



A conceptual model to integrate the regional context in landscape policy, management and contribution to rural development: Literature review and European case study evidence



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ABSTRACT

Agri-environmental policies and planning influence agricultural landscape management, and thus the capacity to deliver landscape services and to contribute to rural viability. Numerous models and frameworks have been developed to improve comprehension of the mechanisms and interrelationships between policies, landscape and socio-economic values and benefits. As social-ecological systems, landscapes are closely depending from the socio-institutional and territorial context of the specific rural locality. The paper proposes an enhanced framework for assessing these mechanisms by acknowledging the critical role of the regional macro-environment. A literature review and the revisiting of evidence from eight European case studies are applied to establish a comprehensive understanding and exemplification of the links between the policies, landscape, ecosystem services and value flows. Results highlight the need for integrative, inter- and transdisciplinary research approaches. Efficient landscape policies require enhanced regional embeddedness and targeting, acknowledgement of user demands and the capability of regional community and governance structures for policy implementation and natural capital valorisation.

1. Introduction

Agricultural landscapes deliver multiple landscape services (LS), which directly or indirectly satisfy human needs, such as food production, pollination, water regulation, or recreation (Termorshuizen and Opdam, 2009). They are therefore important for human well-being, quality of life and the economic competitiveness of rural areas (Dissart, 2007; OECD, 2006). For this reason, the sustainable management of agricultural landscapes, partly driven by landscape policies (i.e. agri-environmental policies (AEP) and regulations), is increasingly under-

stood to benefit rural vitality in a more integrative way (Cooper et al., 2009; ENRD, 2010).

A number of theoretical models and frameworks has been developed to improve the comprehension of the societal benefits from landscapes and the services they deliver. Haines-Young and Potschin (2010) describe the functional links between ecosystem structures and processes, services, and their value for human well-being in form of a 'service cascade'. Recently, van Zanten et al. (2014a) presented a conceptual development of the cascade framework which focuses on agricultural landscapes more specifically (see Fig. 1).

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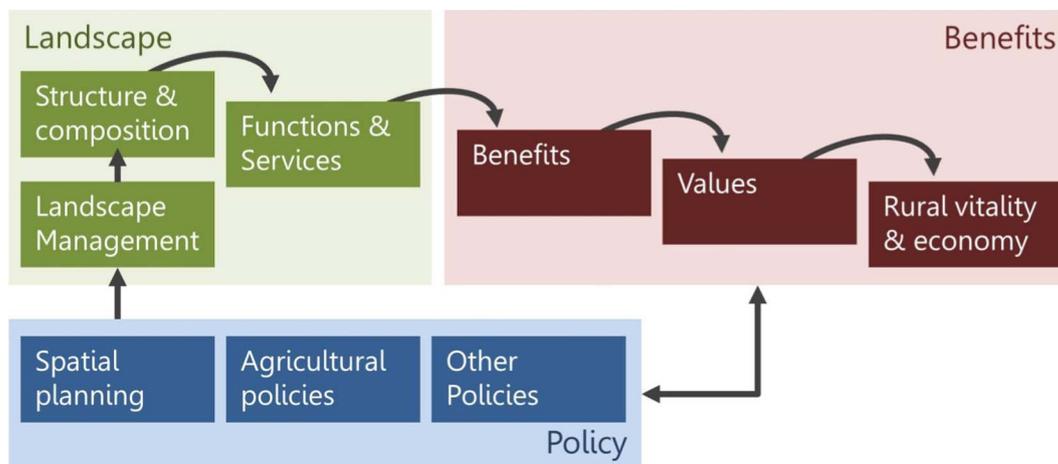


Fig. 1. Cascade framework depicting the links between policy, landscape and societal benefits. Developed by Haines-Young and Potschin (2010) and van Zanten et al. (2014a) (adapted).

Both frameworks outline how the set of policies, regulations, and economic instruments influences ownership structures and farmers' and other land-use actors' management (Palang, 2010), which in turn affects landscape structure and composition, and the abundance and spatial arrangement of landscape elements (Piorr and Müller, 2009). In this sense, agricultural management objectives and practice have a decisive influence on the capacity of a landscape to provide LS (Kragt and Robertson, 2014). When values obtained from LS are integrated into the local economy, they contribute to regional welfare and competitiveness. For example, a landscape's visual quality can attract tourists and strengthen the tourism sector (Waltert et al., 2011). Moreover, landscape related cultural identity can pay off via marketing of regional products (Belletti et al., 2015).

While the cascade frameworks of Haines-Young and Potschin (2010) and van Zanten et al. (2014a) focussed on disentangling the general functional links between landscapes and socio-economic benefits, no explicit attention has been given to geographic perspective, and to the role of the socio-institutional (i.e. local actors, stakeholders and governance structures) and territorial (i.e. geographic and socio-economic situation) contexts (Ilbery, 1986; Robinson, 2004). In this direction, the concept of a place-based, territorial development was brought forward by the OECD (2006) in the formulation of the 'New Rural Paradigm'. This concept is informed by scholars highlighting the need of localised policies to take the diversity of rural areas and their spatial variability into consideration (Evans and Morris, 1997; Ilbery, 1998). This includes the acknowledgement of the local conditions and assets, prevailing private and public actors, and the civil society (Murdoch et al., 2003). This is particularly relevant, as rural areas in Europe (and elsewhere) are characterised by strong regional heterogeneity (Copus et al., 2011), which determines the effectiveness and efficiency of (agri-) environmental policy and subsequently the potential to benefit rural communities.

Given these considerations, the objective of this paper is to develop a conceptual model that incorporates socio-institutional and territorial dimensions in order to broaden the understanding of the functional linkages between policy adoption, landscape management practice and the generation of societal benefits. In contrast to most existing theoretical frameworks, we explicitly account for local context dimensions in order to enrich the academic debate from a theoretical and methodological perspective and to inform place-specific landscape and agri-environmental policy-making. Doing so, the paper explores a specific geographical dimension, placing at the centerstage the role of spatiality and existing diversity of rural areas, the landscape focus as well as the human-environmental interaction, which represent main domains of the discipline (Woods, 2005).

In Section 2, we expand existing frameworks by including the role of local context properties. In Section 3, the methodological approach is

described. In Sections 4 and 5, the academic literature and empirical case studies are reviewed to examine the socio-institutional and territorial dimensions in detail. Specific mechanisms leading to policy adoption and to the creation of societal benefits are explored. Section 6 discusses our findings in the context of the conceptual framework and presents implications for future research and policy design.

2. Conceptual model

The cascade frameworks' depiction of the cause-effect links has enhanced the general conceptual understanding of how policy action has impacts on environment and landscape as well as human well-being. However, it has been argued that it does not take the complexity of the mechanisms, the causal links between policy, landscape management, services and benefits and the place-specificity fully into account (Braat and de Groot, 2012). In order to further hone the cascade model to cope with place-specificity, the framework developed in this paper integrates mechanisms, occurring at landscape level represented with two main dimensions, namely the (i) socio-institutional and the (ii) territorial.

