Ecosystem services and public goods: valorisation methods

PEGASUS WP1 - Task: 1.3

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1. Introduction

This short note introduces the concepts applied in Task 1.3. This task concerns a review of methods and approaches to valorise and to support PG/ESS provision by farming and forestry. For this purpose we use the following working definition of valorisation (see also Section 3.2 and 3.3):

> *Valorisation is a strategy to create value to society on the provision of public goods/ecosystem services. Values can be expressed in qualitative or quantitative terms*

This short note starts in Section 2 with the general context within PEGASUS for valorisation formed by the case studies. An initial list of case studies is selected at the start of the project. In Section 3 we develop the framework regarding the valorisation and appreciation of PG/ESSin more detail.

2. Context of the case studies

The case studies initially identified in PEGASUS (43 in total) sketch the context for valorisation. From Table 1 it follows that the categories of PG/ESS in PEGASUS are belonging to different sections within the CICES classification (European Environmental Agency, http://cices.eu/): they can be provisional, regulating and/or cultural. Also different divisions and groups are included.

Table 1: Case study proposals PEGASUS categorized following public good (PG)/ecosystem service (ESS) (n=43)

Category PGG/ESS	Frequency	Percentage
Biodiversity	23	53%
Environmental quality	4	9%
Landscape	27	63%
Water	16	37%
Soils	11	26%
Social benefits	15	35%
Recreational	10	23%
Other	26	60%

The first set of a relative large number of case studies is oriented towards biodiversity and landscape. The “other category” is also relatively important and consists of services like all ESS in general, climate change adaptation and mitigation, clean air, and carbon sequestration. The different categories (distinguished in Table 1) consist of a number of PG/ESS: (1) for instance water consists of both purification and water protection and (2) landscapes are composed of use values like recreation and non-use values. This means that the context for our appreciation, valorisation

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and valuation framework is relative multifaceted. In Table 2 we distinguish the PGG/ESS by the drivers distinguished.

Table 2: Case study proposals PEGASUS categorized following drivers applied (n=43)

Driver	Frequency (number of times indicated)	Share of total number of cases (%)
Public policy	17	40%
Market	22	51%
Social benefit (non-market/profit)	17	40%
Collective/co-operative driven	18	42%
Individual land manager	19	44%
Food chain (by the processor/distributor/retailer)	13	30%

Several types of drivers are identified in the case study proposals. The cases relate to the management of land by farmers and/or forest managers. In addition, in a number of cases more than one driver is distinguished: e.g. market and food chain drivers and market and individual. Each driver is a way to valorise ecosystem services; however, they remain relatively general. In order to make a valorisation strategy operational, they need to be worked out in more detail.

3. Valorisation framework

3.1 Introduction

Central in this framework are the processes to appreciate, valorise and value public goods and ecosystem services from agriculture and forestry (see Figure 1). Appreciation is based on a qualitative judgement of public goods/ecosystem services and not translated in monetary terms. To the contrary the valuation of ecosystem services puts monetary values to the existence, management and use of public goods and ecosystem services. The benefit to society is the change in human well being generated by the good (Bateman et al., 2011). However, not every ecosystem service will be appreciated, valorised and valued in the same way: people may still be unaware of the ecosystems supplied.

Appreciation of PG/ESS by the general public might be observed by stakeholder engagement, as well as understanding of their existence or 'valorisation' mechanisms. The first step is the process of appreciation. An indication of the appreciation of PG/ESS by society is engagement and involvement in managing and maintaining PG/ESS. This indicates that PG/ESS might be underappreciated by society when engagement and involvement in their management and maintenance remains insuffient to secure their provision in the long run. The next step is to valorise appreciated ecosystem services and public goods. Without engagement and/or understanding of

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PG/ESS provided there will be under appreciation. Valorisation is a process in which goods and services from nature and landscape are broken down in different elements that can be valorised, taking into account joint production and synergies.

