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# *Can landscape stewardship be analysed and enhanced through the concept of service economics?*

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## **Abstract**

In this paper, a service economic analysis framework is developed and applied in order to define, understand, explain and improve landscape services. Together with the ecosystem functions and externalities approach, landscape services are understood as intentionally provided targeted outcomes of agricultural production, with the objective to improve landscape quality. Based on this conceptualisation, a five-step analysis framework is developed and applied to analyse the supply chain of three different landscape services. Empirical evidence was collected from two case studies located in France and Austria, whereas the French case study is the national grassland premium and the Austrian case study is on a local landscape scheme. It could be shown that a key strength of the utilised service economic perspective lies in its formalised structure which allowed the identification of involved actors, the organisation of their relation and the way they are acting within their institutional systems (i.e. how landscape services are organised). Moreover, the standardised analysis structure allows for comparisons of supply chains of landscape services and helps to identify scope for further improvements, independently from its geographic and administrative context. We conclude with potential risks and benefits of the service economics perspective for landscape services.

## **Key words:**

Landscape Services, Service economics, remuneration, supply chain, landscape program

## *Introduction*

European landscapes have been shaped by centuries of agricultural land use. Landscape amenities, formerly unintended by-products of agricultural land use, are now regarded as a key environmental asset and are highly valued by society (Van Huylenbroeck et al., 1999). They are often valued in their inherited form, yet this form typically derives from obsolete practices, which are no longer viable due to intensification of agricultural production (Matthews and Selman, 2006). In general little is known about the relationship between human behaviour and landscape development but it is hypothesised that changes in economy and society are directly reflected in the character of landscapes (Wood and Handley, 2001). New land use practices or the abandonment of agricultural land use result in unwelcome landscape change. In consequence, several forms of purposeful intervention in landscape development, such as legal regulations, contracts with landholders, national and EU-supported agri-environmental schemes, landscape and nature reserves, or food-related activities such as ‘eat the view’ and labels of origin (Penker 2009; Penker, 2008) are intended to enforce active land management for the production and maintenance of societal valued landscapes (Piorr, 2003; Blatschke, 2006). In this context, landscape premiums seems a promising initiative, in which people benefit economically from doing things that enhance multiple landscape functions, which, in turn, enhance quality of life and economic opportunity (Matthews and Selman, 2006).

Up until today little reference has been made by research to purposeful intervention and to the establishment of remuneration for landscape services. Among them, Aznar and Perrier Cornet (2004) discuss the concept of accentuating the production methods of landscape services using service economics as its basis; implying that landscape services are a “service” because they are intentionally provided by a supplier due to the demand by a user. Public Services are generally understood as utilities provided by the government to its citizens, either directly (via the public sector) or through financing private providers of services. Public Services are the result of a natural monopoly (e.g. railway infrastructure is best erected and maintained by one single provider) or involve a social consensus (usually expressed through democratic elections) that certain services should be available for everyone, irrespective of income (e.g. some health services or access to water). Public services are predominantly subject to regulation going beyond that applying to most economic sectors. Thus, the field of Service Economics can be also a key for a better understanding of the functioning and provision of landscape services.

In this paper we use the concept of Public Service Economics for the framing and understanding of landscape services, and address the following research questions:

- How can landscape services be defined and how can they be analysed by service economics?
- Who are the actors providing and using landscape services and how is the provision of these services organised?
- What are the risks and what are the chances of looking at landscape services from the perspective of service economics?

Following the theoretical framing of ‘remunerated landscape services’, the relevance and usefulness of the service economic theory is evaluated for the description, classification and analysis of landscape services. This theoretical framework is then used to classify the actors involved and to analyse the supply chain of landscape service provision. Based on the

theoretical discussion of the concepts of service economics, the paper presents empirical case studies comparing the relative service orientation of two programs involving remunerated landscape services in Austria and France. Potential advantages and disadvantages, benefits and risks that can be associated with a service economics perspective on landscape services are finally discussed and conclusions drawn for future applications of this concept.

## **1. Theorizing human-landscape relations**

To conceptualise human-landscape relations, we have to acknowledge that the terms landscape services, landscape functions, ecosystem services, ecosystem functions, ecological services, ecological functions, landscape services and environmental functions are ambiguous and often used interchangeably (Egoh et al., 2007). This reflects the variety of scientific discourses on human-landscape relations. Following, we concentrate on three theoretical concepts of economics which support the understanding of landscape services: ecosystem services from ecological economics, externalities from environmental economics and public service economics (Aznar and Perrier-Cornet, 2004).

### 1.1 Ecosystem functions and the conceptualisation of landscape quality

In ecological economics, nature represents a stock that is capable of delivering services. In this conceptualisation, services are produced by nature in itself (Hannon, 1998). Ecosystem services are the benefits people obtain from landscapes that can be provided by human-modified and natural systems (Costanza et al., 1997). The classification of these benefits has a long tradition in several disciplines; we refer here to a quite recent and often applied typology of De Groot et al. (2002).

De Groot et al. (2002, p394) define "ecosystem functions as 'the capacity of natural processes and components to provide goods and services that satisfy human needs, directly or indirectly'". According to De Groot et al. (2002) four primary categories of ecosystem functions can be identified: Regulation function, Habitat function, Production function and Information function. The authors highlight five ecosystem functions in this last category that are relevant to landscape amenities: aesthetic information, recreation and (eco)tourism, cultural and artistic inspiration, spiritual and historic information; scientific and educational information (De Groot et al., 2002).

The 'ecosystem function concept' helps to conceptualise landscape quality from an anthropocentric view. The concept of ecosystem functions provides a transformative lens for thinking about the relation between humankind and nature (Swinton et al., 2006). It is important to note that Landscape services referred to in this paper are those provided by humans who try to improve ecosystem functions which are provided by nature.

### 1.2 Externalities and human influence on landscape quality

Environmental and agricultural economists consider landscape services generally as production externalities, which can be either positive or negative. In this line, Wytrzens (1992) understands landscape maintenance as a joint product of conventional agricultural production. Roger (1999) regards landscape amenities as positive externalities of agricultural production. Thus, landscape services in this context can be defined as by-products or joint

products of land use, the joint product being either positive or negative. The externality approach highlights the dependency of landscape amenities on agricultural practices.

If we focus on positive externalities, the externality approach assumes that environmental benefits have public good characteristics but recognises that in certain circumstances some forms of environmental benefit can be jointly produced with a private good (Hodge, 2000). However, this literature says little about the way landscape amenities can be improved or created. This opens the way for service economics analysis.

### 1.3 Remunerated landscape services and service economics

Landscape amenities are not only externalities of agricultural land use, they may also be intentionally provided as a targeted outcome of remunerated landscape services, and thus might be explained by service economics.

In general, service economics are dealing with the place of services within economic dynamics. It is not a unified theory, but a range of fields. There are several definitions of services. For this paper, we rely on the definition developed by Hill (1977) and Delaunay and Gadrey (1992). Basically, their approach considers a service as a particular social relation between producer and user. They propose the following definition: “A service activity is an operation intended to bring about a change of state in a reality C that is owned or used by user B, the change being effected by service provider A at the request of B, and in many cases in collaboration with him or her, but without leading to the production of a good that can circulate in the economy independently of medium C”. This medium C may be an object, a good, an individual (who could be the final user or distinct from him), a flux or a stock of information or even an organization, but it always remains inseparable from the performance of service. The service relationship cannot be reduced to an interpersonal dimension. On the one hand, it requires the use of capital (inputs and means of production) (Delaunay 1999). On the other hand, it engages institutions exterior to the stricto sensu relationship in a social contact of service.

