



Aims and Objectives

Characterizing European regional land use change trajectories in periurban and rural areas. The socio-economic development of rural areas within a context of globalization induces a spatial reorganization of human activities. It increases the number of places facing land pressure, potentially source of land use conflicts, in the most urbanized areas but also in periurban and more rural areas. The increasing development of new rural functions, like the integration of the biodiversity conservation or the touristic development, joined with more traditional ones like the production of primary goods or the residential use of periurban lands, create new spatial arrangements of the human activities in Europe. A global trend toward an intensification and a diversification of land use is observed. The aim of this analysis is to characterize it at the regional level in Europe.

Analyzing the articulation between the regional scale issues and the European scale issues raised by these new spatial arrangements. Farmlands management, urban development, and environmental quality protection are currently global issues identified at the European level by the European institutions. The understanding of the regional spatial arrangement of human activities and the regional land use dynamics is used to reveal to which extent rural and periurban areas in Europe are concerned by these global issues.

➔ **Defining smart land use management principles for regional development strategies, in order to support synergies between rural functions while limiting land use competition, and acknowledging the interactions between the needs at the European scale and the needs at the regional scale.**

Methodology

Literature review of land use changes in Europe during the last decades

Assessment of the land competition figures, the rural functions in expansion, the potential for synergy between land functions



Creation of a common database at the NUTS X level

Assessment of the indicators available at the NUTS X level to quantify the current changes in land use function during the 1990-2012 time period

Main sources: ESPON, European Environmental Agency, National dataset, UMS-RIATE, IUCN-WPDA, Eurostat



Regional typology of land use in 2012

1. Harmonization of data at the NUTS X level
2. Ascendant Hierarchical Classification Treatment with QGIS and R



Analysis of land use changes (1990-2012)

Regional land use changes trajectories (chi-test, evolutions analysis):

Location of land use changes through time period in Europe (concentration analysis)



Cross-analysis with socio-economical variables

Assessment of the issues raised by the regional context and the spatial changes for the land uses considered
Chi-Test and Correlation analysis, cases studies based on the literature



Identification of smart land use strategies for each regional cluster, based on two hypotheses:

Too many incompatible uses is harmful (land use conflicts, impossibility to launch joint projects, uneasy joint development expectations)

A territory whose land is fully dedicated to a single use is quite vulnerable to major changes (major concerns, lack of alternative solutions in case of climate changes or economic crises for example)

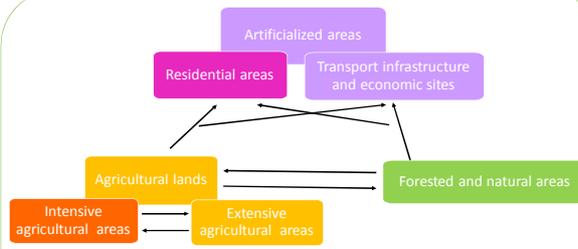
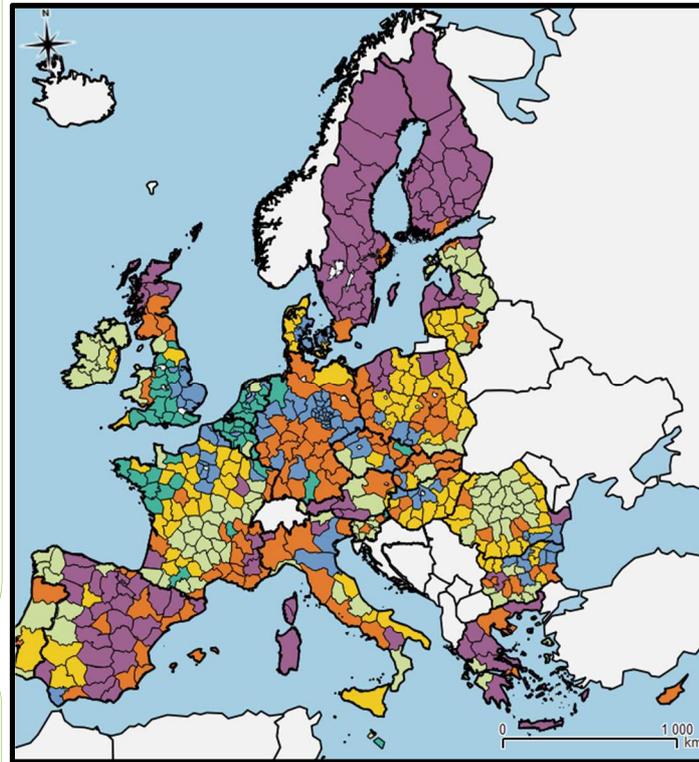
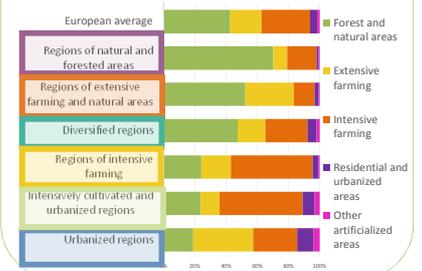


