The multifunctionality of agriculture and risk management as seen by Hungarian farmers involved in diversified farming

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Abstract

Studying the multifunctional nature of agriculture requires a multi-level, multi-dimensional and multi-actor approach. In any given country analysis starts at the national economy level then descends to the farm and farm household level. In our study we analysed the life histories of nineteen non-representatively selected Hungarian family farms. In doing so, we determined that, to understand new initiatives undertaken by farmers, it was better to examine their motivation than merely examining the initiatives themselves. At the farm household level, multifunctionality is strongly related to achieving livelihood strategies and constitutes a possible risk management solution. The analysis has revealed farmers' motivations for undertaking multifunctional agriculture, the interrelationship between multifunctionality and risk management, and the interpretation of multifunctional agriculture by various groups of farmers regarding their own farm activities.

Keywords

Multifunctional agriculture, rural economy, risk management, farmers' motivation, life history

The multifunctionality of agriculture and the rural economy

In a general sense, the rural economy's[3] multifunctionality can be understood as a response to marginalization and the economic impotence of the rural areas and the agricultural sector. Despite numerous attempts at the international level, there is still no uniformly accepted definition for multifunctional agriculture. To our knowledge, the term *multifunctionality*, as a guiding principle, was officially conceptualised at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. At the conference plenary it was stated that (De Vries, 2000): "Multifunctional aspect of agriculture particularly regards food security and sustainable development"

Since the second half of the 1990s, the European Union (EU), the Food and Agriculture Organization of the United Nations (FAO), and the Organization for Economic Co-operation and Development (OECD) have also been actively dealing with multifunctionality. At the FAO Conference between 12-17 September 1999, it was declared that *"agriculture has multiple objectives and functions within the framework of sustainable agriculture and rural development which through appropriate policies can all foster sustainable agriculture and rural development and which should be targeted, cost-effective, transparent and do not distort production and trade"* (Mulvany, 1999).

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[3] Fehér (2005) defines rural economy as regional economy in rural areas, with emphasis mainly on land use. Rural economy includes economic actors carrying out economic activities (production, services, management) in the given area and consumers of outputs of these activities; the resources available in the area and used for the above activities; the enterprises, companies, households, civil and official organisations and institutions providing the organisational framework of the economy; the network of relationships between actors and organisations within and outside the area; and the structures (related to sectors, land use, resources, co-operation, coordination, etc.) representing the general framework for economic activities. An important aspect of rural economy is that they are based mainly on resources that originate from the area itself and to a lesser extent on external resources.

According to a 2001 OECD study, "*multifunctionality refers to an economic activity may have multiple outputs and, by virtue of this, may contribute to several societal objectives at once."* Consistent with the OECD definition, multifunctionality is an activity-oriented concept referring to multiple results and to production process characteristics. The OECD "working definition" encompasses multifunctionality's core elements, which have been recognised by Member Countries. According to the OECD (2001) multifunctionality's key elements are:

- the existence of multiple commodity and non-commodity outputs that are joint agricultural products; and the
- fact that some of the non-commodity outputs exhibit characteristics of *externalities* or *public goods*, so that markets for these goods do not exist or function poorly.

There are several elements that still impede a uniformly accepted definition for multifunctionality in agriculture. Some of these are:

- political interests (for example reforming agricultural payments and its approval by all countries and country-groups). Here, we are firstly referring to the World Trade Organization (WTO) negotiations, which, in our opinion, have been pivotal toward the concept of multifunctional agriculture;
- lack of scientific systematization and evaluation of the externalities and non-commodity public goods produced by agriculture;
- externalities and non-commodity public goods are valued differently in the various countries and
- the different approach to multifunctionality spanning scientific disciplines.

There has been a noteworthy attempt at systematizing notions attached to multifunctionality which span different scientific disciplines and exist in different countries. We are referring to the elaboration of the Concept Oriented Research Clusters (CORCs) by the international MultiAgri Project (Caron, 2008).

