

# Landscape as a frame for and a product of developments in rural areas

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## Introduction

### Theme of the workshop

Landscapes have always had a dual role in the rural area: on the one hand they provide a frame for (production) functions and on the other hand they are the product of these functions. Because in the rural areas in Western Europe – and on several places in Eastern Europe too - a shift can be seen from mono-production functions to societal multi-functions, this dual dynamic of landscapes will change too. Landscape is more and more used as resource for rural development and as a flexible frame to incorporate this.

In this shift landscape qualities are used to facilitate changing functions, e.g. it is easier to open a campsite in a beautiful landscape and more people would like to have a house there. However, new functions do also have an effect on the quality of the landscape. The challenge is to find ways that 'frame' and 'function' can strengthen each other.

### Questions raised in the workshop

The main goal of this workshop will be to open the debate to representations, models, participatory approaches and other tools that help to discuss the changing roles of landscape and its impacts at farm and regional scales. To support this discussion there is a need to describe the current state of the debate and cases as examples. In order to guide changes in land use in relation to landscape, we also need to discuss if and how planning in this field is possible.

The workshop will also be the stage for a discussion of the changes in land use that are taking place in Latin American countries driven by global market trends and local farmer resources and strategies.

Questions that arise in this respect are:

#### *Relation function - form*

1. How can rural landscape support 'new' rural functions like housing, recreation, nature conservation, water resource management, energy production?
2. What will be the effect of these functions on landscapes, their inner structure and the diversity between landscapes?
3. What are the effects of changing functions on farm scale for the landscape on the regional scale? How does this affect farm diversity?
4. What is the effect of diversification in farming (hobby farming part-time farming, full time farming, pluri-activity) on the landscape?

#### *Tools for measuring changes*

1. What tools can be used to assess the above-mentioned effects (modelling, representations, participative scenario methods)?

#### *Tools to plan function – form interaction*

1. How can we plan landscapes in such a way that they can optimally play their multifunctional role?

2. What tools can research provide that contribute to this type of planning?

## The papers and posters: a quick overview

### Interaction function – form

In several regions in Europe landscape is used to enhance the identity of people and their products. In the LIFESCAPE project, described by Maessen, Wilms and Jones-Walters, the aim is to mutually strengthen the landscape identity and the identity of the products that are produced in that region. For instance, in the South Downs in England a pilot project is being carried out, to reintroduce sheep in order to restore the very biodiverse chalk grasslands. The sheep are branded as typical of the region, which creates a surplus price. In this case, a higher landscape quality and better farming are integrated.

Agriculture in the Montado in Southern Portugal is under pressure. New functions of this landscape could give new ground for the protection of the landscape, while it also serves the new requirements of the inhabitants. In a series of interviews Surová and Pinto-Correia revealed that especially walking, hunting, mushroom picking and beekeeping were mentioned. The main problems were not really related to the landscape, but to identifying private property and a lack of information about wild cattle, hunting and fire etc. For the successful implementation of new functions, the economic benefits for the landowners should be clear, qualified help is needed and rights and responsibilities should be clearly defined.

The representations of rural landscape associated with the shift from mono-production functions to societal multi-functions are addressed by Pinto-Correia *et al.* The authors surveyed different groups of users of rural landscapes in a municipality of the Southeast of Portugal with the aim of understanding their preferences in respect to diverse landscape patterns, displaying alternative ways of agricultural land use. Their results suggest that certain functions, such as hunting and ecotourism show a clear preference for a landscape pattern, whereas the functions related with life quality, weekend visitors and residence, express more dispersed preferences, not always easy to interpret or relate to the remaining reply distribution.

The question of potential conflicts between nature conservation and productive functions of landscape is the object of analysis by Sabatier *et al.* These authors use modelling tools to assess ecological and economic performance of different farms according to their economic size and agricultural practices (in Marais Poitevin, France). Their results show that grassland landscapes comprising either large or small extensive farms perform well in respect to the ecological dimension. However, the author's findings also show that large extensive farms are more sustainable in economic terms than small counterparts. Yet, the authors highlight that small extensive farms are fundamental to convey social sustainability to the grassland landscapes.

The issue of farmer strategies and changes in land use in the context of tropical forests is discussed by Barbosa *et al.* The authors present an innovative agricultural management technique, the no-tillage and direct seeding alternative to the conventional slash and burn practiced by tropical farmers for decades as a way to conquer agricultural land from the tropical forests, and discuss its adoption by Amazonian small farmers. Their discussion highlights the role of resources lack/availability in the process of change in farmer behaviour. According to the authors, the farmer's perception of land "abundance" in the Amazonian forest seems to have prevented the abandonment of damaging slash and burn technique during the last decades, while limitations in information and financial resources are now hampering small farmers from adopting the no-tillage and direct seeding technique.