There will be PG/ESS that are end products for the economy, half products and by products. Ecosystem services are the last item in the chain of the ecosystems. Ecosystem functions are an 'intermediate' dimension of the ecosystem (Bateman et al., 2011; Fisher and Turner, 2008; Boyd and Banzhaf, 2006, 2007). Fisher and Turner (2008) distinguish between 'intermediate services' (e.g. pollination, water regulation) and 'final services' (e.g. clean water, flood control). Benefits arise from services (e.g. honey, drinking water and protection of the living environment).

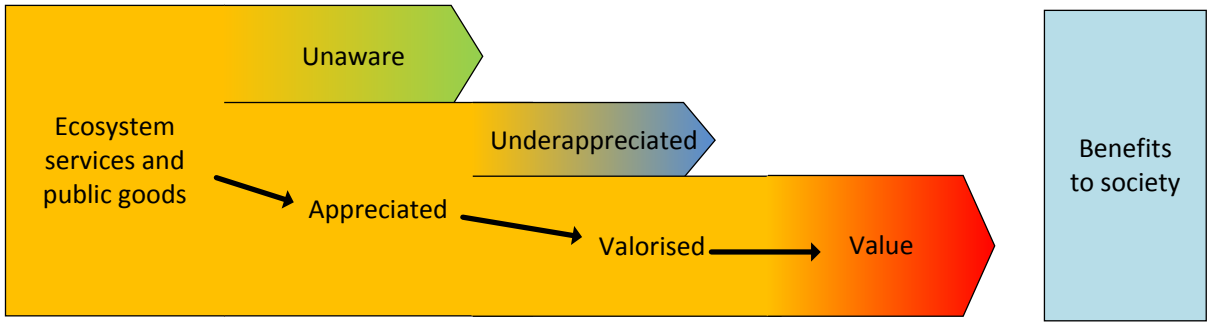

Figure 1: General framework for appreciation and valorisation ofPG/ESSs

The valorisation process can deliver a plan for a given planning horizon. To evaluate and optimise the supply of PG/ESS different valorisation plans are valued in a final step. The demonstration to stakeholders that PG/ESS has a value for them (not necessarily expressed in monetary terms) may encourage them to monitor, maintain or improve the provision of public goods and ecosystem services. An optimal valorisation plan is represented by the highest benefit to society of the different ecosystem services and public goods. This implies that different levels of valorisation can be distinguished (see also Derville and Allaire, 2014). Different factors like location and seasonality will be relevant for appreciation, valorisation and valuation. In this note we will go into more detail for appreciation (Section 3.2), valorisation (Section 3.3) and valuation (Section 3.4).

3.2 Appreciating ecosystem services and public goods

The concept of 'appreciation' adopted in PEGASUS is "to understand the different perceptions of stakeholders benefitting from PG/ESS provided by agriculture and forestry." Appreciation is often context dependent and also depends on interpretation and perspectives. It varies for different categories of stakeholders (e.g. rural population; agrifood business, touristic and recreational sector) who benefit from the provision of public goods and ecosystem services in agriculture and forestry. Appreciation (signs of societal value) by society (individual or groups of people) of the provision of PG/ESS is expressed through awareness, increased understanding, engagement, involvement and benefits to the economy (see Figure 2). The figure builds on the 5 levers of change

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formulated by the company Unilever inspiring sustainable living (see also: http://linkingsustainability.com/coming-up-reports/unilevers-5-levers-for-change/).

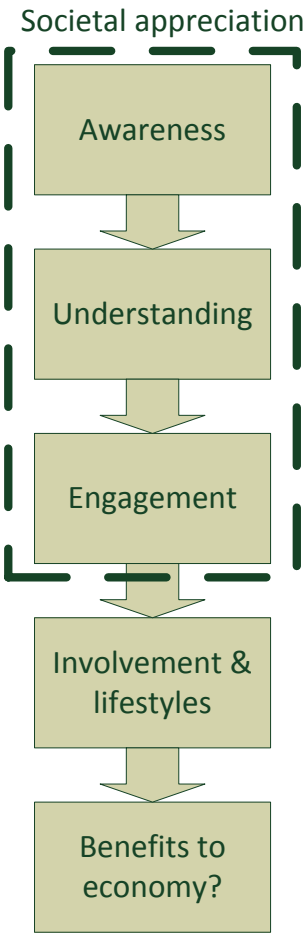

Figure 2: Levels in societal appreciation

Three categories of appreciation are distinguished in Figure 2, that are important for maintaining natural capital. According to figure 2, we distinghuish three categories: (1) societal appreciation, (2) involvement & lifestyles and (3) benefits to the economy. The three categories are summarised in the following:

1. **Category 1 in Figure 2: Appreciation of ecosystem services and public goods through broader societal interests (comprising of awareness, understanding and engagement):**
   The provision of public goods might be underappreciated. People living in a specific landscape (e.g. mountainous areas), for example, might underappreciate the value of their scenery but have very valuable knowledge regarding the management of such areas, which is fundamental to public goods and ecosystem goods and services (Walker et al., 2004). Cultural landscapes, where such knowledge is particularly rich, might be supported by farming practices with high nature value. It is primarily the existence of amenities that matter for societal appreciation. However the degree to which these are effectively

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valorised in an economic activity generating added value remains unclear (Terluin 2003). Awareness by society regarding the benefits of such public goods might be noticed through public debate and media attention (Tacconi 2000; Gregory and Wellman 2001). Voluntary action towards maintenance of public goods could be achieved through social networks, and resource users' self-management might be better legitimated than other instruments (e.g. command-and-control measures, subsidies) (Van der Schans, 2003 and Reed et al 2009). Such self-management practices, which build on the work of Elinor Ostrom, could involve land managers in interaction with other societal groups as well as public authorities. Raising awareness and education are important features strengthening the appreciation of public goods by society, including the business sector (e.g. WBSCD, 2012).

2. **Category 2 in Figure 2: Appreciation of public goods and ecosystem services through involvement and lifestyles**
   Involvement and lifestyles refer to, e.g. consumers having an interest into regional food systems because of the regional quality of life (e.g. appreciation of cows and grazing systems). This is mainly targeted at consumers but has a strong link to resilience (Berkes and Ross 2013). Appreciation might be expressed as the outcome from matching supply and demand, between providers and beneficiaries of public goods. Membership of organisations involved in the long-term management of such public goods (e.g. WWF) could be an indicator that reflects appreciation. Moreover, consumers buying products based on locally-produced food could be an indicator of appreciation for the delivery of regionally produced public goods and ecosystem services. Partnerships with local stakeholders (including private sector, NGOs, experts and public sector regulators) potentially are important means to strengthen the appreciation of public goods (e.g. WBSCD, 2012). However, there might be PG/ESS for which the public cannot show signs of appreciation via purchase of certain consumer products or actions, e.g.good air quality, the sustainable use of an aquifer.

3. **Category 3 in Figure 2: Sectoral benefits to the economy.**
   The provision of public goods adds value to the economy, among others through sectoral benefits (e.g. touristic and recreation sectors), higher prices of houses near forest areas (Slee 2011) or reduced expenses in the health care system. Economic benefits from the provision of public goods are visible by the generation of value added and/or reduced costs. Private sector initiatives in the agrifood sector could be important to enhance the benefits of public goods provided by land managers (e.g. farmers and forest managers), especially when the beneficiaries of the public goods are involved.

In the next Section we will go into more detail on valorising PG/ESS.

3.3 From appreciation of ecosystem services to valorisation

Valorisation starts from societal appreciation of PG/ESS and concerns the institutional and governance settings. Hiedpanpaa and Bromley (2014) argue that due valorisation transactions are

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introduced to cause individuals to change their existing production and consumption. Farmers and forest owners will operate in an environment where ecosystems are valorised according to their own understanding of options and prospects. Wolff and Primmer (2006) argue that valorisation will create private commercial incentives to invest in sustainable use and conservation of PG/ESS. It results in creating self-interest and market relations. The idea is to overcome limiting factors both for buyers and sellers (see also Hiedpanpaa and Bromley, 2014). The key factor driving the 'consumer' of PG/ESS is the value of these assets. For sellers (farmers/foresters), the total income generated from farming/forestry activities, is the key factor limiting the provision of PG/ESS. In practice, valorisation is often initiated by stakeholders from outside who value particular segments of PG/ESS. Valorisation by outsiders – however - does not automatically imply that sellers change their behaviour regarding the provision of PG/ESS.