With a view toward WTO negotiations, the EU has embraced agriculture multifunctionality as a long-term objective. Already in its 1999 CAP reform, the EU had already begun to pay heed to multifunctionality-related ideas when the European Model of Agriculture concept was officially approved at the Berlin European Council (24-25 March 1999). According to the European Commission's October 1999 publication *"Apart from its production function, agriculture encompasses other functions such as the preservation, the management and enhancement of the rural landscape, the protection of the environment, including against natural hazards, and a contribution to the viability of the rural areas. Agriculture must also be able to respond to consumer concerns for example those regarding food quality and safety. These functions are not simply externalities of the agricultural production function, i.e. undirected side-effects, not embedded into an institutional and political context"* (European Commission, 1999).

In the scientific literature multifunctional agriculture emerges as a kind of agricultural policy paradigm (Josling, 2002; Mészáros, 2006).

Agriculture has an important role in balanced land development, which can be fulfilled through maintaining rural areas' viability and on- and off-farm economic diversification. A prosperous agricultural sector is indispensable to sustaining the rural economy and a rural society in which farmers can provide diverse products and services going beyond their basic agricultural activities, including the production of high-quality food products that meet consumer demand, and safeguarding the environment and the cultural heritage.

Multifunctionality as an activity-oriented concept and, in a narrow sense, shares several common features with farm diversification. Both are strongly connected to agriculture therefore they refer to on-farm activities; furthermore they both aim to enhance rural employment and improve farmers' livelihood. Moreover, while farm diversification refers to farming activities differing from the traditional, multifunctionality also embraces traditional agriculture. The multifunctional model of agriculture's political nature which spans both the international and regional level, combined with its environmental and public service commitment, further differentiates the two concepts. Multifunctionality can therefore be considered a wider and more general concept.

In the Hungarian context, Szabó and Fehér (2004), Fehér (2005, 2006) and Petrics (2008) studied agricultural multifunctionality in detail. It is pertinent to stress that the research has been conducted related to Hungarian agriculture's agri-environmental issues (Katona-Kovács, 2007) and energy production functions (Popp, 2006).

Multifunctionality at the farm level

Due to the strong relationship between rural development and the European Model of Agriculture, it is practical to follow a multi-level, multi-dimensional and multi-actor approach when agricultural multifunctionality constitutes the subject of study. (Van der Ploeg and Long, 2002; Van der Ploeg and Roep, 2003; Van der Ploeg, 2006). Regarding the different levels of analysis, the following classification has been used in related scientific works:

- global interrelations between agriculture and society,
- the agricultural sector (as part of the national economy),
- the rural economy and its actors (including farms and farm households),
- policies and institutions, and
- the farm (farm enterprise and farm household).

As for the focus of our study, analysis has been carried out at the farm (enterprise and farm household) levels. Figure 1 illustrates the farm level approach to multifunctionality.

At farm level rural development emerges as a redefinition of identities, strategies, practices, interrelations and networks (Van der Ploeg and Long, 2002:11). At farm level, the concept of multifunctionality contrasts the structuring principles of conventional farms with those of multifunctional farms (Van der Ploeg and Long, 2002; Van der Ploeg and Roep, 2003). It describes multifunctionality based on the relationship between the farm and the three external contexts they relate with. The first context is the agro-food supply chain that is the farm enterprise's production side. The second is the rural economy in which the farm is situated and it contains the ways the farm interacts within the rural context. The third entails the different resources at the disposal of the farm of which the utilisation allows the farm household to develop various livelihood strategies.

On the agro-food side the conventional farm tends to specialise and this includes reducing the number of activities it is involved in. Production is characterised by scale economy. Regarding the rural side, the conventional farm has limited relations with the rest of the rural context: acting nearly exclusively at the land market level (Belletti, Brunori et al., 2003). On the resources side, a conventional farm uses mainly external resources and disregards internal resources. Conventional farms' network resources are essentially limited to market relations and are not seriously embedded in the local, economic, social, and cultural context.

