

# Land Use Planning Group, Wageningen University

## Research programme 2014-2017

### 1. A new profile for spatial planning at Wageningen UR

In the summer of 2013 a renewed profile for spatial planning at Wageningen UR was proposed (Advisory committee LUP, 2013). This profile addresses the unique position of the Land Use Planning Group within the planning discipline discourse in an (inter)national perspective and within Wageningen UR.

The main recommendations of the Advisory Committee include:

- To improve the balance between the social sciences and the natural sciences perspectives on spatial planning within the group;
- To re-establish descriptive research to understand the response of landscapes to a wide range of triggers and driving forces. This will pursue landscape analysis from both the natural and social sciences perspective;
- To continue existing research activities aimed at deriving new planning policies, social learning activities and institutional innovations that fit in with the shift in planning from government to governance;
- To reinforce prescriptive research to incorporate values in the planning processes, e.g. for improving the resilience of landscapes and coping with risks and uncertainties;
- To improve the scientific network of the group by establishing further cooperation within WUR and at national and international levels;
- To change the name of the group to Spatial Planning Group. It would be more suitable and recognizable, as it is a name that is internationally widely accepted and used.

In this Research Program the recommendations are elaborated. Chapter 2 describes the mission and of the LUP group; chapter 3 describes the core competences of the group, and chapter 4 contains the research agenda for the coming years. We focus on four research domains in the forefront of spatial planning disciplines, which contribute to emerging societal demands for new knowledge. In chapter 5 the research network building is discussed, followed by chapter 6, which provides suggestions to improve the research culture of the group.

## 2. Mission and aims

### **Mission**

To improve our understanding of landscapes as social-ecological systems, thus providing the basis for sustainable land use and spatial planning.

### **Aims**

In the research of the Spatial Planning group a central role is assigned to the landscapes as a social-ecological systems. We aim to develop planning theory, approaches, and instruments which may enhance the resilience of landscapes. In order to do so we analyse and explain the interplay between natural and social processes. We study how landscapes respond to societal processes, how in turn people respond to landscape change, and how they decide to intervene through technological solutions and policy measures.

Landscapes are in many cases the precipitation of human efforts to make a living on the biophysical environment. The search for a livelihood involves the cultivation of land for food, the construction of buildings, the transformation of raw materials for production and distribution of goods, and the consumption of services. The spatial and ecological consequences are, for example, the translocation of nutrients, altered hydrological systems, and the loss of biodiversity. Planning emerges from the aspiration of societies to stimulate the socio-economic performance of landscapes and to prevent and mitigate negative environmental consequences of land use. In addition, planning is meant to increase resilience to natural processes and perturbations such as climate change or earthquakes.

In our view, successful planning needs to consider the following three elements: (i) the structure and dynamics of landscapes and how these develop; (ii) the values associated with landscapes and landscape developments; and (iii) the governance structure for steering landscape developments. The figure below illustrates this integrated approach. The landscape (top) is a dynamic system that continuously undergoes transformations - partly due to internal dynamics and partly in response to exogenous drivers. Understanding how internal and external factors interact in influencing the system dynamics is an important basis for spatial planning. In order to identify problems and formulate appropriate solutions, planners have to account for the values associated with landscapes (bottom left). These values determine what is desired in terms of outcomes (e.g. sustainability, minimized risks, fair distribution of scarce resources) but also which aspects of landscapes need to be preserved (e.g. heritage, identity). The approach to achieve this depends on the governance setting (bottom-right), which is characterized by the structure of and processes within the local social network, the degree of decentralization of governmental responsibilities, and the level of stakeholder participation, public support, and individuals' commitment.



Figure 1: The integrated approach to Land Use Planning developed by the Land Use Planning Group of Wageningen University.

### 3. Core competences

The unique niche of our group lies in our ability to integrate the three elements of landscape, governance, and values. We use knowledge about spatial processes in ecological and technological networks and combine this with knowledge about the structure and functions of social networks. Based on this cross-disciplinary knowledge we develop understanding of how social-ecological networks may develop in response to processes such as climate change, societal change, and technological innovation. We bridge prescriptive and descriptive research which allows us to capture the full cycle of dynamics that characterize social-ecological systems, and develop planning tools that are adapted to such dynamics. With awareness of the global context, our work emphasizes on the regional and local scale levels. Our methodologies vary from agent-based modelling to statistical trend and pattern analysis and are all aimed at formulating solutions-oriented participatory approaches to spatial planning.

Within Wageningen University the Spatial Planning Group is situated at the interface between the social, technical, and natural sciences. This allows us to bridge and combine knowledge and methods from these domains. Our competences are further strengthened through cooperation with the Landscape Architecture Group (e.g. research by design), the Laboratory of Geo-Information Science and Remote Sensing (e.g. spatial data processing, Remote Sensing), the Cultural Geography Group (e.g. social theory development), the Soil Geography and Landscape Group (e.g. sustainable soil management), and the Agricultural Economics and Rural Policy Group (e.g. economic modelling and cost/benefit analysis)..