The concept of valorisation can be applied to private and public goods. It has a number of different aspects and uses within literature. It is as concept widely used in dairy farming in the meaning of valorising raw milk (e.g. Banaszewska et al, 2013), legumes (e.g. Voisin et al., 2013) and valuing waste products (e.g. Lancker and Mondelaers, 2014). For instance, in the Netherlands large dairy companys like Friesland Campina and Noorderland apply this concept for their raw milk. To valorise a private good like raw milk, different components of milk are processed into products like milk powder, cheese and fresh drinking milk. The basic idea of milk valorisation is to optimize the production process. Voisin et al (2013) discuss valorisation of ecosystem services in relation to legumes. They try to link technological processing to the valorisation process.

Banaszewska et al. (2013) have developed a dairy valorisation model as a decision support tool for medium-term allocation of raw milk (approximately 5 years). The model allows allocating raw milk to end products and production planning. A number of factors have been taken into account which are important for valorisation. These factors will be translated to PG/ESS and extended in WP4:

1. **Governance**: What is the governance system in place?
2. **Time scale**: what is the time horizon (years) for valorising PG/ESS? What are relevant stages in valorisation strategies (starting up and maturity)?
3. **Production recipes** are important, based on composition of PG/ESS from land management practices and intermediate ecosystem services (see also Bateman et al., 2011). Final PG/ESS are the last item in the chain of ecosystem functioning and they directly affect human well being. For instance, a public good such as 'rural amenities' is based on different combinations of landscape elements. Some PG/ESS will be augmented by human and munufactured capital inputs before generating welfare bearing goods (Bateman et al., 2011). This is not applicable to supporting services. It is therefore important to isolate the the contribution of PG/ESS to the production of goods.
4. **Seasonality** of PG/ESS in composition and supply of goods. PG/ESS may differ in composition depending on e.g. growing season (CO2 uptake) and holiday periods for recreational products. This places PG/ESS in a temporary defined context (see also Bateman et al., 2011).
5. **Whole product portfolio**. For valorisation the whole portfolio of PG/ESS is relevant for synergy and joint production of PG/ESS. Focussing on a limited number of PG/ESS can

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overlook negative effects on other ESS. The primary process and intermediate ecosystem services are also part of the chain. Merlot et al (2014) present the structure of valorisation, traditionally achieved through bilateral transactions among suppliers and users, and accounting methods. This is comparable to the valorisation plans discussed by Banaszewska et al (2013) for raw milk. They stress the need for collective contracting and accounting methods suitable for incorporating the economic effects of the recognition of social and environmental values of PG/ESS. There is growing evidence that deliberative or participative approaches that rely on social processes, including individual, institutional, and societal factors are able to identify and valorise the multiple benefits arising from complex systems (Dominati et al, 2010 and Martin-Lopez et al., 2014). Also, it is important who will valorise the provision of PG/ESS. Hiedpanpaa and Bromley (2014), for example, argue that local users of PG/ESS tend to indicate that securing their livelihood is more important than protecting specific PG/ESS. Securing the provision of PG/ESS might be valorised mainly by people living elsewhere.

