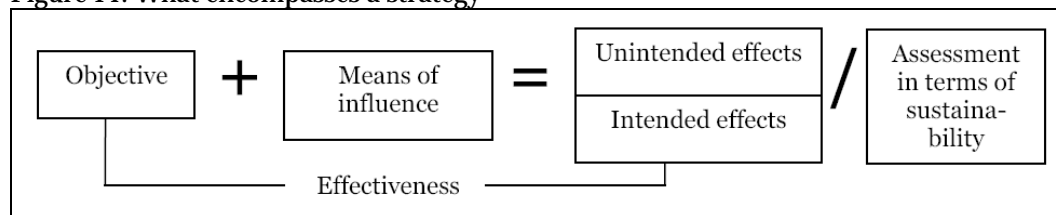


Source: D2.1.2

Consistent analysis

A potential policy transfer or knowledge exchange between regions requires a consistent analysis and comparison of the respective regions. The Joint Analytical Framework (JAF) developed in PLUREL provides a guidance on case study comparison, especially focused on spatial policies. In the JAF a common terminology was developed (e.g. what is a strategy, Figure 14), which is a prerequisite for comparisons. Further were issues to focus on and how identified through the framework. The regional case study reports reflect the JAF.

Figure 14: What encompasses a strategy



Source: D3.2.1

Exchanging knowledge

Research results are only useful if somebody can learn from them and use the new knowledge. In PLUREL 33 partners from 14 different countries as well as several stakeholders from the case study areas are involved. Exchanging knowledge is a success determinant in this project. Not only the transfer to project findings to key target groups is crucial, but also stakeholders have to be an active partner in the development of outputs, so their needs and demands can be met. In PLUREL there was always focus on this exchange and an evaluation to the Research-practice co-operation will be carried out at the end of the project. PLUREL aims for “shared learning”, linking researchers and practitioners (see Table 6).

Table 6: Objectives in PLUREL to link researches and practitioners

Knowledge co-creation
<p>Integrating the conceptual worlds of stakeholders and researchers, to create opportunity for innovations. This knowledge could be classified as ‘grounded theory’ of a reflective practitioner and action-researcher.</p> <p>Testing scientific knowledge with daily reality of different groups of stakeholders for verification, validation of the scientific knowledge</p>
Ensuring relevance
<p>Contribution to fulfilment of professional needs of practitioners by developing relevant knowledge.</p> <p>Contribution to achievement of objectives of the society in place (residents, business, eventually of elected politicians, so not the professional needs of practitioners);</p>
Clear dissemination
<p>Contribution to fulfilment of professional needs of practitioners by developing common language and concepts, or using practitioners’ concepts that make knowledge readable and understandable to practitioners</p> <p>Identifying together with practitioners and other stakeholders proper platforms for dissemination to make knowledge accessible</p>

Source: D3.1.1

Knowledge exchange has to be maintained. Besides making the project’s results accessible for everybody over the internet with the PLUREL XPLOER, PLUREL is active in discussion with important stakeholder networks to foster the importance of urban-rural linkages for a sustainable development in Europe. PLUREL cooperates with the PURPLE network (Peri-Urban Regions Platform Europe), and contributes to the CURE initiative, (Convention for a Sustainable Urban and Rural Europe, invited by DG Regio). A close link between PURPLE and PLUREL can promote both the dissemination of the knowledge on rural-urban linkages gained in the project and at the same time support the network’s targets.

Furthermore, PLUREL will also provide results for learning in traditional formats, including a book on peri-urban development, integrating the case study and the EU-

perspective, and a policy brochure addressing key questions raised by end users on sustainable peri-urban development in Europe.

Reference Box 4: Knowledge exchange and learning

Product	Deliverable	Contact
Global drivers for land use change and scenario framework	D1.3.2	Joe Ravetz
Rural-Urban-Regions typology	D2.1.2/2.1.3	Wolfgang Loibl
Case specific scenario development	D2.4.3	Gertrud Jørgensen
Evaluation of the research-practice co-operation	D3.1.1	Carmen Aalbers
Joint Analytical Framework	D3.2.1	Carmen Aalbers
Peri-urban dynamics in the case studies	D3.3.9	Gert de Roo
PLUREL XPLOER	D5.3.2	Katharina Helming
Book on peri-urban development	D5.4.3	Stephan Pauleit
Policy brochure	D5.4.5	Iván Tosics

6 Conclusions

Peri-urban land-use change and urban-rural relationships are encompassed by a complex pattern of interrelated processes and developments on different levels and with different angles. Furthermore, each peri-urban area in Europe, although confronted with similar challenges, has its unique historical development and natural and cultural setting. The PLUREL project deals with issues on both levels, a general European perspective and a local, case-specific perspective. This report discusses therefore policies on both (or several) levels and how PLUREL's results can contribute to cope with related challenges.

Policies on European level set a broad framework for peri-urban development. Besides the overall aims from the Lisbon and Gothenborg agenda, the ESDP, the CEMAT guidelines and the Territorial Agenda of the EU are important documents. Most recently, the European Commissions published the Green Paper on 'Territorial Cohesion' (October 2008), which further sharpened the role of urban-rural linkages for a more balanced and harmonious development, as well as the challenge of the diverse settlement pattern of the EU. The rate of participation in the proceeding consultation process showed the importance of the topic.

Concerning the regional and local scale, four major issues for sustainable development of peri-urban areas were identified through stakeholder consultation:

- Issue 1: Growth management
- Issue 2: Economic, social and environmental processes & future development
- Issue 3: Impacts and costs
- Issue 4: Knowledge exchange and learning

PLUREL provides a broad range of knowledge on these issues, illustrated in the previous section. A comprehensive overview and comparison on planning instruments and strategies in the case studies as well as modelling of policy decisions will provide a set of data regarding growth management in peri-urban areas. Many of the results will be brought together in a book for practitioners. Regarding economic, social and environmental process, much work was undertaken in PLUREL. Results on e.g. the relationship of urban growth and recreational qualities in peri-urban areas will be synthesized in the book and a policy brochure. Also impacts and costs will be included in these products.

The last issue, knowledge exchange and learning, is not only relevant for stakeholders but a crucial issue in the project itself. During the project knowledge is exchanged between a European scale and the case studies, between researchers and practitioners, between academic disciplines. Tools like the RUR-typology were developed to compare regions enabling learning processes. Also the documented work from the case studies provides insights into knowledge exchange and learning processes. In the PLUREL XPLOER, all knowledge will be gathered. However, in opposition to the book and brochure, this platform will allow an individual way of approaching, allowing quick and user targeted knowledge exchange and the provision of information appropriate for the end-users' rationality.

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