The contribution of agricultural landscapes to local development and regional competitiveness – an Analytical Network Process (ANP) in selected European Union and Candidate countries' study regions

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Abstract

Agricultural landscapes are important elements of European culture. There is an increasing recognition that agricultural landscapes represent economic assets; not only because of the production of agricultural commodities, but also by offering significant opportunities for the socioeconomic development of rural areas. However, in literature there is no clear evidence of which causal relationships exist between the valorisation of landscapes and the creation of socioeconomic benefits. The objective of this paper is to assess causal connections between actors, the goods provided in agricultural landscapes, the socioeconomic benefits created by these goods and the contribution of such benefits to regional competitiveness, using an Analytical Network Process supported by qualitative stakeholder validation. Network evaluation is done on basis of a stakeholder panel exercise conducted in 9 rural European study regions, which are all coping with different basic natural and social conditions. The results show, that various elements impact on the system of landscape valorisation. It can be seen that agricultural production still plays a key role in the relations between landscape and rural development; however the exercise also shows, that public goods lead to socioeconomic benefits and that differing regional conditions influence the importance of single elements playing a role in the system.

Keywords: Analytical Network Process, Agricultural Landscape, Landscape valorisation, Ecosystem Services, Private and Public goods, Regional competitiveness

JEL code: Q24; Q150, Q510

1. Introduction

In recent years, increasing importance is attached to the question of how agricultural landscape and the valorisation of landscape services contribute to the development and competitiveness of rural regions. In particular the concept is discussed that agricultural landscapes hold the potential to provide private as well as public good-type (ecosystem) services which represent a resource not only for local inhabitants but also for different sectors of the rural economy, such as agriculture, forestry, tourism or the trade and services sector (van Zanten *et al*., 2013; Fieldsend, 2011, TEEB, 2010; De Groot *et al.,* 2010, Haines-Young and Potschin, 2010; ENRD, 2010; Cooper *et al*., 2009). Depending on the valorisation of the goods provided, landscapes can support the rural economy and the quality of life in rural areas and can become a factor of territorial development and competitiveness in terms of agricultural income, population growth, employment creation, etc. (e.g. van Zanten *et al.* 2013; Cooper *et al.* 2009; Courtney *et al.* 2006; van der Meulen *et al.* 2011; Courtney *et al*. 2013; Dissart andVollet, 2011).

However, the cause-effect chains between the supply of goods and services from landscapes and the development and competitiveness of rural regions still remain mostly unclear. In particular this is due to the fact that the socioeconomic effects (benefits) resulting from the use of landscape services often are multi-staged and multi-faceted and therefore difficult to assess (ENRD, 2010; Cooper *et al.*, 2009). On the one hand, the use of private and public good-type services from agricultural landscapes can create "direct" and "linear" socioeconomic benefits, e.g. from the production and marketing of agricultural goods or from the direct use of recreation possibilities by both local population or tourists (Cooper *et al.*, 2009, Hein *et al*., 2006). Here, at least as regards the benefits of the direct use of private good-type services, the assessment of the monetary impact on the development and competitiveness of a region appears comparatively easy (Powers, 2010). In contrast, the assessment of economic benefits from the direct use of public good–type services is often complicated due to the mostly missing market price for such services (Hein *et al*., 2006; Rudd, 2009; Schaeffer, 2008; Diaz-Balteiro and Romero, 2008). Moreover, the use of services provided by a landscape can also create "indirect" and "non-linear" socioeconomic benefits (Cooper *et al*., 2009; Fieldsend, 2011; ENRD, 2010): For example, the use of the beauty of a landscape in combination with the agricultural products supplied in a landscape can enable new marketing concepts of regional speciality products (Cooper *et al*., 2009). In the same way, the landscapes' function of moderating extreme events, or again even the beauty of a landscape, can lead to the establishment of businesses in a special area (Balderjahn and Schnurrenberger,

1999). Such economic activities in turn can create, influence or alter other economic activities, for example by developing the regional income side due to creating jobs for the local population or by developing the supplier side due to enhanced demand. Here, one can speak of "multiplier effects", whereas "multiplication" can go through various stages before it dies out (Domanski and Gwosdz, 2010, ENRD, 2010).

