

MULTIFUNCTIONAL AGRICULTURE AS AN INNOVATION PATH FOR RURAL AREAS

LÍVIA MADUREIRA

University of Trás-os-Montes e Alto Douro (UTAD),
Department of Economics, Sociology and Management (DESG)
Researcher at the Centre for Trans disciplinary Development Studies (CETRAD),
Vila Real, Portugal.
E-mail: lmadurei@utad.pt

SUSETE COSTA

Centre for Trans disciplinary Development Studies (CETRAD),
University of Trás-os-Montes e Alto Douro (UTAD),
Vila Real, Portugal.
E-mail: sucosta@utad.pt



**Paper prepared for presentation at the 113th EAAE Seminar
“THE ROLE OF KNOWLEDGE, INNOVATION AND HUMAN CAPITAL
IN MULTIFUNCTIONAL AGRICULTURE AND TERRITORIAL RURAL
DEVELOPMENT”, Belgrade, Republic of Serbia
December 9-11, 2009**

Copyright 2009 by Livia Madureira, Susete Costa. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

MULTIFUNCTIONAL AGRICULTURE AS AN INNOVATION PATH FOR RURAL AREAS

Abstract

The main purpose of this paper is to discuss the potential of MFA model to enhance innovation in rural areas build on the analysis of information from a database of best practices on innovation in EU rural areas collected by the RAPIDO project¹. The analysis shows innovation to be strongly related to multiple-activity. This suggests the synergies between functions and land-uses to overlap the competition for resources between activities and that MFA shows a promising approach to enhance innovation in rural areas.

Key words: Innovation, Multifunctionality, Rural areas, Sustainability.

1. Introduction

Multifunctionality of agriculture (MFA) has been acknowledged in the last years, both by scientists and politicians, as a promising approach to address sustainable development within rural areas. The synergies between productive activities and environmental functions and services have been encouraged since 1992 by the EU agro-environmental policy. In addition, rural development programmes and policies have promoted the MFA model build on its social dimension and its potential to enhance on-farm diversification strategies. This public support to the MFA was accordingly to the consumers and societal demands for food quality and safety, recreation and environmental quality.

As a result of market and societal demand drivers and the stimulus of EU domestic policies there has been, within the last decade, a reinforcement of the on-farm diversification strategies build on the advantages of specific-location features to the development of new products and services. An interesting outcome of these strategies is the emergence of a multiple output land-based supply, evidencing the multifunctionality as a promising innovation path for rural areas.

The role of innovation and knowledge to promote sustainable development in the EU rural areas is acknowledged, at some extent, by the rural development strategy for 2007-2013 (EC, 2005). However, this latter strategy is built on a sectoral vision, focusing its attention into the promotion of innovation and knowledge within the “conventional” rural sectors, agriculture, forestry and food industry. It assigns a secondary position to the multifunctional and multi-sectoral activities, whereas acknowledging its importance.

The dominance of a technological and sector-oriented paradigm for innovation, following the OECD definitions and methodologies to measure innovations (OECD,

¹ RAPIDO – Rural Areas, People & Innovative Development. SSPE-CT-2006-44264. Detailed information available on www.rapido-fp6.eu.

1997 and 2005), explains why the rural areas are widely excluded, both from the study and the implementation of targeted innovation plans or programmes, which address basically the sectors with global competitiveness potential. Therefore, though EC (CEC, 2003) defines innovation as “the successful production, assimilation and exploitation of novelty in the economic and social spheres” and recognises, in a subsequent communication (CEC, 2006), that all forms of innovation need to be promoted, for innovation comes in many forms others than technological innovation, including organisational innovation and innovation in services”, this broad definition still has not turned operational for other scales than the firm/sectoral ones.

Innovation taking place in the EU rural areas is characterised by a diversity of innovation types and actors and by minimal innovation often build on tacit know-how and supported on informal networks (RAPIDO, 2009). Another important feature of innovation in EU rural areas is that is frequently undertaken by rural enterprises with multiple activities and involved all along the value chain. The plasticity shown by the “rural innovators”, while convergent with the diversification strategies promoted by rural development policy, is not captured by the conventional support schemes to agriculture and rural development. The gap between “rural innovators” dynamics and the public policies supporting competitiveness and rural development evidences the importance of a better understanding of the motivations and strategies of rural enterprises and other organisations in order to build the knowledge needed to adjust the public support and to turn it successful in promoting innovation in rural areas.

