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Shaping rural development research in Europe: acknowledging the interrelationships between agriculture, regional and ecological development

An enhanced research strategy supported by the ERA-NET RURAGRI

In a context of significant changes and increasing complexity of economic and social systems, new challenges arise for rural research. It is commonplace that many research issues cannot any more be understood by regional or national studies alone but have to be framed in their international setting. A recent ERA-NET, the RURAGRI network, addressed the gap in European research organisation for providing a common research agenda on rural development research. It highlighted that this research field can be covered sufficiently only if the interrelationships between agricultural, ecological and spatial development are addressed appropriately and taken up as core research questions. The Strategic Research Agenda elaborated through the partners of this network, representing research organisations in 20 European countries, indicates the wide scope of issues for respective international research. Some of those aspects, and particularly the aim of increasing our understanding of these interrelationships, are taken up in a first set of selected international studies resulting from the ERA-NET's call. The intensive discussion on research collaboration and the high status of rural development policy on the political agenda within the European Union also underpins the need for future international collaboration on research organisation of rural development research.

Keywords: research organisation, European Research Area, rural development, regional systems, interdisciplinarity

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Introduction

With the substantive changes in our resource use systems and increasing interrelationships of economies and societies at the various geographical scales, the need for systemic approaches in research organisation has increased. These global trends particularly relate to land use dynamics and impacts on rural development. The reorientation of agriculture towards improved ecological practices, the economic viability of rural areas and their contribution to sustainable development have set new issues for both policy making and research. In this context the research framework for rural development analysis changes significantly and a new sphere of research questions has to be elaborated. It will be particularly inspired by the major trends and driving forces identified by the state of the art of research in this field at the international level and foresight studies addressing specifically the perspectives and needs of future research and policy development.

This paper focuses on considerations for research organisation addressing the interrelated aspects of agriculture and sustainable development in the context of rural regions. It draws particularly on the work of the ERA-NET RURAGRI (2009-2014) which takes up the long-term discussion on rural research organisation in Europe. By addressing current challenges and acknowledging the interrelations between land use, regional economy, ecological changes, societal drivers and governance issues it provides a comprehensive framework for rural development research that aims to take account of the increasing complexity of development in rural areas. Research in this field started during the 1980s with rising awareness of environmental, structural and socio-economic problems in rural areas. During that period, the need for a rural policy and a more integrated approach to deal with the increasingly complex situation was formulated for the first time at the international level in Europe. The document *The future of rural society* (EC, 1988), which outlined a vision for a genuinely territorial rural development policy, can be seen as the starting point of this process.

Since then, the integration of rural development policy activities in the Common Agricultural Policy (CAP) and at various stages in the Structural Funds programmes has taken place. Policy elaboration was significantly accompanied or, at least at times, significantly influenced by, rural development research (Dax, 2014). Soon it became clear that international analysis and comparative approaches were needed to address the European dimension and the diversity of rural regions across Europe. A growing research community focusing on rural issues established in European countries and networking was facilitated through targeted projects within the European Union's (EU) Framework Programmes (FP), commissioned studies and transnational cooperation (Dax, 2002). In particular, networking activities, such as the REAPER programme (the European Rural Studies Action Network; Arkleton Centre, 1997), the COST activity A12 Rural Innovation (Blanc, 2003) and the synthesis work of the Standing Committee for Agricultural Research (SCAR; Blanc, 1996) raised commitment for comparative research perspectives. Finally the intensive discussions on opportunities for European research cooperation of two SCAR Collaborative Working Groups (Agriculture and Sustainable Development, and Rural Development Research) and the recognition of the need to enhance cooperation among rural researchers and to contribute to a more explicated European perspective stimulated the European Commission (EC) to establish an ERA-NET under the FP7 call KBBE-2008-1-4-10 focusing on 'Agriculture and sustainable development in a rural development context'. Since 2002 more than 100 collaborative activities of national research programmes, so-called ERA-NETs, have been established to contribute to the strategy of a European

Research Area (ERA). While 19 thematic ERA-NETs had already started within the FP6 programme, the idea to focus on the interrelationships of the various drivers and aspects of rural development was only realised with this FP7 call.