The assessment of the links between nature and the goods and services nature provides for human society, has been subject to intensive scientific discourse particularly during the last decade, where several frameworks have been developed to capture mainly the supply side of goods and services from ecosystems and the (positive) influence of such goods and services on human society (Costanza *et al*. 1997; MEA 2005; TEEB 2010; Müller *et al*., 2010; de Groot *et al*., 2010; Haines-Young and Potschin 2010). Very recently, on the basis of the ecosystem services cascade framework (de Groot *et al*., 2010; Haines-Young and Potschin 2010), van Zanten *et al.* (2013), in the context of the EU research project "CLAIM" (www.claimproject.eu), developed a framework which takes particularly into account the causal connections between agricultural landscape structure and composition, the supply and demand of landscape services and the contribution of these services to regional competitiveness. Thereby, van Zanten *et al*. (2013), particularly address the mechanisms influencing and driving the system. The framework has been validated by an extensive stakeholder process both on the local/regional level (9 study regions) and on European level, involving representatives of stakeholders from the study regions' countries as well as representatives from other EU countries and from EU-wide institutions.

The objective of this paper is to build on the framework of van Zanten *et al*., (2013) to assess the relevant causal connections between different sectors of a rural economy, the provision of private and public goods from agricultural landscapes, the socioeconomic benefits created by the use of these goods and the contribution of such benefits to regional competitiveness. To this aim we apply an Analytical Network Process (ANP), supported by qualitative stakeholder validation, o the 9 selected case study areas in EU and EU candidate countries.

The remainder of our paper is organized as follows. In Chapter 2, we first introduce our study regions. In Chapter 3, we describe how ANP is applied in the context of our research question while taking a deeper insight in how we adapted van Zanten *et al*.'s (2013) framework for our study. In Chapter 4, we present the results of the ANP. Here, on the one hand we focus on super-regional commonalities, on the other hand we show inter-regional differences

attributable to regional specificities. The discussion of our results and some conclusion and outlook are comprised in Chapter 5.

2. Study regions

Landscape is, to a large extent, a “local issue”: landscape structure and composition, existing landscape elements and, consequently, the landscape services provided are strongly connected to the landscape’s geographical location (Jones and Stenseke, 2011). This study, however, aims at providing an overall evaluation of the effects of landscape on socio-economic systems; to do this, we used a common logical structure and focus on commonalities emerging from the different, though “typical”, landscapes throughout Europe, rather than on “localisms". To this aim, our study is carried out in 9 Case Study Areas (CSA), which have been chosen according to two criteria: firstly, the areas cover different situations in EU and EU candidate countries; secondly, the CSAs are large enough to cover important gradients, such as the gradient from peri-urban rural areas to remote ones – which crucially determines the market size, e.g. related to population. Also, in all CSAs, landscapes provides a wide range of goods and services, and is generally not focused on one or a few. As a consequence, our CSAs are faced with different natural and social basic conditions, although they are all “rural” and characterised by agricultural production, varying from rather marginal up to intensive management: (1) The CSA “Lowlands of Ferrara” in Italy covers about 900 km² and stands for a flat landscape, agriculturally managed with middle to high intensity for the production of market crops, vegetables and quality products. (2) The “Naturpark Märkische Schweiz” in the east of Germany covers about 580 km² and is characterised by a gradient from intensively managed, large-scale farming area to low- intensively managed area inside a nature park. (3) Alpine conditions, characterized by rather low-intensive dairy farming in a classical and richly structured mountainous scenery are represented with the Austrian CSA “Mittleres Ennstal”(250km²) in Styria. This CSA covers valley as well as high alpine locations. (4) In the Netherlands, the CSA “Winterswijk Municipality” (ca.140 km²) represents a hedgerow mosaic landscape with high agro-biodiversity. The region is characterized by a strong agricultural focus on dairy farming. (5) In Andalusia, Spain, the CSA “Montoro” shows a gradient from high intensive to low intensive olive cultivation. (6) The Polish case study region “Chłapowski Landscape Park” covers 172,2 km² is characterized by typical agricultural lowland landscape, rich in small-structured landscape elements like field ponds, water catchments and shelterbelts. (7) The Turkish CSA “Güneykent Isparta” is characterised by a mix of landscape features including lakes, hills and mountains. The agricultural focus is intensive rose oil production. (8) With Bulgaria’s “Pazardzhik Region”