Regarding the socio-institutional dimension, the concept of socio-ecological systems has raised attention to how local social and institutional settings interact with environmental processes. Especially agricultural landscapes are very much altered by human activity in order to provide socially desired services and benefits (Berkes and Folke, 1998; Matthews and Selman, 2006).

Concerning the territorial dimension, Balmford et al. (2008) highlight the spatial variability of flows of ecosystem services, management costs, and economic benefits due to the distribution of consumers in cities and the agricultural countryside. They stress the need for a spatial approach that acknowledges spatial heterogeneity and allows to identify scale mismatch between ecological and socio-economic scales, spatial trade-offs and distributive consequences of decision-making in the use of ecosystems, which can facilitate effective policy design (Balmford et al., 2008; Lefebvre et al., 2015).

Our conceptual model accordingly distinguishes four areas of interlinkages (A1, A2, B1, B2), to describe the mechanisms between policy and landscape management, as well as between landscape management and the generation of societal benefits (see Fig. 2). The A1 link illustrates how farmers' decisions are crucial for effective implementation of landscape policy. Moreover, the A1 link depicts the role of local stakeholders in the governance process of landscape planning and design. A2 refers to the dependency of societal benefits from the societal demand. This demand is driven by the general public and potential users' and consumers' preferences. It also sheds light on how social capital and networks determine the local and regional capacity to generate downstream benefits for the regional economy and

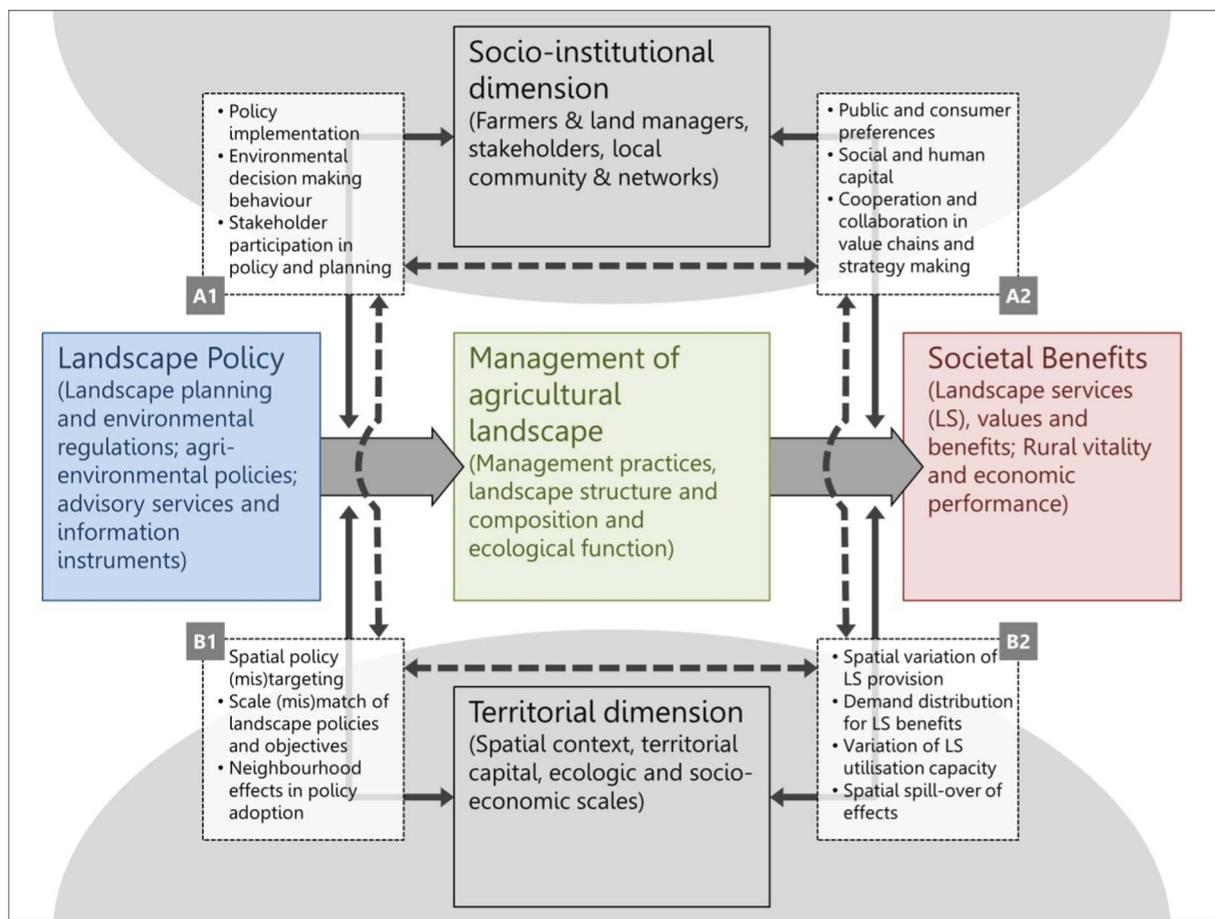


Fig. 2. Further development of the conceptual model integrating the socio-institutional and territorial dimension. A1: Influence of the farming community and institutional framework on landscape policy adoption; A2: Role of stakeholders and general public in the creation of benefits from landscapes; B1: Spatial and scale targeting and (mis)match defining policy effectiveness; B2: Territorial conditions and assets affecting the capacity for benefit generation. Note: Solid lines represent influence on the process between policy-landscape-benefits. Dashed lines represent mutual influences of the dimensions.

society.

The role of the territorial context in the B1 link relates to the effects of spatial policy (mis)targeting and scale (mis)match between policy objectives and environmental effects, influencing the efficiency and effectiveness of landscape policies. B2 is concerned with the spatial variation of the biophysical capacity to provide LS as well as the spatial distribution of demand for the landscape benefits. At this point it should be noticed, that there are multiple interlinkages and interdependencies between the socio-institutional and territorial components (represented as dashed lines in Fig. 2). Certainly, spatial policy targeting is also a result of the policy design and planning process in which stakeholders are involved (A1–B1). Similarly, their interests and preferences as well as the degree of cooperation and collaboration enhances decision making (A1–A2). Spatial targeting and neighbourhood effects will for instance have an effect on the spatial distribution of landscape service supply (B1–B2), whereas the spatial distribution of demand is also a function of public preference variations in different places (A2–B2).

3. Case study evidence

To substantiate and validate the interlinkages of the socio-institutional and territorial dimensions within the conceptual model presented in Fig. 2, we combine a review of the existing literature with an investigation of evidence from eight European case studies. The case studies have been deliberately selected and designed to investigate different aspects and mechanisms within the reference cascade framework. It is not the rationale of this case study approach to carry out direct comparisons between different case studies in an inductive

reasoning sense or to claim high representativeness on a specific topic. Rather we seek to capitalise on the complementarity of individual findings drawn from the variety of methodological approaches and local settings to enhance the meaningfulness and validity of the conceptual model. This mixed method approach is particularly relevant for exploration within the complex cause-effect relationship between policy, landscape and societal benefits (Greene et al., 1989).