The ERA-NET RURAGRI (www.ruragri-era.net) that was set up in response to the FP7 call explores emerging topics for research and aims at research not yet envisaged in the field of agriculture and sustainable development in the context of rural development. With its full project title 'Facing sustainability: new relationships between rural areas and agriculture in Europe' it highlights the three interrelated dimensions (agricultural, ecological and spatial development) that are particularly required to be addressed in present research, but so far have only partly been explored jointly. The network assembles 24 partners from 20 countries (including the non-EU countries Turkey, Switzerland and Israel) and thus extends to a large part of European rural research. Hence it represents an important contribution to the discussion of European research priorities and its concept and activities are of influence to the current FP (Horizon 2020) and the establishment of the ERA.

The paper focuses on the need to adopt such a comprehensive view of the different dimensions that influence agricultural and rural action and have an impact on developments in rural regions to address societal challenges and take sufficient account of the complex interrelationships. With regard to existing literature it will highlight the need to realise the scope of complexity linked to the new dynamics of land use systems and rural development issues (Rogers *et al*., 2013). The next section therefore provides a brief introduction to the debate on the conceptual changes of rural development that are fundamental to an appropriate, up-to-date research design and support for policy reform. The extent to which existing European rural research activities address the current challenges is then presented. This is followed by a summary of RURAGRI's strategic considerations, laid down in the Strategic Research Agenda (SRA). Following to the common research framework, the relevance and the need for further research and enhancement are discussed before conclusions on issues and organisation of European rural research are drawn.

The assessment presented in this paper benefits not only from the personal involvement of the author in the organisation of the RURAGRI call, but also reflects experiences from participation in many FP projects and international debate on rural research at EU level and within OECD working groups.

A new concept of rural development

Along with the changes in rural society and economy, rural research has shifted its main concerns over recent decades. Whereas in the 1980s it was targeted to a large degree towards agricultural activities, its main research priorities are now much wider in scope. However, the new research focus is only partially reflected in the evolution of rural development policy. Although policy analysts such as Pezzini (2001) were tempted to state that "today *rural is not synonymous with agriculture* and even that agriculture is no more the backbone of rural areas" (p.136, emphasis in the original quote), the policy programme labelled and widely referred to as the 'rural policy' programme in the EU is Pillar 2 of the CAP. Acknowledging the evolution in objectives, reiterated policy intentions and numerous initiatives for rural development practices, particularly at local level (Marsden, 2006), OECD pointed to the need to enhance the 'New Rural Paradigm' (OECD, 2006). This new conceptual framework for rural development strives to present rural areas not as merely 'dependent' peripheral regions and to overcome the prevailing defensive policy perceptions. It includes a cross-sectoral approach that calls for the integration of all levels of government and regional and local actors. This integrated perspective addresses a broad scope of relevant policies, going well beyond the previous focus on almost exclusively agricultural activities, a new vision of rural regions as areas with substantive assets; and a focus on investment measures, instead of compensation payments.

According to this conceptual outline, rural policies have to abandon their previously defensive strategies and traditional mantra of 'rural areas as problem regions with hardly any alternatives and future options' except for the agricultural production potential, limiting its perspectives to land use issues. In contrast, proactive strategies would tap the full potential of the regions and pay attention to including actors from all sectors (Lowe *et al*., 1999). Such a perspective recognises modernisation and innovation aspects as core driving forces, but at the same time takes account of the spatial diversity of rural regions.