another mountainous landscape is included, which is characterised by sheep, cattle and dairy farming as well as wine production. (9) The last CSA "Castagniccia", located in the north of Corsica, covers about 420 km² and represent a Mediterranean mountain region managed with low intensity by small cow, pig, goat and ewe breeders as well as by chestnut farmers.

2. The ANP – Method and application

To answer our research question, we decided to use a multicriteria analysis (MCA) technique. On the one hand, with this decision we meet the increasing recommendations to involve stakeholders in the process of answering socially relevant questions especially in the field of environmental and rural development research (Beierle, 2002; Beierle and Cayford, 2002; Prager and Freese 2009). On the other hand, the decision was driven by the fact that MCA can overcome some of the limits of monetary evaluation of non-tangible benefits, which characterize many links in the "landscape – economy system" (Hall *et al.,* 2004). Also MCA – in comparison to classical monetary evaluation approaches like contingent evaluation, willingness-to-pay, choice experiments, etc. – is more appropriate to assess multiple dimensions, causal pathways feed-back and multiplier effects within the system investigated, which is often the case when investigating the connection between agricultural practices and their effects (Finn *et al.*, 2009).

The Analytical Network Process (ANP) is a multicriteria technique firstly proposed by SAATY (1996). It combines mathematical and psycho-cognitive roots, in order to bridge a complex system within a formal mathematical system in connection to an explicit network (Saaty, 2005). The technique was and is specifically designed to cope with complex systems and the presence of loops and trade-offs that affect decision processes. The aim of the ANP is to summarize available information consistently (usually by means of a structured interview with experts) and quantify the importance of elements playing a role in a specific system. In particular, the ANP is able to detect interdependence relationships within and between elements belonging to the same system. One of the main features of the ANP is the possibility to assess intangibles and the inclusion of inconsistencies of judgement by means of an absolute scale of measurement (SAATY, 2005).

In very recent years the ANP increasingly has been used in environmental evaluations. Worthy to mention are particularly the studies of Aragonés-Beltrán *et al*. (2010), García-Melón *et al.* (2010), Garcia-Melon *et al.* (2012), Gómez-Navarro *et al.* (2009), Garcia-Melon *et al.* (2008), Nekhay *et al.* (2009), Wolfslehner *et al.* (2005), Villanueva *et al.* (2014) and Parra-López *et al.* (2008).

Network design

In the first step of our ANP, we identify the network of components and elements that reflect the relations between landscape and regional competitiveness. To ensure, that our network includes all relevant elements and connections, we refer to the part of van Zanten *et al.*'s (2013) analytical framework, which describes the relations between economic actors, the supply and demand of landscape services, the socio-economic benefits created by the consumption of landscape services and the contribution of these benefits to regional competitiveness. On this basis, our network is composed by one cluster representing actors, two landscape services clusters, one cluster describing socio-economic benefits and one cluster representing regional competitiveness. The specific control criterion of our network is "landscape valorisation" (see Fig. 1).