Corral *et al.* also address the issue of farmer strategies and changes in land use in the context of South America (Argentina and Uruguay) underlining that international prices and domestic policies are diverting land from traditional cattle-agricultural model to intensive crop production. These changes in land use are undertaken both by the local farmers and by the new actors in the scene, the investment funds managers, who rent and buy land from local farmers to allocate to crop production. Strategies to expand mono-production function seem to be an overall trend within the countries that are big world food suppliers, leading to changes in land use that reduce rural landscape functions contrary to what appears to be the trend in European rural areas.

## Measurement tools

Hall describes interactive research into the effect of arable landscape change on the local residents' quality of life. Hall uses photographs taken by the inhabitants of the 8 parishes that are included in the research. After selecting 30 representative photos, the inhabitants are asked to rank the photos from most preferred to least preferred.

Knickel and Kasperczyk demonstrate a methodology to assess the contribution of farms to the goals of the EU Agri-Environmental schemes (AES): The Agri-Environmental Footprint. This method is a multicriteria analysis, of which the goals are set in an interactive way. Its outcome functions as a guiding image of the environment viz landscape. In other words, The Agri-Environmental Footprint can measure how far farms contribute to the regional landscape. It can also measure the change in contribution at the moment farms join the AES. The interactive parameter setting also functions as a tool for learning about landscapes.

Sabatier *et al.* resort to a database from Marais Poitevin (France) where farm types are defined through a large set of indicators of management intensity. They use data to simulate alternative grassland landscapes comprising different farm types and agricultural practices. Then, the authors develop a stage structured stochastic model to estimate long term effects of grazing and mowing practices on grassland birds for the simulated alternative landscapes. The model results allow them to assess the ecological long term performance of alternative grassland landscapes characterised by varying management intensity and farm size.

Barbosa *et al.* use participative approaches to develop, implement and evaluate multidimensional impacts resulting from the adoption, by different type of farmers, of the no-tillage and direct seeding technique as an alternative to the conventional slash and burn practiced in tropical forests. The researchers implemented long term participative approaches, which have allowed farmers to learn by doing the better performance of new techniques (both in economic and social terms).

Corral *et al.* develop an agent-based simulation model based upon the framework Multi-Agent-Systems (MAS) which allows anticipating changes in land use in response to variations in prices and policies. The MAS appears as a promising tool to simulate the dynamics of landscape accounting for the interaction between diverse actors influenced by exogenous factors, such as their location in space and global market prices. Preliminary results of MAS model developed by Corral *et al.* allow for envisaging land use and ownership change associated with international price variations and domestic policies, showing that increasing demand for crop products in the international markets is diverting land from the traditional cattle-agricultural model to intensive crop production and land exploitation from small farmers to investment funds managers.

## Planning tools

Tiemann and Siebert describe an interactive methodology to plan the introduction of ecological networks. Stakeholders can play several roles in the subsequent phases of the planning process from agenda setting, planning and implementation to monitoring and evaluation, but their contribution is always essential to make the implementation work. Involving people in the planning process has as an important side-effect that they learn very much about the ecology of landscapes.

Oliveira proposes a tool to plan landscapes able to perform effectively their multifunctional role, which she called Local Development Strategy (LDS). The LDS relies upon multidisciplinary and participatory approaches as a way to develop and implement new governance models at landscape level. Such models are fundamental, according to the author findings, to overcome the existing gaps between broader levels of policy design, namely EU level, and the local level of action implementation.

## Conclusions and discussion

### General conclusions

Several papers (e.g. Maessen *et al.*, Surova & Pinto-Correira, Pinto Correira *et al.*) demonstrate that new functions for 'old' landscapes are being created, which increases their sustainability. The example of Maessen *et al.*, also shows that landscape can serve as a tool for regional farm development, because the quality of the region is used to increase the value of the product. Several other papers

argue the other way around and discuss the effect of different farming systems on the landscape (Sabatier *et al.*, Barbosa *et al.*, Hall, Knickel *et al.*). Their conclusions are diverse: physical properties (size) of farms, implementation of policy and knowledge are all important factors in relation to landscape quality. The South American contributions give rise to the idea that multifunctionality and landscape quality are not global issues; both papers describe a tendency to monofunctionality.

Concerning the methods used: participation seems to be the trend in landscape research. Almost all papers are based on participation; either as a research tool, planning tool or as an outcome of research.

## Discussion on interaction function – form

The answer to the question of how can rural landscapes support 'new' functions seems to vary according to regional contexts. Different types of multifunctionality seem to emerge:

(a) multifunctionality centred on agriculture, where other landscape functions come out as non-commodity outputs of farming (Sabatier *et al.*) - in line with OECD definition of multifunctionality (OECD, 2000);

(b) multifunctionality as an attribute of rural spaces (Potter, 2005) evidencing a decreasing importance of agriculture along with an increasing importance of non-productive functions, such as recreational and residential (Pinto-Correia *et al.*). These author findings indicate that the extensive non-competitive agriculture of accessible rural areas of Southern Europe tends to become mainly a frame for non-productive functions, which might help to support farming maintenance ('new products' supporting the frame). This is evidence that multifunctionality can effectively become a sustainable characteristic of rural space.