6. **By-product utilization** (see also Lancker and Mondelaers, 2014). This could be explained by marketed goods in agriculture. By-products from raw milk, for example, can offer additional opportunities for the maintenance of sustainable land use. Main product and by-product are often interrelated and by-products of food production can be used for other production processes (circular economy). However, generalising the effects of valorisation on the sustainable use of resources remains hard to make (Pierce et al., 2003)
7. Main and by-product **logistics (transportation)**. Many ecosystem services are not consumed at the location where they are produced and linked costs are important for the valorisation potential. Transportation links to the spatial defined context of PG/ESS (see also Bateman et al., 2011). Additionally also local circuits of productions are important (territory). Such direct consumer relations between the provision and use of PG/ESS could merge into a pathway for the valorisation of food systems and related PG/ESS (Lamine, 2015). However, the pathway also needs to address the diversity of interdependencies in agrifood systems (processing and distributing).
8. **Changes in prices** of main products and by-products are important for valorisation potential. Are prices stable or volatile?

3.4 Valuing valorisation plans

Valuation of valorisation plans depends on the reason for valuation or on the target audience; values can also be expressed in qualitative or quantitative terms (Silvis and van der Heide, 2013). Most ecosystem services are not fully captured in markets and no market price will be available. Exceptions are often related to provisioning services like food and fibre. The total economic value of ecosystem services derived from nature and the landscape consists of a use value and non-use value (see Turner et al., 1998). Use values arse from the use of ecosystems services that are used like food or converted to another form like water. Non-use values involve no tangible interaction between the area under consideration and the people who use it for production or consumption (Silvis and van der Heide, 2013). However, different ecosystem services are delivered in a region. A

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clear distinction between use values and non-use values is in practice often ambiguous due to this joint production of ecosystem services.

To represent the importance of ecosystem services to society is more complicated that intuition would suggest (Silvis and van der Heide, 2013). Valuation cannot be disconnected from individual choice. Many concepts of value are subjective (Silvis and van der Heide, 2013) and are often seen as socially and culturally constructed, shaped by power structures, negotiated, mutable and non-aggregatable (Slee, 2005). In many cases goods and services will be augmented by human and manufactured capital inputs and the value of ecosystem services themselves needs to be isolated from other inputs (Bateman et al., 2011). Economic techniques provide several techniques to assign value to changes in ecosystem services. The most appropriate technique depends on the type of good or service.

The total economic value of PG/ESS need to be decomposed into the multifaceted goods and services provided in the region. They result from the economic activities related to the goods adn services, as well as the transactions between the stakeholders involved. Because of this character, economic, ecological, and institutional perspectives to create financial incentives reflecting the value ecosystem services have to be combined to determine adequate economic governance. The economic perspective of governance includes securing property rights as well as collective action in managing the environment, especially in cases where several stakeholders are involved. It implies that investments in PG/ESS depend on the incentives. Constitutions at different jurisdictional levels attach property rights to the different ecosystem services because they specify land ownership, local governments, states, federal agencies, and international organizations (De Blaeij et al., 2011). Economic governance will also have to enforce contracts in case of voluntary transactions between an ecosystem service provider and an ecosystem service buyer. Finally, economic governance will need to secure collective action in managing the environment. This collective decision making will become more complex where several stakeholders are involved.

4. Valorisation methods in practice – findings from the National Workshops

National workshops were held in September and October 2015 in 10 different countries. Their aims were:

- To begin to build the PEGASUS 'learning community' at national level, to inform PEGASUS activities in relation to policy and practice;
- To involve key actors/experts in the PEGASUS research agenda;
- To test and refine the basic framework for the study, including the typology of environmental and social benefits that will be the focus of our investigations, their relationship with different farming and forestry systems, as well as the way PEGASUS proposes to approach an assessment of the valorisation / appreciation of these benefits;
- To involve local practitioners from likely/potential case study areas, to learn more about the initiatives they are involved with, to raise their awareness of PEGASUS, its goals and methods

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and to understand their needs to ensure the case studies have benefits both for the participants and for our research.

Some key findings of the national workshops are summarised in the following sections. The summaries draw from the workshop reports prepared by the national teams in PEGASUS.

4.1 Austria

The concept of public goods is well appreciated in Austria, especially due to the existence of less-favoured and mountain regions – with limited production potential - and a strong focus of agricultural and regional policies to address beneficial outcomes from agriculture and forestry. The inclusion of positive and negative impacts of land management practices on PG/ESS is seen as particularly important. Important public goods are landscape development, nature protection services, securing water availability and quality, soil preservation and quality as well as the social dimension of the vitality and attractiveness of rural regions. The participants indicated an interest to seek for innovative co-operative arrangements in the management of farm land, including co-operation between the touristic and agriculture/forestry sectors. The participants also have a special interest into bottom-up approaches with the involvement of people.