If we take service economics as a theoretical reference, landscape services can be defined as an intervention on an environmental medium (like water, air, land) or the ecosystem. The aim of a landscape service is to maintain or improve landscape quality. In contrast to positive or negative externalities of agricultural land use, here the service supplier aims to improve landscape quality in response to a demand. The intentional character of the intervention is emphasised economically by the remuneration the service provider gets in exchange for his or her time, material inputs such as plants, stones or wood, knowledge and expertise devoted to the supply of the landscape service. We understand 'intentional' in the common sense as 'voluntary'. In contrast, if actors are obliged to produce the service, it is not a service they provide but a regulation (rule, law) they have to follow.

According to Archibugi et al. (2003), public service provision involves three main players: users or citizens, the government and the service supplier. In the case of landscapes, non-governmental organisations also act as intermediaries representing the demand of their members and commissioning farmers, planning agencies or others providers of landscape services. The actors involved in the supply chain of landscape services and how they are organized is discussed in greater detail in section 3.

## 2. Applying Service Economics to understand landscape services

One of the important tasks undertaken in the field of Service Economics was to clarify the distinction between goods and services (Gadrey, 2000). In contrast to a good, a service is not an entity that can exist independently of its producer or user. Service Economics may serve as a tool to classify the actors involved in Landscape services and understand their interrelationships. Archibugi, 2003 uses the services triangle (Figure 1) to illustrate the relationship of supplier, user and governing body when defining a public service.

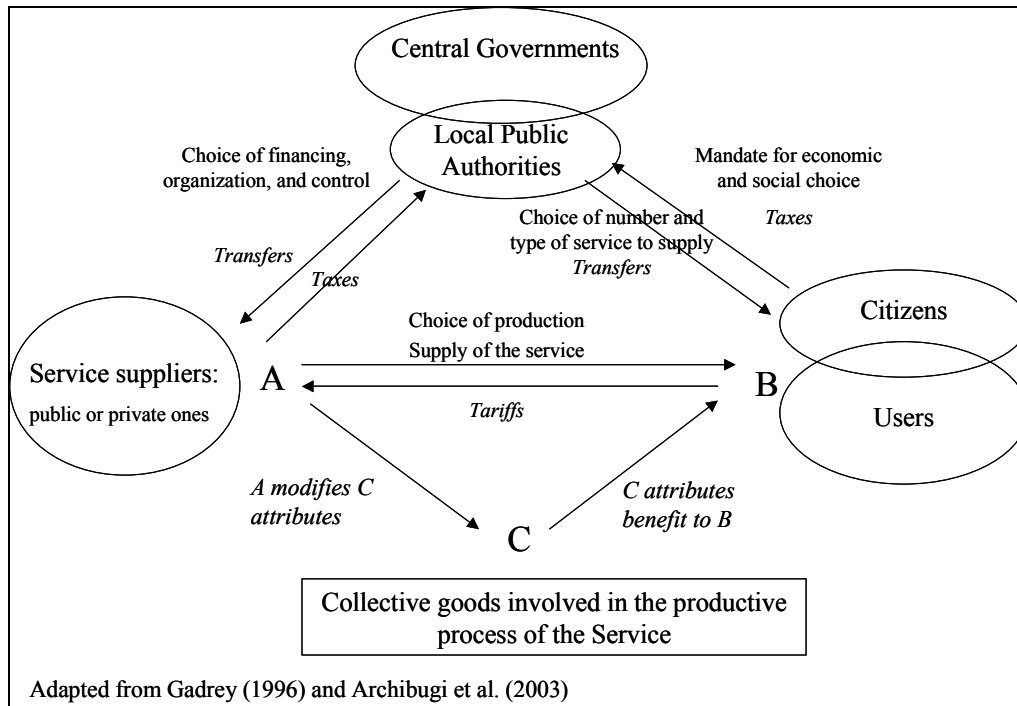


Figure 1: The Service Triangle

The service triangle illustrates that users of landscape services are generally not those who communicate directly a demand for services to producers. If they are not involved in land-use management and planning processes (which is very rarely the case in Austria and in France), other agents or institutions act on their behalf. Also the remuneration does not come directly from the beneficiaries of the improved landscape quality, but generally from an intermediary organisation. Most often these are public organisations (Aznar and Perrier-Cornet, 2004). These intermediaries, who formulate the demand for services to the suppliers in the name of the users, play a central role for landscape services. The intermediaries define the quality and quantity of demand, select contractors, monitor the outcome and allocate the tax money, fees or donations to the service providers.

The provision of cultural valued landscapes usually involves different actors at different levels. Higher levels such as regions, the State or the EU formulate concerns, provide funds and expertise, set up programmes and procedures which need to be implemented and adapted to a specific context on the local level (Allaire and Blanc, 2003). Characteristically, demand and supply of landscape services are co-ordinated by governmental organisations or civil society organisations such as WWF, Alpine Associations or local associations driven by the motivation of enhancing the quality of their local landscape. On the local level, service provision has a double dimension: on the one hand, there is a relationship between the public

authority and the end-user of the service. On the other hand there exist a second relationship between the local authority and one or several actors commissioned by the local authority to produce the service that is consumed by the end user. These two dimensions of landscape services co-exist and interact, forming local systems of public landscape actions. Thus, both, service providers as well as contractee are likely to benefit from long-term relationships because of lower transaction costs.

Figure 2 illustrates the supply chain that connects the providers of landscape services, the intermediary organisations and the beneficiaries of the landscape quality.

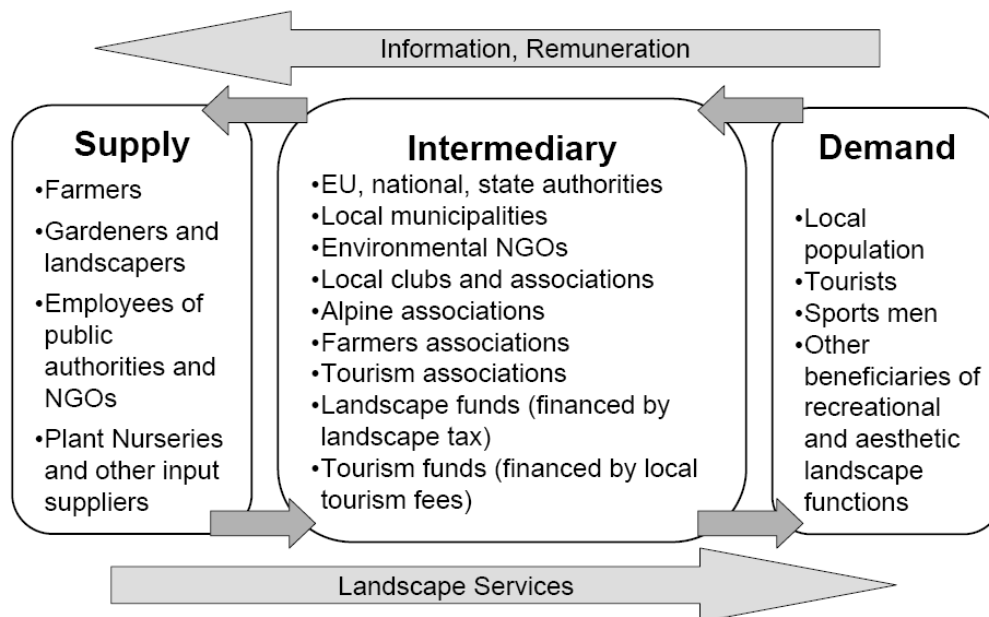


Figure 2: Supply chain of remunerated landscape services and exemplary actors

The lists of exemplary actors and organisations already indicate a variety of different supply chains. They can be differentiated regarding the actors and organisation involved, and regarding the specific rules and conventions governing their interaction. The left to right arrow symbolizes the direction of service provision, and the right to left arrow, the remuneration and the information on quality and quantity of demand. Classification of the multiple actors through the concept of service economics not only helps us better understand the organisation of Landscape services, but may also help to identify potential conflicts arising from the heterogeneity of service users and uses.