Fig. 1: The main land use changes in Europe

Fig. 2: share of land uses by regional type



Legend and land use management issues associated to regional types

- Low rural diversity and soft intensification: The most natural Regions
 - Land use issues : many local communities highly vulnerable to major changes due to a lack of land use diversity / diversification creating a land pressure in a fragile environment
- Rural diversity and strong intensification
 - Land use issues : interactions between a diversity of rural land uses in development: potential for synergy/land use conflicts
- Urban-rural diversity and strong intensification
 - Land use issues : importance of the urban/rural interface and continuous land changes: potential for synergy/conflicts
- Low rural diversity and soft intensification: The most cultivated Regions
 - Land use issues : many local communities highly vulnerable to major changes due to a lack of land use diversity
- Rural diversity and soft intensification
 - Land use issues : diversity of rural land uses : potential for synergy, but low changes
- Urban-rural diversity and strong intensification
 - Land use issues : importance of the urban/rural interface and continuous land changes: potential for synergy/conflict

Source : Corine Land Cover data (2017), European Environment Agency (EEA) under the framework of the Copernicus programme. Administrative boundaries: Eurostat, 2016. Logiciel: QGIS

Fig. 3: Regional typology of rural land uses in 2012

Bibliography

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Results

- Strong evolutions towards more artificialization, in periurban and rural areas. Strong Western Europe/Eastern Europe differentiation of this process between 1990 and 2000, less visible between 2006 and 2012.
- Identification of 6 types of regions with specific land use issues (Fig. 3), characterized by : 1) A land use diversity profile (land use patterns in 2012, Fig.2): low/high rural diversity, urban-rural diversity; 2) The strength of intensification processes (land use changes dynamics 1990-2012): soft/strong intensification

Land use and the smart development framework

- Various potentials of European rural regions with specific challenges for the regional smart development policies.
- Specific regional land use issues should be mobilized by regional policies, land management policies, and economic policies. Land use diversity creates a potential for land use conflict but also a potential for innovative rural development path through the valorization of specific figures of coexisting human land-based activities.

Conclusions / Recommendations

- Figures of land use issues induced by the current socio-economic development of rural and periurban areas differ according to the regional context, in peri-urban areas as well as within rural areas, with variations in the intensity of changes.
- The global issue of farmlands management is crucial for the urban regions where farmland become rarer, and in rural areas where farmlands are available but largely used as a support of urban development.
- Urban expansion was mainly a concern for the densely populated areas (coastal Mediterranean areas, largest cities, Netherlands, Western Germany, Belgium) between 1990 and 2000. It is a more general feature of rural development after 2000, spreading in more rural regions and Eastern European countries. The environmental quality preservation, associated to a need for environmental continuity through Europe, has to be tackled down by the urban regions and in the most cultivated regions where forested areas almost disappeared and show little signs of increase.