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## **Public goods as a source of rural development**

### **Summary**

The purpose of this paper is to examine the concept of public goods as it applies to agriculture in the European Union and to find out if there is a case for policy measures to encourage the provision of public goods by agriculture. In particular the focus will be paid on which RDP measures are being used to deliver environmental and social public goods associated with agriculture.

Key words: public goods, agriculture, Common Agricultural Policy

### **Introduction**

Since its establishment in 1956 under the Common Agricultural Policy (CAP) the European agriculture has received a sustained level of public support. Other sectors of Common European Market are not subject to public intervention on this scale, which raises the question why it continues to be required given the sector's increasing competitiveness and market orientation. In certain respects, agriculture is like other economic sectors, with a large number of producers participating in a range of markets for food, fiber, and raw materials for energy and industrial products. In other respects, it has specific characteristics which mean that the potential for the provision of non market goods in the field of sustainable development is particularly prevalent in this sector. It is widely argued that securing the provision of goods that are important from public perspective provides a valid reason for public intervention in a market economy as it secures not only economic but also social growth as well as ensures proper stewardship of environment.

With regard to agricultures itself as well as to rural areas they development should be considered as an important part of the European Union's policy. More than 56% population of 27 member state live on rural areas, which compose 91% of their territory. [Guyomard, 2008] Agriculture and forestry still have essential meaning in field of using land and management of natural resources on this areas in the EU, also determine base for economy differentiation on this field.

Common Agricultural Policy was historically first from among common social economic policies of the European Community. The initial objectives of CAP were to increase production and living standards in agriculture community, stabilize markets and supply, and assure reasonable price.

The CAP has been changing through decades to adjust to the challenges of new conditions of its functioning. First reform of Mansholt took place in 1968. The most important was MacSharry reforms, that created limit to rising production. It reduced levels of support by 29% for cereals and 15% for beef, created set-aside payments to withdraw land from production, payments to limit stocking levels, and introduced measures to encourage retirement and forestation.

Next important reform was Agenda 2000, which main objectives were to strengthen Community policies and to give the European Union a new financial framework for the period 2000-06 with a view to enlargement. It was launched in 1999 in the form of twenty legislative texts relating to the priority areas. It was agreed that there will be a continuation of the agricultural reform along the lines of the changes made in 1988 and 1992, with a view to stimulating European competitiveness, taking great account of environmental considerations, ensuring fair income for farmers, simplifying legislation and decentralizing the application of legislation. The EU decided to increase the effectiveness of the Structural Funds (including the European Social Fund) and the Cohesion Fund by greater thematic and geographic concentration of projects on specific objectives and geographical areas and thus improving management; as well as to strengthen the pre-accession strategy for applicant countries by setting up two financial mechanisms: a pre-accession structural instrument

(ISPA) to support improved transport and environmental protection infrastructures and a pre-accession agricultural instrument (SAPARD) to facilitate the long-term adjustment of agriculture and the rural areas of the applicant countries. ISPA and SAPARD complement the actions of the PHARE programme.

Due to reform from the year 2003 (Luxemburg reform) the new "single farm payments" are subject to 'cross-compliance' conditions relating to environmental, food safety and animal welfare standards. Many of these were already either good practice recommendations or separate legal requirements regulating farm activities. The aim is to make more money available for environmental quality or animal welfare programs. The reform from Luxemburg also oblige EU to perform Health-Check in 2007-2008.

Thus it needs to be noted that CAP under his past reforms evaluated from policy supporting production of marketable goods to policy supporting development and provision of both marketable and non-marketable, namely public, goods. CAP before 1992 was focus on increasing production by subsidies it. This approach lead to rise intensive production and cause a lot of damage to the environment. Nowadays people are demand higher quality food and understand importance of public goods like environmental protection, conservation of biodiversity, soil fertility and water quality, landscape preservation, food safety, animal and plant health, and rural development.

Nowadays it is known that CAP will need further changes to adjust new long- term challenges for the years 2014-2020. Important has been the publication, in November 2009, of an declaration by leading agricultural economists from all over Europe advocating "A Common Agricultural Policy for European Public Goods"[A Common Agricultural Policy for European Public Goods, 2009]. The declaration proposes to remove all blanket subsidies that stimulate production and support farm incomes. Instead, subsidies should be focused exclusively on the provision of public goods, notably to fight climate change, preserve biodiversity and manage water resources as well as ensure food security. The Health-Check show that CAP reform will include "decoupled" direct aid to farmers, shifting money from

direct aid to Rural Development, Cross Compliance- Aid to farmers is linked to the respect of environmental, animal welfare and food quality standards.

