



THEMATIC WORKING GROUP 3
PUBLIC GOODS AND PUBLIC INTERVENTION

Synthesis report (Final Version)

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Connecting Rural Europe

The Thematic Working Group 3

The EN RD has established Thematic Working Groups (TWGs) which carry out specific analysis on the basis of the current rural development programmes focusing on specific thematic priorities. Working on the basis of a specific mandate they provide in-depth analysis of the EU Rural Development policy implementation and contribute to the understanding and diffusion of 'know-how' and experiences and improvement of its effectiveness. As of February 2010, TWGs have been established on the following topics:

- TWG1: Targeting territorial specificities and needs in Rural Development Programmes
- TWG2: Agriculture and the wider rural economy
- TWG3: Public goods and public intervention
- TWG4: Delivery mechanisms of EU Rural Development Policy

The TWG3 aims at establishing a common understanding of the significance of the role of agriculture in the provision of public goods. Particular attention was to be given to understanding the delivery mechanisms needed for encouraging the provision of respective public goods and assessing the implications for future policy developments.

The analytical work of the group was carried out on the basis of a defined work plan articulated as follows.

Under Step 1 of the work plan (concluded in October 2009) a 'Conceptual framework on Public Goods' (available on the [ENRD web site](#)) and the Step 1 report providing an overview of the main results of the Rural Development Programmes (RDP) screening exercise were produced.

The purpose of the Step 1 report was to investigate how Member States and Regions intend to deliver a range of environmental and social public goods associated with agriculture through their 2007-2013 RDP.

Step 2 of the work plan included an analytical report that builds on the evidence documented in Step 1, and provides a more detailed analysis of:

- the potential contribution of individual rural development measures to the provision of specific public goods in different regions of the EU;
- the relationship between public goods and agriculture, and aspects of undersupply of public goods;
- the role of rural development measures in delivering environmental and social public goods;
- the most used measures under the RDPs for the delivery of public goods.

Step 3 (carried out from March to mid-June 2010) involved a more comprehensive analysis of the socio-economic benefits linked to the provision of environmental public goods as well as economic and social public goods such as "rural vitality". It was undertaken by means of the collection of relevant example/case studies. The results of this activity have been incorporated into this final report.

A detailed communication plan has been outlined to be implemented starting from autumn 2010. A series of products (including a [brochure](#) on "Public goods and public intervention in agriculture" and this synthesis paper) have been envisaged for a wider dissemination and discussion among EN RD stakeholders. Finally, a concluding seminar is taking place the 10th of December 2010. The scope of the seminar was to present the outcomes of the work of the TWG3 to a larger group of stakeholders, and to clarify the notion of Public Goods to a wider audience. It also demonstrated that the conceptual framework of public goods provides for common grounds in discussions about the CAP and Rural Development.

Table of Contents

The Thematic Working Group 3	ii
1 Introduction	1
2 What are the public goods associated with agriculture	1
3 The role of rural development policy in delivering public goods.....	4
3.1 Area-based payments: supporting land management practices that provide public goods ...	6
3.2 Capital investment in physical infrastructure in rural areas	8
3.3 Building capacity, advice, training.....	10
4 Socio-economic effects or rural development intervention for the provision of environmental public goods.....	11
5 Criteria for the successfully delivery of public goods.....	14

1 Introduction

The TWG3, 'Public goods and public intervention', aimed to explain the concept of public goods and their relevance to European policy in the fields of agriculture and rural development, to provide an overview of the range of public goods provided through different types of agriculture in the EU to consider the role and potential of Rural Development policy under Pillar 2 of the CAP to deliver public goods associated with agriculture. It seeks to provide a more detailed analysis than has been available previously of the potential contribution of RDPs as a whole, and individual rural development measures in particular, to the provision of a range of selected public goods in different regions of the European Union. Public goods associated with forestry are outside the scope of the study.

Based on a desk based review of all 88 RDPs and the measures that are implemented within them and a questionnaire survey conducted with officials in 14 Member States, the study highlights the importance of particular rural development measures in addressing a range of environmental and social challenges, identifies the way in which these measures are used in different parts of Europe, the socio-economic benefits that can be generated alongside environmental benefits and considers what factors contribute to the successful implementation of rural development measures on the ground.

2 What are the public goods associated with agriculture

Agriculture in Europe is not only responsible for the supply of food and raw materials but occupies about 41 per cent of the land area. Consequently it has a powerful influence on the state of the rural environment and the opportunities for its enjoyment. There is scarcely any true wilderness in Europe so the quality of the environment depends heavily on the ways in which the land is managed.

Agriculture and forestry are also important sources of employment and contribute to the character and social fabric of much of rural Europe. Agriculture in Europe, therefore, is essential for the provision of a whole range of public goods. Indeed, many aspects of the countryside that people value most, and which they expect rural areas to provide are public goods, for example farmland birds, wildflowers or beautiful landscapes. In addition to biodiversity and landscape, agriculture can also help to provide other environmental public goods that society value highly, such as high quality air, soil and water and a stable climate as well as improving the resilience of the land to natural disasters such as fire and flooding. Agriculture also plays an essential role in delivering other public goods, including food security and rural vitality, particularly the economic, social, and cultural contributions it brings to rural life and the wider rural economy.