The following section illustrates in more detail, the actors involved in landscape stewardship. The intermediaries and suppliers are presented together, as the prevailing policy framework results in much stronger links between these supply chain actors than between intermediaries and landscape users.

## 2.1 Suppliers and intermediaries

Actors supplying intentional landscape services are potentially stakeholders who can alter the landscape. A landscape change occurs when gradually the land cover transforms to a new dominant type, necessitating technical actions that modify the (local) environment and causes

structural change (Antrop, 2003; Allaire and Blanc, 2003). Another landscape will be formed when, for example a new form of rural land use demands larger fields, terrain levelling, removal of hedgerows or the construction of new enlarged roads (Blaschke, 2006). Generally, different groups of intermediaries are involved in the production of landscape services. Figure 3 presents different institutional sectors governing landscape services (see Aznar and Perrier-Cornet, 2004). They are characterised by specific formal and informal rules and procedures, by different budget lines and motivations for controlling and enabling remunerated landscape services. The differences among the institutional sectors result in diverging supply chains and different forms of interaction and co-operation of the involved actors.

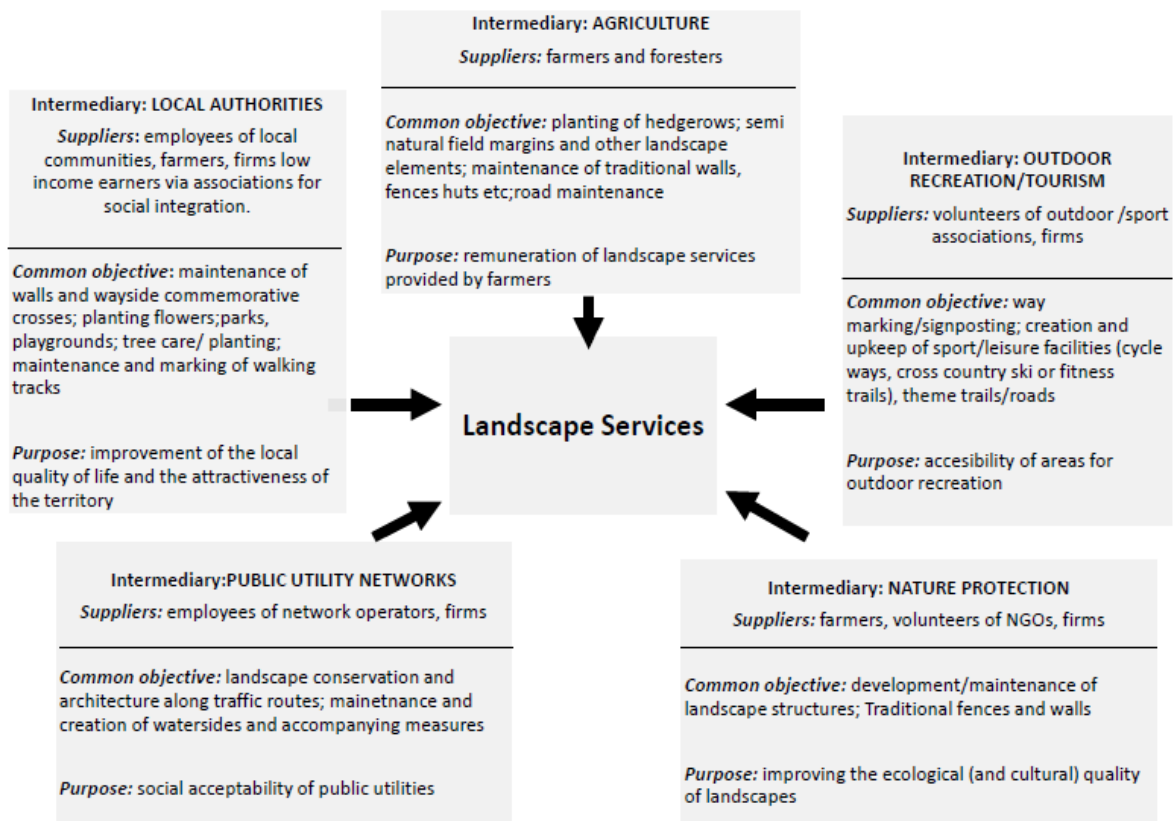


Figure 3: Intermediaries controlling and enabling landscape services and their provided services (adapted from Aznar & Perrier-Cornet, 2004)

Suppliers governed by agricultural authorities have the potential to maintain or improve the aesthetic and recreational quality of landscapes. Farmers, realising or maintaining social value 'place quality' by their farm practises can be regarded as landscape quality producers (Mathews and Selman, 2006). This includes the creation or maintenance of structures and land uses that give relative degrees of character to the landscape, as well as traditions and cultures associated with particular areas. Typical services provided by the agricultural sector are shown in Figure 3. These include the restoration or maintenance of fields and borders (hedges and walls), the appearance of farm buildings and the planting of hedges (Aznar and Perrier-Cornet, 2004). Services of this kind are characterised by their presence all over the territory and their production on private property as a response to a collective demand. Main actors in this sector are individual farmers who decide to or not to produce the service



(Jackson et al., 2007). In the French example, public authorities belonging to the French Ministry of Agriculture act as intermediaries for the production of these landscape services (see section 5).

Suppliers governed by the intermediary “tourism associations and authorities” often provide services that improve the accessibility of landscape for outdoor recreation activities. Respective landscape services permitting access to the landscape are traditionally managed on the local level based on informal agreements with landowners. Service suppliers can be volunteers, often closely related to users, coming from local leisure and sports clubs. Examples are hiking club members who voluntarily take care of the local and regional hiking infrastructure (Mann, 2006; Penker, 2008). Additionally, there is a gradual evolution of firms supplying services related to outdoor recreation activities.

'Public utility networks' gather various actors of public authorities in charge of satisfying local user needs. Services produced by this sector correspond to larger landscaping projects. Examples are the creation of major rural roads, as well as communication and electricity infrastructure – often with accompanying measures of landscape planning. The projects are mainly carried out by local authorities (e.g. the general council "conseil general", "communes") or – as described by Aznar and Perrier-Cornet (2004) - the French Ministry of Public Utilities. Also subcontracted local firms may act as suppliers.

'Local authorities' reflect the local dimension for service provision. Local authorities tend to play an essential role for intentional landscape service production intending to improve life quality. Especially the fact that local actors aim for a continuous satisfaction of local population needs, as well as a valorisation of local natural and cultural heritage, which are driving factors for service provision. As identified by Aznar and Perrier-Cornet (2004), services include small heritage restoration, flower planting, local landscaping and the creation of parks. As suppliers, often businesses provide the services for which they receive public remuneration, or local authorities themselves act as service suppliers.

Intermediaries in nature protection are either public authorities or NGOs. They provide landscape services on their own or on state land or on private land through contracts with land holders. The actual services are provided either by contracting landholders in exchange of remuneration, by volunteers of NGOs or by specialised firms. Figure 3 subsumes the intentional landscape service intermediaries and suppliers, including their underlying motives and objectives for service provision.

## 2.2 Users benefiting from landscape services

The service relationship between the public authority (e.g. local authority) and the landscape users corresponds to the social construction of a demand for a local public good (Allaire and Blanc, 2003). Users of rural landscapes can be characterised as having a relatively hedonistic approach (Aznar and Perrier-Cornet, 2004). They are looking for an attractive landscape they perceive and consider as natural (Junker and Buchecker, 2007). Studies of landscape aesthetics have shown that there is a common understanding by users as to what makes a natural environment attractive, this being an environment that has a close-to-nature status, varied structures, views and silence (Braemer, 2002). At the same time, people prefer an environment where human land-use can be noticed but where nature has a recognised 'eigen-value' (Rusterholz and Baur, 2003). Users' expectations correspond to well-managed rural

areas. They appreciate well managed pathways, well maintained river banks, regularly managed fields and forests.