## **4. Research agenda**

Among its key outputs, the Spatial Planning Group develops new multi-actor landscape planning approaches that are adapted to the emerging new modes of governance of rural and peri-urban landscapes in which values, creativity, and entrepreneurship of local communities are put central. These approaches are applied within the following domains of expertise:

### **Ecological network planning**

Enlarged and connected ecosystems can counteract fragmentation and help species to cope with threats of climate change and intensified land use. In the European Union, large budgets are spent on planning and realization of such enlarged and connected ecosystems. The process of allocating land for this objective is complex. Technically, the spatial network needs to provide habitats and/or facilitate migration; environmentally, the ecosystem network needs to be strategically located with respect to economic activities in its vicinity; strategically, the ecosystem network should be able to provide as many as possible services besides the promotion of biodiversity; and socially, the acquisition of farmland needs to be done in a way that farmers (both those that sell land and those that remain active in the area) are not duped. The research of the Land Use Planning Group helps policymakers by informing them about the various trade-offs that exist, and helps them to balance the various interests.

### **Landscape governance**

Improved understanding of how the landscape (as a resource system) influences the interactions between actors in the social system, and how actor groups decide to intervene in the physical landscape to gain desired values is essential. This understanding allows us to develop methods that facilitate local communities in finding a balance between private and public interests, between conservation and adaptation (for example with respect to biodiversity and cultural heritage), and between economic and social well-being. Values and uncertainties play a key role in individual decisions to invest in a future landscape and in collective action. We investigate how the perception of shared values (for example: landscape identity) and social or economic benefits influence collaborative processes in local communities, how social networks generate self-governance, and how local communities respond to external governance mechanisms. This new planning approach also generates new and fundamental questions on the role of scientific information as a governance tool.

### **Landscape adaptation to climate change**

Most metropolitan landscapes are located in deltas, which are, for that reason, highly susceptible to climate change. At a global scale, these densely populated deltas are of eminent value to the economical, ecological, and socio-cultural development of the countries involved. Following the rich Dutch tradition in water and land management, the Spatial Planning Group is involved in advancing the multi-layer safety approach to adapt metropolitan landscapes to climate change. This approach is based on the risk approach regarding flooding, in which the consequences (in terms of exposure and vulnerability) and probability of flooding are combined. Furthermore, we search for solutions that increase landscape resilience by integrating ecological and agrarian functions within the more rural areas. For this we aim to develop spatial information and decision support tools to be used in policy making. Our research seeks to combine scientific knowledge in

this field with application in real-life case studies in European delta landscapes. In this way we contribute to elaborate on spatial planning concepts and organizational arrangements that may help vulnerable delta landscapes to cope with the effects of climate change.

### **Technologically Sustainable Landscapes**

Transiting towards sustainable landscapes involves governing existing site-specific technologies while designing and siting a variety of new ones, often posing new risks and creating unwanted impacts on landscapes and communities. European landscapes are increasingly landmarked by a number of site-specific facilities and networks meant for extracting, transforming and supplying raw materials (i.e. oil and gas extraction sites and energy distribution networks), supplying renewable energy (i.e. wind-farms and photovoltaic parks), processing and producing goods, and finally enabling mobility. How to minimize the risks posed by these technologies on humans and the environment through sustainable siting approaches constitutes the area of research of Technologically Sustainable Landscapes (TSL).

The integration between such impacting technological networks and ecological networks is an important challenge. Technologically Sustainable Landscapes therefore constitute a key-area of research for enhancing the resilience of landscapes to natural and social events which may constitute a risk to a sustainable social-ecological functioning. From natural resources management (water, soil, etc.) to the siting of major technologies in the landscape (energy, transport, extractive and process industry) we adopt a risk-based approach to landscape planning whose aim is identifying effective analytical and normative approaches which could enhance the transition towards sustainable, climate-resilient and values-sensitive landscapes

### **Sustainable Food Systems**

Economic resilience, environmental integrity, social well-being and governance of food systems is vital to the development of sustainable territorially embedded local and regional food systems both in developed and in developing countries. Improving the sustainability of production, processing, transportation, retail, consumption of food and the consequent production of waste is an emerging challenge for policy makers and planners at all levels of geographical scale. We are interested in how consumers' preferences translate into financial triggers for land users, and how these in turn translate into land use and management change. Particularly relevant from a planning perspective are processes of up-scaling and down-scaling from the national to the supra-national and from the national to the metropolitan level of scale, therewith accounting for leapfrogging and distal relationships. Our group aims to enhance knowledge about present food systems and identifying opportunities for future improvement without compromising basic economic and ecological constraints. Our research covers a wide spectre of food related land uses in the domains of food production, food processing, food transportation, retail, consumption and waste - taking stock of nutrient flows within the frame of urban and regional metabolism. Planners are geared to play a pivotal role in the current process of transition toward more sustainable food systems.

