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A DSS model for the governance of sustainable rural landscape: A first application to the cultural landscape of Orcia Valley (Tuscany, Italy)

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ABSTRACT

There is a growing interest on landscape and landscape policy and planning, especially since the adoption of the European Landscape Convention in 2000. This latter defines landscape as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors". In the case of rural landscape, this means that an appropriate governance model should not only involve local stakeholders in a participative approach, but also take into account natural characteristics, cultural aspects of the past and present, and socio-economic aspects, since agriculture is the main driver of change for rural landscapes. Farm strategies are influenced by internal and by external factors, these latter being related to market conditions and to constraints and opportunities given by policies. Market globalization and Agricultural policies are consequently having a strong impact on landscape, that public institutions try to neutralise setting rules about landscape conservation. Thus, due to its specific features, landscape is impacted both by several sectorial and territorial policies which have none or very low coordination among them. Indeed, Common Agricultural Policy (CAP) has often shown a negative influence on landscape, also in the case of Agri-Environmental Schemes (AES) intended to promote landscape. In this framework, the aim of this paper is to present a comprehensive model for the governance of rural landscape and a first simplified application to a cultural landscape. This model is based on the integration of a geographical multi-criteria analysis, an advanced GIS-based geo-processing tools, and participatory techniques aiming to understand and foresee local stakeholders' behaviours through focus-groups and dedicated interviews. The identification of future landscape scenarios is based on the integration of past evolution (historical analysis), landscape sensitivity (territorial analysis) and farmers' adaptation to market and policy changes (farm analysis). A simplified version of the model was tailored and tested in the municipality of Castiglione d'Orcia of the Siena province in Tuscany, Italy, one of the UNESCO cultural landscapes, but is the Authors' opinion that its approach

1. Introduction and state of the art

The European Landscape Convention (ELC) defines landscape as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" and underlines that "a landscape forms a whole, whose natural and cultural components are taken together, not separately" (Council of Europe, 2000). This not only asks for an integration of the methodologies and approaches that concern bio-physical and socio-cultural aspects, but asks also for the adoption of proper tools able to highlight the effects of human activities on landscape. Indeed, as highlighted by Conrad et al. (2011a), the Explanatory Report of ELC observes that landscape protection, management and planning can be a complex matter necessitating multi-disciplinary work. The need for public intervention in this field derives from the economic characteristics of landscape; indeed, rural landscape is a pure public good and an externality (positive or negative) of farming and other economic activities that exploit and modify the land. Although landscape protection could be pursued by means of "command and control" policies, based on the definition of standards to be respected on land transformation, nevertheless standards are usually scarcely effective and often opposed by people who suffer for their implementation. Besides, command and control policies are ineffective in opposing passive transformations due to an activity

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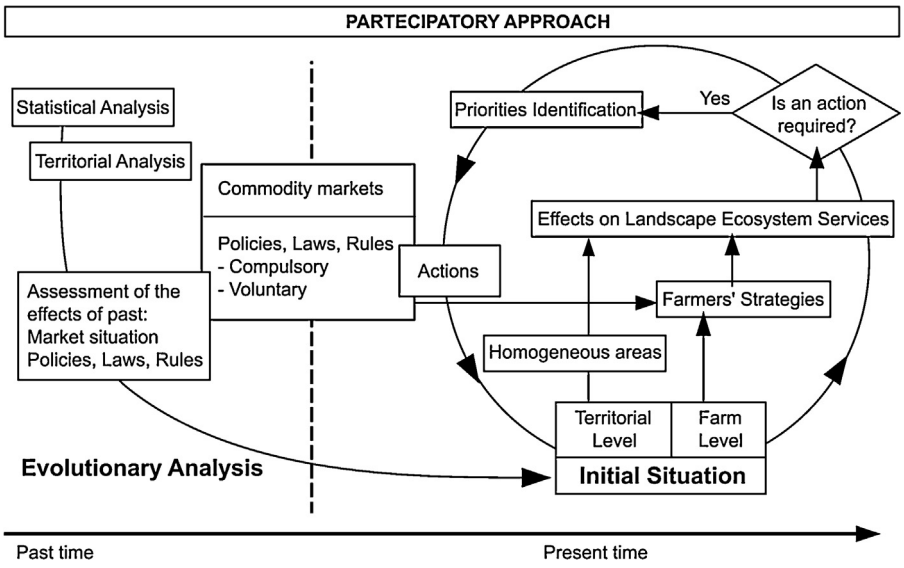