The variety of aesthetic qualities of landscapes implies various use potentials (Maier and Shobayashi, 2001; de Groot et al., 2002). Two user groups have become a growing societal importance in the past decades and thus changed significantly rural areas, these are: those enjoying the landscape as a place for residential living and the others benefiting from it as a place for outdoor recreation and tourism. Both actor groups benefit from landscape services but can be distinguished by their distance to and time of using the service. While the use of landscape by residents can be characterised as a local and permanent use, consuming outdoor recreation and/or touristic infrastructure, such as hiking trails, are more mixed forms because they are not only used by local residents but as well by temporarily visiting tourists.

Many people have a preference to live in aesthetically pleasing environments (de Groot et al., 2002). The demand for residential living environment in the countryside is a phenomenon which can be observed since the 1970's (Jeanneaux, 2006). Lifestyle motives and amenities have been reported to be important for migration and mobility in several studies and are considered major contributors to rural repopulation and economic change in post-industrialised economies (Dahms and McComb, 1999). Especially retired people and tourists looking for second homes make up a large portion of migrants seeking for quiet and nature linked living possibilities (Labie, 2004; Royer, 2002). Household migration to rural areas are heavily driven by a residential search for landscape and climatic amenities or higher quality of life, helped by lower land rents and transportation costs (depending on the transport network and the link with price for gasoline) (Plateau and Rakotomalaia, 2005). Commonly, residents are people with a strong attachment to their home environment.

Outdoor recreation activities have gained societal importance in most European countries since the last four decades. Based on the European wide comparison of forest recreation household surveys, at least 50% of the population visits a natural environment for recreational purposes. About 80-90 % of all recreational visits or trips took at least partly place in forests (Dehez et al. 2008). Prognoses indicate a continual rise of nature-sport as a trend (e.g. Opaschowski 2001). These activities require space and infrastructures, forcing rural areas to become increasingly more multi purposed to serve the recreational demands of society (Mann and Jeanneaux, in preparation). People interact and relate differently to landscapes and therefore have different perceptions on desired landscapes (Tress and Tress, 2001), making landscapes complex to manage. Therefore the process deciding the need for the landscape services can be controversial, involving possible interest conflicts and disagreement between various stakeholders concerned. The classification of Landscape services and application of the service triangle may lead to more transparency and therefore integration of the multiple actors, that is, the suppliers, users, and governmental bodies.

### **3. An analytical framework to analyse the "supply chain" of landscape services**

The concepts of Service Economics may serve to analyse and to compare different supply chains providing landscape services. Based on Service Economics, we propose six steps to analyze the "supply chain" of a landscape service: (1) the emergence of the demand, (2) the remuneration and the transfer (3) the supply of the service, (4) the production per se, (5) the use of a service, and (6) the evaluation of the quality and quantity of the "result". The result of landscape services is not necessarily a product but it is/has a positive effect for the user, based

on the transformation (or maintenance) of a medium and the improved landscape quality. Following, the six distinct steps are explained in more detail.

#### **Step 1: Emergence of a demand**

The central questions in Step 1 for the analysis of a landscape supply chain are: How is a demand expressed, and how is a demand emerging? This could be due to the fact that an intermediary organisation is going to ask for a service in response to a specific demand. This intermediary organisation can be located at the global (European or national) level or at the local level. In this step, the intermediary organisation might evaluate the quality of the medium (e.g. hedge, river, minor rural road) and then defines what actions are necessary in order to provide the landscape service. They create rules that shape/model the type of service that is going to be produced. The users could also be included in a planning process to identify the demand, e.g. by participative planning approaches involving various relevant stakeholders.

#### **Step 2: Remuneration and transfer**

For the remuneration of landscape services various financing sources are possible. There can be money coming from diverse budgets and geographical levels: from the general EU or from the national budget, from the budgets of the federal states or from local municipalities.

Other financing possibilities are imposing taxes on landscape interventions, such as the extraction of gravel or sand (Penker, 2008), which are then administered by public funds and dedicated to measures of landscape maintenance. Another possibility in this sense are local tourism fees on over-night-stays transferred to local farmers providing landscape services, or membership fees and donations financing landscape services commissioned by environmental NGOs or alpine associations. The variety of financing opportunities is rich and may vary depending on the service provided and its respective institutional context.

#### **Step 3: Emergence of the supply side.**

The service can be produced by one or several suppliers. The intermediary organization decides if it produces the service internally with its own employees or if the service should be provided by land holders or private firms. The latter decide if they should contract with the intermediary organization and if they cooperate and coordinate themselves for service provision (e.g. cooperation of farmers providing large scale landscape services). They might adapt their internal organisation structure and resources (e.g. competences, resources, financial means, human means) in order to produce the service. For example, some farmers decide to become landscape services providers and they adapt the organisation of their farms accordingly or co-operate with other farmers to bid for bigger contracts.

In general, the choice for a provider to produce a landscape service depends on several determinants. Determining factors are for example the combination of factors (like labor and capital, knowledge and social relations) or their location (proximity to urban or tourism centers).

#### **Step 4: Service provision**

When demand and supply meet, the actual service can be provided. For example, a municipality commissions a private landscaping firm to improve the landscape quality of a public place. Sometimes, public policies (the rules for subsidies) can define the type of provider. Potential suppliers can decide whether they participate in such a program or not. This framework is linked with the involved intermediaries. Then, the concrete production is operated. It is based on the means of the provider, but a co-production can occur if for

example the intermediary organisation is participating in the production (in different ways). Sometime, the exact form of the landscape service is specified during this moment. Landscape services produced can be further distinguished by their character as being a punctual services (one-time services like hedge planting, creation of a path or playground) or a periodical services (like regular maintenance services of fences, or upkeep of leisure facilities). The actors negotiate the outcome of the service. They also have to deal with the uncertainty of the quality of the service and uncertainty of the price of the service. If there are new difficulties faced during the production process, they can re-evaluate price and quality objectives.

#### **Step 5: Landscape users benefiting of the service**

This step describes the benefits derived from the landscape service by the landscape users. They can benefit from the improved landscape quality (e.g. maintenance of a hedge). For example, a tourist appreciates a walk (final use) on a minor rural road (environmental medium of the service) thanks to hiking marks (outcome of the service). Concerning the time-space relation, consumption is spatially connected to the actual place of service provision, but temporally disconnected: The end-user is not obliged to benefit of the service just after the operation. The use by one landscape users, generally does not exclude others from the same benefits, although there are some effects of crowding on particularly outstanding points of landscapes, such as mountain peaks or lakesides or riversides (partial rivalry of use). Landscape users might be excluded from some landscapes (private gardens at lakesides). Some types of landscape use might be restricted (e.g. mountain biking or paragliding in protected alpine landscapes). Final users do not benefit from separate landscape services, but they use a set of services and goods. For example, a tourist appreciates the local landscape (scenic view) and the maintenance service on a minor rural road permitting the access to this landscape. These different services might be governed by diverging intermediaries and managed by different suppliers. The users can be distinguished regarding their provenance (local/exterior people), the type or the intensity of the use of the landscape service.

#### **Step 6: Evaluation and effects of the service**

Generally, the evaluation of the service can be done by both sides: the contractors (provider/intermediary organisations) or the users of the service. The feedback to intermediary organisations can also come from landscape users in a participatory setting or by an external evaluator, who could assess the outcome of the service against the objectives assigned. Thereby, the evaluation is based on two aspects: First, the direct/short term effect of the service on landscape quality needs to be evaluated. Second, the indirect/long term effect needs to be taken into account as well. This is the most interesting but also the most difficult point for the evaluation. Especially defining the criteria to evaluate the long term effect of a service seems crucial and sometimes arbitrary. According to the literature, long term effects can be measured in two ways: First by short term use values (landscape quality), i.e. is the service well appreciated and used by final users? Second, there are also long term impacts of the landscape service on the environmental dimensions (water, air, soil...) and social effects.

