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Rural Landscapes and Agricultural Policies in Europe



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Editors

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Foreword

These are the final results and reflections of the project MEA-Scope. This project with the full title “Micro-economic instruments for impact assessment of multifunctional agriculture to implement the model of European Agriculture” was a pioneering project. It was among the first which were funded in the new activity Scientific Support to Policies of the 6th Research Framework Programme. Policy decisions – especially at the European level – are never easy. What policy-makers decide will potentially affect the lives of millions of people for many years. This makes reaching informed decisions crucial, and scientific research can help illuminate their policy choices.

MEA-Scope was one of two projects which addressed the research priorities for European Rural areas which were identified in an EC workshop on Multifunctionality in Agriculture in 2001.

Scientific Support to Policies in the Research Framework Programme is facing the challenge to identify in the discussions between policy makers and the research community those topics which can be addressed in a mid-term strategic research programme. When the research topic was published Multifunctionality of Agriculture was among the concepts with many research questions open. It was considered that positivistic approaches into technology aspects of agriculture, forestry and other rural activities based on natural resources and land use are needed, as well as more normative research with regard to trade, food quality and safety, animal welfare, environment, rural development and cultural issues. It was recognised that the need for more knowledge of joint production of goods and services call for many partial studies. It was considered a problem that economic models tend to ignore non-commodity outputs, obviously because they are more difficult to model. Multifunctionality calls for integration. Therefore, integrated approaches like the MEA-Scope project got finally a preference over partial analyses. The inclusion of environmental and social aspects is a big step forward.

Multifunctionality outputs derive from the use of land. Therefore, the characteristics of different farming systems (scale, techniques, employment, food producing capacity) and related spatial characteristics of farming

(balance between open space and urbanisation, effects interlinking agro-ecosystems) are important issues.

The MEA-Scope project has addressed these points successfully. This publication provides insight into the concrete project results and its application to model different policy scenarios.

Hans-Jörg Lutzeyer

Scientific officer, European Commission, DG Research

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We dedicate this book to **Prof Dr. Lech Ryszkowski[†]** whom we remember and miss as a project partner and a personality with a strong sense of mission on his scientific activities and visions, who never became tired of challenging the implications of our approaches and results in a wider interdisciplinary scientific context.

Annette Piorr and Klaus Müller

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Introduction

Rural Landscapes are an essential determinant of the cultural identity all over Europe. Man and society have shaped them over centuries through settlements, agriculture, and forestry. Their variety primarily is attributed to the geomorphologic and climatic diversity within Europe. Most notably, the agricultural land use reflects characteristics of sites and features, as well as cultural particularities which farmers developed in land management. Thus, landscape composition, configuration and land use intensity always affected the economic, social and environmental performance of European regions.

Over the recent years agricultural land use has undergone major changes. With the enlargement of the EU, new challenges towards reducing disparities and improving cohesion came up. New demands with regard to land use emerged (multifunctionality). Societal problems such as migration and ageing are becoming a severe problem in remote rural areas. Consumers' health concerns and societal demands on resource protection result in an urge to introduce environmentally sound management practices.

Even if agricultural production became subject to marginalisation in many regions, especially in those characterised by low soil productivity, the value of agricultural land use for the maintenance of landscape amenities and regional identity is broadly recognized and demanded by society. Farmers' willingness to shift their activities towards combining the production of market goods (commodity outputs) and public goods (non commodity outputs) is a generally observed trend.

The European Common Agricultural Policy (CAP) reflects this line of development. In contrast to the CAP of former decades, when support was predominantly oriented towards maintenance and increase of production, the CAP of today aims at supporting sustainable land use and rural development. In line with this, the Model of European Agriculture (MEA) regards agriculture in a multifunctional role, and aims at helping farmers to adjust their business and land management methods to changing agricultural practices, and society's demands. With the reforms since 1992, the CAP shifted from production oriented direct payments to a decoupling of direct payments from production intensity (first pillar). The New Rural

Development Scheme for the period 2007–2013 strengthened the second pillar with providing more diversity in offers of voluntary measures.