Aiming at a broad coverage of geographic, socio-economic, agricultural structure and landscape contexts, we have revisited 11 empirical studies in eight European regions. These include landscapes of the northern European lowlands (Winterswijk, Netherlands; Märkische Schweiz, Germany; Chlapowski Landscape park, Poland), mountainous regions (Valley of Mittleres Ennstal, Austria; Pazardjik region, Bulgaria), Mediterranean lowlands (Ferrara region, Italy) and mountain ranges (Castagniccia, France) as well as semi-arid open lands (Montoro, Spain) (see Fig. 3). In all case studies, specific knowledge gaps along the policy-landscape-benefit cascade have been identified through intensive exchange with local stakeholders. The research topics and questions arising from these gaps have then been addressed by empirical studies or modelling exercises of a broad methodological diversity (Table 1).

The collective analysis of the individual results and discussions among investigators revealed the usefulness of the cascade framework, but also the need for a further development of the conceptual model, which takes the spatial variability of the regional context into consideration.

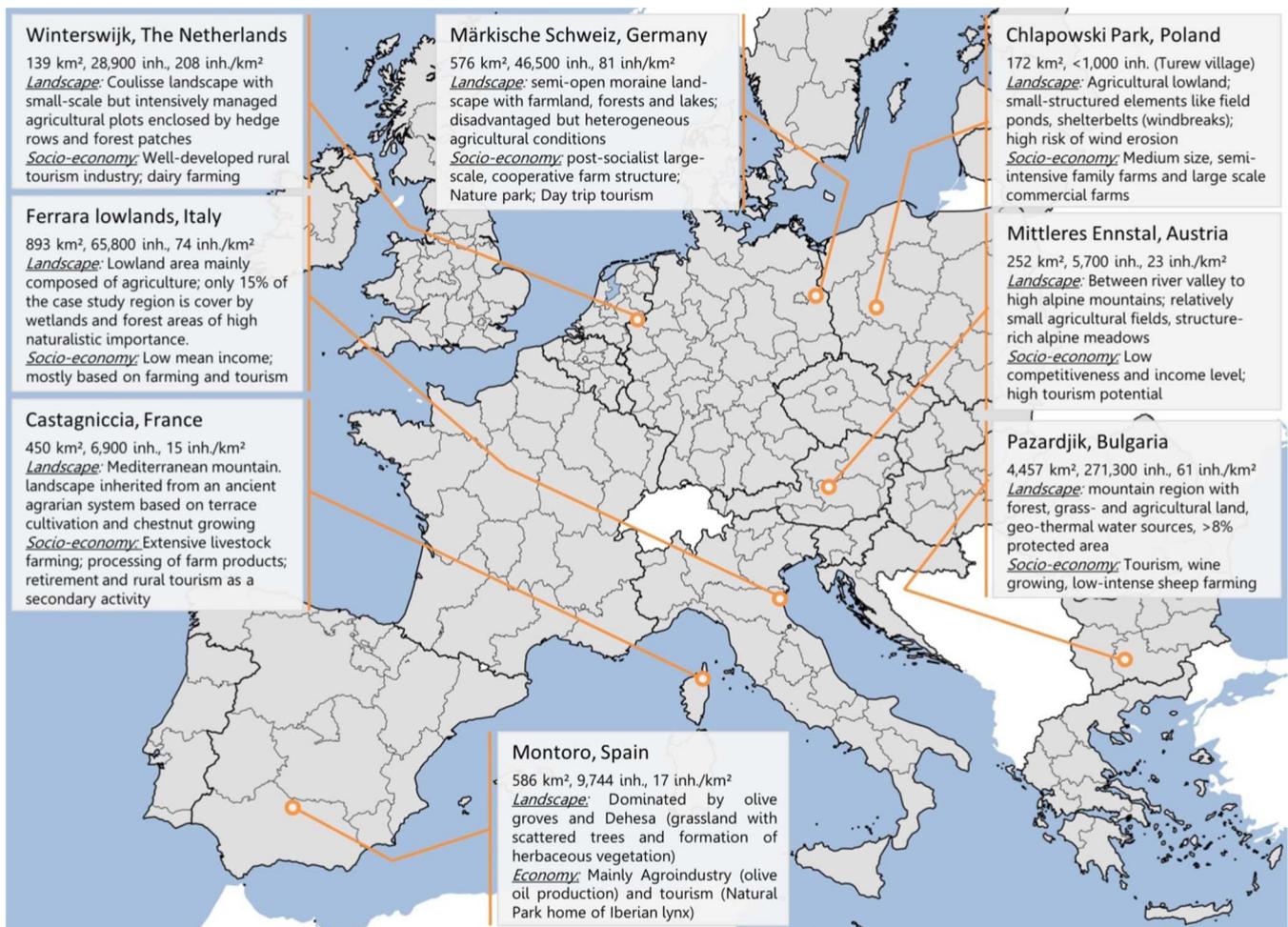


Fig. 3. Location and description of the eight case study regions from the European research project CLAIM (<http://www.claimproject.eu/>).

4. Socio-institutional dimension

Agricultural landscapes as socio-ecological systems are shaped over time by agricultural management practices, which are subject to (local) societal demands and preferences for the outcomes from environmental and productive processes of agriculture and forestry (Plieninger and Bielinger, 2012). Therefore, the socio-institutional system, i.e. farmers,

stakeholders, and the wider local community, as well as their prevailing social interactions, norms, conventions and value settings, represent an integrative element in the process of landscape management and benefit generation (Marquardt et al., 2012; Morgan, 2011). Whereas farmers are mainly responsible for the landscape management through agricultural practice or through voluntary participation in agri-environmental schemes (AESs), other types of actors and stakeholders are

Table 1
 Overview of the empirical case studies carried out in the CLAIM project, which are used to develop the conceptual model.^a

Link	ID	Region	Study objective	Method
A1, B1	IT2	Lowlands of Ferrara, Italy	Interaction between policy, farmers and consumer demands	Agent-based Modelling (ABM)
A1	BG1	Pazardjik, Bulgaria	CAP implementation at farm level	Farm survey and expert evaluation
A1	PL3	Chłapowski Landscape Park (Poland)	Compatibility of policy with expectations of stakeholders towards landscape	Stakeholder interviews
A2	NL2	Winterswijk, Netherlands & Märkische Schweiz, Germany	Comparative study of visitor's visual preference in a Dutch and German agricultural landscape	Choice Experiment (CE)
A2	ES1	Montoro, Spain	Landscape attractiveness as a driver for rural economy	Choice Experiment (CE)
A2	IT1	Lowlands of Ferrara, Italy	The influence of landscape on second order effects: The case of agritourism	Bayesian Belief Network (BBN)
A2	AT1	Mittleres Ennstal, Austria	The role of stakeholder networks in landscape valorisation	Stakeholder Network Analysis (SNA)
B1	FR2	Castagniccia, France	Impact of CAP on landscape management in a Mediterranean mountainous region	Remote sensing, and econometric analysis
B1	PL5	Chłapowski Landscape Park, Poland	Importance of shelterbelts and CAP greening for landscape and performance of farms	Economic and landscape modelling
B2	DE2	Märkische Schweiz, Germany	Mapping landscape services, competition and synergies	Geostatistical simulations
B2	AT2	Mittleres Ennstal, Austria	Influence of landscape on competitiveness of remote rural areas	Data Envelopment Analysis (DEA)

^a Note: A more detailed description of the empirical studies is provided as Supplementary material to this paper and on the CLAIM online knowledge platform (<http://www.claimknowledgeplatform.eu/>). The ID corresponds with the nomenclature used on the website.

utilising benefits from provided LS or are otherwise affected. These other actors and stakeholders encompass sectoral representatives and interest groups, such as environmental or nature conservation, regional water and soil associations, tourism and economic development agencies, trusts and community foundations, public authorities and administrative bodies as well as the local community and general public as “users” (consumers, residents, visitors) of the landscape. The diversity of their roles, interests and social network relationships (Rawlins and Morris, 2010) as well as the different spatial levels they act on (Hein et al., 2006), not only substantially influence landscape management (conceptual framework link A1), but also the creation of benefits from LS (A2).