The fact that agricultural land is used for a range of different purposes, including the production of private goods such as food, fibre and fuel as well as the provision of public goods, means that these different interests compete for productive resources such as land and labour. Whereas the market largely determines the allocation of these resources for private goods, with farmers responding to price signals, this is not the case for public goods.

This is due to the fact that markets cannot function properly in terms of balancing supply and demand for public goods. The characteristics of non-excludability (if the good is available to one person, others cannot be excluded from enjoying its benefits) and non-rivalry (if the good is consumed by one person it does not reduce the benefit available to others) mean that users of public goods have no incentive to pay for them, which can lead to their over-exploitation, and on the supply side, farmers have little incentive to provide public goods because they are not being paid to do so.

Therefore, in the absence of functioning markets to meet demand, public policy is needed instead to incentivise the necessary action. This requires either the setting of clear standards as a baseline for admissible action or, in many cases, committing public funds to incentivise supply by creating an economic incentive to farmers to manage their land and other resources in a way that provides public goods, particularly where a different form of management is required than would have been undertaken in response to the farmer's own economic interest.

In the past, many public goods were produced hand in hand with agricultural production. However, as a result of market developments and technological innovation, land use has shifted towards more intensive forms. This was accompanied, on the one hand, by impressive productivity gains on the most competitive land and, on the other, with the marginalisation or abandonment of land use in less competitive areas. As a result of both processes, we observe continued declines in many species and habitats, increasing water scarcity, significant problems with soil erosion and soil organic matter. Furthermore, structural change has caused the continued exodus of people from rural areas to towns and cities in many parts of Europe. Even despite some regional improvements, for example in relation to air quality and greenhouse gas emissions from agriculture, there is still a long way to go to meet our European targets for climate change and biodiversity. Reasons for this undersupply of public goods include the consequences of abandonment of farmland, when it is no longer economically viable; the intensification and concentration of land use, driven by market forces; and declining and aging rural populations as a result of rural unemployment and lack of rural services and infrastructure.

To achieve the desired level of public goods, therefore requires policy action. However, not all the relevant activities by farmers and land managers require using public money. In line with the Polluter Pays Principle, no compensation would be provided to land managers for complying with legislative requirements or binding other standards - they must absorb these costs themselves. Only where action is needed that goes beyond that required in the legislative baseline, are financial incentives needed to encourage land management practices and other investments that would otherwise not make economic sense to the farmer. Policies that offer incentives need a clear baseline for establishing where payment is required.

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. Some of the farming practices needed for the continued provision of public goods are found throughout Europe, others are more associated with particular regions. Many of these management practices provide several environmental public goods simultaneously. In addition, the range of beneficial farming practices will undoubtedly change over time as emerging technologies provide new possibilities for enhancing the environmental value of specific practices, for example, by improving energy efficiency.

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 fertiliser 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.

Table 1: The main public goods associated with agriculture

Farmland biodiversity: Historically, many wild plants and animals have coexisted alongside food production. However, as agriculture has intensified, today farmland biodiversity depends heavily on areas of low-intensity management, or on unfarmed features around the farm, such as uncultivated strips between crops, walls or hedges, farm tracks, ditches and ponds. These places provide food, shelter and breeding sites for birds, mammals and insects and the conditions for native flowers and other plants to grow. Farmland biodiversity also includes the rich genetic diversity of local breeds of farm animals and varieties of crops, many of them highly adapted to the soils, vegetation and climate of their region.

Water quality and availability: The use of fertilisers, herbicides and pesticides to enhance agricultural production are commonplace, but can have a major impact on the quality of both surface and ground water. Finding ways of reducing the amount of nitrates, phosphates and agro-chemicals that end up in rivers and aquifers, protects drinking water sources and contributes to the biodiversity of rivers and wetlands. As agriculture is a major user of water, especially for the irrigation of high value crops, fruit and vegetables in the drier parts of Europe, it is at the centre of efforts to ensure more efficient and sustainable water use, helping to safeguard supplies for everyone.

Soil functionality: Soil is the basis of all food production. Well-functioning soil has good structure, sufficient organic matter, and is resilient to erosion by wind or water. Most agricultural practices impact upon soil functionality in some way, but soil functionality can be preserved through the use of appropriate farming methods.

Climate stability – increasing carbon storage and reducing greenhouse gas emissions: Removing some of the accumulated CO₂ from the atmosphere is important for stabilising the world's climate. Plants accumulate CO₂ very effectively, and farming methods which maintain permanent vegetation cover and return plant waste to the soil are a good way of mopping up carbon. In fact permanent grasslands store nearly as much carbon as forests. As well as improving storage of carbon, agriculture can also play an important role in reducing the emissions of greenhouse gases that are responsible for global warming – not only CO₂, but also methane and nitrous oxide.