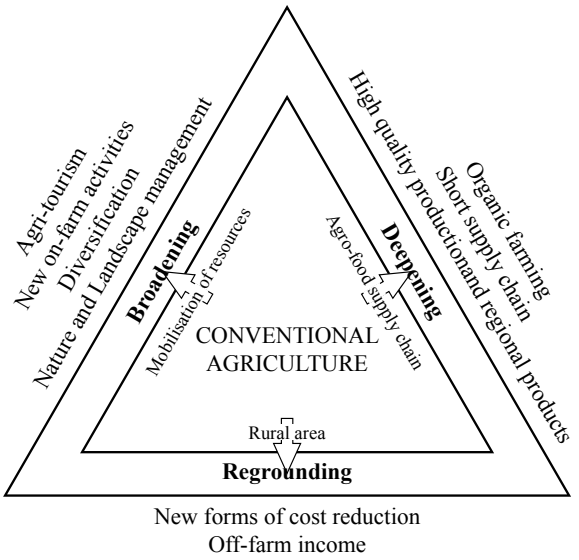
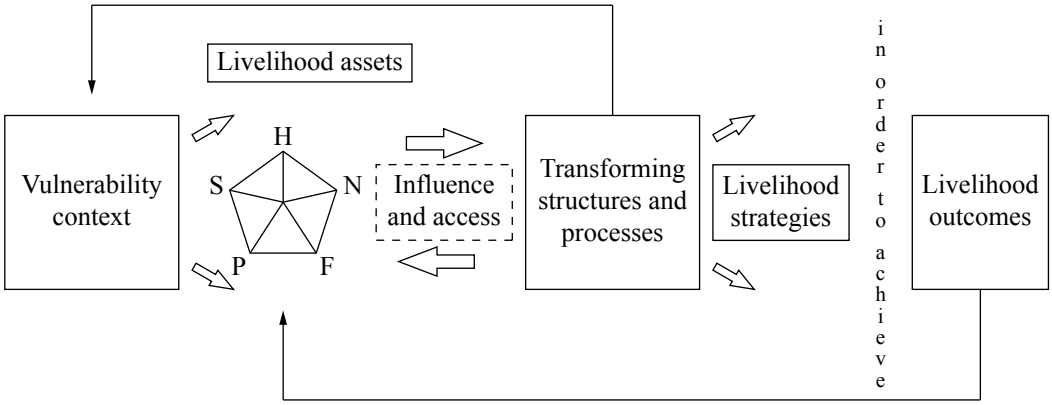


Figure 1: Farm level approach to rural development and multifunctionality
Source : Van der Ploeg and Roep, 2003

On the contrary, the multifunctional farm enterprise leaps over the conventional farm boundaries, deepening and broadening its activities (diversification occurs both in agricultural and in non-agricultural terms) and interrelations. The latter means the households' involvement in different networks. It is essential for the multifunctional farm to broaden its activities network involvement through which it can enlarge its knowledge and information base and create a basis for cooperation. Broadening also implies a more intensive use of the available natural, social and cultural capital that the specific area offers to its farm enterprises. This requires that families follow a sustainable livelihood strategy that also includes the use of household labour or the integration of on-farm labour with off-farm one. Regarding the production base, the multifunctional farm enterprise opts for internal inputs (its own savings, grassland manure) which contribute to the savings and environmental safeguarding.

According to the Department for International Development of London (DFID), a sustainable livelihood strategy is as in Figure 2.

The concept of livelihood has been defined in various ways. However, each definition emphasises meeting basic needs. The World Commission on Environment and Development (WCED) defined sustainable household livelihood as adequate reserves and supplies of food and cash to meet basic needs (Niehof and Price, 2001). Livelihood strategies are pursued by employing a range of available livelihood resources (human, natural, financial, physical and social) in order to undertake different activities. Activities connected to the realisation of a livelihood strategy are, on the one hand, influenced by the actors' values and priorities; on the other hand, by the wider socio-economic context in which the livelihood strategy operates. This wider context includes trends (economic, demographic, etc.), shocks (natural, economic, etc.) and seasonal phenomena (prices, production, health, employment). In the wider context, encouraging or hindering households' activities also represents a risk for achieving strategies and hence for the household's livelihood. The extent to which households are vulnerable depends on their risk management capacity, adaptation to challenges, and the success of adaptation strategies.