4.1. A1: socio-institutional dimension of policy adoption

4.1.1. Farm decision-making for landscape management

Due to their decisive role in the management of agricultural landscapes, farming communities and their embeddedness in social networks represent the main feature of the socio-institutional dimension in landscape management and the effectiveness of AEPs. Comprehensive literature exists on the role of the characteristics of farmers, farm households and businesses on agricultural and landscape management practice (Primdahl et al., 2013), willingness to provide LS (Broch et al., 2012) and policy implementation (Murphy et al., 2014). Primdahl et al. (2013) differentiate between the roles of farmers as producers, citizens and landowners to explain landscape management decisions. Other authors focus on demographic characteristics of farmers and farm households (Rodríguez-Entrena and Arriaza, 2013; Villanueva et al., 2015a). Factors such as age, education, gender, succession situation, income dependency (Burton, 2014), environmental knowledge and awareness (Page and Bellotti, 2015), experience and motivation (McCracken et al., 2015), sense of place (Mullendore et al., 2015), legacy and history (Cooke and Lane, 2015), the interaction in social networks (Wossen et al., 2013) and belonging to structures of social capital, such as designations of origin or membership in a farmers cooperative (Rodríguez-Entrena et al., 2014a), have been found relevant. Applying a discourse analytic approach, Del Corso et al. (2015) revealed the importance of communicative action between farmers in questioning their rationales for certain landscape practices. The influence of farm structure, specialisation, production intensity, economic size and land ownership on policy uptake has been investigated (Weltin et al., 2017; Zimmermann and Britz, 2016). Above all, farm-management decision-making often underlies a strong status quo bias, resulting in considerable path-dependency that requires particular triggers to change (Sutherland et al., 2012).

However, large inconsistencies in empirical evidence are found regarding the role of individual explanatory factors. Along with econometric modelling and descriptive analyses, the application of farm types represents an important approach (Burton, 2014). By determining attitudes, aspirations, value settings and different economic preconditions, the differentiation of farming styles and types (Hien et al., 2014; van der Ploeg, 2010) presents a possibility for improving understanding of farmers decision making behaviour (Primdahl et al., 2013).

Case study examples: In order to investigate the spatiotemporal behaviour dynamics of the distribution of the adoption of agri-environmental measures (AEMs) and diversification activities by farmers, an agent-based model was applied in the Italian region Ferrara lowlands (IT2) (Zavalloni et al., 2015). The modelling results indicate that farmers’ decision making is strongly influenced by policy incentives, but can be substituted by the presence of sufficient consumer demand for rural goods and services linked to landscape management. Results thus suggest strengthening the link with the demand for LS through improving consumer awareness about rural areas and facilitating information flow.

Investigating farm structure as determinant for agricultural policy

implementation, an econometric analysis of a farm survey in the Pazardjik region, Bulgaria (BG1) revealed the relevance of farm size for policy-measure uptake. Larger farms have a higher capacity to cope with funding requirements and external constraints, such as individual experience, institutional limits and bureaucracy. The findings show that, due to necessary co-financing, farm modernisation is the domain of large cooperative and corporate farm holdings, whereas marginal and family farms gain more from AEMs. Access to advisory and extension services as well as prevailing farm assets represent additional factors for participation. This substantiates previous findings that related policy design should take target groups, motivations and requirements into consideration, particularly the importance of small farmers as carriers of traditional, landscape-adapted management practices in marginal regions.

Both case studies exemplify how farmers and the farming community are decisive for the uptake of AEM. They indicate that internal factors such as farm size and business structures are important, but also that the external factors such as policy incentives, knowledge systems and consumer demand have a strong influence on landscape management. However, they also show the interplay between policy incentives on farm decisions and the policy receptivity of farms.

4.1.2. Participative governance approaches in local landscape planning and strategy-making

Landscape development is characterised by its spatial conditions, and its interaction with broader topics of biodiversity, human well-being, place identity, and economic development. Therefore, the design and application of landscape policies at local level require embeddedness in more comprehensive governance approaches that overcome sectoral fragmentation and link actors across vertical hierarchies (Primdahl et al., 2013). Sectoral issues, such as residential and infrastructure development (Kerselaers et al., 2013), as well as nature conservation, resource protection, and countryside development (Prager and Freese, 2009) are particularly affected by landscape development. Therefore, alongside the agricultural sector, including farmers, extension services and authorities, it is suggested to involve a broader set of rural stakeholders (Kerselaers et al., 2013; Prager and Freese, 2009) and civil society to enable the inclusion of wider perspectives and local and scientific knowledge and learning processes (Armitage et al., 2012; de Loë et al., 2009; García-Martín et al., 2016).

It has been argued that the effectiveness of decision-making benefits in multiple ways from participative, bottom up-oriented governance approaches: first, as a tool to improve the access to the tacit knowledge base of local, specific landscape information (Pinto-Correia et al., 2006), and stakeholders’ values, priorities, and goal settings (v. Haaren and Bathke, 2008). This helps to identify possible value conflicts (Kerselaers et al., 2013) and to enhance a mutual, collaborative understanding of these conflicts (Healey, 2010). Kerselaers et al. (2013) and Prager and Freese (2009) further highlight that stakeholder participation leads to a high degree of procedural and distributive justice, meaning the fairness of the decision-making process and outcomes. Participative processes improve legitimation, transparency, trust and acceptance of policies and thus enhance policy implementation. However, Armitage et al. (2012) and Taylor and Van Grieken (2015) point to a number of challenges related to the complexity of decision-making, e.g. for the design of environmental policies, such as the spatial fit between institutional and environmental scale, knowledge and conflicting interests, accountability and legitimacy.

For this reason, Primdahl et al. (2013) and Primdahl and Kristensen (2016) suggest a process of spatial strategy making to enhance communicative and collaborative actions between the local community and farmers. Despite this, major shortcomings in implementing participatory approaches in landscape planning and policy making have been observed. For example, the spatial level and strong top-down orientation of decision making (e.g. policy scheme design) (Prager and Freese, 2009) is not well-suited. Timeliness and facilitation efforts are

insufficient (Conrad et al., 2011).