Resilience to flooding and fire: In central and southern Member States in particular, well-grazed vegetation can be an important barrier to the spread of forest fires, and reduce the fire risk in permanent crops such as olive groves. The capacity of farmland to absorb excess rainfall and store floodwater will be increasingly important as climate change increases the risk of flooding in urban areas.

Agricultural landscapes: Farming has shaped the distinctive rural landscapes of Europe for thousands of years and continues to do so. These range from alpine pastures to terraced landscapes, to *dehesas*, orchards and flood plains to mosaic landscapes of mixed arable and grass fields. Many cherished patterns of land use and locally distinctive landscape features are no longer essential to modern farming methods, but still need management if these kinds of cultural landscapes are to be maintained. Protecting the diversity of agricultural landscapes plays a key role in safeguarding the attractiveness of rural areas as a place to live in or for tourism.

Rural Vitality: Rural areas in the EU-27 exhibit huge differences in land use, population, prosperity, language, cultural heritage and traditions. Rural vitality involves having the job opportunities, minimum level of services and infrastructure as well as human capacity and good social networks to sustain and promote these values in order to ensure the long-term viability and attractiveness of rural areas as places to live, work and visit. The land, the character of the surrounding landscape, climate and other natural factors all serve to shape the customs, traditions and identity of rural areas. Agriculture can help to sustain rural vitality through the role that the farming population and associated rural activities and traditions play in rural areas. Linkages work both ways. Where rural areas remain economically and socially vibrant, this can also help to support the continuation of economic activities such as agriculture and forestry, which in turn are important in providing environmental public goods upon which many sectors – such as rural tourism and recreation – depend.

Food Security: While food is a private good, it is also true that markets do not ensure the availability of food at any time in any place. Deliberate action is needed, therefore, to secure food supply in the long term at the European or global level. Retaining the capacity to produce food sustainably into the future through appropriate husbandry of land and other resources and the maintenance of the necessary skills, is critical for achieving this.

3 The role of rural development policy in delivering public goods

Although estimates of the current scale of public goods provision through EU agriculture are notoriously difficult to derive, there is evidence of an undersupply of environmental public goods when compared to public demand, as articulated through environmental targets, objectives and goals. The provision of public goods through farming competes with the production of private goods such as food or biomass. Trends towards intensification and concentration of production diminish the supply of environmental public goods. Furthermore, the limited profitability of some forms of agriculture, such as extensive grazing, leads to trends of marginalisation/abandonment of farmland, resulting in an undersupply of environmental public goods associated with these agricultural land uses.

Rural development policy through the European Agricultural Fund for Rural Development (EAFRD) provides a framework within which the resources and policy measures to encourage the provision of public goods through a deliberate and targeted approach are made available and trade-offs between different objectives can be addressed. It is the policy instrument that has the most potential to actively encourage the provision of public goods and with €151 billion allocated to rural development over the 2007-13 programming period, including national co-financing, it provides by far the largest source of funding to encourage the delivery of specific public goods associated with agriculture in Europe.

However, rural development policy does not operate in isolation. Using rural development measures to incentivise 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.

One of the strengths of rural development policy is its programming approach, whereby a framework of strategic priorities and guidelines for implementation, monitoring and evaluation is set at the EU level, with Member States given considerable flexibility to determine which measures they choose to implement and the means of implementation in order to meet the needs of particular areas. However, given the breadth of the objectives of rural development policy (incorporating competitiveness, environmental and social objectives) and the differing degrees to which economic, social and environmental issues take priority in different Member States, there is great deal of variation in the way in which the delivery of environmental and social public goods is approached in individual RDPs. The degree to which the RDPs deliver public goods, therefore, is very dependent on the way in which Member States design their Rural Development Programmes (RDPs), the actions that they choose to prioritise, the eligibility criteria they use, the way that measures are designed and targeted and the way in which schemes are delivered on the ground.

It is important to emphasise that individual rural development measures, and the actions funded through them, have the potential to deliver multiple benefits simultaneously – for example improvements in water and soil quality and biodiversity benefits, alongside the reduction of GHG emissions. Recognition of these synergies is critical to enable the pursuit of multiple public goods in an integrated manner, to maximise the benefits achieved and to minimise the risk of conflicts between public goods occurring.

The rural development measures that have been identified as being used for providing environmental and social public goods can be divided into three broad categories:

- Area based payments that provide incentives to farmers to carry out beneficial land management practices, for example: the agri-environment measure, natural handicap measures and the Natura 2000 measures.
- Investment aid that provides assistance with the costs of physical capital investment, for example: the farm modernisation and infrastructure development measures under Axis 1 and; the grants for funding activities in rural areas more generally, such as maintaining and promoting the natural heritage, supporting farm diversification, or tourism activities in Axis 3.
- Measures that provide advice, training and capacity building to improve human capital, for example, in the training and advice measures in Axis 1 and 3.

The most significant measures used for the provision of environmental public goods and rural vitality are listed in [Table 2](#).