This paper provides a contribution to fill the knowledge gap on the innovation taking place within EU rural areas and on how it could be enhanced. The paper builds on data and findings of the RAPIDO project², and its objectives are two folded. First to characterise innovation in rural areas build on the analysis of a number of case-studies of innovative initiatives located across different regions of UE. This characterisation includes variables such as the type of promoter, sector(s) where it operates and type of innovation undertaken. Emergent activities related to innovation, such as environment-related activities, are examined as well its interactions with more conventional activities of rural organisations. Secondly, the multiple-activity dimension of innovative organisations is analysed within the framework of MFA to support a discussion on the potential of the multifunctionality model to enhance innovation in EU rural areas.

The paper is organised as follows. The next section provides empirical evidence on some features of the innovation taking place in the EU rural areas. Section 3 analyses the multiple-activity strategies of innovative organisations within the framework of MFA and

²The main objective of this project was to analyse current best practices of innovation in agriculture, forestry, the food sector and the wider rural areas as well as to analyse methods to transfer knowledge to different target groups.

discusses the potential of MFA model as an innovation path for EU rural areas. Finally, section 4 provides some concluding remarks.

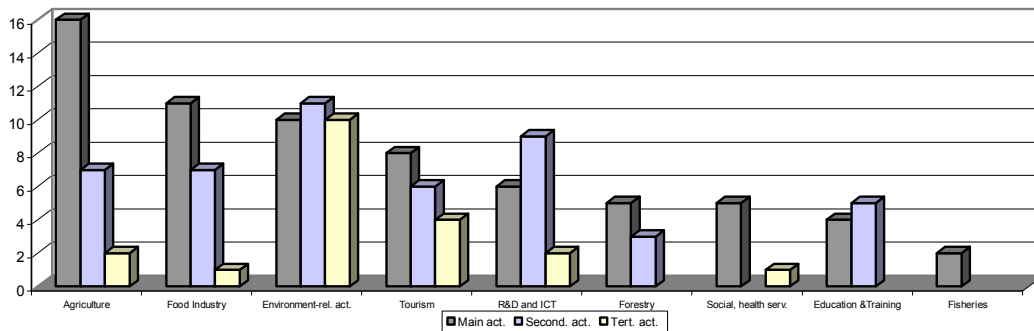
2. Evidence on innovation in EU rural areas

The empirical evidence presented and discussed within this section is based on the responses to a survey conducted at case study level. Data were collected by the RAPIDO project (2007-2008) and consists of a database of best practices on innovation in EU rural areas, with 67 case studies spread all over 17 EU countries. This database includes a diversified set of information, such as the sectors of activity, type of innovations, the promoters of the initiatives and socio-economic impacts of the innovation (RAPIDO, 2007). The information presented in this section addresses three main questions: Which are the innovative sectors? Who are the innovators? And, what types of innovation have been undertaken?

2.1 Which are the most innovative sectors?

The RAPIDO database shows innovative organisations to be concentrated within the conventional rural sectors, agriculture, food industry and tourism, reflecting the relative weight of these sectors in the EU rural economies (see Figure 1).

Figure 1 - Innovative initiatives by activity sector, including secondary and tertiary activities



Source: RAPIDO, 2008

Figure 1 shows that the conventional rural sectors, agriculture, food industry, tourism and forestry, appear mainly as the main activity of the organisation. However, all of these activities show to be also relevant as secondary activities and even as tertiary for others organisations.

The environment-related activities, which include activities such as bio energy, landscape management, nature and biodiversity conservation and environmental education, presents a similar importance as main or complementary activity for the organisation. It is the more expressive sector appearing as second and third activity. Renewable energy production, meaning bio energy with one exception

(photovoltaic), represents 70% (7 of 10 case studies) of the case studies where these activities are the main activity. Renewable energy production shows to be less important as secondary or tertiary activity (4 of 21 case studies) (RAPIDO, 2008). The high proportion of activities related to the environment appears as a surprising finding, in particular its importance as secondary and tertiary non productive activities.