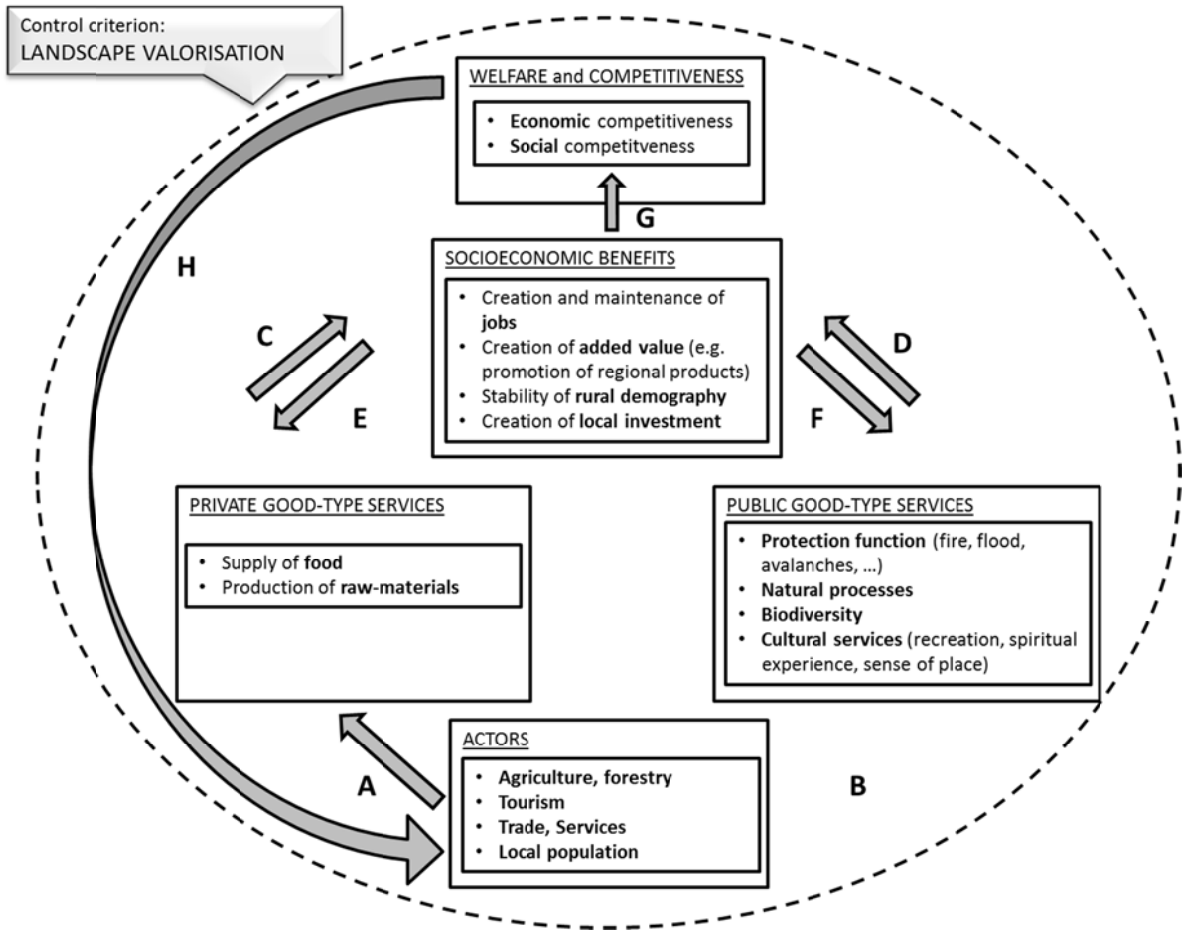

Figure 1: The analytical" landscape valorisation" network

Focussing on rural contexts, our "Actors" cluster represents producers and consumers of landscape services in a rural community. Four actor groups are assumed to have the strongest impact on local demand and supply of landscape-service: "*agriculture and forestry*", "*local population*", "*tourism*" and the mainly local "*trade and services*" sector. As regards the two

