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Ecosystem service valuation in a governance debate: Practitioners' strategic argumentation on forestry in northern Finland

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ABSTRACT

To better understand the links between ecosystem service (ES) valuation and governance, we examine how local-level practitioners (i.e. the state forestry enterprise, tourism entrepreneurs, reindeer herders, a local NGO and a local hunting association) performed ES valuation through argumentation to promote certain interests in practical governance in the context of a forestry debate in northern Finland. Our case shows that monetary valuations may escalate disputes instead of providing neutral information. Furthermore, increasing transparency could be useful in gaining an understanding of the links between the (strategic) partiality of knowledge production and perceived ES values and trade-offs across stakeholder groups; this could also lead to a common view on various ES values and governance solutions. On the other hand, the stakeholders were eager to identify various benefits at diverse spatial and temporal scales in a strategic manner to defend or oppose prevailing land-use practises and ownership. However, while the positive identification and measurement of ESs is relevant, attention should also be paid to the practises of denying and questioning certain ES values. This is crucial to better understand how stakeholders perform ES valuations through argumentation and by this means shape and construct the governance options for and against particular ESs.

1. Introduction

The concept of ecosystem services (ES) pays special attention to the benefits obtained by people from biodiversity, ecosystems and their structures and processes (MA, 2005). Following the Common International Classification of Ecosystem Services (CICES, 2013), there are three types of services: (1) provisioning (products obtained from ecosystems, e.g. food, wood, water), (2) regulation and maintenance (moderation or control of environmental conditions, e.g. flood control, water purification by aquifers, carbon sequestration by forests), (3) cultural (non-material benefits obtained from ecosystems, e.g. recreation, education, aesthetics). Even though ESs represent the values and benefits of nature to people (Haines-Young and Potschin, 2010), the actual provisioning of ESs is determined not only by ecological but also by coupled social-ecological systems implying that ES assessment cannot be separated from the social context in which the ESs are embedded (Heikkinen et al. 2012; Spangenberg et al., 2014; Lakerveld et al., 2015). Furthermore, the actual values of ESs are often debated and negotiated between various ES beneficiaries as part of governance and policy discussions (see Wilson and Howarth, 2002; Dunlop 2014; Jordan and Russel, 2014).

Much emphasis has been put on the identification and valuation of ESs, for example, by monetary indicators (e.g. de Groot et al., 2002; TEEB, 2010). Environmental decision-making becomes better informed if the often unrecognised values of diverse ESs are captured (Costanza et al., 1997). However, ES valuation becomes challenging when the policy goal is not merely the economic development of a single resource but the promotion of sustainability from the viewpoint of various parties or the advancement of social equity (Costanza and Folke, 1997; Wilson and Howarth, 2002; Lakerveld et al., 2015). Subsequently, ES valuation needs to better take into account the social and cultural dimensions including stakeholder perspectives (Kumar and Kumar, 2008; Chan et al., 2012; Hauck et al., 2013).

Stakeholders may define and frame ES values for strategic reasons, thus promoting benefits to certain actors at different institutional levels (see Vatn and Vedeld, 2012). This raises questions about knowledge production: who generates the knowledge, what values the knowledge conveys, and how the knowledge is used to support decision-making (Hodgson et al., 2007; Jordan and Russel, 2014). We note following Jordan and Russel (2014, 194) that knowledge about ESs '"*is not a neutral package of "facts" on the contrary, what counts as knowledge and how it is presented (for example, in terms of the "services provided")* is an inescapably

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political act (…).′ Therefore, this article emphasises the strategic nature of identifying and valuating ESs. Expertise on ESs is necessary, but it has to be recognised that expertise is often used to back up certain interests and that the experts themselves are political actors (Sarkki and Karjalainen, 2012; Dunlop, 2014). Thus, science cannot produce uncontroversial normative recommendations for policy (Bromley, 2012), and ES valuation cannot replace political debates or resolve conflicts. However, in this paper we present a case where a contested ES valuation through argumentation was an integral part of a governance debate and was used as a justification for different management options.

Despite the growing interest in ESs, more consideration is needed on how ES valuations could contribute to real-world management and policy design (de Groot et al., 2010; Primmer and Furman, 2012). This gap has been addressed by Primmer et al. (in press), who present a framework which takes into account the stakeholders making ES-related decisions and the different arguments that are used when implementing a decision. In this paper, a key distinction is made between analytical and technical ES valuations by scientists to inform governance and ES valuations through argumentation by practitioners as part of real-world governance debates. Thus, this paper approaches ES valuations not through top-down science-led valuation assessment, but from a scarcely employed bottom-up view focusing on how local-level practitioners develop and use ES valuations in a strategic manner in order to promote specific interests in practical governance. Strategic ES valuation through argumentation refers to the ways and discursive practises of utilising, modifying and extending technical valuations and inventing arguments regarding ES values in order to support or oppose a certain kind of policy or management option.