Research and development (R&D) and information and communication technologies (ICT) reveal to be significant activities for the surveyed organisations. They are reported as the primary activity for a number of case studies, but mostly projects with supra-regional scope. Even so, while less important as the main activity compared to the conventional rural sectors and environment-related activities, they represent a relevant sector as a secondary activity.

Yet, probably the most surprising finding is the weight of multiple-sectoral organisations: 70% of the innovative initiatives have a secondary activity and 30% have a third one. Further, there are a significant number of organisations that integrate within its values chain activities of the three major economic sectors (agriculture, industry and services).

To sum up, and answering the question “which are the sectors showing to be more innovative” there is four aspects to underline. The first is that both “traditional” and “emergent” rural sectors show to be innovative. Secondly more than sectoral innovation we see multi-sectoral innovative organisations. A third remark is the growing importance of the environment-related activities in particular associated with the conventional rural activities, agriculture, forestry and tourism. Environment-related activities emerge as new sector calling for a space of its own within the economic activities nomenclature. Finally, it is important to report the weight of R&D and ICT activities, in particular as complementary activities of both conventional and emergent sectors.

2.2 Who are the innovators?

The innovators include mostly private organisations, such as service providers, producers, private investors and tourism operators. Table 1 shows the nature of innovators, highlighting the importance of private organisations: two in each three case studies. Public agents account for less than 20% of total innovators, yet their importance increases when considered they subsume into the “association of categories”.

Table 1 - Actors implementing the innovation

Type of actors	No	%
Service providers	15	22.7
Producers	13	19.7
Private investors	10	15.2
Tourism operators	5	7.6
Residents	4	6.1
Governmental bodies	8	12.1
Local authorities	4	6.1
Association of categories	7	10.6
Total	66	100.0

Source: RAPIDO, 2008

Another related question is “where innovation is taking place? The database provides information for 53.7% of the case studies. Yet, the majority of them (83.3%) locate its activities within lagging/peripheral rural areas (RAPIDO, 2008). These figures seem to confirm the findings presented in the literature, that a peripheral location might encourages innovation (e.g. Patterson et al. 2003, North and Smallbone 2000). Further, the importance of lagged/peripheral areas within the sample explains, probably, the relevance observed for the environment-related activities.

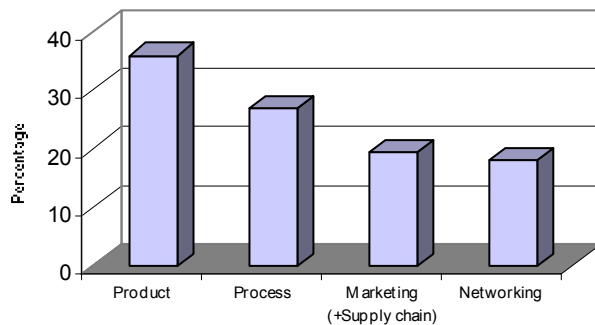
These results highlight the importance of the location-specific factors (SERA, 2006) to the development of innovative products and to the diversity of activities undertaken by the majority of the innovative rural organisations. They suggest also that these locations favour innovation through multifunctionality to respond consumers and social demands for environmental quality, food safety and leisure.

2.3 What types of innovation are being undertaken?

The principal type of innovation implemented according to the organisations surveyed³ is displayed in the Figure 2. It shows product innovation as the most important for around 35% of the case studies. Process innovation comes in second place, reported as the main innovation type implemented by more than 25% of the organisations surveyed. Marketing (chain supply) and networking have globally a relevant weight (37.3% of the total case studies) (RAPIDO, 2007).

³ Note that the respondents reported only the principal type of innovation developed/implemented for the main activity.

Figure 2 - Main type of innovation



Source: RAPIDO, 2008

These figures show, that in spite of reporting only the main type of innovation undertaken, the importance of organisational innovation is quite relevant, certainly needing to be object of an especial focus within the innovation analysis in the rural areas.