The most crucial aspect for evaluation is the question of who are the social actors setting the standards and what is the justification and legitimisation for this choice? It can be assumed that the evaluation of the service is highly structured by the intermediaries governing the landscape chain. If the evaluator is not a member of the same intermediary organisation, then the evaluation of the service can be difficult because of diverging motives and objectives.

#### **4. An empirical evaluation of the relative service orientation of two landscape programs in France and Austria**

Empirical case studies were conducted to compare the relative service orientation of two programs involving remunerated landscape stewardship in France and Austria. Besides different national contexts, the level of service provision is also contrasted. While the French example focuses on an agri-environmental scheme on the national level, the Austrian case study examines a landscape service scheme on the local level. A group of questions were adapted from the service economics approach outlined in Section 4 to investigate how the landscape service is organised (Annex 1). Specifically, one objective was to examine how integrated the users are in the supply chain, and the degree to which their desires are met. The underlying assumption is that the more service orientated the landscape program is the better managed the landscape amenities will be.

##### 4.1 Case Study 1: The Grass land premium in France

For the French case, a national implemented agri-environmental scheme is analysed: the Grass premium 'Prime herbagère agroenvironnementale' (PHAE). The demand for environmental sound farm management and landscape protection is a recent issue in France. A major political concern became the threat of land abandonment in grassland areas with a consequent degradation of once productive land. Therefore, a focus of French agri-environmental policy is on the maintenance of local production systems (here extensive grassland management) and their contribution to the agricultural landscape and the environment (Buller & Brives, 2000). PHAE can be set up alone or included within a larger contract like Sustainable Farm Contracts (Contrats d'Agriculture Durable), between the State and a farmer. The schemes are implemented by the Ministry of Agriculture (Nitsch et al., 2005).

##### 4.2 Case Study 2: Landscape Service scheme in an Austrian municipality

For the Austrian case study, a landscape service scheme of a municipality located in the northern Alps of Tyrol, Austria was analysed. Besides the national, EU co-financed agri-environmental schemes, several municipalities implement their own local landscape programmes (Hackl et al., 2007). The municipality of this case study is a market town in Austria, in the Kitzbühel district. It is located at an elevation of 622m above sea level. With an area of 166.57km<sup>2</sup> it is the largest municipality in the district, and among the largest in Tyrol.

The municipality has a long tradition of sharing the provision of landscape services between the local authority, local farmers and private clubs (e.g. sports clubs). Landscape services remunerated by the municipality consist of three different types. Firstly, upkeep of the landscape involves a general agreement between the farmers and the local authority. This assures an aesthetically pleasing landscape, a clean well maintained municipality and the image of living in one of the cleanest and tidiest areas in Tyrol. Promoting this image is of great interest to the municipality since it is depending on tourism, in winter as well as in summer periods. Secondly, the service of cleaning and clearing rural roads from snow in

winter is shared between the local authority and the farmers. The local authority is responsible for providing this service and contracts this out to farmers. Both the local members of this municipality and tourists benefit from these landscape services. Thirdly, the local authority is asking private clubs to provide extra landscape services, when needed. For example, the clearing of a walking path to an alpine restaurant may be realised by private sports clubs or farmers (if their fields are bordering the path) or both may share this responsibility.

#### 4.3 Results and comparative analysis

In this section, the results of the two case studies, following the five-step analysis framework for Landscape services are presented. The results are given as a comparative summary to deepen the understanding of the surveyed service, as well as to highlight commonalities and differences among the cases for service provision and use. The specific results obtained from the case studies are displayed in the annex.

##### **Step 1: Emergence of a Demand**

The two case studies illustrate that a need for landscape services provision is acknowledged on the national as well as on the local level. While in the French example, the incentive was introduced by the framework of agri-environmental policies and measures, the Austrian case highlights local initiatives by stakeholders based on local traditions to provide landscape services. Moreover, both demands are documented in core policy documents i.e. in strategic development plans, which apply for different administrative levels, respectively. Similar, potential users as well as their preferences for the extent of landscape service provision are in both cases assumed and are not based on demand surveys. This appears to be independent of the size or type of user groups: preferences are assumed for local residents, recreationalists and tourists. In both cases predominantly the service providers are involved in the process of service definition. Although in the French example a commission has been established on the national level to allow the participation of diverse stakeholder groups, this platform is dominated by the interests of the agricultural lobby, thus neglecting a pluralistic, democratic negotiation process. On the local level, similarly, only service providers (farmers) are integrated in the process, formally excluding users, and thus impeding the possibility to express their preferences for service provision.

##### **Step 2: Remuneration and Transfer**

In both case studies, service providers are remunerated for their engagement. Private funds are not involved for remuneration, but for each administrative level, public authorities, i.e. the Ministry of Agriculture for the national level and local authorities for the communal level are in charge for remuneration. They define the amount of money and transfer it to the service providers. For both landscape services under scrutiny, money is paid on an annual basis, depending on the size of managed land for the provision of defined services. Differences exist in the amount of remuneration: While on the local level, money paid for traditional landscape upkeep has a more symbolic character, the road clearance and national agri-environmental scheme is seen as an important additional source of income for the farmer, especially in less productive, i.e. mountains areas. This becomes even more important knowing that some services do not imply specific production costs, as they are part of still employed traditional farming practices. Thus, no specific framework conditions have to be created for these service provisions, only that their work is defined and documented as a landscape service. Conversely however, the road clearance service does involve specific production costs and is separate to regular farming practices.

### **Step 3: Service Provision**

The analysis of the two case studies for service provision shows that in both examples farmers are the main service suppliers: for extensive grassland management and for the management, upkeep and clearance of rural roads. While in the French case study contracts are revised every five years, the local landscape services in the Austrian Case study are adapted and improved each year whereby the main services are remaining mostly the same. In contrast, the requirements have become more complex for French farmers and thus more and more farmers have stopped to ask for this premium. These services are not punctually concentrated but widespread to all suitable area within the administrative borders (i.e. mountains areas, rural road network). The type of service to be provided is defined solely by public authorities. This may be fostered by the fact to ensure a continuation of a service tradition (example Austria) or to enforce/implement a European or national policy schemes targeting the agricultural sector (example France). Additionally, the circle of service providers is not open to everyone but is oriented along use traditions or rules for agri-environmental schemes. Interestingly, both cases reveal that it is likely the service would be provided even without payments, due to their integration into regular farm work, with the exception of the road clearance service.

### **Step 4: Consumption of the service**

The services provided are embedded in local/regional social-ecological systems. By the provision of extensively managed grasslands as well as by managed rural road networks, besides the upkeep of the medium, mainly regional/local aesthetical and recreational amenities are raised. Consequently, the major users identified are local residents and recreationists as well as visiting tourists. The landscape service in terms of an aesthetic use is accessible to everyone. Similarly in both examples, recreational and touristic uses are not monitored or documented. This is not a specific problem related to the studied landscape services but due to a common European lack of monitoring systems in this regard. Predominant open-access rights and limited exclusion possibilities make it difficult to e.g. count visitor numbers on central entrances points or parking lots. Apart from raising the aesthetical quality of landscapes, other environmental objectives can be reached by the provision of the services, independently from use structures, e.g. biodiversity enhancement. Therefore, service benefits are difficult to define due to overlaps of their effects.