Case study example: The third case study carried out in the Chłapowski Landscape Park, Poland (PL3) sheds light on the roles of local planning, stakeholders and the local community in designing landscape planning and AES. Based on a document analysis and interviews with stakeholders, representatives of local government and community members, the local landscape development narrative and its reflection by different stakeholders and the public was investigated. It was found that protection of landscape features is formulated in several local planning activities and hence legitimated by the diversity of local stakeholders and governmental decision-makers. These actors also create awareness and interest among farmers to enhance policy adoption and the valuation of the LS created.

Emphasising the relevance of local governance activities by including broader sets of stakeholders for the design and adoption of landscape management measures, this case study confirms the prevailing debate on the need for integrative and collaborative governance approaches in agricultural management and landscape planning.

4.2. A2: socio-institutional dimension of benefit creation

4.2.1. Stakeholder and institutional capacity

In agricultural landscapes, a diversity of actors such as farmers, stakeholders and the general public are involved in the use of LS. Particularly individual aspects, such as motivations driven by intrinsic attitudes, values, interests and preferences (Visser et al., 2007) as well as the knowledge and information base (Herzon and Mikk, 2007) are found influential for environmental decision-making and setting up business strategies to utilise landscape services. Own or others' management efforts, the given territorial potential (Morris and Potter, 1995), the individual situation of the farm household and the business structures are relevant for these kinds of decision-making (Page and Bellotti, 2015).

As larger downstream value chains are required to make efficient use of landscape and natural assets, the involvement of local businesses and stakeholders is essential. However, depending on their functional ties, roles and social practice, actors and stakeholders are subject to different discourses and conventions, semantics and social constructions, and awareness and understanding of the potential benefits (Bock et al., 2015; Noe and Alrøe, 2015). Subsequently, they vary strongly in their awareness and acceptance, interests and preferences for environmental and social benefits, which are a major source of target conflicts between different local stakeholders (Lange et al., 2015). This hinders willingness and capacity for local strategy-making and business creation.

Therefore, various scholars stress the role of intermediary and bridging actors and network brokers, such as civil society actors, land-care associations and environmental cooperatives in enhancing interaction, cooperation and governance processes (Lefebvre et al., 2015; Schomers et al., 2015). Information and knowledge exchange, cooperation and partnership building for consensus-oriented collaborative strategy-making are important determinants of the local capability to make effectively use of LS. The relevance of rural networking and governance has already been acknowledged by the European Rural Development Policy (RDP) in its support through the LEADER programme (Marquardt et al., 2012; Ray, 2010).

Case study examples: In the Ferrara region (IT1), Manrique et al. (2015) made an attempt to directly explore downstream effects of LS on the local economy, applying a Bayesian Belief Network (BBN) approach. Estimating directionality of and interdependencies between agricultural, landscape and policy variables with the public preferences of landscape quality and agritourism activities as well as employment and revenue as societal benefit variables, the model reveals a dependency of the benefit value on public opinion and policy setting. The comprehensive approach shows clearly how the socio-institutional context influences the interlinkages between policy, landscape and

societal benefit generation. Exploring the roles of local stakeholders and intermediary agents for local strategy-making, a social network analysis was applied in the Austrian case (AT1). Differentiated into three strategical subnetworks of agricultural production, tourism and the marketing of regional products as main goods and services from landscapes, results have shown major network disruptions and strategic gaps which limit the local capacity for creation of socio-economic benefits from landscape.

Both case studies (IT1, AT1) suggest that the capability to generate societal benefits from landscapes, such as rural employment and income generation, also depends on the entrepreneurship of economic actors and their interaction, as well as on collaborative strategy and decision making with other stakeholders and interest groups. Especially the BBN approach in the Italian example shows high methodological adequacy with the multi-dimensional nature of the policy-landscape-benefit relationship, as it allows for the integration of multiple drivers, i.e. policy and landscape character, with a number of output measures determining socio-economic benefits.

4.2.2. Societal valuation of landscape benefits

Effective contribution to social welfare and economic competitiveness requires compliance with the demand side of the rural actors and community. Likewise, policy implementation mechanisms, the demand for benefits provided by landscapes, their valuation and appreciation as well as the capacity to utilise LS from agricultural landscapes for regional welfare and economic viability, including employment and income generation, depend on the stakeholders and economic actors who benefit or are otherwise affected (Villanueva et al., 2015b). Besides provisioning, regulating and supporting landscape services such as food and fibre production, fresh water, local climate, nutrient cycling, risk protection or biodiversity, agricultural landscapes also contribute to well-being through their aesthetic and cultural value. Although their value for human well-being and rural competitiveness is undeniable, their quantitative assessment is challenging. Due to their cognitive and subjective nature, as they are strongly influenced by the social construction (Görg, 2007). In order to inform landscape policies in this sense, stated and revealed preference studies aimed at investigating societal demand for and valuation of cultural (and other) goods and services from landscapes (Scholte et al., 2015).

Mainly socio-biographical characteristics (Howley et al., 2012), values, attitudes (Hartter et al., 2014), experiences and familiarity (Adevi and Grahn, 2011) have been found relevant as explanatory determinants for variations in amenity value and scenic beauty of the agricultural landscapes for visitors. These encompass the full scope from intensively managed agricultural landscapes, heterogeneous and complex land use structures and cropping patterns, to rather unaltered wilderness (van Zanten et al., 2014b). However, preference differences regarding wider objectives of RDP have also been found (Moran et al., 2007).

Case study examples: A comparative visual preference study (NL2; Häfner et al., forthcoming; van Zanten et al., 2016) in the municipality of Winterswijk (Netherlands) and the Nature Park 'Märkische Schweiz' (Germany) identified relative preferences for landscape elements, controlling for the socio-cultural characteristics of the respondents. The results indicate high preferences for highly diverse landscapes with a prevalence of landscape elements. However, along with cross-regional variations, results have also revealed high variability across individuals. This is driven by their knowledge and education, farming background or origin – but also occurs across regions (van Zanten et al., 2016). A similar choice experiment among visitors of the landscape around Montoro in Southern Spain (ES1) found an additional willingness-to-pay for specific landscape features, such as green cover or woodland islets. Additional estimation of the likelihood of future visits was able to identify total societal demand and a monetary value. However, the results should be assessed to what extent the theoretical values are directly convertible into marketable goods or services.

As the empirical studies substantiate, the socio-institutional dimension of the local situation affects the generation of societal benefits, either for consumers (ES1, NL2) or as part of the local network and strategy making (AT1). The LS contributing to quality of life and recreational potential are usually subject to individual perception and preferences and might differ from case to case. Observations in the cross-regional comparative landscape preference study (NL2) (van Zanten et al., 2016) clearly confirm the relevance of socio-demographic characteristics as well as familiarity, education and value settings for preference differences, which has also been found in previous research (Adevi and Grahn, 2011; Hartter et al., 2014). They emphasise the complex case-specificity of the link between landscape and societal benefit valuation.