Report prepared by: Josef Hoppichler, Thomas Dax, Gerhard Hovorka (Bundesanstalt fuer Bergbauernfragen (BABF), Vienna, Austria).

4.2 Czech Republic

Payments for the provision of PG/ESS currently are part of the CAP (e.g. agri-environmental-climate measures), national programs from the Ministry of Environment, with tailored schemes and limited budgets, and some EU-funded programs. The discussions very much focussed on the effectiveness of such policies. Some agri-environmental payments might even support a baseline condition. Also, the 'dead weight' (farmers in compliance to the measures without changing their practice) of payments could also be seen as argument to seek for alternatives to enhance the provision of PG/ESS.

Report prepared by Klára Čámská and Jaroslav Pražan (Institute of Agricultural Economics and Information).

4.3 Germany

Objectives related to 'vibrant/dynamic and active rural communities' and 'public enjoyment and public outdoor recreation' are considered important for PEGASUS. Several additional comments are made on the initial list of public goods and ecosytem services. It is proposed that 'food, timber,

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biomass for energy production' will be separated in three parts and the aspect of 'cultural landscapes' are of high importance.

Report prepared by: Simone Schiller, Kerstin Hülemeyer, Karlheinz Knickel (IfLS Frankfurt/M.).

4.4 Estonia

The workshop concluded that important public concerns related to food security and animal welfare are hardly covered, whereas some benefits (e.g. healthy soils) are formulated too broadly. In addition, some of the benefits (e.g. regular flow of water and flood protection) partially overlap.

The workshop focussed on two valorisation methods, including public payments (e.g. agri-environmental schemes) and market-driven labelling systems. Raising awareness of the public is considered essential to create a market for the provision of PG/ESS (e.g. marketing beef from grasslands). The workshop concluded the market-driven approaches (especially through co-operation), might add much more value compared to direct support measures (e.g. area payments).

Report prepared by: Argo Peepson, Merit Mikk (Centre for Ecological Engineering).

4.5 France

During the workshop, the public demand for PG/ESS was highlighted to generate an awareness among local actors. Also, it was concluded that there are mechanisms to remunerate farmers for the provision of public goods, whereas this is rather lacking for the forestry sector.

Economic and Environmental Interest Groups ('GIEE') are introduced in 2014 in France enabling groups of farmers to jointly develop agro-ecological initiatives supporting the agro-ecology strategy promoted by the French government. The initiatives might result from civil society or private sector; currently there are some 103 Groups. It would enhance food production with environmental goals in the context of sustainable development.

Cross compliance is perceived as the preferred instrument to secure the joint provision of food and biodiversity. It increasingly becomes an eligibility criterion in the 2014-2020 Rural development measures. Farmers tend to prefer cross compliance than market tools like an auction negotiating for delivery of PG/ESS. Pillar 1 payments therefore need to be considered when studying the provision of public goods.

There is some ambiguity regarding the objectives of the agri-environmental measures: either for income support to farmers and tools for the development of ecosystem services and public goods. Agri-environmental payments to farmers who change their practice towards the provision of PG/ESS might stop with the cessation of funding and public budget constraints.

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Public procurement at local/regional/national level can also be a good way to develop synergies between the provision of private goods and PG/ESS by systematically including an environmental clause and by allowing more flexibility for land managers to access public market. Consider for example, the development of local food systems supplying schools, universities and hospitals.

Report prepared by: Marielle Berriet-Solliec, Aleksandra Barczak (INRA-CESAER), François Lataste (BRL Ingénierie).