"Services" clusters, we in general follow the understanding of the ecosystem-services (ES) approach proposed by MEA (2005) and TEEB (2010). However, we add a more "economic" component to this approach by making a distinction between public and private good-type services. Here, the cluster "*Private good-type services*" represents marketable services ("provisioning", in TEEB (2010) terminology), while the cluster "*Public good-type services*" principally incorporates TEEB's (2010) regulating, cultural and, to some extent, supporting ecosystem services. However, taking into account the results of a pre-test of the ANP questionnaire, TEEB's (2010) category of "regulating services" has been divided into two subcategories, namely "Protection function" and "Natural processes": TEEB's (2010) regulating service "moderation of extreme events" plays a prominent role in some CSAs, but the term itself has been changed to the more user-friendly term "Protection function". The remaining regulating services are merged into the term "Natural processes", summarizing the TEEB's (2010) categories of "Local climate and air quality", "Carbon sequestration and storage", "Waste-water treatment", "Erosion prevention and maintenance of soil fertility", "Pollination" and "Biological control". The second adaptation takes place in line with the consideration of supporting services. Here, a focus has been put on "biodiversity" – again based on the pre-test indicating that biodiversity is of special importance and understood as a useful term to describe supporting services. "Biodiversity" is intended here as the conservation of the variety of species (flora and fauna) and ecosystems. "Cultural services" in contrast, are included into the public good-type services cluster in the original sense of the TEEB (2010) category and represent e.g. possibilities for recreation, sense of place, spiritual value, local identity, inspiration for traditions, art, music, etc. As regards the "Socioeconomic benefits" clusters, we refer to the "upstream" local stakeholder processes carried out within the EU project "CLAIM": Here the creation and maintenance of jobs, the creation of added value, the stability of the rural demography and the positive development of local investments have been depicted as the most relevant benefits contributing to the competitiveness of a region. The last cluster of the network approaches the topic of regional competitiveness. Here, some basic considerations had to be taken into account: The term regional "competitiveness" itself is controversial. In general, the term could be defined as the economic capacity of a defined area to compete on international markets. However, literature reveals that at a wider meaning of regional competitiveness, social competitiveness and sustainability should be included in its definition (Krugmann, 1990; Porter, 1992; Krugmann, 1994; European Commission, 1999a, 1999b, 2009; Porter & Ketals, 2003; Thomson & Ward, 2005). In response to this appraisal, the cluster describing regional competitiveness is labelled as

"Welfare and Competitiveness" and aims at addressing competitiveness not only in its economic sense but also by considering social and sustainability components. To this end, "economic competitiveness" is defined by productivity and represented by economic indicators such as GDP, GVA, wage levels, etc., while "social competitiveness" addresses e.g. the wellbeing of the local population, the quality of life or the development of human capital.

The five clusters are incorporated in a network of relations and feed-backs, altogether investigating eight causal connections.

The first two relations within the ANP network investigate, how single actor groups positively contribute to private good-type services supply (arrow "A") and to public good-type services supply (arrow "B"). Examples would be the question of how agriculture influences food-supply or how positively agriculture enhances cultural services in terms of recreation possibilities, e.g. by creating the positive externality of a nice cultural landscape. Two further relations investigate to which extent private good-type landscape services (arrow "C") and public good-type landscape services (arrow "D") contribute to socioeconomic benefits. Examples would be the questions of how strongly the supply of food or the production of raw materials contribute to job-creation or how the landscape's protection functions enhance inward investments, etc. For the interrelation between services and benefits, it is likely that impacts are not unidirectional but have rather feed-back or multiplier-effect character. This assumption is expressed by the two relations "E", which investigates the impact of socio-economic benefits on private good-type landscape services, and "F", which investigates, if socio-economic benefits in turn affect public good-type landscape services. Relation "G" of Figure 1 takes the hypothesis into account that socioeconomic benefits from the use of landscape services contribute to welfare and competitiveness. The last connection "H" reflects the assumption that regional welfare and competitiveness have a positive loop – or feedback – impact on local actors. This connection "closes" the loop of the network and summarizes the link between landscape and local economy.

Pairwise comparison

The influence of the single elements in the ANP Network is evaluated in form of relative, pair-wise comparisons (Saaty, 2005). Therefore, a common questionnaire has been developed. Here, every "arrow" of the network of figure 1 corresponds to a block of pair-wise comparisons. The evaluation of the network is carried out via a comprehensive expert / stakeholder panel exercise throughout all study regions. Considering about 10 experts/stakeholders per CSA, in sum 84 experts took part in the exercise, all involved in the

topic of agricultural landscape valorisation on a local or regional level. Due to the different regional basic conditions, the composition of the expert/stakeholder panel slightly differs throughout the study areas; however, in all regions stakeholders from landscape management (agriculture and forestry), economy, tourism, environment protection, research, as well as from the local public administration are included. The survey itself took place in November and December 2013.