Thus one of the new challenge of CAP will be delivery of public goods connected with agriculture. The key question is how much subsidies is used to this task. Which dealings work on advantage of public goods and how it is implemented in particular member states. Nowadays perception of functioning agriculture and rural areas lead to separate new models of their development. Agriculture and rural areas gain new function, that impose provision of public goods to all member of society [Maciejczak, 2009].

### **Objectives and methodology**

The purpose of this paper is to examine the concept of public goods as it applies to agriculture in Europe and to assess how far there is a case for policy measures to encourage the provision of public goods by agriculture. In particular the focus will be paid on which RDP measures are being used to deliver environmental and social public goods associated with agriculture. The evidence draws on a wide range of secondary sources, including the literature, evaluation studies, an in-depth analysis of the policy framework, along with detailed information collected from Rural development Programmes being under implementation Europe's wide under the financial perspective 2007-2013.

### **Public goods as an example of economic externality**

External effect (externality) is an effect of any activity that causes third parties not directly involved in this activity. The theory of External Costs and Benefits is an economic theory that examines cases where some of the costs or benefits of activities "spill over" onto third parties. When the activity causes a cost to a third party which is not directly involved it is called a negative externality but if the third party benefits from such activity then we can call it a positive externality. This theory was developed by the British economist A.C. Pigou at the beginning of the past century as a part of his Welfare Economics. [Pigou, 1934 ]

Producers often ignore the external costs (negative externalities) when taking the decision about volume of the production and their prices would reflect only the producers' own

costs. As the result goods that generate high external costs ( i.g. environmental pollution, increase of unemployment rate, cultural heritage decline) are often underpriced and overproduced. However it is impossible to prohibit production of such goods completely because all human activities generate certain level of pollution - that creates a contradiction between people's desire to have cleaner environment on one hand and the higher level of consumption on the other. Pigou proposed to tax activities that generate external costs in order to limit them. Emission tax can serve as a good example of Pigou's theory application. [Callahan, 2001]

An External Benefit (Positive Externality) is such benefit that "spills over" onto a third party which is not directly involved in the activity or decision making process. A Public Good can serve as the specific example of the Positive Externality or an External Benefit. It is a good, which is non-rival and non-excludable, it means that consumption of this good cannot be excluded or limited for any one, also consumption of such good by one person does not reduce ability for consumption for others.

In order to define good as a public good following two criteria are traditionally used:

- Consumption rivalry which means that consumption of the good by one person diminishes it's quantity for other consumers
- Excludability that means that good can be divided, portioned, thus it can be consumed individually.

In practice great number of goods can be called indirect public goods, because they would match just one criteria or match both criteria at a different level [Borek at all, 2007].

Given above definition of public goods is not the only one currently used. For example American economist Samuelson was considering as public goods only goods that are non-rivalry. More often economists consider goods that match any one of two mentioned above criteria as public goods (so called club goods, which can be excludable but non-rival or common-use goods, which cannot be excludable but they are rivalry goods).

The goods that are non-rivalry and not excludable are called pure public goods, while goods that are excludable and rivalry called private goods [Baum, Leszczynski, 2007]. Classification of goods depending on their characteristics is shown in Table 1.