5. Territorial dimension

Rural areas are also characterised by a pronounced spatial heterogeneity in terms of their biophysical and socio-economic context. This brings about place-specific conditions for decision making on agricultural practice (Robinson, 2004; Viaggi et al., 2013) or the adoption of AEM (Shucksmith et al., 2005). The territorial properties also determine the wider regional development potentials in relationship with the agricultural landscape (van Berkel and Verburg, 2010). Thus, these aspects of the territorial dimension play an important role in the mechanisms of policy implementation and creation of benefits from landscape. Local biophysical conditions encompass the given geographic, climatic, hydrologic and soil properties, and define both the natural agricultural productivity (e.g. prime agricultural areas, less-favoured areas, etc.) and the formation of specific land-use systems and management limitations; for instance, location within ecologically sensitive or upland areas. The socio-economic context refers to the local demographic and economic situation, employment, income, population density and degree of urbanisation of the region. Whereas the biophysical context affects landscape management and policy implementation (conceptual framework link B1), the socio-economic situation plays an important role in benefit creation (B2).

5.1. B1: territorial dimension of policy implementation

5.1.1. Spatial policy targeting

Environmental policies can take different spatial effects, covering horizontal, non-spatially explicit policies, from regulations and land use management standards to more site-specific policy and planning measures either based on European and national legislation (e.g. EU Habitats or Water Framework Directive) or on local site designations (planning zones, nature protection, environmental compensation areas, etc.). Beyond European directives, nationally (such as ecological and habitat networks) and regionally (greenways, etc.) specific ecologically important sites are predefined to set legal regulations and economic incentives for environmental and landscape management schemes. Through the formulation of environmental objectives, policies such as those for environmental management have a strong spatial significance because measures and schemes directly refer to specific areas (e.g. field margins, riparian buffer strips, grasslands, etc.). The connection between policy targeting and performance has been subject to numerous studies. Comparing the cost-effectiveness of two different AEMs, Uthes et al. (2010) show diverging effects, positive only for the individual measure, not the overall programme. Regarding policy implementation, Meyer et al. (2015) found that area targeting, along with environmental goal targeting, positively determines implementation success. Similarly, Wünsch et al. (2008) highlight the role of LS in site-specific targeting for the policy measure's efficiency. Due to their relevance for AEM participation, Raggi et al. (2015) draw attention to spatial priority criteria for AEM design.

Case study example: The Polish study (PL5) investigated potential landscape and agricultural management changes for different policy

scenarios, using a combined economic farm model (CAPRI) and ecological model. Results reveal significant variation between the policy scenarios, with higher landscape diversity values when spatially-explicit Ecological Focus Areas are implemented. The study shed further light on the importance of a policy scenario to conserve the locally specific landscape feature of shelterbelts. Their removal would have a major effect on the soil protection function and thus the economic productivity of the farming activity.

Regarding the nexus of the landscape policy and the territorial context, particularly biophysical properties, certain mechanisms of the design and implementation of landscape policies have been identified in the literature review, including the deliberate spatial targeting, matching and mismatching of spatial scales as well as spatial spillovers. The importance of area designations and the inclusion of protection of ecologically important landscape elements are highlighted in the case study (PL5). Observation of mistargeting effects of extensification measures designed for lowering the intensity of grassland management but applied to mountainous ranges also confirms the frequently formulated necessity to acknowledge geographic conditions in policy design and case-specific planning (e.g. Raggi et al., 2015; Uthes et al., 2010). Intra-regional differences entail variations in the policy implementation – partly targeted, partly because the measures cannot take the regional heterogeneity fully into account. Missing spatial targeting can lead to policy inefficiencies and even negative effects on the landscape.

5.1.2. Spatial clustering of land use management practices

The role of environmental conditions on the spatial distribution pattern of environmental and landscape management practices (Viaggi et al., 2013) or policy implementation (Piorr et al., 2009; Piorr and Viaggi, 2015) has frequently been investigated. Beyond spatial policy targeting, the adoption of landscape management practices, such as organic farming, closely depends on territorial framework conditions and occurs in spatially clustered ways (Bjørkhaug and Blekesaune, 2013; Schmidtner et al., 2011). Especially in the case of voluntary uptake of policy measures, spatial variations have been observed (Piorr and Viaggi, 2015), indicating farm location as an important determinant for measure uptake (Zasada and Piorr, 2015) and effectiveness (Uthes et al., 2010). Particularly local climate (McCracken et al., 2015) or geography and topography have been identified as important factors, as it has been shown for mountainous (Raggi et al., 2015) or other marginal locations (Hart et al., 2011). Spatial clustering of farms with agri-environmental practices, such as organic farming, is frequently observed, suggesting the influence of biophysical properties, market proximity, and regional knowledge-spillover effects (Läpple and Kelley, 2015; Schmidtner et al., 2011).

Along with geographic conditions, spatial concentrations are traced back to neighbourhood effects through regional learning and exchange. Regional innovation diffusion and learning processes, as well as the generation of external (regional) economies of scale are discussed as rationales behind spatial clustering effects (Boncinelli et al., 2015). Spatial decision, social network and choice models such as agent-based models have been developed to assess the spatial effects of innovation diffusion (Berger, 2001; Kiesling et al., 2012). It is suggested that these effects occur due to the influence on the decision-making of an initiating actor – the farmer – on another actor located in spatial proximity (Bjørkhaug and Blekesaune, 2013). Others highlight the role of the 'Community of Practice' in social learning and the transfer of tacit knowledge (Morgan, 2011), which both require spatial proximity for face-to-face communication. Agricultural extension and advisory services aim to draw on this by using special extension agents (Rogers, 2003).

Case study example: Modelling the spatiotemporal dynamics of adoption processes of AEPs by farmers in the aforementioned Italian case study (IT2) (Zavalloni et al., 2015) has also revealed clear spatial effects. Findings indicate the tendency of farms that apply environ-

mental practices to spatially cluster over time, creating areas of high landscape quality and recreational value for tourists, as individual decision-making by farms depends on the choices of neighbouring farms. The results underline possible advantages of the coordination between farms for joint environmental practice efforts regarding the spatial consistency and the generation of ecological synergy effects at the landscape level.

5.1.3. Scale issues, spillover and rebound effects

Determined by ecological processes and flows, the LS provision is characterised by an inherent spatial domain as it occurs on different spatial scales – local, regional, global (Costanza, 2008; de Loë et al., 2009). In contrast to short-range occurrence of biomass production or visual landscape quality, water regulation shows regional effects (i.e. on watershed level), whereas carbon sequestration affect the global scale (Rodríguez-Entrena et al., 2014b). Accordingly, the scale of agricultural and landscape management practice needs to be linked to the scale of environmental goals (Duru et al., 2015; Ferreyra et al., 2008). Otherwise, spatial (and temporal) mismatch of policies occurs due to difficulties in aligning the scales of management and those of ecosystem processes and their monitoring, affecting policy effectiveness (Mewes et al., 2015).

