



# The EU societal awareness of landscape indicator: A review of its meaning, utility and performance across different scales

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## ABSTRACT

There is increasing recognition that agricultural landscapes meet multiple societal needs and demands beyond provision of economic and environmental goods and services. Accordingly, there have been significant calls for the inclusion of societal, amenity and cultural values in agri-environmental landscape indicators to assist policy makers in monitoring the wider impacts of land-based policies. However, capturing the amenity and cultural values that rural agrarian areas provide, by use of such indicators, presents significant challenges. The EU social awareness of landscape indicator represents a new class of generalized social indicator using a top-down methodology to capture the social dimensions of landscape without reference to the specific structural and cultural characteristics of individual landscapes. This paper reviews this indicator in the context of existing agri-environmental indicators and their differing design concepts. Using a stakeholder consultation approach in five case study regions, the potential and limitations of the indicator are evaluated, with a particular focus on its perceived meaning, utility and performance in the context of different user groups and at different geographical scales. This analysis supplements previous EU-wide assessments, through regional scale assessment of the limitations and potentialities of the indicator and the need for further data collection. The evaluation finds that the perceived meaning of the indicator does not vary with scale, but in common with all mapped indicators, the usefulness of the indicator, to different user groups, does change with scale of presentation. This indicator is viewed as most useful when presented at the scale of governance at which end users operate. The relevance of the different sub-components of the indicator are also found to vary across regions.

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## 1. Introduction

Human activities have shaped the rural environment to such an extent that the notion of the 'anthropocene', as a new

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geological epoch, has been proposed to describe the period since widespread agricultural management began (Crutzen and Stoermer, 2000). The multiple ways in which humans interact with rural agrarian landscapes makes landscapes multifunctional, providing a number of ecosystem services (MEA, 2005) to society, such as provisioning (e.g., food) and regulating (e.g., pollution control) services (Potschin and Haines-Young, 2006; Primdahl and Swaffield, 2010), but also a variety of cultural services, such as rural settlement, cultural heritage, and amenity (Bromley, 2000; Wascher, 2000; Belletti et al., 2002; Yrjölä and Kola, 2004). In recognition of the cultural services that rural agrarian landscapes provide, these landscapes are now being defined both as physical structures managed for agriculture and forestry and as cultural entities characterised by systems of land use and cultural practices.

The functional components of the physical landscape (woodlands, hedges, field margins, ditches, etc.) as well as rural buildings and other structural elements (dry walls, terraces, etc.) are now understood to reflect the evolution of farming and forestry in a specific physical and socio-economic setting. Similarly, the cultural attributes of a landscape are a product of centuries of interaction between natural conditions, farming traditions and cultural heritage (Paracchini et al., 2012).

Policies, in conjunction with economic forces, acting upon the social/cultural and the natural/man-made capital of a society, impact human activity and therefore have a marked impact on human wellbeing (Primdahl and Swaffield, 2010). Policies targeted at the rural space and related economic activities, such as the Common Agricultural policy (CAP) and environmental legislation, directly affect the provision of ecosystem services from rural agrarian landscapes, by driving changes to the management of these landscapes. Therefore, multi-dimensional indicators of the states and rates of change in agrarian landscapes are of particular interest to policy makers, as these are windows into the wider performance of these policy instruments.

To support policy monitoring and impact assessment, considerable research effort has been devoted in the past to mapping the physical components of European landscapes (Mucher et al., 2010; van Eupen et al., 2012; Wascher, 2005; Warnock and Griffiths, in press). In the EU this has resulted in maps identifying meaningful ecological units, based on differences in elevation, soils, geology and land cover, which provide broad environmental strata as a spatial framework to, or example, assist with indicator reporting and environmental sampling. A good example of this type of approach is the development in the UK of the Countryside Survey (Bunce and Barr, 1995), which provides a system of strata for monitoring environmental indicators at national scales, based on a rigorous sampling framework.

However, few reliable frameworks are currently available by which to assess the ways in which farming practices interact with landscapes to generate non-market, or non-commodity (MEA-Scope, 2003), cultural ecosystem services (Pinto Correia and Carvalho-Ribeiro, 2012). Consequently, there has been more limited development of indicators encompassing the social dimensions of rural agrarian landscapes (Cassatela and Peano, 2011; Ode et al., 2008; Tveit et al., 2006). The European Landscape Convention (ELC, 2000) echoes others in describing this lack of a well-developed conceptual framework and limited policy tools as problematic given increasing awareness of the importance of accommodating multiple societal, amenity and cultural values in the management of landscapes (Haberl et al., 2004; Pinto-Correia and Berman, 2009; Pinto-Correia et al., 2006; Sassatelli, 2010; Stephenson, 2007, 2008; Swanwick, 2009). This paper, by testing the indicator for 'societal awareness of landscapes' developed by Paracchini et al. (this issue) at multiple scales of governance (i.e., regional and EU), provides an in-depth view on the potentialities for a top-down approach to the construction such social indicators of landscape.