Table 2: Rural Development Programme measures and the public goods they provide

	Type of support	Rural Development Measures
ENVIRONMENTAL PUBLIC GOODS	Area based land management payments	Agri-environment measure Natural handicap measures Natura 2000 measure
	Capital investment in physical infrastructure	Non-productive investments Farm modernisation Infrastructure development Semi-subsistence farming Conservation and upgrading of the rural heritage Adding value to agricultural products Diversification
	Advice, training and capacity building to improve human capital	Advice and training measures
SOCIAL PUBLIC GOODS	Area based land management payments	Natural handicap measures Agri-environment measure
	Capital investment in physical infrastructure	Infrastructure development Semi-subsistence farming Farm diversification Encouragement of tourism activities Basic services for the economy and rural population Village renewal Leader approach
	Advice, training and capacity building to improve human capital	Training and information Leader approach

3.1 Area-based payments: supporting land management practices that provide public goods

There are three main rural development measures that can help to encourage the provision of environmental public goods by supporting certain types of land management practices, either directly or indirectly – the agri-environment measure, the natural handicap measures and the Natura 2000 measure. The focus of these area based measures tends to be primarily on maintaining and enhancing farmland biodiversity and agricultural landscapes, although increasingly the land management practices that are supported under the agri-environment measure also prioritise improvements to water quality, soil functionality and carbon storage. In addition, by encouraging the continued management of agricultural land, they contribute indirectly to rural vitality. In terms of the financial resources allocated to rural development measures, over 50% of the total planned expenditure in all RDPs relates to these measures.

Of all the rural development measures, the **agri-environment measure** (214) is the most directly focused on the delivery of environmental public goods and plays the most significant role in this regard. As the only compulsory measure within rural development policy, all RDPs use the agri-environment measure to encourage farmers to enter into voluntary agreements to deliver a wide range of public goods. Not only is it the measure with the broadest geographic coverage, it also accounts for the greatest share of total public expenditure of all measures within the EAFRD – almost a quarter of all planned expenditure for 2007-13.

A wide range of land management practices/actions are supported under individual agri-environment schemes that contribute to improving the state of the environment and the most frequently supported actions are set out in [Table 3](#).

Table 3: Actions supported by the agri-environment measure and the public goods they provide

Supported actions according to frequency of use by Member States	Farmland Biodiversity	Water Quality and availability	Soil Functionality	Climate Stability: Carbon storage	Climate Stability: Greenhouse Gas Emissions	Air Quality	Resilience to Flooding and Fire	Agricultural Landscapes	Rural Vitality	Food security
Maintain organic farming practices	★	★	★	★				★	★	
Introduce organic farming practices	★	★	★	★		★		★	★	★
Use of local/rare breeds of livestock	★							★	★	★
Maintain or introduce extensive grazing practices	★	★	★	★			★	★		★
Maintain and manage natural features	★	★	★	★			★	★	★	
Cultivation of traditional/endangered crop types	★		★					★	★	★

Supported actions according to frequency of use by Member States	Farmland Biodiversity	Water Quality and availability	Soil Functionality	Climate Stability: Carbon storage	Climate Stability: Greenhouse Gas Emissions	Air Quality	Resilience to Flooding and Fire	Agricultural Landscapes	Rural Vitality	Food security
Maintain or introduce extensive arable management	★	★	★	★				★		
Establish buffer strips/field margins against field edges	★	★	★	★				★		
Management of wetlands /river meadows	★	★	★	★			★	★		
Maintain and manage traditional orchards	★		★	★				★	★	★
Maintain built features	★		★					★	★	
Establish buffer strips next to water courses	★	★	★	★			★	★		
Develop nutrient management plans	★	★	★		★	★				
Reversion of arable to grassland	★	★	★	★	★		★	★		
Protect and maintain water courses in good ecological status	★	★	★	★	★		★			★
Develop soil management plans	★	★	★	★	★					★
Create wetlands	★	★		★			★	★		
Develop whole farm environment management plan	★	★	★	★	★			★	★	★
Establish no spray zones within arable fields	★	★	★			★				

The two **natural handicap measures** (211 and 212) contribute to the provision of public goods indirectly. They provide compensation to farmers for the natural disadvantages they face in relation to their productive capacity in terms of climate, topography, etc within areas designated as Less Favoured Areas. These measures provide support for the continuation of predominantly extensive agricultural practices in economically more marginal areas where ensuring the maintenance of the farmed landscape is a priority. In so doing they bolster farm incomes, thereby securing on-going agricultural management, which acts as the basis for the provision of environmental public goods, for which support under the agri-environment measure is also available.

A network of Natura 2000 sites has been established at the EU level in order to 'maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest'¹. The agricultural **Natura 2000 measure** (213) provides support to compensate for area-specific disadvantages resulting as additional costs from mandatory requirements within these areas. However, the choice of how Natura 2000 obligations are met is left to Member States according to the principle of subsidiarity, and can involve statutory, administrative or contractual measures and only about one third of RDPs make use of this measure.