4.6 Italy

The workshop highlighted the need that the territory should be clearly defined. This is considered essential to analyse the interactions. Also, rural vitality is considered important for further analysis, distinguishing population with fair living standards in rural areas, the existence of basic services in the area, attractiveness of the area and density of activities in the area that are linked to land management. Also, the workshop emphasised that in Italy and other Mediterranean countries the PG/ESS are strongly related to cultural and rural heritage, as well as traditional farming systems.

An efficient inclusion of the private sector may result in a long-term change in local stakeholders' strategies, which could ensure the long-term sustainability of policies. In this way, the provision of public goods would not be dependent on the financial resources available each year. Some limitations are expressed regarding rural development programs: (i) payments are largely based on management practices and farming practices, and little focus on the environmental outcomes achieved, and (ii) the lack of flexibility of programs, often not able to provide support for locally relevant ecosystem services.

Report prepared by: Barbara Forcina, Francesco Mantino and Francesco Vanni (CREA, former INEA).

4.7 Portugal

Through the dialogue between different stakeholders, PEGASUS might eventually bride policy, land management by farmers and forest owners and science. In doing so, it could create new tools and policy strategies. In order to implement policy measures securing ecological concerns, the provision of ecosystem services and public goods needs to be made explicit to the land managers and policy makers. Focus is on the *montado* production system, and landscape, cultural heritage, carbon storage and Mediterranean culture are identified to be beneficial to society. The market structure is not in place to secure that land managers would benefit from their provision. In addition, soil structure, biodiversity and functional diversity are also identified as having benefits to society. However, these are also beneficial to land managers. PEGASUS could provide business models supporting extensive production systems with low economic returns.

Report prepared by Carlos Guerra and Teresa Pinto-Correia (University of Évora, Portugal).

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4.8 Slovenia

Slovenia perceives and treats the concepts of PG/ESS in agriculture and forestry differently. The concept of 'forest functions' (mainly nature preservation, environmental protection and biodiversity) is embedded in policies through the management of forest resources. To the contrary, PG/ESS remain vaguely defined, neither they are recognised. Compared to the CAP, the issue of public payments for forest management appears less acceptable. The workshop concluded that a public consultation would be needed on the presence and role of PG/ESS in agriculture and agricultural policy. Forestry could be a benchmark case for the identification of key PG/ESS in agriculture. Education, communication and knowledge transfer are the means to enhance the understanding of PG/ESS.

Report prepared by: Tina Kocjančič, Emil Erjavec and Luka Juvančič (Biotechnical faculty, University of Ljubljana).

4.9 The Netherlands

The workshop concluded that PG/ESS related to soil and water are important, also enabling the provision of other PG/ESS (e.g. landscape and biodiversity). Rather than focussing on front-runners in the provision of PG/ESS, the workshop recommended to focus on the 'peloton' (e.g. 80% of the farmers) and seek for ways to enlarge the group of followers, identify 'front-runners' and fasten the valorisation process. A focus on policies as well as addressing the contribution from citizens and other stakeholders in promoting the provision of PG/ESS is considered important.

There is a discussion on mandatory delivery of outdoor-grazing systems (a widely debated topic these days) relative to the current payment schemes for the delivery of milk from outdoor-grazing cows.

Report prepared by Nico Polman (LEI Wageningen UR).

4.10 United Kingdom

The workshop suggested there is a fundamental need to discuss ESS 'bads', rathern than solely ESS 'goods'. The workshop concluded that there is a need for improved evidence base for the provision of PG/ESS, including trade-offs, to ensure more effective payments. The provision mechanisms have been overwhelmingly focussed upon agri-environmental schemes negotiated on an individual farm/holding level which was limiting outcomes. The discussions emphasised the need to change institutional structures to become more people-centric, territorially-based and respectful of local knowledge and social-cultural aspects. The encouragement of a sense of ownership and responsibility is considered important for the provision of PG/ESS, with a focus on how local needs and national objectives may be met and co-produced.

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The main mechanisms for PG/ESS include (i) land ownership and rights specifically the use of covenants, (ii) mechanisms to cover income foregone or opportunity costs (e.g. auctions), (iii) local, territorial controls for adaptations of national objectives and policies, and (iv) mechanisms or levers which are accessible and understandable for local communities with different knowledge levels.