**Table 1. Classification of goods and their characteristics.**

<b>EXCLUDABILITY</b>			
(possibility to exclude a person from consumption of the good)			
		<b>YES</b>	<b>NO</b>
<b>R E I S I V A L R Y</b>	<b>Y</b>	<p style="text-align: center;"><u>Pure private goods</u></p> <ol style="list-style-type: none"> <li>1. Low cost of exclusion</li> <li>2. Production by private enterprises</li> <li>3. Distribution on the market</li> <li>4. Financing by the revenue from sales</li> </ol> <p><i>Examples: food, entertainment, cars, tourism</i></p>	<p style="text-align: center;"><u>Common goods (mixed goods)</u></p> <ol style="list-style-type: none"> <li>1. Limited collective consumption</li> <li>2. Production via sector</li> <li>3. Distribution on the market or via public institutions</li> <li>4. Financing from revenue, payments or taxes</li> </ol> <p><i>Examples: public parks, swimming pools, cinemas</i></p>
	<b>N O</b>	<p style="text-align: center;"><u>Club goods (Buchanan theory)</u></p> <ol style="list-style-type: none"> <li>1. Private goods with external effects</li> <li>2. Production by private sector</li> <li>3. Market distribution with help of subsidies or taxes</li> <li>4. Financing by the revenue from sales</li> </ol> <p><i>Examples: sport clubs, private schools, cable TV</i></p>	<p style="text-align: center;"><u>Pure public goods</u></p> <ol style="list-style-type: none"> <li>1. High cost of exclusion</li> <li>2. Supply by state or private sector via state contracts</li> <li>3. Distribution by budget</li> <li>4. Financing form taxes</li> </ol> <p><i>Examples: public security, courts, education</i></p>

Source: Kamińska, 2011

In that context environment friendly agricultural activity that saves rural eco-systems, biodiversity, cultural heritage or rural landscape should be considered as typical externality. It is important to remember that we deal with external effects when certain part of costs or benefits generated by one person's activity is transferred to other persons without relevant compensation. Normally it would be the side-effect of some enterprise which positive or negative consequences are experienced by wider circle of recipients. Therefore environment friendly agricultural activity can be considered as Positive Externality or External Benefit. [Baum, Leszczynski, 2007]

Large number of highly valued by society public goods is associated with farming activities. The most important of them are environmental – amongst them are biodiversity, quality and availability of water, quality of soils, air quality, prevention of floods and forest fires, climate stability. Social public goods are of high value for public too: food security, cultural heritage, rural development and animal welfare.

Taking into consideration the nature of public goods, free market cannot supply them in desired quantities. Because of non-rivalry and non-excludability consumers are not willing to pay for them. The farmers are also have little incentive to provide public goods as they are not paid for them. This situation can lead to the undersupply of public goods and government intervention is needed to achieve the right level of such goods provision according to the public demand. [Cooper, at all 2009]

There is number of instruments that can encourage the provision of public goods by farmers.

First of all, public goods can be provided as a by-products of the conventional farming when the farmer voluntary takes the decision to use less invasive farming technologies or for example to provide better welfare for the farm animals. This choices can be also supported by the governmental subsidies or policies, such as Common Agricultural Policy of the EU.

Another way in which public goods provision can be increased is by defining certain farming practises and products as ecologically safe or environment friendly, that allows to transfer some of the external costs to the consumer who pays higher price for such farm produce.

The best examples of this are: organic or biological food, conservation agriculture and integrated farm management systems. Apart for completely organic or biological foods there are certain commercial food labels that explore just some ecological aspects during it production packaging or distribution.

Public goods can also be provided in rural areas and on the farms in particular in form of the recreational services such as eco- tourism, hunting, fishing or traditional field sports [Buckwell at all, 2009]

### **Public goods in the EU agriculture**

The public good supplied by agriculture can be divided into two groups. First one is the environmental public goods which are connected with environment. The CAP is distinguished 9 environmental public goods which are Agricultural landscapes, Farmland biodiversity, Water quality, Water availability, Soil functionality, Climate stability - carbon storage, Climate stability - greenhouse gas emissions, Air quality, Resilience to flooding and fire. RDP is focus mainly on 5 environmental public goods, which are carbon storage, greenhouse gas emissions, agricultural landscapes, farmland biodiversity and water quality. Another group is social public goods. They consist of Farm Animal Welfare, Rural Vitality and Food Security.

All types of farming can provide public goods if the land is managed appropriately. However there are significant differences in the type and amount of public goods that can be provided by different types of farms and farming systems in Europe. Extensively managed livestock farms, mixed systems with both livestock and crops, permanent crops with more traditional management and organic farms tend to deliver the greatest range of public goods. This is because they tend to be managed using lower levels of fertilizer and pesticides or with lower livestock densities, contain a high proportion of semi-natural vegetation and landscape features, and the farmed area is often intermixed with a diversity of different types of land cover such as scrub or woodland.