## 2. The current state of development of landscape social indicators

Commenting on the state of development of social indicators of landscape Cassatela and Peano (2011) point out that while a considerable number of social indicators exist, "the number of indicators found in the literature is a sign of the diversity of use and the experiential phase the subject is currently going through, rather than a sign of rich content". While the corpus of existing social indicators is thus highly fragmented, due in part to this diversity of uses, a broad classification is possible on the basis of the criteria upon which

public preferences for, or valuations of, landscapes are made, i.e., the functional value and the aesthetic value of landscapes.

Preferences for particular landscapes are sometimes expressed in terms of the uses to which landscapes can be put. So, for example, a landscape with land uses providing game-cover would have a 'functional value' to groups interested in hunting. Studies in the fields of landscape ecology and ecological economics have shown that different functional values can be attributed to the same landscapes according to the preferences of different user groups, such as tourists, farmers, hunters etc. (Ribe, 1989, 2002; Sheppard et al., 2001; Tahvanainen et al., 2001; Roovers et al., 2002; Rogge et al., 2007; Surova and Pinto-Correia, 2008; Sevenant, 2010; Carvalho-Ribeiro and Lovett, 2011; Rogge et al., 2011). More recently, several EU research projects have contributed developments to the landscape function approach based on the ecosystem service framework (see for example, SENSOR: Helming et al., 2007 ELCAI: Perez-Soba and Wascher, 2005; Euroscape 2020: Wascher and Pedroli, 2008).

Preferences based on aesthetic values, on the other hand, are closely associated with the process of perception (Tahvanainen et al., 2001), where these perceptions are rooted in cognitive processes, involving observation and analysis in the present, based on past knowledge and experience, to create coherent visual concepts that are attributable to, and identify, landscapes. Numerous landscape concepts have been identified, including, stewardship, coherence, disturbance, historicity, visual scale, imageability, diversity, naturalness and ephemera, etc. (Antrop, 2000; Ode et al., 2008, 2009, 2010; Ode and Miller, 2011; Ode Sang and Tveit, 2013; Fry et al., 2009). The role of human perception in defining landscapes has been recognised in the European Landscape Convention (ELC, 2000), which defines landscape as "an area perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (CoE, 2000). By their very nature, these perception-based values are multi-dimensional and localised, i.e., specific to particular groups and places and therefore the indicators which capture them are usually constructed using 'bottom-up' approaches, i.e., derived from data collected from local surveys addressing the preferences of publics related to particular rural agrarian landscapes (Carvalho-Ribeiro and Lovett, 2011; Hersperger and Burgi, 2009; Howley et al., 2012; Nijnik et al., 2009; Palang et al., 2011; Rogge et al., 2011; Sayadi et al., 2009; Surova and Pinto-Correia, 2008; Eetvelde and van Antrop, 2009). It has also been noted that both function and perception based values are not permanent, but context-related, such that individuals can switch between them according to circumstances, i.e. based on whether they are adopting a user/consumer or a citizens' viewpoint (Rensburg et al., 2002; Vanslembrouck and Van Huylenbroeck, 2005).

Summing up the state of development of social indicators of landscape Cassatela and Peano (2011) note a number of generic weaknesses, two of which are of most relevance to this study. The first weakness is that, being derived from 'bottom-up' analytical processes, most existing social indicators cannot be aggregated, as they are relevant only at the local/regional level and in the context of spatially and temporally confined projects and so are not suitable for implementation across regions and at larger scales. Second, these indicators, while they attempt to capture particular anthropic phenomena, for example public perceptions of tranquility, diversity, uniqueness etc, use metrics that lack generalisable anchoring points, i.e., they are highly subjective. The need for exploration of more generalizable approaches to social indicator construction is thus apparent.

The CAP is, by some margin, the policy which has the greatest impact on the rural agrarian landscapes of Europe today (Primdahl and Swaffield, 2010). The purpose of defining indicator sets in the context of the CAP is to monitor and assess the effectiveness of the

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