Report prepared by: Janet Dwyer, Melissa Affleck and Katarina Kubinakova (Countryside and Community Research Institute, University of Gloucestershire).

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Appendix A: activities

This tasks starts in month 2 (April) and will be finalised in month 6 (September). Important steps are contributing to the Dijon workshop (June) and contributing to 14 national-level workshops to be held in month 7. The latter workshops are meant to test and extend the draft findings and to ensure that we have captured a wide range of relevant examples to concept the theoretical framework as well as to embrace future challenges.

Main activities of task 1.3:

A. Preparing literature review and critique/SWOT analysis of different valorisation methods
B. Preparing a compendium of policy and non-policy approaches to provisions, including costs and benefits in terms of provision and appreciation

Ad. A

It is important to understand how supply and demand interact. Beneficiaries are not only stakeholders who have some kind of profit, but also those who value PG/ESS (e.g. non-use values).

A questions is what choices do farmers or forest owners make with respect to land management and linked PG/ESS. How do they take into account beneficiaries? How can these PG/ESS be valorised (see also Schaller et al., 2014 for landscapes)? PG/ESS are valorised by the existence of wood, forests and ponds which provide to some extent the support for valorisation, while the proximity of the Rennes urban area supports the demand for agro-tourism and recreational activities (e.g. Vermersch, 2001). To valorise the environment (or green capital) through devleopement of touristic/recrational enterpices through cultivating rural amenities requires appropriate institutions, management sturctures and policies (Slee, 2005).

The focus of this task are (institutional) arrangements that can be applied for valorisation. Farmers will have some kind of business model in which they operate their farms where PG/ESS are jointly produced or substitute for conventional agricultural production or forestry systems. Different categories of beneficiaries will be relevant for specific PG/ESS. Relationships with these beneficiaries will different depending on the type of PG/ESS. Some beneficiaries like citizens from the neighbourhood will be known to the farmers or foresters and others will be anonymous.

The CANVAS business model (Osterwalder and Pigneur, 2010) will be considered to characterise valorisation methods at farm level (e.g. Polman et al., 2015 and Polling and Lorleberg, 2014). It will be translated, adapted, and extended for PG/ESS. Central in this

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framework are value propositions. These propositions can be qualitative or quantitative and need to be worked out for PG/ESS. PG/ESS will be valorised privately if they yield value for someone. Otherwise they will remain in the public domain or be common property. Once attributes are in the public domain, individuals can spend resources to 'capture' it. This is characterised as 'capture' because here, in contrast to a market sale, the original owner does not receive what the recipient spends .

PG/ESS will be characterised towards type of public good. Public goods can be subdivided with respect to relevant spatial scale. Water retention has a different scale compared to individual landscape elements like a special tree. Main output will be a critique/SWOT analysis of different valorisation methods. A provisional table of methods and PG/ESS is given in appendix B.

Ad B

The compendium will be a concise compilation of approaches collected within task 1.3. It will be easy accessible and be part of the project website. Main elements are short fact sheets which will be categorised following the framework developed under A. References will be included to the project itself, literature and case-studies. The primary target groups will be policy makers, NGOs, farmers unions and other researchers. Secondary target groups are farmers and forestry owners. The compendium will be tested and extend through national level workshops.

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Appendix B: provisional table valorisation methods

Table B.1: provisional table of valorisation methods and PG/ESS

	(Dutch) Examples of PG/ESS	
Valorisation methods	Meadow birds	Grazing
A. Public sector payment		
B. Private sector payment		
• Chain payment; local and national (vertical)		
• Other sectors, brewery in the sense that farmer protects his water resources or for inputs and tourism sector for maintaining scenery, employment creation (horizontal)		
C. Regional viability		
• Employment		
• Consumers, recreational values, volunteers offer labour instead of payments		
• Inclusive growth (climate resilience)		
D. Viability of farming		
• Development rights, permits (public)		
• Lisence to produce (private)		

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