However, more productive types of farming can also provide public goods, for example through the use of new technologies to improve soil and water management and to reduce greenhouse gas emissions or through the introduction of farming practices that support biodiversity in more intensive agricultural landscapes. A whole range of aspects of farm management have an impact on the delivery of environmental public goods, including:

- the pattern of cropping and stocking, intensity of land management and specific farming practices;
- the structural features of a farm, including field size and farm scale;
- the management of water courses, natural features, groundwater resources and forests, not only on the farm itself but also as part of the wider landscape.

In terms of day-to-day farm management activities, there is a whole range of farming practices that can help provide public goods. These can be divided into two broad types. Firstly there are those practices which are inherently better for the environment overall, for example practices that use minimal tillage, low levels of inputs and retain seminatural vegetation, as well as the use of technologies that improve the efficient use of resources such as precision farming techniques or drip irrigation. Secondly there are those practices that address matters of a specific environmental interest, for example creating buffer strips of natural vegetation around ploughed fields, leaving small areas unsown in arable fields to encourage nesting or leaving areas of semi-natural habitats unfarmed to provide habitat for wildlife to flourish. The range of public goods provided by individual farming practices is presented in Table 2.

**Table 2. The range of public goods provided by individual farming practices.**

	Agricultural landscapes	Farmland biodiversity	Water quality	Water availability	Soil functionality	Climate stability - carbon storage	Climate stability - reduced GHG emissions	Air quality	Resilience to flooding	Resilience to fire
Growing crop varieties with lower nutrient/water requirements	X	X	X	X	X	X			X	
The use of green manure / cover crops		X	X		X	X	X		X	
Animals grazed outside	X	X	X		X		X	X		X
Minimise herbicides applied to crops	X	X	X	X	X			X		
Retention of high proportion of grass on farm	X	X	X		X	X			X	
Hand weeding of crops	X	X	X		X		X	X		
Land managed as small fields/plots	X	X	X		X				X	
Minimise pesticides applied to crops		X	X	X	X			X		
Mix arable and livestock within rotation	X	X	X		X					X
Minimal cultivation for cereals (no-till)			X	X	X	X	X			
Soil drainage optimised (non-organic soils)			X		X		X		X	
Legumes used as part of crop rotation		X	X		X		X			
Biological control of invertebrate pests		X	X		X			X		
Nutrient management planning		X	X				X			
Use of local breeds	X	X			X					
Small machinery used		X			X					

Genetic selection for high productivity		X					X			
High milking frequency		X					X			
Growing locally adapted crop varieties	X	X								
Biogas production from animal waste			X				X			
Mixed grazing	X	X								
Availability of nectar sources for bees		X								
Use of multi-purpose livestock							X			

source: own investigation based on Cooper at all, 2009

Rural development policy, as part of the CAP, offers a range of measures to support the types of farming systems, management practices and other investments needed for the provision of public goods, both environmental and social, in a deliberate and targeted way. Many of these measures support both environmental public goods and social public goods (rural vitality) at the same time, either directly or indirectly. This is not surprising as vibrant rural communities, economically viable agricultural systems and sustainable environmental management of farmland are all inter-dependent. Member States and regions have the flexibility to choose which measures to use and how they should be targeted and implemented to reflect local needs, within a framework of strategic priorities set at the EU level. However, rural development policy does not operate in isolation. Using rural development measures to incentivize land management to provide public goods requires the continued presence of land managers throughout all parts of Europe. Direct payments to farmers under Pillar One of the CAP help to achieve this, given that these payments are critical for the economic viability of farms. In addition, the requirements for all land managers receiving these payments to keep their land in Good Agricultural and Environmental Condition (GAEC) helps ensure a basic level of environmental management

on farms forming a foundation on which more targeted incentives under rural development policy can build.

Rural development measures used to encourage the provision of public goods fall into three broad categories:

- area-based payments incentivizing land management practices that benefit soils, water quality, habitats and species as well as the maintenance of the landscape;
- capital investments that can be used, for example, to provide assistance with the costs of introducing environmentally sustainable technologies and infrastructure on farms as well as to support the creation of new business opportunities, services and other activities in rural areas more generally, such as maintaining and promoting the natural heritage, supporting farm diversification, or tourism activities;
- investments in advice and training for land managers, as well as capacity building for people in rural communities.

The most significant measures used for the provision of environmental public goods and rural vitality are listed in Table 3.

