



## Surveys

# Integrating socio-cultural perspectives into ecosystem service valuation: A review of concepts and methods



Samantha S.K. Scholte\*, Astrid J.A. van Teeffelen, Peter H. Verburg

*Institute for Environmental Studies (IVM), VU University Amsterdam, De Boelelaan 1087, 1081 HV Amsterdam, The Netherlands*

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## ABSTRACT

Ecosystem service research has long been dominated by a monetary interpretation of value, neglecting other social perspectives on the importance of ecosystems for human well-being. Emphasis has been put on individual utility and rational choice, which does not adequately capture the full spectrum of social values of ecosystem services. A socio-cultural approach to value ecosystem services is increasingly advocated and is gaining more attention in the ecosystem service research agenda. The current documentation of socio-cultural perspectives on ecosystem services is, however, characterized by a conflation of the concepts of “cultural ecosystem services” and “socio-cultural values” of ecosystem services. This paper reviews (i) the concept of socio-cultural values within the ecosystem service framework, (ii) the social and ecological factors that determine socio-cultural values, and (iii) the methods by which socio-cultural values can be assessed. The clarifications of the concept of socio-cultural valuation and the structured listing of the available methods facilitate a better integration of socio-cultural values into ecosystem service assessments and help researchers to choose methods from the available portfolio.

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## 1. Introduction

The ecosystem service (ES) approach is gaining momentum: many scholars have reviewed the concept of ESs and the methods used to assess them (Atkinson et al., 2012; Christie et al., 2012; de Groot et al., 2002; Liu et al., 2010; Seppelt et al., 2011; van Zanten et al., 2013). To give ecosystems more weight in policy decisions and management strategies, approaches have been developed to quantify the value of ESs in monetary terms (e.g. Costanza et al., 1997). This monetization of ES values, however, has led to a lot of controversy (see Common, 2007; Kosoy and Corbera, 2010; Spash and Vatn, 2006). Norton and Noonan (2007, p. 665) express the worry that the focus on economic tools has “locked the rhetoric of environmental evaluation in a very monistic, utilitarian, and economic vernacular that leaves little or no room for other social scientific methods”.

There are three value-domains that are associated with ES values: the ecological, economic and socio-cultural domains (MA, 2005). Ecological values of ESs are described in terms of how the service contributes to the health of the ecosystem, using indicators such as resilience and diversity (de Groot et al., 2010). Economic and socio-cultural values both reflect the relative importance of ESs to people. Socio-cultural values are distinguished from economic values, because they are not expressed in monetary terms (de Groot et al., 2010; Oteros-Rozas et al., 2013). For the sake of clarity and consistency, in

this paper we will therefore use the term monetary values instead of economic values.

The monetary valuation of ESs focuses on services that can be relatively easily approached through market-based methods, whereas the less tangible services, such as aesthetic or inspirational services, are frequently dismissed as hidden externalities. The interplay between ecosystem functioning and its contributions to human welfare and well-being is rather complex, which is why increasingly authors suggest to take a pluralistic approach when performing ES valuations (Chan et al., 2012a,b; Kumar and Kumar, 2008; Norton and Noonan, 2007; Spangenberg and Settele, 2010). To better integrate a broader set of social perspectives and valuation methods into the ES framework, a growing group of scholars is looking at socio-cultural valuation methods to capture the value of ESs (e.g. Agbenyega et al., 2009; Casado-Arzuaga et al., 2013; Hartter, 2010; Martín-López et al., 2012). These methods do not serve as an alternative, but rather as a complement to current, monetary forms of ES valuation.

Although socio-cultural values are increasingly addressed in ES assessments, little effort has been put in reviewing the concepts and methods considered in socio-cultural ES assessments. This paper aims to address this research gap by providing a thorough review of (i) what is understood by socio-cultural values, (ii) what determines socio-cultural values, and (iii) what methods are used to assess socio-cultural values. As the field of socio-cultural valuation of ESs has only recently emerged, we draw from theoretical and methodological considerations in a range of research disciplines, including psychology, economics and geography, to gain a better understanding of socio-cultural

\* Corresponding author.

E-mail address: [samantha.scholte@vu.nl](mailto:samantha.scholte@vu.nl) (S.S.K. Scholte).

values of ESs. We explore concepts and approaches from a broad set of studies that have investigated values for the environment.

In the following section we define socio-cultural values in the context of the ES framework. In the third section, we put forward a theoretical framework, presenting the different social and ecological attributes that determine socio-cultural values. In the fourth section, we assess the methods that address socio-cultural values of ESs. In the final section, we discuss future research directions and give suggestions to facilitate the integration of socio-cultural perspectives into ES valuation.

## 2. Socio-cultural Values Within the ES Framework

There is no general apprehension of the term value in environmental research, and thus its definition and application varies across studies. Ecologists often look at *functional values*, that address the more technological and functional relationship within a system (Farber et al., 2002). Functional values exist regardless of whether they are recognized by social norms or individual preferences. Psychologists and sociologists are mostly concerned with studying the basis of value. *Held values* are conceptions about what is desirable and important within an individual, such as notions of liberty or responsibility (Lockwood, 1999). This concept of value is different from the economic concept of “valuation” that treats value as *assigned values*, expressing “the relative importance or worth of an object to an individual or group in a given context” (Brown, 1984, p. 236).