Key: H = Human Capital; N = Natural Capital; F = Financial Capital; S = Social Capital; P = Physical Capital

Figure 2: The Sustainable Livelihoods Framework
Source: DFID Sustainable Livelihoods Guidelines 1. (1999)

Building on the concept of livelihood strategies and adapting Kostov and Lingard's work on rural development and risk management, Petrics (2008) considered risk management behaviour as one of the most decisive elements of farm level multifunctionality.

Risk management and multifunctionality

Kostov and Lingard base their risk management and rural development theory on research which indicates that human behaviour in general and economic behaviour in particular is better thought of as a process for reducing uncertainty through risk defusing operators, meaning risk management where comparison is more widely used as a decision making tool rather than probability calculus (Kostov and Lingard, 2004).

Kostov and Lingard distinguish between uncertainty and risk. In order to explain the concept of risk management they apply the definition of risk and uncertainty elaborated by Knight (1992) who defined risk as "the case in which there exists an underlying (objective) probability distribution of possible outcomes, and uncertainty as the case where no such distribution exists" (Kostov and Lingard, 2003:464). Kostov and Lingard consider this distinction significant and meaningful mainly because they contend that absolute uncertainty renders human action, particularly economic action, impossible. They claim that in order to act, we need a subjective perception of uncertainty, a vision of the world and an idea of its structure. Therefore, they define uncertainty as a environmental characteristic and risk as the subjective perception of this uncertainty.

Thus, an important determinant of risk management is awareness. Awareness can contribute to the transformation of uncertainty and to the avoidance of risk. Risk therefore can be avoided or mitigated only if risk itself is perceived, meaning the existing uncertainty becomes internalised and perceived as a subjective threat. Subjective perception of risk then leads to the subjective alteration of reality and this represents risk management. Risk management compels the actors to act economically. Thus, the concept of risk management is based on the actors' behaviour, their reaction to risk, rather than on the probability of risk occurring.

In adapting risk management to rural development, (Van der Ploeg and Renting, 2004:233) argue that rural development "diminishes, both symbolically and materially, the dependency on financial capital, agro-industry, the global commodity markets and big retailers, while regrounding agricultural production again on ecological, social and cultural capital".[4]

Petrics (2008), while analysing life stories[5] by using episodic-narrative interviews conducted with nineteen Hungarian farm households with significantly diversified farm enterprises, found that multifunctionality emerges as a possible risk management solution. She highlighted that farmers' behaviour and motivation better explained the introduction of new farm activities for risk reduction purposes (why they do something) rather than if one sought an explanation in the activities themselves (what they do). Figure 3 shows the county distribution for the analysed farm enterprises.