Fig. 1. Flow chart of the model for the governance of sustainable rural landscape.

being abandoned that in some way contributes to the landscape maintenance (Tempesta, 2014), as in the case of agriculture, especially in some rural marginal regions. In recent years there has been a growing awareness of the multifunctional role played by agricultural activities (OECD, 2001), which not only provide food and fibre for producing goods but also services, such as environmental protection or landscape conservation. These services are usually defined as "no commodity outputs" and according to their type and the context in which they are produced, they can develop into proper economic activities (farm diversification, e.g. selling services relating to hydrological protection or forest management) or remain outside the market. In this last case it is important to understand if these services are necessarily provided, or not, by agricultural activities. Indeed, while in the first case policies aiming at maintaining agricultural activities may automatically maintain also an adequate level of no-commodity outputs, in the second case, specific interventions will be required in order to maintain such a level. De Groot et al. (2010) propose that the concept of ecosystem services and values should be integrated in landscape planning, management and decision making, changing the focus on ecosystem services production from agriculture to landscape, although agriculture remains the main driver for the change of rural landscape. In this framework it is paramount to study and to understand the impacts of agricultural policies, e.g. the Common Agricultural Policy (CAP) of the European Union, which can play both the role of driver of landscape change and that of response to landscape deterioration. Indeed, while the past policy of direct payments, with the consequent intensification of agriculture and the research of economies of scale, has brought about a simplification and homogenization of the rural landscape (see e.g. Agnoletti et al., 2011; Van Zanten et al., 2013), Pillar 2 measures, by promoting rural development, have often prevented abandonment and land deterioration. The vast literature dealing with the ex-ante and ex-post evaluation of CAP impacts on rural landscapes (e.g. Brady et al., 2009; Lefebvre et al., 2012; Agnoletti et al., 2011) confirms the growing interest in the analysis of such policies as drivers of the level of ecosystem services provided by landscape. After the last CAP reform and the introduction of greening rules, landscape conservation and management can be directly promoted also under Pillar 1, although there is a concern that direct payment effects on landscape could be – as in the past – significant and negative. Besides, albeit many Authors stress the need to reconcile production and environmental integrity (see, e.g. Costanza et al., 1997; Robertson and Swinton, 2005), there is the risk of an alteration in the balance between policies promoting productive and non-productive functions of agriculture. Thus, while in more productive agricultural areas there is the risk of an intensification, due to the increase in world population and the consequent increase on demand of agricultural products, which could cause famine and social tensions, less fertile areas risk the abandonment because of too high costs of production. Due to its spatial characteristic, landscape is also ruled by territorial planning, which states rules and standards about land use and transformation, usually through command and control tools, as stated above. Territorial planning is usually regulated by laws that are more area-specific than agricultural policies, being mainly related to the regional and sub-regional levels. Last but not least, there are other policies, mainly dealing with environmental issues (see, e.g. rules dealing with nitrogen use or the use of water), that can influence agriculture and landscape services. These policies deal with issues that have to be faced at different spatial units (e.g. landscape systems, hydrological catchments, administrative areas, ecosystems, protected areas, etc.), thus implying that analyses should be able to work at different scales and to integrate them. Besides "spatial" scales also "temporal" scales are very important, especially in the case of historical cultural landscape. A review of the methodological problems about scale arising in interdisciplinary research on landscape is provided by Higgins et al. (2012).

As we have above stated, landscape conservation, management and planning is a very complex task, implying not only interdisciplinary but also transdisciplinary approaches. The need for an interdisciplinary approach is due to the fact that landscape quality and the ecosystem services that it provides depend on many features belonging to different research fields. According to Vizzari (2011) potential landscape quality relies on three different classes of components, namely "Physical-naturalistic", "Historical-cultural" and "Social-symbolic". Conrad et al. (2011a) stress that still "there appears to be a bias in academia towards ecological concerns, which contrasts with the more holistic approach adopted in landscape policy". According to Agnoletti (2014), there is also a bias towards nature and environment at policy level, insofar international directives involving landscapes are often overlapping the idea of nature with that of landscape, encouraging renaturalization, particularly in the form of forest cover, and neglecting ancient landscape patterns. This "reduction" of landscape to elements mostly