In the course of policy impact assessment duties, the European Commission launched several projects within the EU's 6th Framework Programme (FP 6) to develop science based quantitative and qualitative policy assessment tools. This book presents the major outcomes of the research project "MEA-Scope",¹ specifically dealing with the ex-ante assessment of CAP impacts on multifunctionality.

MEA-Scope analyzed how far policies lead to a change in the farm structure of a region, or how far they influence farmers decision making on cropping or husbandry management practices. Focus is the assessment of related economic, environmental and social impacts. The chosen approach was based on the development of a hierarchical linkage of three pre-existing models: AgriPolis, MODAM and Farm-N/ Fasset. By considering the spatial scales of regions and typical single farms in their reactions on existing and possible future policies, the MEA-Scope project provides a highly valuable contribution to concepts, policies, rural development objectives and agricultural land use realities.

For developing the multifunctionality concept into an operational policy instrument, MEA-Scope set five main objectives:

- Further development of the multifunctionality concept for European agriculture
- Answering of policy-relevant questions for the implementation of the multifunctionality concept
- Demonstration of the operability of the integrated assessment framework
- Generation of scientific knowledge on specific questions regarding multifunctionality of agriculture, particularly with respect to spatial scale and regional differences
- Development of a quantitative tool for assessment of the multifunctionality impacts of CAP reform options.

The consortium was built by 11 institutions from the following 9 countries: Denmark, France, Germany, Hungary, Italy, Poland, Slovakia, Switzerland, The Netherlands. After three and a half years of research, the round 40 scientists involved from 11 European research institutions in the project

¹ MEA-Scope: Micro-economic instruments Micro-economic instruments for impact assessment of multifunctional agriculture to implement the Model of European Agriculture. Project (SSPE-CT-2004-501516) funded by DG RTD of European Commission, FP6 "Policy Oriented Research" www.mea-scope.eu

presented the achieved results to the end users, to the scientific community and to the interested public.

The MEA-Scope Final Workshop was held from the 17th to the 20th September 2007 in Florence, Italy. During the workshop 25 oral presentations (3 from invited speakers) were presented and discussed with the audience. This went along with dedicated discussions on the development strategies taken.

The workshop sessions were on the following topics:

- Multifunctionality Concepts, Societal Demand and Impact Assessment
- Modelling of Policy Induced Structural Change and Adaptation of Agricultural Practices
- Linking Scales, Policy Issues and Impacts
- Regional and Local Case Study Stories of a Europe in Change

The book consists of selected papers of the Final MEA-Scope workshop. It is designed to provide an overview on concepts and approaches of multifunctionality impact assessment as well as on societal demand in different parts of Europe. The four parts are organized along the above mentioned workshop topics. All contributions have the character of alone-standing articles. Thus, certain redundancies are inevitable. Even so, the editors decided for a compilation with the subject of each part being explored by various scientists from different points of view and reflecting their respective interpretation of results.

The first part, on *Multifunctionality Concepts, Societal Demand and Impact Assessment*, introduces the MEA-Scope project approach in developing a conceptual and methodological procedure towards multifunctionality impact assessment. In the first paper Piorr and Müller (2009) introduce the overall project structure and outline the MEA-Scope approach of making the conceptual understanding of multifunctionality operable for impact assessment. The analytical framework is based on the determination of non-commodity outputs and indicators, that reflect demand and supply side on one hand, modelling capabilities and data availability on the other. Two papers describe in detail the theoretical foundation of the various multifunctionality concepts. Ferrari and Rambonilaza (2009) analyze the existing multifunctionality concepts from the perspective of agricultural activities, rural areas and natural environments as well as deliver an interpretation which critically draws up the frontiers of the multifunctionality concept. The paper on multifunctionality concepts provided by Casini and Lombardi (2009) focusses on a comparative survey and critically assesses the framework approach taken in the MEA-Scope project. The research results gained from stakeholder participation in evaluating the regional relevance of the production of commodity and non-commodity

outputs are presented in the paper by Schader et al. They show how different the societal demand on the provision of multifunctionality proved in a cross regional comparison, and they further discuss reasons for the specific regional priorities from the stakeholders' perception. A completely different approach to the research task of assessing multifunctionality impacts of CAP policies was developed in TOP-MARD (the partner project of MEA-Scope, launched in parallel on the same FP6 call). Bryden and Refsgaard (2009) describe the theoretical foundation of their project design, the development of a new model and its application on the example of quality of life assessment in a Norwegian case study.