### **Step 5: Evaluation and effects of the service**

Quantity and quality standards to be met by service suppliers and which can be used for evaluation purposes are in place for both provided services. In the French example, photographs are used to qualitatively evaluate upkeep activities by the controlling body. Additionally, quantitative standards define the framework conditions. In the Austrian example quality guidelines exist for the rural road management, and informal standards are often defined orally for general landscape upkeep based on tradition. In general, no feedback from users is formally included in the evaluation processes. All evaluation is done by the authorities in charge. Only informal structures are used by local stakeholders to e.g. complain to the respective authorities about the quality of service provision. As one effect, a stable quality of service exists, but incentives for adaptive service improvements over time are rare due to limited input possibilities.

## **5. Discussion and Conclusions**

In this paper we developed and tested a theoretical framework to conceptualise human-landscape relations. As a first step, we combined the ecosystem functions and externalities

approaches to define landscape services as positive externalities, produced as (unintended) by-products of agricultural production. We then narrowed down the scope of landscape services to those which are related to aesthetical and recreational amenities of land management for our analysis. As a second step, the view on landscape services was broadened by applying the service economics framework. Here, landscape services were understood as being intentionally provided targeted outcomes of management action. An analysis scheme was developed 1) to locate the position of landscape stewardship in the economy, and 2) to analyse the supply chain of landscape services, such as the actors involved, how the provision of the service is organised and the quality of the service. This scheme was comparatively applied to two case studies of landscape stewardship programs in France and Austria. Following, we discuss the supply chain of landscape services as identified in the case studies, and also discuss chances, risks and strength of the service economic framework as an analysis scheme for their better understanding of landscape services.

### 5.1 Conclusions drawn from the comparative case study

The two case studies from Austria and France provide valuable insights into the supply chain of different landscape services to enhance the aesthetic, recreational and touristic amenities of landscapes in a different cultural context, and on different administrative levels.

Even if the chosen examples differ in terms of their scope of geographic application, they illustrate that the provision of cultural landscape services are recognized on the national as well as on the local level, being documented and fostered by policy documents respectively. Behind this stands the idea that rural land serves multifunctional purposes. Consequently, besides agricultural production, other land uses like recreational and aesthetic functions also have to be included into land management decisions as Dehez et al., 2008 also suggest. Therefore, the idea to enhance lifestyle quality by managing landscapes for all social desires as introduced by the United Nations Conference on Environment and Development (UNCED) in Rio, 1992 (see Cleveland et al., 2007) is implemented from the national down to the local level. The political motivation behind service provision is thereby a different one: In the French case, a general set of standards are set at the national level, and then refined at the regional level, which holds promise to avoid loss of biodiversity and standardization of landscapes. For the Austrian study the program is locally funded and not formally standardized so it is likely to support local practices. The lack of homogeneity of landscape services makes them difficult to standardize. However, they serve the objective to enhance lifestyle quality; new is their definition as services, intentionally provided.

In both examples the providers for these services are mainly farmers. In the Austrian case, local clubs like nature sport clubs can also be involved in service provision, but generally the role of agriculture as the important 'manager' and 'creator' of rural landscapes was revealed. Focusing on farmers as service providers according to the results bares chances and limitations. It is positive that the objective to create and/or to improve pleasant landscape scenery is no longer seen as a positive 'side-effect' which is automatically produced while engaging in farming practices (Roger, 1999), but defined as an additional purposefully produced service. Even if the examples showed that providing these services doesn't always bare much additional production costs, it is an important first step to define the effects as a service. In circumstances where modern agricultural practices (creating new undesired landscapes) replace traditional ones, then the role of landscape services as a purposeful intervention to maintain desired landscapes can be more clearly observed. Also whether or not



the service bares additional production costs becomes less relevant. This constitutes the basis to define the work needed to enhance landscape quality and thus for the remuneration. But the remuneration seems difficult.

The case studies showed that in both cases an 'appropriate' level of remuneration, thus representing the work needed to provide this service, seems not to be defined in an optimal way. While in the French example, the remuneration seems too high regarding that often there are no productions costs involved to provide this service, in the Austrian case the funding is very low, and has more a symbolic character. But both incentives have a motivating effect for the farmers. But it can be assumed that in the local landscape scheme the amount of remuneration might not persuade farmers about traditional landscape maintenance if they would not do it anyway. Extremes can be seen in the French example where the money originating from the grassland premium is an important part of farmers' income. This illustrates that intentionally provided services to maintain or improve culturally valuable landscapes bare chances of additional or even alternative revenues in rural areas. On the down side, much more work is needed to define the appropriate level of remuneration.

Moreover, the way services are defined can be questioned. In general, assumptions are made by intermediaries like local or national authorities as to what general users prefer. These assumptions may be reasonable, such as in instances where the landscape value is managed by local authorities in small regions, where informal dialogue is common or when the management is of an aesthetic value with a long tradition such as managed grassland. However, both case studies indicate a lack of formal involvement of users. Due to the fact that mainly farmers are the service providers, the definition of service extent and quality is predominantly shifted to the agricultural sector. On the local level, formal structures exclude other participants than the local authorities and farmers. On the national level, formal structures have been initially created for wider participation, but in practice, the agricultural sector has the decision authority. It can be argued that this is correct knowing that services are produced on private land and thus farmers can freely decide in what kind of services they want to engage in. Also, often the desired landscape is the result of normal farm practice and the non-farming community is not likely to be an authority on this matter. In contrast, farmers participating in the grassland premium are receiving public money (from tax payers); in order to satisfy the payers who are likely also to be the users then opportunities for input would be tactful. A service cannot exist independently of its producer or user. Both are required and therefore both need to be integrated into the process. This may also help differentiate the program as a service rather than protectionism. Thus, it is the role of the intermediaries to ensure this is achieved.

The use of participatory methods to explore user desires might help to enhance aesthetic and recreational landscape amenities. According to Hodge (2007) there is a role for a process that engages across the range of stakeholders and co-ordinates the decisions of land managers. This process should include both the gainers and losers from potential changes. There is a risk that the ideas of an aesthetic landscape differ between farmers and e.g. recreationalists and tourists. Especially a landscape value where its benefit is "useable" such as a walking trail or mountain bike track which would more clearly need input on quality and quantity standards from user groups, who could act as experts in this respect. Without user involvement there runs the risk of conflict, particularly if it is recognized that farmers in some instances are receiving payments, when the cost of landscape amenity provision is minimal or carried out

as a normal farm practice anyway. On the other hand landscape service – like in the French grassland premium – may be neglected altogether if no remuneration is made.

An issue arising from the case studies is the need to ease the contracts for landscape provision, so as not to dissuade farmers to participate in the program. This raises the question of how to organise service definition and provision. According to Archibugi et al. (2003) the general identification of an optimal form of organization is not possible. There is not a single best organizational solution for landscape service provision. Hodge (2007) calls for a new approach to landscape governance that is based on the integration of different organizational forms on the local level. Therefore, to create partnerships and to use participatory approaches between farmers and other stakeholders who represent user groups are instrumental in understanding intentional landscape services and the tradeoffs of different landscape management scenarios.

## 5.2 Weaknesses, risks and strengths of the service economics approach

The Service Economics approach applied provides a helpful framework to understand how landscape services can be produced through intentional intervention. Acknowledging the existence of intentional human interventions into landscapes to improve landscape quality, we need an additional perspective for their understanding. In this paper, we argue that service economics could provide this perspective.