To provide adequate responses to the diversity and increasing complexity of spatial development, research has to grasp the full set of relevant factors, the evolution of institutional settings and actors' participation, the place-specific variations in the regional context situations and the policy framework impacting on rural development. In policy terms, such a comprehensive perspective points to a rationale for a 'Rural Cohesion Policy' (Copus *et al*., 2011). For rural development research the new conceptual views highlight a number of important requirements (RURAGRI, 2009):

- An assessment of the spatial dynamics that are changing agriculture is crucial for the understanding of the spatial dimension of sustainable development within the diverse EU regions and between them at the European scale. Sectoral approaches only considering agricultural activities fail to take account of new spatial trends and to tap place-specific development opportunities. European research should build on spatial assessment and studies (such as the European Spatial Planning Observatory Network – ESPON programme) to understand trends taking into account economic and social activities for further regional development.
- In parallel to the territorial dimension, activities to promote social inclusion and poverty reduction (like those expressed with priority 6 of the Rural Development Programmes 2014-2020) have to be nurtured as integral parts of development. Research has to respond adequately to the heterogeneity of distribution of natural, human and economic resources across European rural areas.
- In addition to providing diverse development opportunities, heterogeneity may reduce risk vulnerability and enhance adaptation capacity to climate change impacts, prices variability and more generally changes in societal demand.

- As for other parts of the world, throughout Europe the strong urbanisation trends require increased attention for connectivity between urban and rural areas. The geographic, economic and human dynamics of rural areas are increasingly influenced by urban development (i.e. urban or semi-urban economic activities, infrastructure and habitat, patterns of human and material flows).
- Following these spatial trends the European geographical area has to be analysed as a whole and cannot be assessed for its parts in isolation. Research has to foster the integration of activities and programmes at different governance levels and across geographical regions.
- As revealed already in many programmes and research activities, the current set of challenges can only be addressed by interdisciplinary approaches and transdisciplinary activities are crucial to achieve dissemination of research findings within the rural regions.
- Research can turn out to be influential only if it addresses the objectives and challenges of the European policy agenda (e.g. CAP, environment, regional policy, transregional cooperation etc.).

In order to understand better the links between agriculture and rural development, the ERA-NET RURAGRI aims at reflecting these research requirements and addresses two main questions (RURAGRI, 2009):

- What are the main challenges ahead of rural development in Europe and their interaction with agriculture?
- How can agriculture contribute to sustainable rural development?

The analysis of these two questions within the RURAGRI network led to a set of general issues for rural development research. Common research programmes at the European level would have to tackle the following key topics as main aspects: (a) the role of European rural areas in the context of increasing urbanisation, (b) the new challenges and opportunities increasingly experienced and assessed by revaluation of European agriculture's features, and (c) the mix of policies and emerging governance systems facing sustainability demands. In this regard the relevance of the rural context for farming systems are shaped and influenced by evolving governance arrangements at different scales (multi-level governance) that are crucial to meeting the challenges of sustainable development.

A European view of rural research activities

The numerous challenges of our societies for rural development have been discussed widely in recent European research (Dargan and Shucksmith, 2008; van der Ploeg *et al*., 2008; Ward and Brown 2009; Copus *et al*., 2011; Hubbard and Gorton, 2011; Woods and McDonagh, 2011; Torre and Wallet, 2014 etc.). There is not space here to elaborate the full assessment of themes and main results of international studies. However, the mapping of European research activities by the ERA-NET RURAGRI provides a useful overview. It highlights the increase in rural research and addresses the main trends in research topics and orientation. The search for relevant research involved three action lines:

- The mapping of the national framework for relevant research activities and national reports on main programmes and influential projects. The synthesis of these reports by the 20 RURAGRI partner countries (Brouwer and Sas-Paszt, 2011) provides an important assessment of respective research activities, their specific focus and common views and research topics, at national level.
- An expert workshop of high-level European researchers addressing the main challenges within the fields of agriculture, rural areas and sustainability, and arising future research needs (Den Haag, The Netherlands, March 2011).
- The collection of international research activities in the EU over the past decade, including the EU's FPs (particularly FP6 and FP7), the relevant ERA-NETs, other international studies commissioned by the EC and activities of other programmes (e.g. ESPON and Interreg), achieved primarily through the analysis of *Cordis*, the EU's research documentation website (http://cordis.europa.eu/projects/home_en.html), and the websites of relevant projects (Baumgartner and Dax, 2012; Dax *et al*., 2012).