3. Multiple-activity strategies and the MFA model

This section analyses the multiple-activity strategies observed for the innovative rural organisations within the framework of concepts and models of MFA, in order to discuss the potential of a multifunctionality model as an innovation path for EU rural areas. It starts with a brief review of the MFA framework, which is used next to analyse the empirical evidence on the multiple-activity strategies of innovative rural organisations. The third part of this section is dedicated to discuss the potential of multifunctionality model to enhance innovation in EU rural areas.

3.1 Concepts and approaches to MFA

There are different conceptual approaches to MFA, namely the conventional distinction between demand and supply sides (Van Huylenbroeck et al. 2007). Supply approach envisages MFA as a technical issue related to the ability of agriculture to provide multiple joint outputs; whereas, demand approach sees MFA as a societal demand, therefore as a “duty” of agriculture to supply a diversified bundle of outputs to society, including public goods and positive externalities. These alternative approaches are somewhat linked by a third view which sees multifunctionality in a broader sense and as framework for a new agro-food and rural development model (Van der Ploeg and Roep 2003, Van Huylenbroeck et al. 2007, Renting et al. 2009).

While supply and demand approaches to MFA appear as dichotomous views of the same phenomena, this situation only holds when non-commodity outputs are jointly produced without representing an additional cost to the producers. The current situation in most of EU rural areas is that, on one hand, negative externalities and public bads of agriculture became “joint products” unaccepted by the society and, on the other hand, the positive

externalities and public goods jointly produced with food/fibre production became scarce to respond to an increasingly demand for environmental quality, food safety and leisure. Therefore, priceless joint products of agriculture, such as waste or landscape become priced outputs. This pricing has been done through the environmental and agro-environmental policies of EU. The agro-environmental grants are the most well known measures of the latter policy, and are basically payments to avoid/encourage negative/positive externalities of farm activities. These green payments, launched by the EC in 1992, were in a certain way the first acknowledgement of the MFA of European farmers, built on the demand/normative side concept of MFA.

The synergies between productive activities and environmental functions have been encouraged in EU since then. Therefore, it was not surprising the importance given to the MFA under the Agenda 2000, linking it with the sustainability concept on the rural development policy ground. In addition, within the later years, rural development programmes and policies have promoted the MFA model build on its social dimension and its potential to enhance on-farm diversification strategies. These programmes and policies build on the MFA, whereas implicitly, as a new agro-food and rural development model which overlaps supply and demand approach to MFA by focusing on the local capture of the value of both market and non-market goods and services. Another issue when one tries to relate MFA with multiple-activity is the distinction between concepts such as multifunctionality, diversification and pluri-activity. Van Huylenbroeck et al. (2007) define as multifunctional an activity with multiple outputs, whereas diversification means the combination of different economic activities into the same management unit and pluri-activity refers to multiple activities of the farmer or rural entrepreneur. Therefore, it is important to analyse the multiple-activity strategies of the innovative organisations surveyed within this framework to have a better understanding of what is the meaning of the multifunctionality for them.

3.2 *Multiple-activity: diversification strategies and multifunctionality*

Table 2 relates the main activity of the surveyed organisations with their complementary activities (up to the third activity).

Table 2 - Innovative initiatives by main and complementary activities

Main activity	Secondary and third activity						
	Agriculture	Food Ind.	Forestry	Tourism	Env. Act.	RD, ICT	
Agriculture			7	1	2	9	1
Food Industry	3				2		4
Forestry			2			2	1
Tourism	1			1		2	
Environ.-rel. activ.	3			1	1	4	
R&D and ICT	1					1	2
Total	8	9	3	5	18		8

Source: RAPIDO database, 2007

Agriculture appears significantly related with food industry and the environment-related activities. It comes also associated with forestry and tourism. The food industry appears together with activities such as agriculture and tourism, whereas the ICT and R&D appear as the most relevant complementary activity. Forestry comes up related with the environment-related activities and also with food industry. Tourism presents complementarities with agriculture, forestry and the environment-related activities. Environment-related activities appear strongly linked to agriculture and also with forestry and tourism. Further, some organisations reported it as complementary activities when they are also the main activity. This situation reflects the bundling of quite different activities such as bio energy, nature conservation or environmental education. These two later activities like other, such as landscape management, are mostly joint activities.