However, in remote rural areas, multifunctionality seems to be still a policy goal and not very easy to implement. Part of the difficulties are according to Oliveira the lack of governance models adjusted to local needs and expectations and design to deal with landscape scale as an alternative to administrative delimitations. Therefore, tools to plan and manage multifunctionality at landscape scale seem to be needed: on the one hand, to conciliate potential conflicting uses of landscape (Pinto-Correia *et al.*, Sabatier *et al.*) and, on the other hand, to allow remote rural areas to be rewarded by the non-productive functions without direct use value, such as the conservation of nature, biodiversity and culture heritage (Wiggering *et al.*, 2002; Gallardo *et al.*, 2003)

What will be the effect of these non-productive functions on landscapes, their inner structure and the diversity between landscapes is largely an unanswered question. However, the different pattern of multifunctionality along different rural areas, namely the role played by farming, varying in the large spectrum from productive to mostly frame activity, suggests a possible increase in landscape regional diversity. In respect to the inner structure of landscapes a variety of situations seems to be likely, including

(a) the enrichment of rural landscape given the rise in the production of environmental goods and services (the non-commodity outputs) as joint products of agriculture;

(b) the altering of 'traditional' landscape due to the diminishing presence of farming in land use, along with the expansion of urban uses (second-homes, tourist lodgings, recreational spaces) or with land abandonment and growth of forestry and non-cultivated areas.

At least two significant caveats are raised by the papers presented within WS4, which indicate the risk of the impoverishment of landscape diversity, both intra and inter-regionally.

First, the difficulties of small farmers in achieving economic sustainability, making way for increase in farm scale, thus reducing landscape diversity (Barbosa *et al.*, Corral *et al.*, Sabatier *et al.*). Large extensive farmers appear to be well positioned to face the challenges of implementing (agriculture) multifunctional model, because they are better skilled at responding to changes and to policy incentives through innovative behaviour (Sabatier *et al.*).

Second caveat refers to the remote rural areas, which might not be able to implement the multifunctional rural development model and to fully benefit from the EU support to it. The failure in implementing multifunctionality as characteristic of rural space and economy within these areas will impoverish their landscape and will weaken the synergies between 'frame for' and a 'product of' that characterise multifunctional rural landscape.

The accessibility of rural areas seems to play a determinant role for the sustainability of multifunctional rural landscapes. Furthermore, some of the papers (Barbosa *et al.*, Oliveira, Sabatier *et al.*) suggest it is easier to couple economic and environmental dimensions than to assure social sustainability of the European multifunctional landscapes. This happens because the survival of small farmers is viewed as a fundamental piece for the social sustainability of farming systems in such different contexts as the French grassland landscapes or the tropical Amazonian agricultural areas. These findings (Barbosa *et al.*, Oliveira, Sabatier *et al.*) confirm Wiggering *et al.* (2002) concerns regarding the possibility of non-sustainability of multifunctional agriculture.

The risk of unbalanced 'function-form' landscapes as a result of the MFA model underlines the need of coupling the implementation of this model with a new design for agriculture and rural development policies, giving special attention to rural entrepreneurship, the valuation of public goods and to institutional innovation (Huylensbroeck, 2003).

## Discussion on planning tools

Referring to the previous section, tools to plan function – form interaction are needed to successfully implement multifunctional agriculture and rural development in the EU rural areas. The papers' suggestions in this respect highlight two complementary groups of tools. One group includes the tools which resort to the direct or indirect incorporation of expressed preferences and expectations of the different landscape users in landscape planning and managing. Examples in this respect are the participatory approaches (Barbosa *et al.*, Oliveira) and the survey of the landscape users to obtain information about their preferences for alternative landscape patterns (Pinto-Correia *et al.*). The second group includes the modelling tools (Corral *et al.*, Sabatier *et al.*), which allow the simulation of changes and the creation of scenarios for landscape evolution.

Participative approaches show they are a useful tool to plan and to implement sustainable landscapes through farmers learning by creating the mutual relation between landscape as a product and as a framework. These tools, when implemented for relatively long periods also prove to be valuable to assess ecological, economic and social impacts of changes in agricultural landscape management.

The collection of individual perceptions and preferences regarding landscape use also turn out to be a useful tool to plan MF landscapes. However, as highlighted by Wiggering *et al.* (2002) these methods are too expensive and not appropriate to identify all demands at a regional scale.

Modelling tools seem to be quite valuable to plan multifunctional landscape, because they allow for predicting changes in response to farmer and landowner behaviour, and might eventually be extended to incorporate the behaviour of other users. Conventional modelling tools, while proving effective to integrate ecological and economic dimensions, show difficulties in encompassing social aspects. But the agent-based simulation models (Corral *et al.*) appear as a promising tool to assess interactions between ecological, economic, and social dimensions at landscape scale.

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