3.2 Capital investment in physical infrastructure in rural areas

Measures for investing in capital infrastructure in relation to agriculture – on and off farm – and investments in rural areas, also attract significant resources from EAFRD. Although their primary rationale is largely economic (improving the competitiveness of the agricultural sector) or social (improving the quality of life in rural areas), if designed and targeted appropriately they can also bring benefits for the environment. Support for capital investment also contributes to rural vitality, either through helping maintain the economic viability of farms or by providing opportunities for diversification, thereby driving new economic opportunities in rural areas. Where these measures do deliver environmental outcomes, the focus tends to be on delivering improvements to water quality, soil functionality, water availability, reductions in greenhouse gas emissions rather than biodiversity and landscape. If inappropriately designed and targeted, however, some investments can conflict with environmental priorities, with negative impacts, highlighting the need for appropriate and effectively enforced safeguards to be in place.

Amongst the measures that can be used for these purposes, the **farm modernisation** measure (121) is the most significant in budget share (14% in the New Member States, 9% in EU-15). The most frequently supported investments considered to deliver environmental public goods include the funding of improvements to livestock housing and handling facilities. These can help to reduce greenhouse gas emissions and improve air quality, but also allow waste to be collected and stored more efficiently. Using appropriate housing for overwintering livestock can improve grazing management, thereby reducing nitrate leaching into water courses. Such investments are also considered to benefit rural vitality, with improved facilities improving the working environment for farmers and farm labourers. Other actions that are considered to benefit public goods include improvements to equipment for manure and silage handling, processing and storage which can help reduce nitrate leaching, benefitting water quality, soil functionality, air quality and reductions in greenhouse gas emissions; the introduction of equipment and installations to support the production of renewable energy and reduced CO₂ emissions, for example through investments in anaerobic digestion facilities; and investments in improved irrigation systems to increase water use efficiency, although the extent to which this occurs in practice depends on whether or not the improvements deliver net water savings. Several Member States support the establishment of energy crops under this measure with the aim of reducing greenhouse gas emissions and improving air quality as well as rural vitality.

Other measures in this category include the **Infrastructure for the development and adaptation of agriculture** measure (125) which can provide support for investments aiming to improve water management, storage and usage, for example improved irrigation technology and collective investments in the construction, upgrading, restoration and modernisation of water storage and supply facilities. The measure also supports investments in more efficient, environmentally

¹ Article 2(2) of the Habitats Directive, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.07.1992.

sustainable technology and this can benefit a much wider range of public goods notably air quality, water quality and soil functionality as well as reduced greenhouse gas emissions. Improvement and creation of infrastructure for the development of agriculture and forestry (which includes infrastructure for livestock to improve the grazing conditions, the construction and improvement of access roads in rural areas, and the restructuring or consolidation of land parcels) primarily benefit rural vitality by improving the accessibility and economic viability of farm holdings, as well as water availability, water quality and soil functionality, and resilience to flooding and fire. In relation to agriculture, the **adding value to products** measure (123) has the potential to impact upon a range of environmental public goods, particularly reducing greenhouse gas emissions, water quality and air quality as well as support rural vitality through supporting investments in energy saving technologies, promoting the processing of agricultural products for renewable energy and improving hygiene and animal welfare.

Examples of how two Member States have used the farm modernisation measure to support improvements in the environment are included in Box 1.

Box 1: Use of the farm modernisation measure to deliver environmental benefits

Malta – Investments in environmentally sustainable technology: The abundance of small farms, which characterise Maltese agriculture, expose farmers to inherent structural weaknesses. These are being addressed through the use of the farm modernisation measure. By granting financial support to land managers for making environmental investments, the Maltese Ministry for Resources and Rural Affairs aim to support environmentally sustainable conversion to more competitive forms of production.

Under the Rural Development Programme, farmers are eligible to receive grants for adopting environmentally sensitive technologies, operating systems and processes that provide clear environmental benefits and reduce the impact of agricultural activity on natural resources. Investments targeted towards increasing water savings or involving the use of alternative energy sources that result in energy savings are priorities. To date 360 applications have been received. Each application is subject to an environmental impact assessment, and as a result of this, 344 of these were deemed eligible. However, due to the popularity of the measure and the limited funding availability, grants were awarded to only 300 applicants.

The majority of the funding has been used to target the livestock sector where grants have been used for the installation of photovoltaic panels or wind turbines to generate renewable energy. Water savings have also been made on livestock and dairy farms through investments in small-scale water catchment facilities, harvesting rainwater from the roofs of cattle yards, which is then used for cleaning purposes. Water conservation has been achieved on a larger scale in the crop sector with grants used to construct underground water reservoirs, which collect the rainwater from the overlying land and the roofs of greenhouses. This water is then stored and used for irrigation purposes in the summer months.