In the RURAGRI network countries the diverse research topics and detailed issues of rural research were identified, with several countries disposing of focused research programmes that include investigations of interrelationships between ecology, economy, social and institutional dimensions. The most relevant national programmes with regard to addressing these interrelationships are (Brouwer and Sas-Paszt, 2011) the programmes 'Agriculture and Sustainable Development' (ADD), 'Ecosystems, Territories, Living Resources and Agriculture' (Systerra) and 'Joint calls on agricultural and rural development and partnerships' (CAS-DAR) in France, 'Sustainable Land Management' and 'REFINA – Research for the Reduction of Land Consumption and for Sustainable Land Management' in Germany, 'The Green Development and Demonstration Programme' (GUDP) in Denmark, the 'Research Programme of the Ministry of Agriculture' (PFEIL 15) in Austria, with the other partners focusing their research activities of relevant institutions on important elements of the scope of RURAGRI's research. Moreover, other national research programmes such as the 'Rural Economy and Land Use Programme' (RELU) in England are interesting examples of interdisciplinary activities. Beyond the discussion of national views a visualisation of the gaps in addressing the interrelationships of the three dimensions turned out to be extremely useful to underline the need for interdisciplinary approaches. The EU analysis revealed that many initiatives of FP6 and FP7 programmes address core issues for research priorities in the scope of RURAGRI. Information for about 80 relevant international FP projects, 105 other international projects and studies (commissioned either directly by EC tenders

or carried out within thematic programmes) and networking activities in at least 18 ERA-NETs, European Technology Platforms (ETPs) and Joint Programming Initiatives (JPIs) were collected as relevant EU research activities. The research focus within the three dimensions of RURAGRI is presented as a triangle (Figure 1). While many programmes and network activities are mainly driven by one or two of the underlying dimensions, some projects worked more intensively towards an integrated analysis as required by the new conceptual considerations (e.g. MULTAGRI, TOP-MARD, RUFUS). Nevertheless the central area of highest exchange of the three dimensions is populated rather sparsely, indicating the scope for intensifying research that much more strongly addresses the interrelationships.

The main findings of mapping research activities underpin an increasingly active uptake of relevant issues. While the scope of analysis is extended to 'new' fields of investigation, there is a lack in current research on addressing the various drivers and interrelationships of different systems on rural development. RURAGRI analysis highlighted that the majority of projects tend to focus on a specific issue and neglect the systemic inter-linkages and implications from various influencing aspects. However, with an increasing demand for policy relevance more studies are commissioned that contribute to rural development or regional programmes. On the other hand, the aspects of sustainability (and a series of further concepts related to nature relationships and resource use assessment; see Copus and Dax, 2010) have become a specific focus for rural research. The general impression from the ERA-NETs collective debate is confirmed by a recent systematic search of trends in rural development research within English language publications (Evans *et al*., 2013) which classifies research publications by type, region and engagement with sustainability over three time periods (1988/89 – 1998/99 – 2008/09) across the world. Findings reveal the shift of research towards developed countries and sustainability issues, reflecting the political uptake of the concept in this part of the world.

At the same time, the future perspective of research needs has persisted as a major task of research organisation at the European level. SCAR, which had already acted as inspiration to stimulate the process towards building the ERA-NET RURAGRI, summarised in its Foresight studies core issues of current research demands for the EU. They highlight the crucial role of enhancing knowledge systems in rural regions (Brunori *et al*., 2008) and the impacts of resource constraints for sustainable production and consumption (Freibauer *et al*., 2011). Farming systems research has underscored the crucial aspect of learning and knowledge systems for rural development research (Hubert *et al*., 2012, Katona Kovács, 2014). As a consequence of these foresight studies on rural research the increasing connectivity of (rural) spaces affects also research issues and organisation. Framing rural research has to be understood therefore more and more in an interdisciplinary field where a multitude of influencing relationships (Juvancic *et al*., 2011) has to be assessed for their relevance. In a system of high path-dependence the demand to understand and act in a complex field of interrelationships becomes an important research task, necessitating a specific concern for reflexivity in local action.