The data confirm multiple-activity pattern as corresponding also to a combination of multi-sectoral activities. This suggests that multiple-activity strategies are mainly diversification strategies, meaning a set of different economic activities managed by the same unit (Van Huylenbroeck et al. 2007). Yet, a closer look to this multiple-activity pattern evidences its joint character, activities that share resources to supply a common product: a special product or a basket of goods and services.

Some of the combinations and new activities observed within the innovative organisations might be explain as resulting from diversifying strategies in both directions: “deepening activities” (to retain added value) and “broadening activities” (to diversify supply) (Van der Ploeg and Roep 2003, Renting et al. 2009). Yet, often the broadening of activities results from the multifunctionality of land-based activities, such agriculture, forestry and the agro-tourism. The growing importance of the environment-related activities illustrates a striking interaction between multiple-activity and multifunctionality.

The environment-related activities were at begin basically a bundle of non-commodity outputs from land-based conventional rural sectors that farmers (and landowners) were stimulated to provide through the agro-environmental payments. However, they are now became more and more actual activities for many rural organisations. They appear both, as complementary activities of productive sectors, such as agriculture and forestry, or associated to non-productive activities like the tourism.

The greening of European consumers demand (for food and leisure) has converted competitive outputs into complementary products. The “natural” multifunctionality of agriculture and forestry became strategic for activities like the rural tourism, which is increasingly enriching its packages with environment-related services. Therefore, multiple-activity can often be envisaged as multifunctionality strategy from the supply side, with producers offering bundles of outputs resulting from land-based joint activities.

3.3 Multifunctionality as an innovation resource

RAPIDO project (RAPIDO, 2008) concluded that innovation observed in the EU rural areas results at large extent of two (often complementary) strategies: (a) changing land use and/or production processes to answer stimulus from domestic policies (e.g. agro-environmental and biomass incentives); (b) diversifying and developing new activities, products and services to meet consumer's demands (e.g. environment-related and cultural services for tourists). Therefore, domestic policies and market demand have converged to reinforced on-farm diversification strategies and the advantages of specific-location features to develop new products and services and finding niche markets.

The strategies aforementioned drove many farmers and landowners to develop multiple-activity rural business strategies build on the multifunctionality of land-based activities. Some have focused on especial products defined along different activities of the value chain; other, probably the majority, choose to supply multi-output baskets, responding both domestic policies incentives and societal and consumers demand for quality and safe food, leisure and recreation, and landscape and nature conservation. Thus, they have departed from agriculture (and food industry) and enlarge their supply basket to environment-related activities and leisure & recreation. On the other hand, the environment-related activities and its association with tourism (ecotourism and other nature-base tourism forms) seem to attract new-comers to the rural areas. These are entrepreneurs, in particular young and skilled people, whom appear to have inverted the direction of multifunctionality, using it as a resource (a mean) to develop new projects and business where the tourism is often the main activity, although the non-productive environment-related activities are also became increasingly an important sector by its own.

To sum up, the multiple-activity strategies of the innovative organisations whereas can be envisaged as diversification of activities, show in most of the cases a particular character of joint activities organised to supply multi-outputs baskets. This jointly character of the activities emphasises the role of multifunctionality as an asset/resource for innovation strategies, especially involving product, process and market innovation. Therefore, multifunctionality appears clearly as a source of innovation at the organisation level, creating room for new products and process, changes in existing ones and for the opening of new markets.

However, multifunctionality might show even more powerful as an innovation resource if looked at the territorial level. It can be promoted to enhance the development of a multi-output land-based supply at territory level, build on the networking of organisations, which could be encouraged to cooperate in order to supply multi-outputs baskets at the territorial level, through the development of complementary activities, allowing for scale economies and creating room for global competition potential. Therefore, network/organisational innovation appears as a keystone tool to enhance the potential of multifunctionality as an innovation path for

rural areas, build on MFA model of joint activities territory-based oriented to respond to a multidimensional demand.