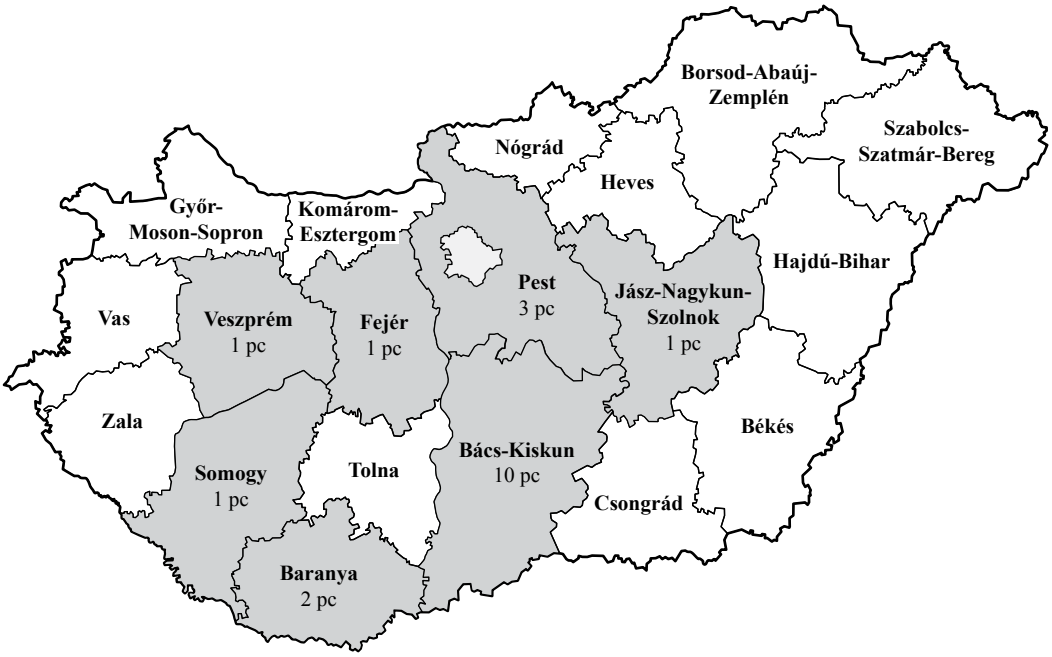


Figure 3: Distribution of analysed farm enterprises by county

The selection of farm households did not follow representative methodology. The final composition was determined by those farm types having demonstrated availability and willingness for collaboration. Consequently, conclusions drawn from the interviews and life histories refer only to the analysed population.

Besides the basic and comparable information regarding the farms and farmers, interviews also covered other aspects such as the circumstances governing the establishment of the farm and the farmers' motivation for starting farming. The "when", "why" and "how" questions shed light on the farm enterprise's diversity and on the introduction of new agricultural activities and functions Also taken into account are the directions and categories which are illustrated in Figure 1. Farm diversification encompassed ecological agriculture (organic and bio-dynamic farming), on-farm food processing, direct selling, provision of tourism and recreation services, biodiversity conservation, some form of extensive livestock breeding, or a combination of these.

[4] In the same article authors mentioned the limited autonomy of specialized farms had mainly been produced raw material for the agro-industrial chains. The real control of these farms got out of the producer's hand).

[5] The use of life stories in classifying Hungarian farmers was carried out also by Kovács (2008).

With the introduction of new farm activities and with the achievement of new agricultural functions, farmers intended to respond to the following challenges:

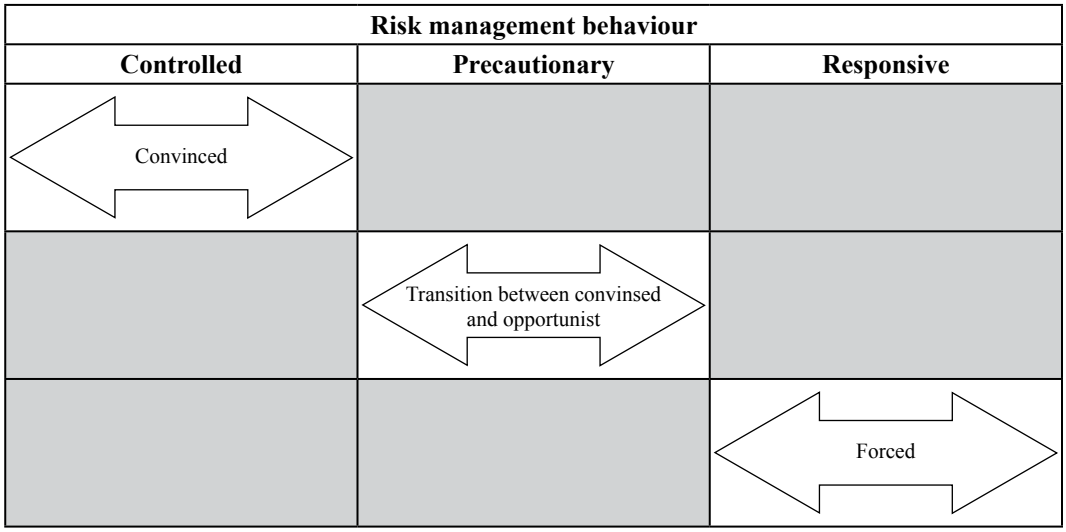
- the instability of wholesale prices for traditional agricultural commodities,
- the increasing monopolistic nature of the processing industry,
- growing production costs due to climate change and food safety and environmental requirements,
- unfavourable production and market conditions for agriculture.