We define socio-cultural values of ESs as the importance people, as individuals or as a group, assign to (bundles of) ESs. As such, we consider socio-cultural values of ESs to be assigned values, though we adopt an assigned value theory that explicitly takes into account the central role that held values play as determinants of assigned value (see Brown, 1984). In addition we adopt an approach that acknowledges the different dimensions of socio-cultural values. Whereas the neoclassical economic interpretation of value focuses on individual utility and rational choice, a socio-cultural interpretation of value requires a more holistic approach towards value. Socio-cultural values may be self-oriented or other-oriented: in the latter case individuals place value on objects without thinking about their own good, but by thinking about what is good for society as a whole (e.g. Oteros-Rozas et al., 2013; Wilson and Howarth, 2002). Furthermore, since information about ecosystems and their services is often lacking, individuals may not have existing, well-defined values for ESs. Instead, they might construct a response on the spot, based on their experience, beliefs and the information that is given by the valuation exercise: socio-cultural values may therefore also be transformative (Chan et al., 2012b).

While increasingly scholars address cultural ESs (e.g. Daniel et al., 2012; Milcu et al., 2013), the concept of socio-cultural values of ESs still remains a serious gap in ES research (see Chan et al., 2012a,b; Oteros-Rozas et al., 2013). Review of the ES literature reveals a conflation of the terms “socio-cultural value” and “cultural ecosystem service”. Costanza et al. (1997, p. 254) define “cultural values-cum-services” as “aesthetic, artistic, educational, spiritual and or scientific values of ecosystems”. De Groot et al. (2002, p.397) refer to socio-cultural value as ‘non-material well-being’ that ‘mainly relates to the Information Functions’. These information functions have been incorporated into the ES framework as cultural ESs, which The Millennium Ecosystem Assessment (MA, 2005) describes as services related to spirituality and religiosity, recreation and ecotourism, aesthetics, inspiration, education, sense of place and cultural heritage.

We consider socio-cultural values to be conceptually different from cultural ESs. Whereas cultural ESs mainly reflect the non-material well-being connected to ecosystems, e.g. spirituality, aesthetic values, sense of place (see Chan et al., 2012a,b; Daniel et al., 2012; Milcu et al., 2013; Pröpper and Hapts, 2014), socio-cultural values reflect *both* material and immaterial well-being. As expressed by Pröpper and Hapts (2014, p. 29), the current classification of ESs and values is based on “Western dualist perceptions of a separability of material provisioning

ESs and their (monetary) values on one hand, and immaterial cultural services and their values on the other”. The benefits people obtain from ecosystems may be both material, e.g. nutrition, and immaterial, e.g. sense of place. Socio-cultural values are therefore not limited to cultural ESs alone and should be connected to the full spectrum of ESs, including provisioning, regulating *and* cultural ESs.

In spite of the importance of ESs to many different groups of people, ESs are, to a large extent, identified and valued by experts and/or policy makers. Experts may not always be aware of all ESs as perceived by people. The crux of socio-cultural valuation is to include the values of all relevant stakeholders, including local and distant beneficiaries, and to make explicit who values what.

## 3. The Determinants of Socio-cultural Value

Fig. 1 presents a framework that describes the potential determinants of socio-cultural values of ESs. Within the context of social-psychological theory, a diversity of models has been used to describe the different layers that shape environmental behavior (see Corraliza and Berenguer, 2000; Steg and Vlek, 2009). Few of these models describe the values for particular ecosystem structures or functions. Studying the forest value–attitude relationship, McFarlane and Boxall (2000) put forward a cognitive hierarchy model that describes the determinants of forest management preferences. In this model, basic values (see Schwartz, 1994) provide the foundation for value orientations, i.e. general beliefs, which again influence more specific attitudes and behavior (McFarlane and Boxall, 2000). Given its focus on specific ecosystem preferences, we have taken this model as a basis to develop a conceptual framework for the specific context of socio-cultural values of ESs.

A limitation of many models that describe the determinants of environmental values and behavior, is that they focus on how individual motivations influence environmental behavior, without reviewing contextual factors (Corraliza and Berenguer, 2000; Seymour et al., 2010; Steg and Vlek, 2009). McFarlane and Boxall (2000) include social influences and socio-economic variables as contextual factors in their model, but they do not include the ecosystem structures and functions, to which the values are assigned. In our framework, we explicitly include contextual factors, both ecological and social attributes, as separate components. By drawing from different research disciplines, the following sections summarize the current knowledge base on how each of these components may determine socio-cultural values of ESs. Firstly we describe which characteristics of the landscape, and the ecosystems within that landscape, may determine socio-cultural values (Section 3.1). Consequently we explain how interactions between the beneficiaries and the natural environment may determine socio-cultural values (Section 3.2). Finally we address the characteristics of beneficiaries, shaped by personal and social attributes (Section 3.3).

### 3.1. Characteristics of the Natural Environment

Landscape and ecosystem characteristics do not only depend on biophysical properties, but are often closely linked to management practices. Socio-cultural ES assessments can be useful to evaluate landscapes and/or ecosystems that have undergone different forms of management (Carvalho-Ribeiro et al., 2010; Ives and Kendal, 2013; Le Lay et al., 2013) or have been affected by different forms of disturbance (Morrison et al., 2013). Here we explain how socio-cultural values can be related to the specific landscape and/or ecosystem characteristics (Section 3.1.1) and the supply of ESs (Section 3.1.2).

#### 3.1.1. Landscape and Ecosystem Characteristics

Landscapes vary with both space and time. Past, current and future land use change are important determinants of socio-cultural values of ESs (e.g. Aretano et al., 2013; Carvalho-Ribeiro et al., 2010; Piowarczyk et al., 2013; Roca and Villares, 2012; Swetnam et al.,

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