Closely interrelated to the socio-institutional dimension, scale issues in AEM design have been found between policy, farm structure and ecological process (Lefebvre et al., 2015; Whittingham et al., 2007). Whittingham et al. (2007) found for instance that the geographic scales where AEM are implemented may not be appropriate for efficient protection of species with wider habitats. Lefebvre et al. (2015) have shown that AEM from the European Common Agricultural Policy (CAP) mainly serve at field and farm level, whereas at landscape scale, additional (voluntary) agreements between farmers and intermediary actors are required to address objectives (Carmona-Torres et al., 2011). To improve coordination of environmental management action of farmers, more collaborative and integrative approaches to environmental planning and strategy making at landscape scales have been proposed in recent years (Prager et al., 2012; Primdahl et al., 2013).

Other spatial effects described in the literature are spillover and rebound effects (Maestre Andrés et al., 2012). These refer to indirect, unwanted and avoidable negative externalities of environmental policies and regulation. They can take form as leakage, when certain land use restrictions in one place, e.g. through an environmental management or conservation scheme or limitations of a certain land use, increases the environmental pressure on neighbouring areas (Lambin and Meyfroidt, 2011) or at even on more distant places, as framed under the concept of teleconnection (Liu et al., 2013). Positive and negative spatial spillover effects occur also through the environmental processes, e.g. water flows or biodiversity, so that the effect of a management practice is not only restricted to the area but can have (converse) effects in another locality (Maestre Andrés et al., 2012).

Case study example: In the Corsica case study (FR1), spatial mistargeting of agricultural policy was analysed in a mountainous pastoral landscape with strong territorial heterogeneity. Farm structure survey data was used in an econometric model to assess drivers of livestock farmers' management decisions. The findings indicate that the policy incentive for extensification of grazing land (mainly in lowland areas) applied in the mountainous part of the region leads to negative effects on natural vegetation growth and an increased risk of forest fires. The study emphasises the need for strong spatial policy targeting to biophysically heterogeneous regions to ensure cost-effective policy implementation and desired landscape management.

The described spatial targeting and clustering, spillover and rebound effects that call for place-targeted policy intervention also call for larger scale studies and analyses. Comparisons across locations and regions are needed to highlight the significance of place-based factors. A larger perspective is also required to determine suitability and effectiveness of local implementation as well to identify whether spatial

spillovers or displacements occur.

5.2. B2: territorial dimension of benefit creation

5.2.1. Natural and landscape amenities

Natural amenities present important regional environmental assets for rural development, competitiveness and social welfare (van Berkel and Verburg, 2010). Localities with pleasant climates and a geography characterised by mountainous area, beaches or water courses will attract more visitors and rural in-migration than other regions (van Berkel and Verburg, 2010). Landscape attractiveness turns out to be a driver for remunerative activities such as diversification. Pfeifer et al. (2009) examined the role of site-specific natural conditions and neighbouring dynamics in influencing farmers' decisions to diversify. Bergmann et al. (2007) describe that farm accommodation and other farm-related activities are a major source of farm income in mountainous regions, and therefore show a relation between pluriactivity and multifunctionality of agriculture, while this is not the case in other regions. In many parts of Europe, mountain farms have undergone a long process of farm reorganisation, adjustment and reallocation, in which diversification and tourism play an important role (López-i-Gelats, 2013). At the regional level, this is taken into consideration by RDP (Zasada et al., 2015). Others, such as Lange et al. (2013), Pascucci et al. (2011) have provided evidence that farmers are well aware of the landscape potentials and accordingly adopt diversification strategies such as tourist activities. Thus, along with their role in the landscape policy adoption, biophysical conditions are highly relevant to how the landscape is eventually utilised for generating societal benefits.

Case study example: A spatial analysis in the Märkische Schweiz (DE2) investigated the effects of intra-regional variations of the biophysical context, including soil-quality, natural amenities and landscape elements, on the capacity to provide LS and public goods (Ungaro et al., 2014). The study found significant differences in terms of the physical arrangements and the subsequent stocks of potential LS provision, such as food and fibre production, water regulation, and visual appreciation at small geographical scales, influencing the causal link between landscape, the provision of LS and their utilisation for societal benefits. Results show that there is also a close relationship between the prevalence of natural amenities, such as lakeside location, with the touristic activities, whereas the visual quality of the more peripheral agricultural landscapes plays a minor role for creating direct socio-economic benefits (Ungaro et al., 2016).

5.2.2. Proximity to urban markets

Agricultural activity in urbanised regions is usually affected by a number of pressures, conflicts and opportunities, which are inherent to the urban location (Zasada, 2011). Weingarten et al. (2010) related the uptake of diversification measures and their local effects to socio-economic framework conditions. They found rather complex interrelations that indicate that different types of rural economies are clearly associated with different patterns of policy impacts. On the one hand, farming can compete with other economic sectors in the land and labour markets, as well as can have environmental effects negatively affecting these sectors (Munton, 2009). On the other hand, agriculture gains from urban-rural relationships – the proximity and accessibility to urban consumer markets and the demand for rural goods and services (Overbeek, 2009; van Leeuwen, 2015). Through knowledge flows, farms in urban and peri-urban areas show higher capacities to adapt to the prevailing comparative advantages. Empirical evidence shows that farms close to urban areas more frequently employ direct marketing and sale activities (Meert et al., 2005; Meraner et al., 2015), day-trip tourism, and other types of farm-related leisure activities (Broch et al., 2012; Zasada et al., 2013). A survey in Belgium finds that the impact of nearby urban centres plays an important role in survival strategies and development paths of small-scale farms, determining the direct sale of products (Meert et al., 2005). Environmental management

such as organic farming also occurs concentrated in proximity to urban areas (Bjørkhaug and Blekesaune, 2013).

Case study example: Addressing the role of the agricultural landscape as a driver of rural competitiveness, in the Austrian case study (AT2) a Data Envelopment Analysis was carried out in a countrywide, cross-municipal study. As a function of biophysical (nature and landscape) and socio-economic factors (proximity to urban centres), the effectiveness of rural labour productivity (input) in contributing to socio-economic performance (output) was analysed. The model results indicate that the urban location exerts a significant influence on labour productivity, whereas for the mountainous location, no significant negative effects were found. This highlights that urban consumer demand is a territorial asset for the competitiveness of the rural economy. Potential positive effects from the utilisation of natural assets, such as mountains for tourism, seem to be jeopardised by remoteness and infrastructural weaknesses.

Socio-economic framework conditions, especially the spatial distribution of consumers and demand, are more important in societal benefit generation. The prevalence of territorial assets, such as the proximity of natural amenities to urban and metropolitan areas, is particularly relevant, because consumer demand centres for rural goods and services associated with agricultural landscape management contribute to rural employment (see case study AT2 and previous findings by Broch et al. (2012) and Zasada et al. (2013)). Also in terms of the economic valuation of landscapes, Moran (2005) clearly shows that a benefit transfer through estimate application across different cases and sites requires acknowledgement of the socio-economic, biophysical and local market conditions. To summarise, the reviewed literature and empirical studies emphasise the relevance of the territorial context in broadening the conceptual understanding of the mechanism to create benefits from landscape for regional social welfare and economic competitiveness.