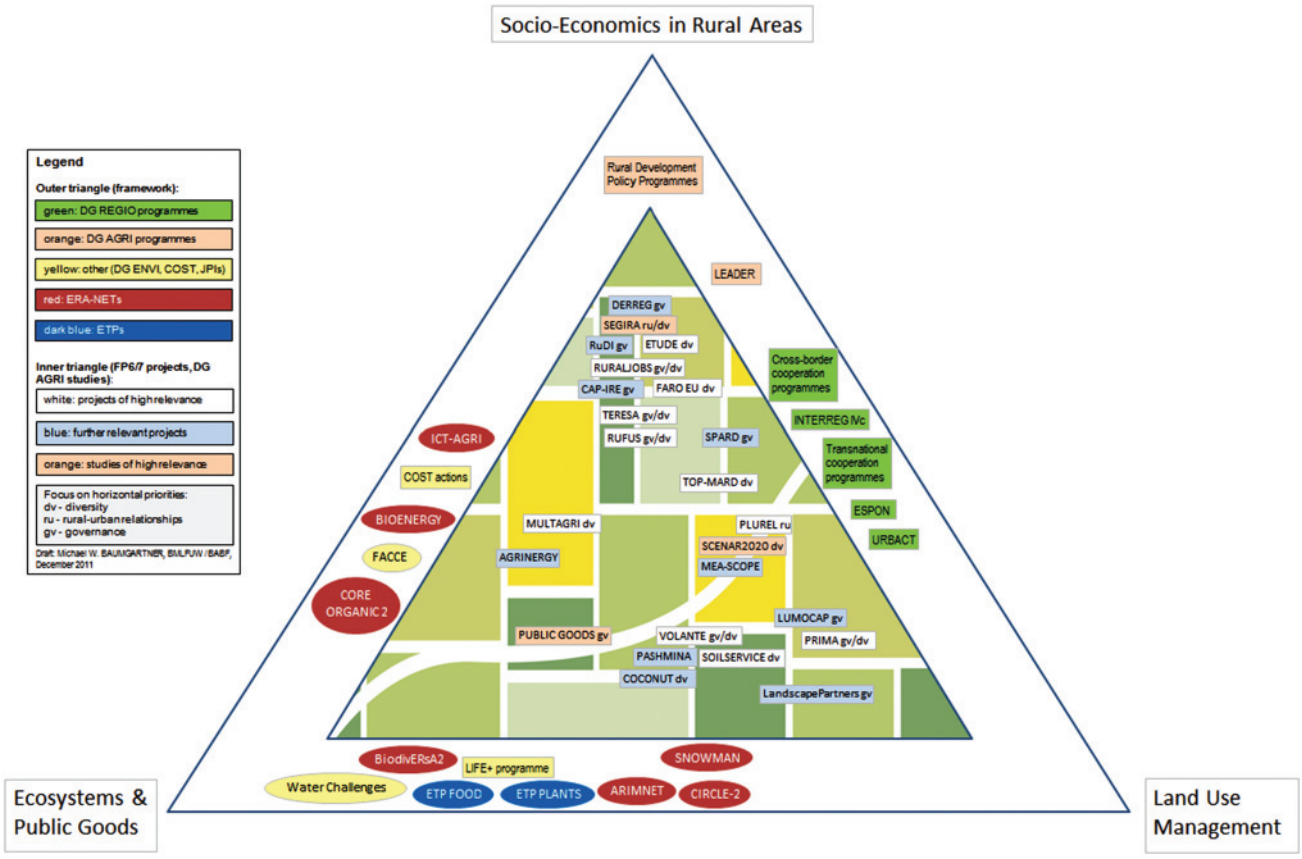

Figure 1: Relationships between relevant EU research activities and the three research priorities of the RURAGRI Strategic Research Agenda.
Source: Baumgartner and Dax (2012)