**Table 3. Rural Development Programme measures and the public goods they provide.**

TYPE OF PUBLIC GOODS	TYPE OF SUPPORT	RURAL DEVELOPMENT MEASURE
ENVIRONMENTAL	Area-based land management payments	<ul style="list-style-type: none"> <li>• Agri-Environment Measure</li> <li>• Natural Handicap Measures</li> <li>• Natura 2000 Measure</li> </ul>
	Capital investment in physical infrastructure	<ul style="list-style-type: none"> <li>• Non-Productive Investments</li> <li>• Farm Modernisation</li> <li>• Infrastructure Development</li> <li>• Semi-Subsistence Farming</li> <li>• Conservation and Upgrading of the Rural Heritage</li> <li>• Adding Value to Agricultural Products</li> <li>• Diversification</li> </ul>
	Advice, training and capacity building to improve human capital	<ul style="list-style-type: none"> <li>• Advice and Training Measures</li> </ul>
SOCIAL	Area-based land management payments	<ul style="list-style-type: none"> <li>• Natural Handicap Measures</li> <li>• Agri-Environment Measure</li> </ul>

	Capital investment in physical infrastructure	<ul style="list-style-type: none"> <li>• Infrastructure Development</li> <li>• Semi-Subsistence Farming</li> <li>• Farm Diversification</li> <li>• Encouragement of Tourism Activities</li> <li>• Basic Services for the Economy and Rural Population</li> <li>• Village Renewal</li> <li>• Leader Approach</li> </ul>
	Advice, training and capacity building to improve human capital	<ul style="list-style-type: none"> <li>• Training and Information</li> <li>• Leader Approach</li> </ul>

Source: Baldock et al., 2010

Due to RDP review, one can identify some common trends in the EU. They vary in different EU countries but some of them are common like (following TWG3 public goods and public intervention such as urbanization, invasive species, intensive agriculture, fragmented land structure, eutrophication, diffuse pollution, soil erosion, land abandonment, water demand, as well as difficulty accessing markets, rural unemployment or lack of rural services and infrastructure.

The public goods trends can be divided by goods that they are influencing. The main problem that agricultural landscapes and farmland biodiversity are facing are abandonment of agricultural land. In some cases problem is decline in management of land that harm and cause degradation of habitats. This problem is connected with intensification of agriculture production in lowlands near big cities. The most affected by abandonment of agricultural land are mountains and other marginal areas. Another problem in some countries especially coastal counties like Greece, Bulgaria is sprawl and development threats in coastal areas. In central European counties like Poland, Hungary the problem is development of monoculture and intensive farming. The factors that are trends for food security are cheap import from local small producers and abandonment of farmland.

## Conclusions

There are multiple influences on the economic development of rural regions in Europe. However, the potential for a region to build on its environmental, social and cultural capital assets to derive an economic benefit is widely documented in the literature. In certain regions of Europe, attractive agricultural landscapes, the presence of farmland biodiversity and historical features provide economic opportunities for a variety of economic activities including rural tourism and recreation, speciality products and foods, as well as providing an attractive location for the establishment of businesses. Economic benefits of this kind are not confined to the more vibrant rural areas. The provision of public goods - such as the maintenance of farmland features, terraces and stone walls - provide economic and employment benefits for the farmer or for local contractors, as well as encouraging the retention of traditional skills. In addition, the products of certain environmentally sustainable farming systems have the potential to be differentiated on the basis of their association with particular production methods or settings, and thereby to attract a premium price.

Many of these beneficial forms of management are under threat. Market forces and technological advances continue to drive the search for efficiency gains stimulated by a growth in demand for food, bioenergy and other industrial products, coupled with pressures from the built environment. These changes are often paralleled by an increase in the opportunity costs of action in favour of the environment which are likely to be higher in the most productive agricultural areas. This implies higher payments under voluntary measures in such areas where there are compelling ecological reasons for interventions such as habitat creation, the retention and management of landscape features, or the adoption of lower input production methods.

In addition, the economic viability of agricultural production systems, such as extensive grazing, as well as those in naturally disadvantaged areas is in decline. Reduced viability is associated with a loss of traditional practices, diminished levels of active management, fewer livestock and outright abandonment in some places. Often this leads to a deterioration in the landscapes and the habitats essential for the survival of particular

farmland species, and carries implications for soil and water quality as well to social and cultural systems. Support for the maintenance of these environmentally and socially beneficial farming systems will be a critical component of the policy setting if the undersupply of public goods is to be addressed in a satisfactory way.

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