6. Discussion and conclusion

The conceptual model presented in this paper draws particular attention to the place-specificity of landscape development and the deliberate utilisation of LS for human well-being and vitality in rural areas. Reviewing state-of-the-art literature and insights from case studies covering heterogeneous European regions, we have shown how both the socio-institutional and territorial characteristics of the rural locality are decisive for the valuation of goods and services associated to landscape, the capacity to derive socio-economic benefits from them and the effectiveness of landscape-related policies. In this sense, the conceptual model we have presented adds a place-based perspective to the works on the assessment of LS and their socio-economic benefits by Haines-Young and Potschin (2010) and van Zanten et al. (2014a). Our main finding is that the interaction of human and ecological systems, which underlies the development and management processes of agricultural landscapes and their contribution to human well-being, manifests at a very local level and cannot be well understood without a place-based perspective. With this aim, the proposed model offers guidance for policy design and research approaches that are sensitive to the peculiarities of individual localities.

To comply with the information and knowledge base necessary to develop a place-based understanding of landscape mechanisms, two aspects will be highlighted here. First, together with generic and large-scale information and assessments that allow for comparisons between different localities, there is a particular need for local knowledge of ecological processes and societal demands. In order to investigate landscape services and benefits, and facilitate locally effective landscape policies, the participation of stakeholders in the research process is particularly meaningful (Fagerholm et al., 2012; Reed, 2008). Their local knowledge, experiences and insights into the economic and societal rationales, requirements and behavioural patterns of farmers can inform place-based policy design and landscape planning, and

encourage implementation (Sevenant and Antrop, 2010). They can also anticipate possible local conflict areas (Pahl-Wostl et al., 2013). Transdisciplinary research approaches with collaborative exchange and dialogue between social actors and researchers are essential for knowledge co-production through social learning (Görg, 2007; Zscheischler and Rogga, 2015).

Second, to investigate real-world questions of coupled social-ecological systems such as agricultural landscapes, disciplinary research focusing on individual aspects such as the policy implementation, environmental processes or societal valuation of LS is insufficient. This results in a knowledge base which remains patchy and incomplete regarding the overall system mechanism. Inter- or cross-disciplinarity, with social-ecological research as the bridging concept, is necessary to cope with the requirement to include the territorial and socio-institutional dimensions and their complex interlinkages in a comprehensive understanding of landscape management and policy implementation as well as the regional capacity to generate socio-economic benefits for rural development (Beichler et al., 2014).

Different disciplines tend to apply distinct methods and scales of analysis to study socio-ecological systems. Therefore, well-defined interfaces regarding processes, scales and data are required to allow coupling of different disciplinary research approaches (Beichler et al., 2014). The application of more comprehensive multi-criteria and behavioural research approaches, i.e. BBNs (IT1; Manrique et al., 2015) or agent-based models (IT2; Zavalloni et al., 2015) in our case studies has proven capable of addressing the system complexities. These approaches allow for a holistic perspective as they operate with multiple influencing factors from the territorial and socio-institutional dimensions and require integration of divergent perspectives. Both combine policy variables with the given landscape, public perception and socio-economic output variables, including farm decision behaviour.

The conceptual framework presented in this paper shows clearly that the effectiveness of landscape-related policies regarding the ecological objectives and socio-economic benefits is affected by the spatial conditions and scales, which can amplify, obstruct or counteract the desired outcome. Regionalised and spatially-targeted policy designs enhance responsiveness to locally-specific requirements for land-use management practices, such as land productivity, geographical limitations and environmental conservation needs (Üthes et al., 2010; Wünschler et al., 2008).

The conceptual framework also draws attention to policy consistency regarding the intervention at different ecological and socio-economic scales. For example, the ecological processes or the societal demand for freshwater provision, flood risk reduction and conservation of the visual quality, which take effect at landscape, watershed or even administrative levels, require awareness and coordinated actions of farmers and land owners (Lefebvre et al., 2015; Prager et al., 2012). Communicative action (Del Corso et al., 2015) and the role of intermediate actors can facilitate the necessary information flow and the building of local actor-networks (Schomers et al., 2015).

Effective design and implementation of environmental and landscape policies at the regional level require strong commitment, with the creation of institutional capacity, including skills and knowledge, but also local governance structures to integrate and negotiate (conflicting) values and goals within the decision-making process (Kerselaers et al., 2013; Primdahl and Kristensen, 2016). Our case studies, such as AT1, along with previous research, e.g. Lange et al. (2015), reveal the divergence of stakeholder opinions. Thus, the structured input of public and stakeholder opinion and mutual learning makes landscape policy design more receptive to meaningful policy actions. Information on ecological requirements, other sectoral stakes and the societal valuation of landscape benefits depending on awareness and appreciation are brought into the policy design and local planning process, increasing the legitimacy and salience of the decision outcome. Therefore, to ensure that landscape management delivers optimal benefits, landscape

policies should be co-designed in adaptive governance approaches with local farmers, communities and stakeholders, which acknowledges the complexity and dynamism of social-ecological systems (such as landscapes) (de Loë et al., 2009). García-Martín et al. (2016) have clearly shown that bottom-up civil society initiatives are able to foster holistic approaches of landscape level management, which include multiple sectors and scales relevant to the system. Also recent development of implementing ecological focus areas at landscape level show that collaborative and place-based approaches gain ground within the EU institutional frameworks.

The translation of the developed conceptual model into policy formulation is challenged by the spatial extent of the validity of agricultural and rural policy. They usually apply at the regional scale and encompassing a large heterogeneity of landscapes and local conditions. The heterogeneity is addressed in policy schemes by introducing relevant internal targeting based on zoning, eligibility and priority definition. In this respect, stricter and finer targeting is advocated to tackle the place specificity of landscapes. In addition, as this paper shows, targeting based on physical and ecological features of different areas has limitations. Rather, the assessment of territorial and socio-institutional structures, their boundaries and interplay allow a better account in policy of local needs and opportunities. Given these caveats, it seems that the strengthening of bridging institutions that connect the local and the regional level and which can capitalise upon regional learning and spillover effects could be a potential strategy worth exploring. More focus should be drawn on collective implementation of landscape protection strategies. Collective actions not only envisaging the achieving of target levels of participation or appropriate organisation of landscape elements in space, but also the feeding of local preferences and vision in landscape intervention.

In conclusion, the conceptual model presented in this paper explores a place-based perspective on the mechanisms between agri-environmental and landscape policy, landscape management and its contribution to socio-economic development of the rural areas by integrating socio-institutional and territorial dimensions of the local context. The reviewed literature and the presented case studies emphasise that the acknowledgement of local socio-ecological system properties is crucial for understanding the policy-landscape-benefit interactions. The conceptual model has implications for research and policy agenda setting aiming at sustainable place-based landscape management and RDP that is effective regarding its environmental goals, but also supports benefit generation for human well-being and economic competitiveness in rural areas. It sheds light on the underlying influencing factors, which are derived from the institutional capacity of local social and natural conditions. Future research efforts and policy design should not only acknowledge specific properties of the place, but also cope with the complex interplay occurring in agricultural landscapes in order to ensure consistent policy intervention.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.geoforum.2017.03.012>.

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