The pair-wise comparison of the elements included in each cluster allows for the calculation of a final vector where the priorities of each element in relation to the control criteria are presented (Saaty, 2005). It is important to notice that the final priority vector accounts for all possible interactions inside the network (Harker and Vargas, 1987) as the eigenvector method basically "compresses" the matrices derived from the questionnaire (Saaty, 2005).

Results

The results of our study show that landscape valorisation is not driven by single, "outstanding" clusters; rather, all clusters play important roles in the system of landscape valorisation. Table 1 shows the priority vectors of the clusters and clusters' elements of the landscape valorisation analytical network.

Table 1: Priority vectors of the landscape valorisation analytical network (9 CSAs, n = 84 questionnaires)

Cluster:	**Factors:**	**Elements' priority (EP)**	**Clusters' priority (CP)**
Actors	Agriculture/Forestry	8 %	17%
	Tourism	2 %	
	Trade & services	3 %	
	Local population	3 %	
Private good-type services	Supply of food	12 %	18%
	production of raw materials	6 %	
Public good-type services	Protection function	3 %	14%
	Natural processes	2 %	
	Biodiversity	3 %	
	Cultural services	6 %	
Socioeconomic benefits	Creation and maintenance of jobs	9 %	33%
	Creation of added value	8 %	
	Stability of rural demography	6 %	
	Creation of local investment	10 %	
Welfare and competitiveness	Economic competitiveness	10 %	17%
	Social competitiveness	7 %	

Looking at the distribution of the cluster priorities, based on the average of all CSAs, "socioeconomic benefits" have the biggest impact on the landscape valorisation network (33%). Following, with a quite evenly distribution, are the clusters "Actors", "Private good-type services", as well as the "welfare and competitiveness" one. Their importance is evaluated to be about 17%. As regards "public good-type landscape services", the results show that they are considered to be the least influential in terms of landscape valorisation (14%).

Within the clusters, pivotal elements can be detected: In the "Actors" cluster, "agriculture and forestry" is still evaluated as the outstanding actor impacting on landscape valorisation in agricultural regions – compared to tourism, local population and the trade and services sector. In contrast, of all actors tourism is the one perceived to have the lowest impact on the landscape valorisation system. This is somehow surprising, as tourism generally is regarded as a sector which is able to directly (and economically) valorise especially cultural landscape services (Cooper *et al.*, 2009; ENRD, 2010). However, this result is consistent with the fact that none of the selected CSAs represent pronounced "tourism" regions. As mentioned before, the CSA selection focussed rather on agricultural and rural regions; consequently the impact of the agricultural sector might still be higher than the impact of the limited tourism activities.

As regards the provision of "private-good type landscape services", the supply of food is perceived as significantly more important than the production of raw materials. This is not surprising given the fact that throughout Europe's agricultural landscapes raw material production e.g. for biomass or bioenergy still does not outperform the "classical" production of food and feed in agricultural characterised landscapes, in spite of the fact that its importance is rising.

Within the "public good-type services" cluster, first and foremost cultural services, which are connected to the appearance and attractiveness of a landscape, are perceived as contributing to landscape valorisation. With a view to the overall "low" evaluation of the public goods cluster, it becomes particularly obvious, that the awareness concerning the multifaceted character of public good type landscape services, going far beyond only landscape aesthetics (e.g. protection from natural hazards, nutrient cycling, carbon sequestration, pollination, biodiversity, etc.) is still limited.

Comparing the priorities given to private and public good-type services, the results of the ANP exercise partly confirm that stakeholders have a higher consciousness towards consumptive and marketable goods provided by a certain environment, than towards essential,

but hardly discernible, benefits from the use of public good-type services (Polasky et al., 2010).