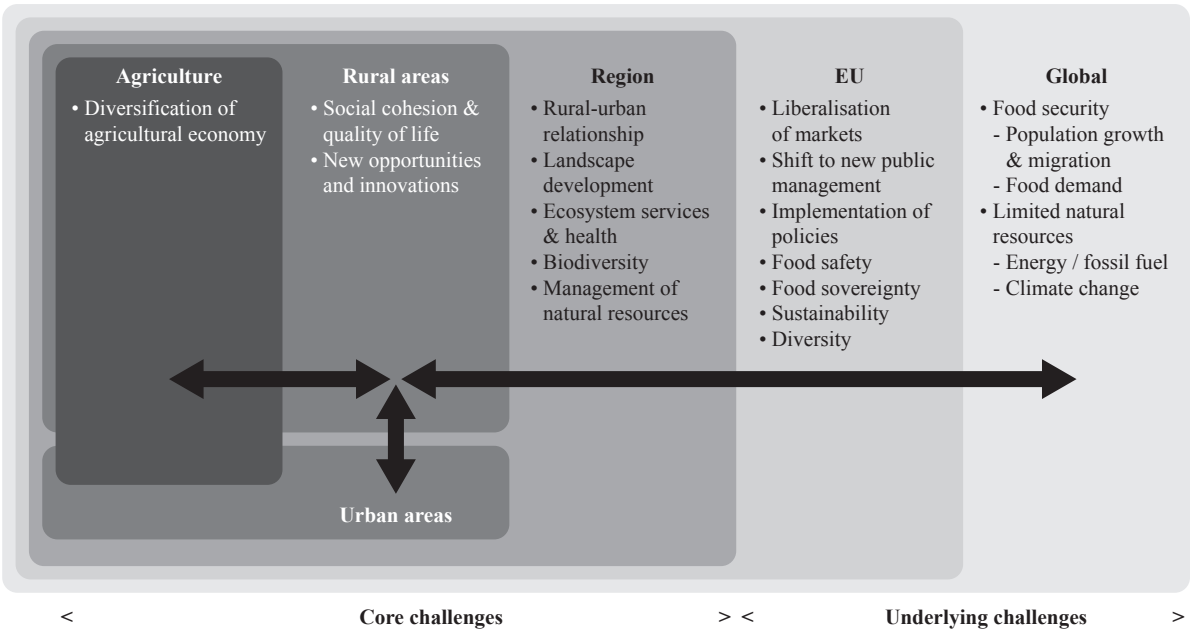

Figure 2: Core and underlying challenges for the sustainable development of agriculture and rural areas.
Source: Johansson *et al.* (2012)

Development challenges and research priorities

The above research activities can be interpreted as a (partial) reaction to problem patterns and changes in agriculture and rural areas. In conceiving future research orientation driving forces for agricultural, environmental and regional development have to be sorted out. As rural change is an extremely complex and nuanced phenomenon that is full of generalisations and stereotypes, Copus *et al*. (2011) highlight the negative connotations of the main persistent rural stereotypes and indicate the difficulties to overcome the social and institutional processes perpetuating its reception in the general public. All the more, it seems important to address the full range of drivers impacting on rural development. Building on the rising understanding for the complexity of regional and rural development processes challenges for development are manifold. They operate across different spatial scales and can result in different outcomes in different types of areas, e.g. rural vs. urban, diversified vs. non-diversified and accumulating vs. depleting regions.

Figure 2 draws a distinction between general 'underlying' challenges and 'core' challenges, attributing various features of drivers to the different spatial scales, from land use through agricultural production to global influencing aspects. While the global and EU challenges are associated with the overarching patterns of our economic and social systems and can hardly be influenced by national, regional and local action, the latter levels are the target areas for research considerations (e.g. of international European projects that are in the scope of calls of FPs and ERA-NETs).

In order to respond to these challenges and address the rural potential, with the objective to achieve balanced sustainable development, research is to be focused on main priorities. The partners in the ERA-NET RURAGRI established a strategic perspective, the SRA, which provides a framework for priorities for future research concerning agricultural and rural development in three key areas (Figure 3). There were 14 research topics within the three research priorities of RURAGRI (Table 1).