Within the idea of applying service economics to remunerated landscape services, an analysis scheme has been developed. The five-step procedure offers a transparent, straight-forward method to survey each stage of a service provision and can be applied to the investigation of different landscape services. The application of the framework is independent of the geographic or administrative scope and sets the focus on the service provided. It surveys on the service as a product and thus classifies humans involved in to providers, intermediaries and users. Adopting this position implicates both potential benefits and risks. An overall shift from the externality approach to intentional service provision first of all helps to avoid market failure, through the recognition of non market values. The societal need for aesthetic, suitable landscapes for living, recreation and tourism is gaining more and more importance these days (Dehez et al., 2008). Here, the service economic perspective helps to make this need explicit and, moreover, to accentuate that active management is needed for their provision. A remuneration forms an important first step to assign values to this kind of land management, and thus a basis for the remuneration of farmers' engagement.

In many less-favoured mountain regions farming is declining due to restricted production opportunities. Remuneration paid to local farmers for the provision of landscape services can encourage the continuation of farming and thus ameliorate the situation with a desired landscape as a product (Hackl et al, 2007). Nevertheless, recognising landscape stewardship as an intentional service (i.e. in the context of service economics) requires a clear differentiation from compensation payments in order to avoid being labelled as protectionism. Also, there is a risk that introducing remuneration for intentionally provided landscape services may limit voluntary actions (Reeson et al, 2008). Therefore, care should be taken when introducing formal institutions into the web of informal institutions and motivations when dealing with public goods (Reeson et al 2008), in order to avoid harmful incentives that may cause a decline in public good provision. But if policy is well-designed it may be

possible to strengthen existing intrinsic motivations meanwhile providing extrinsic incentives to encourage others to contribute (Frey, 1997; Reeson et al 2008).

The remuneration of landscape services holds considerable potential. Among the key messages coming from the OECD Rural Policy Conference in Cologne, Germany 2008 was that public goods and services form the bedrock for rural community development and that they play a role in unlocking the competitive advantage of rural regions. Services in general, but landscape services in particular, lack in homogeneity as they are typically adapted to the specific situation and context. This characteristic makes it difficult to evaluate or compare services regarding their quality and thus level of remuneration. Standardisation of services may lead to a loss of diversity of landscapes particularly if they are too prescriptive. Croxton et al (2004) find in their study on hedgerow restoration that the more architectural variation in hedgerows the greater the habitat support and therefore the greater the biodiversity. Along with the threat to biodiversity is the threat to the aesthetic uniqueness of local areas, particularly if control is relegated to a central governance structure. This makes it even more necessary to include value judgements by the service users. The satisfaction of the service delivered to the end users is a critical component of services. A service unlike an exchange on the spot market generally involves a lasting relationship between buyer and provider (Gadrey, 1996). Although payments (taxes, tariffs etc) may be collected from users to cover costs of Landscape services, users often have no influence or involvement in the management of these services.

Additionally, uncoupling Landscape services from agricultural practices bares the risk that conflict between land utilised for production and land utilised for landscape amenity may arise. Facing multifunctional land-uses, careful planning and prioritising land-uses is a pre-condition to establish adaptive conflict solutions. Therefore, close cooperation between service users and providers is of advantage. Local involvement in the management of natural resources is becoming an increasingly favoured governance structure. Moreover, social capital may become increasingly important, since relations of trust that are forged by institutionalized groups encourage long-term individual investments for the common good, and generate economies that bring greater economic, ecologic and cultural benefits to the rural landscape (Pretty and Smith, 2004).

To sum up, the key strength of service economics as a framework for defining landscape stewardship lies in its formalised structure which allows analysing the supply-chain of landscape services. Its underlying assumption to perceive landscape services as intentionally provided land management actions forms an important basis for the recognition of non market values (i.e. remuneration for suppliers), the provision of intentional landscape outcomes and integration of user desires. More specifically, the concept of service economics allows the identification of respective involved actors, the organisation of their relation and the way they are acting within their institutional systems (i.e. how landscape services are organised). Additionally, the quality of services provided can be evaluated; the standardised analysis structure allows for comparisons of existing supply chains and helps to identify scope for further improvements, independently of the geographic and administrative context. Of course, many aspects of services are still inadequately understood and they are perceived to have a low productivity and low innovative capacity (Flikkema, 2005). The agricultural sector is the main creator of cultural landscapes, today and historically. To transform land-management activities into service categories helps to make farmers' engagement visible and to integrate user desires. Thus, recognising activities related to scenic beauty and recreation forms a new

part of agricultural production. It is the time to make these services more explicit and to remunerate farmers for their engagement, which is also going beyond their traditional involvement. For this, a service economic perspective adds to the understanding of the nature of agricultural production and to adjust service provision to changing societal needs.

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## Annex 1: Results of the case studies following the five-step analysis framework

### Step 1: Emergence of a Demand

Question	French Case Study	Austrian Case Study
1.1. Is there acknowledgement by the public authority (intermediary) of a demand for landscape services?	Yes, by the French Ministry of Agriculture for the maintenance of extensive husbandry.	Yes, by the tourist office and the local authority office for landscape services particularly in the winter.
1.2. Is this an official position and documented somewhere (e.g. strategic plan, policy etc.)?	Yes documentation takes place in the French Agricultural Policy, like in the National Rural Development Plan ( <i>Plan de Développement Rural National</i> , PDRN).	Yes, every year a decision is made as to which farmers take part in the scheme, and how much they receive, this is documented in the strategic local authority plan. The scheme is elaborated each year.
1.3. Are the user groups identified?	No, only the service suppliers are identified.	Yes, they are identified as tourists (who benefit from an aesthetic landscape and a clean well maintained municipality); and local people (who benefit from the image of living in one of the cleanest and tidiest areas in Tyrol, including clear roads).
1.4. Is there any knowledge of the preference of landscape services desired by users?	It is assumed that society prefers grassland.	The local authority assumes that locals desire clean rural roads and borders between the fields and rural roads, as well as that tourists desire a picture postcard view of the municipality. Sometimes local managers of alpine restaurants request clear pathways.
1.5. How is this information gathered? (survey (scientific case study, regional inventory etc.), economic valuation, meetings, feedback, etc)	The preferences are assumed. The European Commission asked to the French Ministry of Agriculture for scientific evaluations of the PHAE, but results are confidential.	Local knowledge gained through tradition and experience and from direct requests from the community.
1.6. Is there a forum, a platform for gathering this information (participatory methods used?)	Yes, a commission for agricultural guidance on the NUTS3 level, the CDOA, provides a platform for representatives of administration, communities, agricultural organisations, farmers' unions, and producer-, environmental- and consumer- associations for exchange. In reality, CDOA is only associating Farmers lobbies and administration.	No
1.7. Who is participating and who is excluded from the	Participating are predominantly public organisations like	Any local farmer who wishes is participating in the general



negotiation process of the service? Why?	subordinated authorities of the Ministries of Agriculture and Environment (DRAF, DDAF, DIREN) or agencies for farm structure improvement (CNASEA). Also semi-private and private organisations are involved representing farmers lobbies (APCA, CDOA). Formally, the CDOA also represents local public authorities, environmental and consumers NGOs, but these are not participating in strategic decisions.	landscape service program. Farmers whose properties adjoin rural roads are involved in the street clearing and cleaning program, the participants are selected on an annual basis.
1.8. How are different preferences integrated and weighted? Who is deciding this?	Farmers' representatives lobbies are more powerful than other actors.	User preferences are not sought by the local authority.