France, Champagne-Ardenne, 'Plan Végétal pour l'Environnement' (PVE)

In France, the farm modernisation measure is being used to improve the environmental performance of agriculture by supporting investment in precision farming equipment. At a national level the focus of the PVE is to reduce pollution from pesticides and fertilisers; reduce soil erosion; reduce the pressure on the use of water resources; and improve energy efficiency at farm level. Investment in new equipment is intended to address these environmental issues at the same time as helping farmers gain an economic advantage in the market. The government is partly funding this programme in conjunction with local authorities and water agencies. Investments can be between €4 000 and €30 000 (up to €80 000 for cooperative farms).

Although the programme has a detailed list of eligibility requirements, some regions found that their financial resources were insufficient to cope with demand. In Champagne-Ardenne, the PVE was so successful in its first year that many applications had to be turned down. A more stringent application system has now been put in place. This prioritises investment in precision equipment for planting hedgerows as the top priority, alongside investments to reduce the use of pesticides.

Source: Issue 5 of the EU Rural Review, ENRD

Rural vitality can be assisted by support for a variety of investments including, the creation of new business opportunities, services and other activities, such as maintaining and promoting the natural heritage, supporting farm diversification and tourism activities. Social and economic vibrancy in rural communities is in turn key to continuation of farming practices, particularly in many more remote parts of the EU, and hence the continued provision of environmental public goods. Promoting cultural diversity and identity, agricultural diversity, local food identity and biodiversity are often mutually supporting not only strengthening the basis for economic activities but also attracting people and businesses to rural areas.

Measures for investment in **basic rural services** (311) and **village renewal** (312) are the most widely used measures for this purpose, for example they assist investments in water treatment services; renewable energy generation; improved roads and other transport links to give rural communities better access to markets. They also support cultural and leisure activities that help to build and maintain the spirit and identity of communities. Other measures that can be used to support rural vitality include the measure for **investment in tourism activities** measure (313) which can be used to provide recreational infrastructure to increase access to rural areas, information provision/sign posting to improve visitors' and tourists' understanding of the environment as well as support actions to reduce the impact of tourism on the environment

The **conservation and upgrading of rural heritage** measure (323) can be used to support the preparation of management plans for Natura 2000 sites or other areas of high nature value, with clear benefits for biodiversity; actions to maintain, restore and/or upgrade rural landscape and cultural features, which will enhance agricultural landscapes; maintaining and/or restoring traditional buildings and promoting green tourism, potentially benefitting both rural vitality and landscape; and improving environmental awareness of local actors. Although only a small proportion of total public expenditure is allocated to each of the measures, the resources allocated can have a significant impact at the local level.

3.3 Building capacity, advice, training

Building capacity and developing skills and knowledge of land managers and rural communities are important ingredients in the provision of social and environmental public goods. Beyond this it aims to stimulate and consolidate well-functioning social networks and active community engagement. This is critical to ensuring the long term involvement of rural actors in the provision of public goods, both environmental and social. Indeed building capacity is central to underpinning the sustainability of rural communities and can be very helpful in engendering longer term behavioural change.

There is a range of measures within rural development policy that can be used to build capacity. This includes **advice** and **training** measures (111, 114, 115) specifically aimed at building capacity in the farming community, for example training in environmental management techniques, and advice on sustainable use of resources, maintenance of water quality, soil functionality and farmland biodiversity. Issues such as improved farm animal welfare, increased water availability and the reduction of greenhouse gas emissions also feature prominently. Advice, information provision and training all have an important role to play in encouraging farmers to change their behaviour and to implement appropriate practices in support of the environment. Together they have been highlighted as a critical element for the success of Rural Development schemes in different contexts and for the effective achievement of scheme objectives and, thus for the effective delivery of public goods. Expenditure on these measures is still very small in all RDPs and there is significant potential to increase the resources allocated to them, particularly in conveying information on the relationship

between land management practices and the environment and efficient ways of enhancing agriculture's environmental performance.

Linked to and supporting the range of other measures, **the Leader approach** is used in all Member States to stimulate rural vitality through funding 'bottom-up' local initiatives. The Leader approach promotes the establishment of Local Action Groups which include local community organisations, non-government organisations and local authorities. It provides the Local Action Groups with a budget for investment in local projects of community interest. One of the key strengths of the Leader approach is that Local Action Groups themselves are responsible for designing their local strategies, and for deciding how the budget is spent, thereby providing opportunities for raising awareness, capacity building and strengthening cooperation between local people in rural areas to enable them to develop new skills, new ideas and implement projects that meet their local needs. Projects can be social, economic or environmental in nature and in many situations, the Leader approach has been an effective catalyst in revitalising local communities.

4 Socio-economic effects or rural development intervention for the provision of environmental public goods

A healthy, attractive environment can also provide socio-economic benefits. Environmental public goods provided through agriculture can play an important role in shaping rural areas, by enhancing biodiversity, landscape and other environmental assets, as well as underpinning important social and cultural traditions associated with land management and processing farm products. This can make rural areas more attractive as a place to live and stimulate economic activity, thereby contributing to the vitality of these areas and improving the quality of life of those who live and visit there. Beyond this, the provision of public goods by farmers impacts positively on the attitude of the public to farming, thereby increasing the legitimacy of the support provided for this purpose.