### **Examples of research projects**

*Climate Adaptation for Rural Areas (CARE).* The aim of this research programme – funded by the national programme Knowledge for Climate - is to assess the effects of climate change and adaptive strategies (i.e. sets of concrete adaptation measures) on agriculture, nature, and other land-use functions in the rural landscape of the Netherlands. (Adri van den Brink and Martha Bakker; <http://knowledgeforclimate.climateresearchnetherlands.nl/climateadaptationforruralareas>)

*Regime shifts in land use systems.* This research project – funded by the IPOP strategic programme Complex Adaptive Systems – aims to explore the applicability of the ecological concept of regime shifts to transitions in land use systems. Two PhD's are involved: one studying the macro processes from real world examples and one simulating the micro processes using agent-based modelling. (Martha Bakker; <http://www.wageningenur.nl/en/About-Wageningen-UR/Strategic-plan/CAS.htm>)

*Coordination of IPOP strategic research programme Informational Governance,* a WUR-broad interdisciplinary research programme in which University and Research institutes cooperate, aiming at understanding information as a governance instrument, and its role on institutions. (Paul Opdam; <http://www.wageningenur.nl/en/About-Wageningen-UR/Strategic-plan/Informational-Governance.htm>)

*Weather extremes and persistent populations: possible adaptation strategies on a landscape level.* PhD project funded by WOT via “Kennisbasis” program. Researcher: Agnieszka Malinowska. The project aims to quantify effects of the predicted increased weather variability due to climate change on the viability of biodiversity within the network of protected areas in the Netherlands. Supervisor Paul Opdam.

*Planning in a Bio-based Economy Landscape;* based on project “Biomass from nature and landscape” with VHL, Alterra, CAH Dronten together with master students and studio-results. Based on divers complexity approaches, transition ideas, Multi-Layer Perspective and TPSN approach, we're focussing on developing a framework to deal with the interactions of the bio-based economy development and landscape governance. (Wim van der Knaap)

*Multi-Functional Flood Defence-Landscape project:* PhD Kevin Raaphorst together with WUR Landscape architecture, Deltares, CGI, Delft Technical University and University of Twente. Focus is to research the underlying communication mechanisms of visual landscape representations and their effect on stakeholders' frames within MFFD landscape planning and design processes. (Wim van der Knaap)

*Future scenarios for St. Eustatius. Developing a planning support tool for re-use of nutrients from urban sanitation in agriculture.* PhD research by Indra Firmansyah, in cooperation with the Environmental Technology group and Plant Research International. Society is facing complex challenges and uncertainties with regard to the sustainable planning and management of the landscape. Scenario planning methods can help to assess these uncertainties and identify planning strategies. The in St. Eustatius includes an integrated analysis of the applicability of urban sanitation concepts and agricultural systems under different future development scenarios. (Gerrit-Jan Carsjens)

*From protected space to embedded place: developing urban agriculture in Almere Oosterveld.* PhD project performed by Jan-Eelco Jansma. This research explores a novel theoretical perspective for linking up urban agriculture planning with strategic niche management and social practice theory. The perspective is applied to the district of

Oosterwold in the city of Almere. Five episodes are discerned i.e. 1. visioning, 2. experimenting, 3. networking, 4. social learning and, 5. embedment in everyday practice. An independent so-called 'niche intermediary' will take up a pivotal role in the development process. (Arnold van der Valk)

*Comparing community gardening practices in Warsaw, Prague, Vancouver and Amsterdam.* This research is part of a PhD project by Elisabeth Brabec. The researchers explore the history present and future of community gardens and allotment gardens in the cities of Warsaw, Prague, Vancouver and Amsterdam. The research question focuses on the role of allotment gardening in the sustainable food movement in these cities. (Arnold van der Valk)

## 5. Research network building

The chair group established a broad scientific network in the spatial planning discipline (listed below). From this starting point, in the coming years the group will actively develop its network activities, directed at the research domains from chapter 4 within the context of the Horizon 2020 program. This would help to explore and establish funding opportunities and increase societal relevance.

The LUP group will increase its efforts to achieve impact in local and national society, policy making, and communication with the public at large. This may be achieved through, for example:

- Publications of research results in professional journals;
- Publications and/or publicity in the general media, such as essays, interviews or popular articles in the national press (TV, radio, newspapers);
- Membership of policy advisory groups or comparable working groups.
- Cooperation with strategic and applied research institutes (e.g. Alterra)

International and National Scientific network LUP

- The Association of European Schools of Planning (AESOP) and its working groups;
- The Landscape Architecture and Spatial Planning (LASP) thematic network of the Euroleague of Life Sciences (ELLS);
- The International Study group On Multiple Uses of Land (ISOMUL);
- The International Association of Landscape Ecology (IALE);
- The global land project (GLP);
- The European Land Use institute (ELI);
- The International Commission on Agricultural Engineering (CIGR), in particular its Section 1 on land and water use, and
- The Network of Universities dedicated to the implementation of the European Landscape Convention (UNISCAPE);
- Network Cultural Heritage & Space (Netwerk Erfgoed & Ruimte – Wageningen UR, Vrije Universiteit Amsterdam, Delft University of Technology);
- the Spatial Planning Consultation Group (*Professoren Overleg Planologie* – POP) that brings together all spatial planning chair holders at Dutch universities.
- Alterra Wageningen UR Team Nature and Society;
- The 3TU Centre of Excellence in Ethics and Technology.