Looking at the different socio-economic benefits impacting on the system of landscape valorisation, the influence of the single elements is rather evenly distributed. However, the creation of jobs and the creation of local investments appear to have a slightly higher impact than the generation of added value and the stability of the demography of rural areas. Within the cluster "welfare and competitiveness", economic competitiveness in general is evaluated to be a more important driver in the system of landscape valorisation.

If we compare the results on the level of the single study regions, it becomes obvious that differing regional basis conditions induce shifts of the importance of single elements playing a role in the system (see table 2).

Table 2: Distribution of importance of elements in the single CSAs

		Study regions*:																	
		IT		**DE**		**AT**		**NE**		**ES**		**PL**		**TK**		**BG**		**FR**	
Cluster	**Factors**	EP	CP	EP	CP	EP	CP	EP	CP	EP	CP	EP	CP	EP	CP	EP	CP	EP	CP
Actors	Agriculture	9	17	9	19	8	16	9	19	10	21	9	16	7	14	6	16	10	19
	Tourism	2		3		2		2		2		2		2		3		1	
	Trade&Serv.	3		4		2		3		5		2		2		4		2	
	Population	3		3		3		4		4		2		3		3		6	
Private good-type services	Food	17	21	7	14	10	16	15	19	13	21	13	19	11	17	9	19	19	22
	Raw mat.	4		7		6		4		8		6		6		10		3	
Public good-type services	Protection Function	5	12	3	17	6	18	2	13	2	8	3	16	3	19	3	16	3	8
	Natural Processes	2		3		3		2		1		2		3		3		1	
	Bio-diversity	2		4		4		3		2		3		4		4		1	
	Cultural Services	4		7		6		6		4		8		9		6		3	
Socio-econom. Benefits	Jobs	11	33	8	31	9	34	9	31	9	29	11	34	6	36	8	34	8	31
	Added value	9		8		8		8		7		7		12		7		7	
	Demography	4		6		8		4		5		5		5		7		10	
	Investment	9		9		8		10		7		11		13		11		6	
Welfare and compe-tetiven.	Economic competitiven.	10	17	11	19	7	16	11	19	12	21	10	16	9	14	10	16	12	19
	Social competitiven.	6		8		8		8		9		6		5		6		7	

*IT: Italy; DE: Germany; AT: Austria; NE: Netherlands; ES: Spain; PL: Poland; TK: Turkey; BG: Bulgaria; FR: France

For the interpretation of the results at CSA level, we strongly refer to a stakeholder participation process downstream of the ANP analysis. Here, in all CSAs, stakeholder workshops have been organised to present the CSA-specific ANP results we derived. In these workshops, both stakeholders, who have been taking part in the ANP exercise itself, and additional stakeholders familiar with the topic of landscape valorisation discussed and validated the CSA specific ANP results at the local level. In the remainder of this section, we first and foremost aim at picking out selected CSA specific findings, which clearly differ from the overall results due to the specific basic conditions prevailing in the CSAs.

Within the actors' cluster, normally agriculture is evaluated as the main influential element in the landscape valorisation system. However, looking at the Bulgarian case, one can see that, although Pazardzhik Region represents an important agricultural area in Bulgaria (the region is characterised by favourable soil and climate conditions allowing for the production of a wide range of crops), the outstanding importance of agriculture amongst all actors is not given to the same extent as in the other CSAs. An explanation for this result could be the low vertical integration of especially the agricultural sector in the Pazardzhik Region. The agriculture and forestry sector is mainly limited to primary production and therefore holds only a comparatively weak position in the value chain while adding value to agricultural products first and foremost takes place in other sectors of the local economy such as tourism or the wine industry. Also a remarkable specific result regarding the actors cluster is the low importance which is put to the tourism sector in the Corsican CSA. Originally, tourism is one of the first industries on the isle. However, this result of the Corsican ANP impressively shows the "localism" of drivers of landscape valorisation: The low importance of tourism in the considered area of "Castagniccia" is explained mainly by its pronounced remoteness: the mountainous location is too far off to compete with other attractive areas in Corsica, such as the nearby coastal line.