Using information gleaned from interviews and applying Kostov and Lingard's work on risk management and rural development, the farmers can be characterised according to the following criteria:

- relation to tradition,
- awareness of the objective reality (reality that includes risks),
- values,
- degree of control and autonomy ,
- readiness for dialogue and dynamics,
- readiness to change
- mental account
- risk threshold.

The above traits allow one to divide farmers into categories both in terms of their risk management behaviour and approach to multifunctionality:

The Figure 4 header illustrates risk management behaviour categories, and the inner part of the arrows indicate categories for farmers' approach to multifunctionality. Figure 4 also shows the relationship between risk management behaviour and the approach to multifunctionality.



*We argue that purely opportunist group can also be formed.

Figure 4: Categories of farm households in terms of risk management behaviour and approach to multifunctionality

Member's position within the above categories can be summarised as follows:

Farmers committed to multifunctionality exercising control over risks (six farmers): They break with "tradition". This is also the reason why, since the outset, they they have been aware of their objective reality. Since they began farming, they have shown a strong measure of control over their circumstances. They strive for the utmost autonomy. Their version of events is influenced by personal values. They enjoy what they do, and act from personal conviction. They have strong values, and are passionate about their farming, and about the variety of activities they are involved in (MFA). MFA reinforces their existing values and beliefs. Since the outset, they have been involved in an ongoing and dynamic dialogue. Their risk threshold is the lowest. They are the most flexible of farmers.

Farmers *partially committed to multifunctionality and partially opportunistic with a prudent approach towards risk* (six farmers of which two can be viewed as totally opportunistic): They predict and avoid drastic problems. They are involved in MFA because for them it is a profitable thing to do; they are not value-driven. Tradition plays an important role in their strategies. They are less flexible than committed farmers but more than those who are obliged to act. This limited level of flexibility allows them to introduce changes in their livelihood strategy when the appropriate moment comes but not before. Their risk threshold is higher than that of the committed farmers, but they are also aware of the objective reality. At a certain point they perceive potential risks and become cognisant of them. Up until this point they display lack of control. Their autonomy increases after they have gone beyond the risk threshold, where they happen to establish dialogue and dynamics.

Farmers obliged to respond to risk (seven farmers): They are compelled to respond to ongoing events. They strive to alleviate the consequences of what is happening, and of what has already happened. They are not sure they are doing the right thing, but can't think of anything better. Their strategies and version of events are completely in sync with tradition. Thus, they are unaware of objective reality and its inherent risks. They display a complete lack of control and display dependence. Their risk threshold is the highest. In fact, they perceive risk only after it has hammered them on the head. Perception of risk is completely due to external reasons (shock, crisis), not because they recognise potential opportunities. Dialogue and dynamics arrive after the fact. They make choices because they have to, not because they want to. They exercised no control over potential risks, and they did not perceive potential risk until it hammered them on the head.

In the following paragraphs, we describe the farmers' motivation towards multifunctionality and how they interpret multifunctional agriculture regarding their own farm.

Farm level multifunctionality – through the eyes of farmers

Farmers' motivation toward multifunctionality and their interpretation are sharply defined by the categories which they fall in.

When analysing motivations toward multifunctionality among committed *farmers exercising control over risks,* it is important to underline their social- and family background, their childhood experiences and memories, and their personal desire to live a healthy life-style. These farmers' risk management approach is characterised by a state of control and they are as self-reliant as possible. Therefore, they have diversified into organic farming, on-farm food processing, and direct selling. They posses important moral principles and values and they are cognisant of objective reality, which includes risks.

Farmers who are partially committed and partially opportunistic with a prudent approach toward risks also exhibited a strong motivation to protect the environment and practise a healthy diet. These farmers have diversified into ecological farming; however their decision was driven not only by their personal ambitions but also by external factors, such as inherent perceived advantages They learnt about the opportunity from organic farming associations. Thus, personal conviction was not their motivating factor.

For farmers obliged to react to risk, economic hardships constituted the most important driving force toward multifunctionality and, in the end, provided their real motivation. Their reasons for farming were divided between family tradition and the personal desire to live in a rural area and cultivate land. There was, however, no discernible link between their social origin and personal motivation for farming and opting for multifunctionality. Prior to diversification, members of this group sold their products exclusively to wholesalers, and were not involved in on-farm food processing. Fluctuation of wholesale prices thus directly drove them towards multifunctionality.