A central part of the book, *Modelling of Policy Induced Structural Change and Adaptation of Agricultural Practice*, presents research results on the impacts of current agricultural policies and future scenarios that were assessed by micro-economic and environmental modelling procedures (agent based, linear programming, trade-offs). The results provide information on the question how and why farmers in different structural and geophysical framework conditions respond to the new CAP reform and how this matches with regional demands. Zander et al. (2009) introduce the modelling approach developed for a hierarchical linkage of three pre-existing models. For all seven case studies a dynamic simulations of five policy scenarios have been operated a combined modelling approach. Uthes et al. (2009) present a cross country comparison of selected results on farm structural and environmental impacts and discusses the policy incentive structure. One approach applied for the spatial localisation of farms is explained in the paper of Damgaard et al. (2009). The method that recreates spatial location of farms where real farm locations are known is developed and applied within a German and Danish agricultural landscape. This is done using an approach based on indexation of structural heterogeneity. Another approach for farm localisation has been applied in the case study region Mugello (Italy). In their analysis of spatial characteristics of land use patterns, Ungaro et al. (2009) make use of geostatistical methods. They examine how policy scenarios induce landuse changes and assess their effects on abiotic and biotic indicators.

The third part of the book deals with *Linking Scales, Policy Issues and Impacts*. In the paper, *Scaling from Farm to Landscape*, T. Dalgaard et al. (2009) focus on the modelling of Nitrogen surplus from agriculture as indicator for water pollution. An in depth analysis of different policy options, related adaptational responses of different farm types and the impacts on multifunctionality indicators is provided by Sahrbacher et al. (2009). The paper delivers an integrated analysis of changes in arable and grass land use, shifts related cropping and husbandry management practice, from the perspective of the underlying policy implementation

pattern. Following the paper, *Implementing the Indicators of the MEA-Scope Multifunctionality Impact Assessment Approach*, Waarts et al. (2009) aims at assessing the MEA-Scope ex-ante impact assessment tool. The paper examines whether or not the tool fulfils the needs of the potential end-users. Focus is on the representativeness of indicator results for non-commodity outputs in relation to end user demand.

The final part of the book, *Regional and Local Case Study Stories of a Europe in Change*, particularly refers to the large diversity of changes and adaptation measures, taken by typical farms in case study regions (Denmark, Germany, Hungary, Italy, and Poland). It relates them to the site specific potentials and problems of the regions, or to in-depths analyses that have been carried out on methodological specifications. Each paper describes its specific contribution to the projects objectives, but it also discloses its own scientific value.

Environmental Impacts of Pillar I and II with Specific Respect to Designated Areas, are the central issue dealt with in the paper of Sattler et al. (2009). A fuzzy tool based indicator modelling approach for the assessment of environmental impacts of alternative policy scenarios is presented. This assessment is carried out using results from the MEA-Scope case study Ostprignitz-Ruppin in North-Eastern Germany. The River Gudenå landscape in Denmark served as a validation case study for the agent-based, spatio-temporal model AgriPolis. Damgaard et al. (2009) describe and discuss the procedures applied and results gained in order to prove the modelling outcomes on real farm data available for two time steps. For the case study in Mugello (Tuscany, Italy) Ciancaglini et al. (2009) analyse the impact of three different direct payment options on farm structure, profits, agricultural activities and production pattern. Bienkowski et al. (2009) carried out an analysis, aimed at determining the possibility to develop beef production by considering beef based alternatives available for crop farming. With results from the MEA-Scope case study in Poland, he limits his analysis on natural fodder resources. In the paper *Multifunctionality and Survival Strategies in Marginal Farms: the Case of Borsodi Floodplain*, B. Balász et al. (2009), using results from the MEA-Scope case study in Hungary, assess the contribution of multifunctionality and the social concerns this has on agriculture.