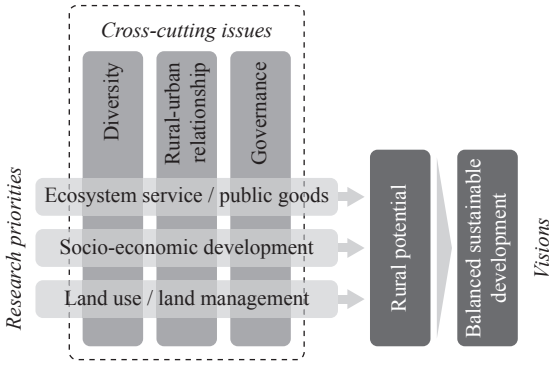

Figure 3: The RURAGRI Strategic Research Agenda.
Source: Johansson *et al.* (2012)

In addition to the research themes themselves it is essential to understand the core influences of contextual aspects on the formulation and framing of these themes. They are presented as 'cross-cutting issues' that exert effects on all three groups of research priorities and should be taken into account in the design of all relevant projects. The three aspects of cross-cutting issues required within RURAGRI are:

- The need to address and reflect the *diversity* of (rural) European regions, their potential, challenges and opportunities as an essential precondition to position and compare place-specific research proposals (that are characteristic for types of rural regions across Europe);
- The assessment that rural areas, communities and economies do not exist in a vacuum but, rather, are integrated into networks or circuits of capital, knowledge and material flows that are particularly shaped by *rural-urban relationships*;

- The firm belief that innovations in *governance* are crucial to enable current and future transition of rural areas in order to achieve balanced regional development.

As RURAGRI is a comparably big ERA-NET it combines research perspectives from 20 countries and mirrors the high interest of EU Member States in supporting rural development policy by targeted rural research. The high diversity of regional contexts and the complex interrelationships extend the scope of interest for research topics. In the preparation of joint research activities of the RURAGRI network which culminated in a common call it was agreed to enable projects on all topics of the SRA. Instead of limiting the research themes to a few specific issues of highest priority, as is the case for FP research themes, the main focus was on the requirements for project design. It was a core need of proposals to address the interrelationship of land use, ecosystem development and the regional context, to put proposals into the framework of European spatial typologies and to refer explicitly to at least one of the three cross-cutting issues (diversity, rural-urban relationship and governance). Furthermore project proposals answering the RURAGRI call published in September 2012 had to apply interdisciplinary research methods and include transdisciplinary action. The resulting projects hence aimed to link diverse aspects of ecosystem assessment, land use management and socio-economic development within specific a framework of rural regions (Dax *et al*., 2013).

Table 1: Topics grouped according to the three research priorities of the RURAGRI Strategic Research Agenda.

Research priorities and topics
(a) Ecosystem services / public goods
• Identify the various types and quality of ecosystem goods and services in different rural areas and improve monitoring systems of goods and services to ensure their sustainability;
• Enhance methods measuring the value of goods and services on spatial and temporal scales for monitoring, including indicators for follow-up and impact assessment. Research could consider the development of governance systems, procedures and tools managing ecosystem goods and services in a regional perspective;
• Increase understanding of how to achieve mutual benefits between economic development in rural areas and the delivery of public goods. Define tools for marketing these values to the general public and to decision makers. Assess the influence of production and consumption patterns on the use of ecosystem goods and services in different rural areas. Identify best practices, innovative solutions and system innovation suitable for use in rural areas.
(b) Socio-economic development
• Explore economic activities, public and private services, provision of infrastructure and technology to enhance sustainability and identify best practices supporting vibrant rural areas;
• Identify barriers that hinder innovation and evaluate novel mechanisms and socio-economic structures (networks) which encourage innovation in rural areas;
• Identify and evaluate agricultural development trajectories in different rural areas, paying particular attention to the potential for specialisation and/or diversification;
• Assess the reasons for migration and the impacts on the quality of life, culture and social identity for different types of rural areas. This should include studies on the potential of migration on the capacity for innovation in different types of rural areas;
• Assess and evaluate the implications of mobility and commuting on the quality of life, culture and social identity for the potential and sustainable development of different types of rural areas;
• Identify the diversity of urban-rural relationships and evaluate their potential to contribute to sustainable rural development, assessing best practices in the management of rural-urban relationships. Research in this area might also consider issues related to the use of ecosystem services;
• Identify the mechanisms of interaction between sectoral policies and their intended and unintended territorial impacts. Formulate recommendations for the coordination of sectoral policies fostering synergies. Research in this area might also consider issues related to land use and/or ecosystem services.
(c) Land use / land management
• Explore and evaluate innovative land use and management practices to overcome conflicting demands on land and identify best practices;
• Evaluate those economic networks utilising natural resources that result in increasing demands on land use; identify and explore novel resource efficient networks. This research could include consumer perspectives;
• Assess multifunctionality of agriculture and how this concept could overcome land use conflicts and contribute to diversification of rural economies. Research linking the concepts of multifunctionality, ecosystem services and public goods is also of interest;
• Assess land use implications of new paradigms (e.g. green growth).