## Step 2: Remuneration and Transfer

Question	French Case Study	Austrian Case Study
2.0. Are the suppliers of Landscape services remunerated?	Yes, for all services they subscribed in the contracts. (But often no specific production costs are involved for the provision of landscape services.)	Yes, each farmer involved in the program receives compensation for the provision of landscape services. The payment (€50, €100 or €150) is based on the size of their farms. The farmers involved in the street clearing are paid on an hourly basis during the winter period.
2.1. Are the suppliers privately or publicly funded?	Publicly, the budget is decided nation-wide by the Ministry of Agriculture, in collaboration with the DRAF, who is in charge to allocate the regional budget at NUTS3 level.	Publicly, by the local authority.
2.2. If so how are they funded (e.g. tax on landscape intervention such as gravel or sand extraction) and at which level, e.g. local, district, national, EU?	Until 2003, it was co-funded by the European Commission and the French Ministry of Agriculture. Since 2003, only French Ministry of Agriculture is paying for PHAE at the NUTS 3 level.	By the local budget of the local authority
2.3. How are the suppliers paid (for example provision of a single or multiple service(s) or as a compensation payment)?	Every farmer is paid based on the number of hectares he manages. Every NUTS3 region must respect a maximum of 27 000 € per farm for 5-year contract.	Every farmer is paid based on the size of their farms on an annual basis. For the winter street clearing service the farmers are paid on a per hour basis, but are unpaid for their cleaning services in the summer.
2.4. Is it profitable for the producer side to offer the	Yes, it is profitable especially in natural less favoured areas.	The general landscape service has a long tradition, the farmers receive

service (payment in relation to production costs), or is it just a small compensation?		payment for their normal farm practice, however the payment is more a recognition of the farmer's hard work than remuneration for services provided. For the snow clearing it is profitable, which encourages farmer involvement.
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### Step 3: Service Provision

Question	French Case Study	Austrian Case Study
3.1. What landscape services are produced and how are these decided?	One landscape service is produced: extensive grassland management. The decision what kind of service should be provided is most times done with help of farmers' unions or the Agricultural Chambers. The farmer has to submit his application to the service of the Ministry of Agriculture at NUTS 3 level (DDAF), they check the consistency of the project and transfers the application to the CDOA ( <i>Regional Committee for Agricultural Orientation</i> ) for authentication. The final validation and approval of the contract is task of the Prefect, as the highest representative of the government on the regional level.	There are three schemes. The first involves traditional upkeep of the landscape and involves a general agreement between the farmers and the local authority. The second involves clearing and cleaning of rural roads. The local authority is responsible for this service and contracts this out to farmers. Therefore the local authority decides on how this service is implemented. Thirdly, the local authority is asking private clubs or farmers to provide extra landscape services, when there is the need (e.g., the clearing of a walking path.
3.2. Are locals involved in the definition of service provision?	For PHAE, locals are not involved for definition of service provision. DDAF can propose some adaptations of service provision, depending on the local conditions. But generally, only few actors are involved in this definition.	No, however locals have the possibility to directly contact the local authority and request services, such as the clearing of pathways to alpine restaurants. However there is no specific platform for this process.
3.3. Are there attempts or opportunities existing to improve or develop the landscape services?	In order to secure a certain degree of harmonisation for service provision, a national frame was imposed to the regional level (NUTS3) at the end of 1999 and the regions were asked to draw up a regional synthesis. Besides this, on the local level, the contracts are revised every five years.	The general service may be improved at the discretion of the farmer, although it will not result in higher payments. The local landscape services are adapted and improved each year, for example a curling club is now remunerated for grooming lake ice for curling in the winter.
3.4. Has there been any innovation in the delivery of Landscape services over time?	From 1993 to today, the requirements have become more complex for farmers. So more and more farmers have stopped to ask for this premium.	The main services are remaining mostly the same; however there is a trend toward involving not for profit clubs (e.g. sport clubs) in the up keeping of the landscape.
3.5. Has there been a loss in service	No	No

provision from voluntary efforts?		
3.6. Are there only volunteers or professionals or both involved for service provision?	There are only professionals (farmers) involved in service provision.	The local authority has a policy to financially reward volunteer services such as from clubs that provide landscape services, so effectively there are no “pure” voluntary contributions to landscape services.
3.7. Is the service geographically concentrated/punctual or spread?	The service is concentrated in mountainous areas, because of the criteria to receive the subsidies: mainly farmers from mountainous areas fulfil these criteria.	The general landscape service is widespread; however the rural road service is defined to areas adjacent to roads.
3.8. For how long does this service (already) exist?	The service exists since 1993, with some evolutions every five years: 1998, 2003 and 2008.	The local authority has a long tradition of engaging with farmers to maintain landscapes in both the winter and summer; however service providers have only been rewarded historically for the winter service. Remuneration for the provision of the general landscape service has not such a long tradition.
3.9. Are there experiences in what form the service would be provided without these payments?	It is assumed, that it is the same service. It is a strong debate for evaluation of the PHAE: is it really a service or is it a windfall for the farmer?	The general landscape service would likely be provided without payments, as the payments are given more as a reward. However the road clearing and cleaning service would fall back in the hands of the local authorities if payments weren't made; because this is a contracted service.
3.10. Are new suppliers displacing other former service providers? (e.g. farmers doing the work previously provided of employees of municipalities) alternative: does the service create any competition?	No, due to a defined circle of applicants for service provision (traditionally offering this kind of service).	No, the service has a very long tradition so those providing the services are remaining reasonably constant.

#### Step 4: Consumption of the service

Question	French Case Study	Austrian Case Study
4.1. What are the benefits obtained from the landscape service by users?	The main objective of the service is to maintain grassland farming. However, other objectives like aesthetic and recreational amenities, as well as biodiversity	The local community benefits from an aesthetically pleasing landscape, a clean well maintained municipality and the image of living in a clean and tidy area in

	enhancement are linked to the service.	Tyrol, including roads and paths cleared from snow. Other benefits are recreational amenities. The local authority also benefits indirectly from providers of landscape services maintaining the area, because they would otherwise be responsible. A positive spin off effect is that the community collectively shares the responsibility of maintaining the municipality.
4.2. Are the users predominately locals?	No, users involve both locals and tourists.	No, users involve both locals and tourists.
4.3. Is access to landscape services restricted or open to all potential users?	No, The landscape service is accessible to everyone; however this is a visual /aesthetic use only.	No, the landscape service is accessible to everyone; however this is a visual /aesthetic use only.
4.4. Is the use of the landscape quantified, e.g. records of tourist visitors etc	No	No
4.5. Are negative and positive relationships identified e.g. conflicts between different user groups?	No	No

### Step 5: Evaluation and effects of the service

Question	French Case Study	Austrian Case Study
5.1. Are quality and quantity guidelines or standards in place?	For the quantity there are standards in place include limitation of fertilizer use (per ha), no change of areas engaged in PHAE, upkeep of hedges and other defined landscape elements. Concerning quality standards, people in charge of the control use aesthetic criteria based on photography of different areas in the region ("in this area, normal upkeep should be like this...")	For the general farm landscape service there are no set guidelines in place, regarding quality and quantity. For the road clearing service this involves all rural roads and pathways in the area. There are also quality guidelines in place on when and how the service is conducted.
5.2. Does the intermediary receive feedback from the users regarding their satisfaction of the landscape services provided?	No feedback is requested (administrative regulation through taxes/public action)	Only through direct complaints, but feedback is not requested.
5.3. Are steps in place to act on user requests to improve landscape services?	No	No formal steps, but users may request services by directly contacting the local authority office. For example managers of alpine restaurants may request

		pathways to be cleared of snow.
5.4. If evaluation criteria of the service are in use do users of the service have input into this evaluative criteria.	No	No
5.5. Are there opportunities for ongoing interaction between the user and intermediary?	No	Not formally, because on the local level everyone knows each other and therefore informal dialogue is possible.
5.6. Who or what organisation evaluates the service provision?	The representatives of the Ministry of Agriculture at the regional level (DDAF) carry out an administrative control of the required documents. An annual onsite control of 5% of the service suppliers on the national level is undertaken by the CNASEA. Farms to be controlled are chosen randomly.	The local police monitor the road clearing service and the general landscape service is monitored by the local authority on an annual basis.
5.7. Are there non desirable effects of the service?	PHAE is supposed to encourage the expansion of farming, instead of encouraging new people to begin farming.	No