There is evidence to show that rural development measures, which are focused on the delivery of environmental outcomes, can therefore also have beneficial socio-economic impacts, by stimulating employment, tourism, the production of added value products as well as through building capacity amongst farmers and other local actors. This in turn helps to support rural vitality. However, there is limited empirical information in the literature on the scale of these indirect effects of environmental public goods on social and economic development in rural areas. The availability of literature from Member States is also variable, with quantified information found mainly in countries such as the UK which were 'early adopters' of environmental land management payments.

Box 2: Examples of the indirect socio-economic impacts that can be associated with the provision of environmental public goods

Incentives provided through rural development measures for the delivery of environmental benefits can also lead to:

- **Increased opportunities for tourism** to the local area/region in which the measure is operating, thereby providing a beneficial impact on the local economy. For example, the environmental public goods delivered provide:
 - opportunities for marketing the area on the basis of its landscape/ biodiversity etc;
 - increased opportunities for recreation;
 - opportunities for farmers to diversity into tourism related activities, for example the provision of bed and breakfast facilities, encouraging educational visits etc.
- **Changes in employment opportunities** both on and off the farm. For example:
 - On farm – changes in the number of employed or family labour for undertaking routine management or capital works;
 - On farm – changes in the number of contractors hired to carry out additional management or capital works required as a result of measures focused on the provision of environmental public goods
 - Off farm – the generation of jobs in upstream/downstream businesses
- Opportunities for **adding value to food/other products**;
- The maintenance of traditional agricultural **skills** or the development of new skills
- **Investment** being attracted to the local area, for example investment in second homes or businesses relocating to the area, which in turn provide increased employment opportunities for local people;
- **Impacts on population** levels in rural areas, for example slowing down outmigration
- Benefits for **cultural heritage**, for example where measures focused on environmental provision have also helped to maintain rural traditions, cultural events (i.e. wine/olive festivals), thereby maintaining and enhancing rural identity etc.
- An **income stabilisation** effect for those farmers in receipt of payments for the provision of public goods by virtue of the fact that incentive schemes to encourage particular land management activities provide a guaranteed income stream for carrying out certain actions over a period over 5 or 10 years.

Most of the studies of employment and economic benefits of RDP environmental management measures relate to the agri-environment measure and demonstrate that these schemes can have a significant impact on the local economy through support provided to scheme beneficiaries being spent locally and by purchases made by contractors, suppliers and advisors also sourced locally. A study in England (UK) showed that, at a national level, for every £1 of Environmental Stewardship payment to the beneficiary, £0.26 is generated off-farm in the local economy and that over a four year period, around 665 new full-time equivalent (FTE) jobs in the local economy were created, of which 530 FTE jobs were generated through direct employment of farm workers, contractors or advisors as a result of the increased workload generated by the agri-environment scheme. Other examples of the socio-economic benefits associated with agri-environment schemes are shown in the examples below.

Box 3: The socio-economic benefits associated to agri-environment schemes: an example

Employment and landscape benefits of traditional viticulture in the Aegean

Farmers in the Greek islands of Santorini (Thira) and Thirasia traditionally pruned their vines in a very special way to protect the grapes from the wind. The variety of grape 'Assyrtiko' is well adapted to the dry hot summers, strong winds and volcanic soils and pruning the plants in a circular reverse conical shape has created a distinctive landscape. Skilled labour is needed for this work and mechanisation is impossible. The vineyards and the landscape they create are threatened by urbanisation and tourist development, and by a move towards high linear vine growing, which would reduce farmers' costs.

When a €1.5m agri-environment scheme for landscape protection on the two islands was introduced, compensating farmers for the extra costs and decreased productivity of their special pruning system, and for maintaining terraces, bushes and trees at the field margins, almost half of the vineyards joined in the first two years. Together with special aid for small islands of the Aegean the payments of €1525 per hectare make it possible for the farmers to continue using labour intensive techniques, in order to keep the quality of wine cultivation alive, providing both local employment and a distinctive landscape for visitors.

In addition to the direct and indirect economic and employment effects of agri-environment payments on the local economy, the very presence of attractive agricultural landscapes, farmland biodiversity and historical features can provide economic opportunities for a variety of economic activities including rural tourism and recreation, speciality products and foods, as well as attractive locations for the establishment of businesses. Furthermore, 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. However, few attempts have been made to quantify the economic or employment impacts of these effects and the studies which exist are not specifically linked to support through RDP measures.