Source: Johansson *et al.* (2012)

Core aspects for rural development research

The RURAGRI call highlighted a number of common research aspects that have been addressed in previous network activities on research collaboration, and scoping discussions on research priorities in response to current challenges. In this perspective it could point to the wide scope of relevant topics for rural research and policy. It is clear that international research programmes only can manage to focus on a few priority topics. ERA-NETs are a good vehicle to underpin the need for an enlarged European preoccupation and more in-depth investigation as well as combined research efforts that give additional attention to studies that could not be commissioned by national programmes alone. Raising commitment for such issues at the international level is reflected in common issues of the RURAGRI call, targeting on novelty approaches, the requirement of an inter- and transdisciplinary method and the realisation of activities aiming at European added value.

The nature of rural development calls for a research framework that is both open to new thematic inquiries and useful for policy assessment and development. Research management in this field is therefore closely linked to institutional development and evolving governance arrangements, and cannot be restricted to a debate on selecting research topics and methods. This requirement is increasingly understood within rural research, but still a strong European incentive and international consensus was missing. International debates, such as those animated by RURAGRI, scoping studies and international conferences might induce greater commitment for analysis of interrelations of rural development topics. The implications of such a research agenda is particularly seen in concerns for creating/enabling effective networks at the local level (Stimson *et al*., 2009). Recently Shucksmith (2013) concluded that "[i]nvestment in the capacity to act of local communities in this way should be a priority, even in an age of austerity" (p.29). At a mid-term perspective it seems important to provide an organisational structure for continuously supporting this research field. The thematic support is deemed useful as activities of different programmes, at dif-

ferent levels, carried out by different research sectors and involving different methodological approaches have to be included in an analytical survey of research activities. This interdisciplinary field is characterised by very strong policy relevance and thus an increased concern for targeted and adapted research strategies that take account of a European vision would be of significant added value.

Conclusions

The increasing interest and uptake of research themes related to rural development issues and its interrelations to land use and ecosystem development is revealed in an increasing amount and scope of relevant research activities. SCAR and European research debate have repeatedly highlighted the need to intensify and shape rural research according to current societal challenges. Following the stronger commitment for targeted research on rural issues in recent FPs, the ERA-NET RURAGRI provided an overview on the European activities in this research field and established a common SRA. The research priorities addressed by that research framework underpin the wide range of topics that are of concern for analysing the system of interrelations (Hedberg and do Carmo, 2012) impacting on rural development, land use and ecological development across European regions. In line with the aims of the ERA-NET approach RURAGRI provided a sound basis for enhanced cooperation of research programmes and enabled exemplary research projects that endeavour to analyse the set of interrelations most relevant for land use and rural development issues. By addressing specific aspects of interrelationships and rethinking the nature of rural development innovative contributions to the discussion of rural development research are expected.

As the scoping activities of RURAGRI underpinned that beyond the EU's FP activities relevant research is commissioned by transnational programmes, specific tenders, networking schemes, activities of international organisations etc. the networking activities initiated by the RURAGRI work should be continued in the future by international collaboration on research organisation of rural development research issues. A multitude of national programmes with relevant research focus should be taken into account as an important input to those considerations. Many of those research activities resulting from international and national programmes are of relevance for an assessment of international developments of driving forces, challenges and opportunities for rural development. In the analysis of interrelations it seems crucial to address current research questions by addressing an international framework of spatial types that could yield findings that are applicable to specific regions and comparable at the European level.

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