At farm level, analysis of the respondents' answers as to how they understand and interpret multifunctionality has allowed a more detailed categorisation of agricultural functions than the widely accepted division into social, economic, and environmental functions. Functions, for example ethical, cultural, personal and household are stressed. Annex 1 summarises the functions referring to the different categories for farmers.

Conclusions

Multifunctional agriculture can be interpreted at different levels (national economy, regional economy, farm, meaning farm enterprise and farm household) levels. Our analyses have revealed that at the farm enterprise and farm household level there is further differentiation regarding the interpretation of multifunctionality. These particularities and differences should not be overlooked while formulating policy which favours the European Agricultural Model.

At the farm enterprise/household level multifunctionality entails one possible risk management tool. Farmers are not motivated exclusively by economic factors. Moreover, in the analysed population, there were farmers committed to multifunctionality and exercising control over risks. And their decision derived from motivations other than obvious short-term economic gains, allowing them to achieve a higher level of and more effective risk management. Short-term obvious economic benefits are the major driving force for those farmers obliged to respond to risks. One shouldn't expect that introducing incentives will automatically lead tofarm diversification and new agricultural functions.

A regional approach toward the study of multifunctional agriculture which encompasses cooperation among different scientific disciplines and their representatives demands a knowledge of farmers' behaviour and motivations.

Troubled disadvantaged rural areas are characterised by a high number of farmers in an emergency situation (farmers obliged to respond to risk). One can thus presume that their motivation for change will be determined primarily by obvious short-term economic gain. However, given that they believe in tradition, their willingness to take risks is minimal so one shouldn't expect subsidies to radically alter their short-term farming strategies.

Annex 1

Interpretation of multifunctionality at farm level by respondents' categories

<table>
<tr><th rowspan="2">Type of farmer</th><th colspan="6">Interpretation of multifunctionality at farm level</th></tr>
<tr><th>Environmental function</th><th>Economic function</th><th>Social function</th><th>Cultural function</th><th>Ethical function</th><th>Personal and household function</th></tr>
<tr><td rowspan="6">Convinced</td><td>Preservation of biological diversity</td><td>Farm is diversified toward new activities (processing, services, trading) that help rendering the farm less defenceless</td><td>Supply of societal services</td><td>Conservation and protection of the old peasant traditions and customs</td><td rowspan="6">Providing safe and healthy food and environment</td><td>Contribution to the conservation and improvement of the social cohesion of the family</td></tr>
<tr><td>Landscape conservation</td><td>Improving the employment</td><td colspan="2">Offering experience to visitors and at the same time conserving local cultural heritage</td><td>Enhancing the interdependence of the farm and the farmer family</td></tr>
<tr><td>Contribution to creating and maintaining a healthy environment</td><td></td><td>Contribution to supply of healthy and safe food</td><td>Conservation of the local typical gastronomic heritage</td><td>Contribution to rendering households less vulnerable on food and energy supply</td></tr>
<tr><td>Soil conservation</td><td>Improvement of population retaining in the rural areas</td><td>Contribution to strengthening women's role and as a result keeping youngsters in the rural areas</td><td></td><td></td></tr>
<tr><td></td><td></td><td>Contribution to the conservation and improvement of the social cohesion in rural areas</td><td></td><td></td></tr>
</table>

Type of farmer	Interpretation of multifunctionality at farm level					
	Environmental function	**Economic function**	**Social function**	**Cultural function**	**Ethical function**	**Personal and household function**
Partly convinced, partly opportunist	Environment protection	Standing on several lags	Contribution to supply of healthy and safe food		Provision of healthy food and environment	Possibility to realise own ideas
		Improvement of population retaining in the rural areas				
		Production of public goods subject to compensation				
		Creation of added value.				
Forced		Standing on several legs			Provision of safe and healthy food and environment	
		Safety for business				
		Disadvantage in the sense that it renders difficult to concentrate investments				
		Better use of farm and farm household endowments				
		Higher profit				

Source: Petrics, 2008.

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