Some examples of these sorts of effects are as follows. In the Czech Republic, a study comparing intensive and extensive systems found that the farms providing agri-tourism were mostly situated in regions with extensive agricultural systems (Grega et al., 2003). In Germany, the popularity of landscapes of high biodiversity value as tourist destinations has enabled the Rhönschaf – a rare breed of sheep from the Rhön area – to be brought back from the brink of extinction. This breed has become a tourist and culinary trademark of the Rhön as well as enhancing local cultural identity and as a result, sheep numbers have increased significantly (Nyenhuis et al., 2007). In the UK several agri-environment schemes compensate farmers for damage caused to grazing land and crops by over-wintering wild geese. Although the payments are have little or no effect on direct or indirect farm employment, the presence of the geese can attract visitors. Research in Scotland in 1998 estimated that bird watchers and goose shooters spent a total of £5.4 million per year in local economies around Scottish goose sites, providing an injection of spending into the Scottish economy. Of this total approximately £3.6 million can be attributed to the presence of the geese, and supports more than 100 FTE jobs in local economies, 53% by inland goose shooting, 42% by goose watching and 5% by coastal wildfowling (RSPB and BASC, 2008).

Agri-environment schemes have also been shown to have a positive impact on increasing human capital and on social capital by raising the management skills base of farmers, increasing their environmental knowledge, learning and awareness. An appreciation of the environmental benefits of agri-environment management can, in some cases, encourage a positive attitudinal shift, although there is less evidence of this when farmers join schemes for financial or opportunistic reasons. An interesting example of this is an innovative project in Lower Silesia, Poland, which combined social rehabilitation with farming and nature conservation, involving convicts from Wolow Penitentiary, prison officers and farmers from the Barycz Valley. The aim was to prepare convicts for employment after their release and included training in agri-environment management, using agri-environment

funding for rare breeds as part of the funding for a training programme. A total of 650 to convicts learnt about the independent breeding of Wrzosówka sheep, working in an agricultural holding the principles of animal welfare and basic sanitary procedures important for keeping a herd in good condition.

5 Criteria for the successfully delivery of public goods

The analysis indicates that a wide range of measures have the potential to encourage the provision of both environmental and social public goods through agriculture. However, whether or not they do so in practice depends on a number of factors.

Amongst the wide range of factors that contribute to the successful delivery of public goods, some of these relate to the selection of measures to be used within the rural development programmes to secure a range of objectives in response to local needs. Others relate to the design and targeting of measures, along with the adequacy of the budgetary resources allocated to them. These factors have a significant influence on the eventual outcome and on whether the potential of a measure to secure the delivery of public goods is realised in practice. Despite progress made in relation to the design, targeting and delivery of rural development schemes there is still significant room for improvement at the EU level and in many Member States. The present suite of measures implemented within RDPs comprises some that are tightly targeted, whilst other lack precision in this regard. This can lead to unsatisfactory results and an inefficient use of resources. Measure objectives need to be specified precisely, and efforts are needed to target the use of measures precisely on specific public good outcomes while taking into account possible positive or negative side-effects. Appropriate targeting, which leaves sufficient discretion to the judgement of farmers and those applying policy on the ground, is essential to secure specific outcomes.

With respect to the implementation of programmes and schemes, the degree of administrative and technical capacity within national administrations, extension services, research bodies, paying agencies, along with the provision level of advice and training for farmers also has a significant effect on public goods outcomes. Effective monitoring and evaluation are critical to assess outcomes and to inform improvements in both measure and scheme design.

Appropriate engagement with farming organisations can help to establish well designed programmes and to elicit a sense of co-operative effort. Finally, the successful delivery of public goods can be reinforced and enhanced if there are tangible effects on the local economy and vitality of rural areas, resulting from the provision of public goods such as cultural landscapes and biodiversity.

The analysis of the way in which Member States have approached the delivery of public goods through their RDPs for the 2007-13 programming period provides some useful lessons that need to be learned to improve the delivery of public goods in the next programming period. In summary, the key issues that are highlighted by this report include:

- Recognition that the delivery of environmental public goods and rural vitality involves long term commitment and that positive results will often only become apparent over time. The design and implementation of measures is an on-going process in which schemes evolve and improve over time.
- The need to take an integrated approach in determining the most effective and efficient means of delivering public goods. This requires consideration of the synergies that exist

between different public goods to find ways of supporting measures or packages of measures that maximise the provision of multiple public goods and minimise any potential conflicts.

- Improvements need to be made in the way that measures are targeted and their impacts measured. Clear objectives need to be set for all measures and schemes implemented in RDPs, with their intended outcomes specified in advance. The measurement of the effectiveness of these measures in the provision of all public goods should be required – for example by extending the current suite of CMEF impact indicators to cover environmental issues such as water quality, carbon storage, soil functionality and landscape as well as developing indicators that can measure impacts on rural vitality.
- Investment is needed in building institutional capacity in relation to the design and delivery of rural development measures. This is critical for the effective and efficient delivery of scheme objectives. The value of this investment in the skills, knowledge and technical resources needed should be recognised as an essential component of successful and efficient scheme delivery.

Investment is also needed in collecting empirical information at the programme level on data to demonstrate the outcomes of schemes, both in relation to environmental and socio-economic data. In addition, given the varied local environmental, social and economic contexts, issues and needs in the EU-27 and the multiplicity of response to these needs in different regions, there is a need for enhanced exchange of good practice and lessons learned between Member States and regions.