As regards the private good type services cluster, supply of food has a particularly outstanding role in the Italian and the Corsican CSA. Though the agricultural production in the Corsican area, carried out mainly as low intensive livestock breeding (pasture pigs and suckler cows) is not very competitive, the production of raw materials is nearly negligible. Therefore the relative importance of food in the private good type cluster is considerably higher. In the Italian CSA in contrast, this result mirrors the fact that in the lowlands of Ferrara agricultural production actually plays a far more decisive role than the production of raw materials: Here, agriculture management is in large part highly intensive, highly specialized and mainly committed to (inter)national agri-food supply chains. The important role of the supply of food

is consequently not surprising. In contrast, in Bulgaria, raw material production contributes to landscape valorisation more than the supply of food. This result is explainable by the clear dominance of forests in the region, where the share of forest area is twice as high as the share of agricultural land.

Overall, the public good-type services cluster has the lowest importance in the system of landscape valorisation. Looking at the single countries, however, it becomes evident that this result does not hold true in all CSAs. So, public good-type services are even more important than private good-type services e.g. in the Austrian CSA. Here, mainly the high impact of the "protection function" contributes to this result: In the Austrian "Mittleres Ennstal", this result goes hand in hand with the specific high-alpine situation of a river-valley flanked by steep mountain forests combined with a mountainous climate with high precipitation rates; in this area, the risks of severe floods, avalanches, and mudslides is omnipresent. Consequently the protection function of the landscape represents an important criterion for society and economy in the region. A comparatively high evaluation of the protection function is also seen in the Italian CSA. Here this result reflects the situation of an artificially created landscape characterised by strong drainage of the originally swamplands, where the protection from floods and sea storm is of high importance.

A last result to be presented here concerns the welfare and competitiveness cluster. Whereas in this cluster economic competitiveness is normally felt as the more important element driving the system of landscape valorisation, in the Austrian CSA a shift into the direction of social competitiveness is evident. This result could be explained by the high appreciation of the regional landscape by the local population. The public goods provided, and here especially the landscape's beauty and aesthetics have been highlighted in the stakeholder workshop as the biggest asset of the marginal region, while the economic impacts of the production in line with the low intensive agricultural management are estimated to be rather low.

Discussion and conclusion

In our study, we use the Analytical Network Process to evaluate the relevant causal connections between different sectors of a rural economy, the provision of private and public goods from agricultural landscapes, the socioeconomic benefits created by the use of these goods and the contribution of such benefits to regional competitiveness. The common structured methodology, applied in 9 CSAs, allowed for an overall, horizontal estimation as well as for an interregional comparison of the main drivers and relations in the landscape

valorisation system – even if case studies were characterized by sometimes significantly different natural and socio-economic conditions.

On case study level, the ANP enables the assessment of local perspectives on the priorities of single elements and clusters driving the landscape valorisation network. The priority ranking of elements evidences differences between the case studies that have been proven by the downstream stakeholder validation process to be attributed to the inherent specialities of the single CSAs. For instance, the "*protection function*" within public good-type services (wild fires, floods, avalanches) is relevant in the Italian or Austrian CSA, whereas for instance "raw material production" is of high importance in Bulgaria. Nonetheless, usually the differences in the priority rankings are not significantly high. However, looking at the priorities given to private in comparison to public good-type services, the results of the ANP exercise partly confirm that people have a higher consciousness towards consumptive and marketable goods provided by a certain environment, than towards essential, but hardly discernible, benefits from the use of public good-type services (Polasky et al., 2010).). A policy implication of the study is that a more efficient and continuous communication strategy between scientists, decision makers, local administrations and civil society might reduce a knowledge distance and make population aware of the public heritage provided by the landscapes they are surrounded by. At the same time, the weight of different valorisation pathways can hint at priority areas for local policy design, particularly in connecting landscape-related and chain-related measures of the Rural Development Progammes.

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