4. Concluding remarks

The evidence available about the innovation taken place in the EU rural areas, whereas still scarce indicates clearly a strong link between the diversification strategies and the multifunctionality of land-based activities. It shows also that innovation in rural areas is mostly the outcome of strategies to overcome constraints, such as a peripheral location and small economic dimension, taking advantage of the uniqueness given by location-specific features and the multifunctionality of land-based activities. Further, it suggests that the synergies between activities and land-uses to overlap the competition for resources between activities within multiple-activity organisations. It shows also that multifunctionality is attracting new-comers, whom are exploiting it as strategic asset within the tourism and the environment-related activities sectors.

This reversal move of entrepreneurs “towards multifunctionality”, instead of the former way “from the MFA” of farmers pulled by public policies, while needing to be confirmed as a path for competitiveness, is very promising in terms of coupling triple bottom sustainability goals at individual and territory level. To get a better knowledge of this “new” trend in EU rural areas is fundamental because it would be very helpful to change the traditional view of a dichotomy between competitiveness and social sustainability (implicit within the rural development strategy for 2007-13).

Literature

1. Commission of the European Communities (CEC), 2003. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Innovation policy: updating the Union’s approach in the context of the Lisbon strategy. COM (2003) 112 Final, Brussels.
2. European Commission (EC), 2005. Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development. Official Journal of the European Union L 277/1, 21.10.2005.
3. Commission of the European Communities (CEC), 2006. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Putting knowledge into practice: A broad-based innovation strategy for the EU. COM (2006) 502 Final, Brussels.
4. North and Smallbone, D., 2000. Small business development in remote rural areas: the example of mature manufacturing firms in North England. *Journal of Rural Studies* 12: 151-167.
5. OECD, 1997. *The Oslo Manual: Proposed Guidelines for Collecting and Interpreting Technological Innovation Data*, 1st edition. OECD, Paris.

6. OECD, 2005. The Oslo Manual: Proposed Guidelines for Collecting and Interpreting Technological Innovation Data, 3th edition. OECD, Paris.
7. Patterson, H. and Anderson, D. (2003). What is really different about rural and urban firms? Some evidence from Northern Ireland. *Rural Studies* 19, 477-490.
8. RAPIDO, 2007. Deliverable 1: 1.1 Best practice database on case studies for innovation development and transfer in rural areas Deliverable No.: 1.2 Evaluation matrix to assess future initiatives and projects in the area of innovation. Prepared by Margaretha Breil, December, 2007.
9. RAPIDO, 2008. Deliverable 3: Sectors where innovation enhances rural employment. Prepared by Livia Madureira, June, 2008.
10. RAPIDO, 2009. Policy Brief N° 2 – February 2009. Prepared by Ecologic - Institute for International and European Environmental Policy.
11. Renting, H., Rossing, W.A.H., Groot, J.C.J, Van der Ploeg, J.D, Laurent, C., Perraud, D., Stobbelaar, D.J., Van Ittersum, M.K., 2009. Exploring multifunctional agriculture. A review of conceptual approaches and prospects for an integrative transitional framework. *Journal of Environmental Management* (2009), doi: 10.1016/j.jenvman.2008.11.014.
12. SERA - Study of Employment in Rural Areas, 2006. Consultancy Report. European Commission. Brussels, DG Agriculture and Rural Development.
13. Van der Ploeg, J.D., Roep, D., 2003. Multifunctionality and rural development: the actual situation in Europe, in *Multifunctional Agriculture: A New Paradigm for European Agriculture and Rural Development*, (Eds.) Van Huylbroeck, G. and Van Durand, G., Aldershot, Ashgate, pp. 37-54.
14. Van Huylbroeck, G., Vandermeulen, V., Mettepenningen, E. and Verspecht, A., 2007. Multifunctionality of Agriculture: A Review of Definitions, Evidence and Instruments. URL: <http://landscaperesearch.livingreviews.org/Articles/lrlr-2007-3> (Accessed on 27 April 2009).