The objective of this article is to examine the practitioners' definitions and the use of argumentation-based ES valuation as part of real-world governance processes. The research questions are: how did the stakeholders use argumentation-based ES valuation as part of the governance debate, and how can the identification of such practises inform ES valuation frameworks and literature? This paper seeks to answer these questions by examining a forest dispute in Muonio, a municipality in northwestern Finland. The dispute took place between the Finnish state forestry enterprise Metsähallitus, which promoted loggings, and a unified local coalition opposed to loggings, consisting of nature-based tourism entrepreneurs, reindeer herders, a hunters' association, a local environmental non-governmental organisation (ENGO) and representatives of the municipality. This dispute turned into a discursive battle to support one's preferred management option by strategic ES valuation through argumentation.

The stakeholders did not perform a systematic monetary valuation of other ESs than those relating to timber and nature-based tourism. However, through interviews we were also able to capture valuations of other ESs linked to reindeer herding, hunting and recreation in other than monetary terms. We employ the ES valuation framework by Hein et al. (2006) and identify how argumentation-based ES valuation informs the different phases of the framework. While the literature is often focused on identifying and measuring the positive values of ESs (e.g. Costanza et al., 1997; de Groot et al., 2002), we highlight how denying and questioning the opposite side's valuations is equally important especially when examining argumentation-based ES valuations in the context of real-world governance.

Our analysis highlights how monetary ES valuations in particular are used strategically (see Hodgson et al., 2007; Jordan and Russel, 2014; Dunlop, 2014), how claimed monetary ES values can or cannot function as tools to inform controversial governance debates (see Purushothaman et al., 2013), and what are the temporal and spatial scales related to the benefits and values of ESs (see Hein et al., 2006). These themes have been identified and discussed in the ES literature, but we aim to bring in the practitioners' strategic ES valuation perspective into the discussion, thereby enriching the literature on the links between ES values and real-world governance processes (see de Groot et al. (2010); Primmer and Furman (2012); Primmer et al. (in press)).

2. Different steps in ecosystem service valuation process

In order to approach ES valuations holistically we apply a five-step ES valuation framework, which derives from Costanza et al. (1997) and the Millennium Ecosystem Assessment (MA, 2005) and which was elaborated by Hein et al. (2006). We chose to use this framework, because it is well-known and includes an analytical separation between the different steps, which enables us to identify what kind of strategic argumentation is related to the different steps of the valuation process. Furthermore, Hein et al. (2006) highlight the fact that sensitivity regarding the appropriate and relevant scales and the careful identification of stakeholders is important to better connect ES valuation to real-world processes, which is often missing from ES analyses (see Menzel and Teng, 2010). It should be noted that not all the steps are always necessary, but from our view Hein et al. (2006) framework adequately covers the different dimensions of ES valuation processes. Furthermore, the framework provides guidelines for performing ES valuation from a scientific viewpoint to inform policy processes. Here we apply the framework to analyse the practitioners' ES valuations in order to connect the strategic valuation of ESs to the different steps of the valuation process. Thus, the framework gives us a frame for approaching ES valuation, which links it to stakeholders (Table 1).

In step 1, strategic argumentation may relate to vague definitions of the boundaries of the ecosystems to be assessed. This can lead to a situation where different stakeholders speak and measure ESs with different ecosystem boundaries, making the results incomparable and providing room for strategic manoeuvring For example, services which have been identified to exist within a larger area may be used to increase the benefits that seem to derive from a smaller part of that area.

In step 2, the ecosystem services provided by the ecosystem are mapped. Identifying the services for valuation is important, as at this point some ESs might be excluded from the discussion already in the beginning of the valuation process. However, there has been little discussion on how to select the specific ES for valuation, despite the potential impact the service selection has on the outcome and application of the assessment (Malinga et al., 2013). Thus, the selection of ESs for valuation should be based on integrated knowledge from the ecosystem service beneficiaries and those doing the valuation (Willaarts et al., 2012). Furthermore, the interaction and trade-offs between the various uses of ESs has often been neglected in the existing governance practises (Carpenter et al., 2009).

In step 3, the measurement and valuation of the identified ES are conducted. Monetary measures can put the different services on the same line to enhance their comparability. However, the utilisation of simplified monetary values may lead to the emergence or escalation of distrust resulting in a conflict between the stakeholders instead of providing grounds for a fairer and more balanced treatment of divergent stakeholder interests (Purushothaman et al., 2013). Thus, fostering pluralism and diversity in ES valuation enhances the perceived credibility of ES valuations (Mukherjee et al., 2014). In addition, a focus on monetary values might lead to the dominance of provisioning services in the valuation framework. Provisioning services are the most visible, whereas the preferences and values related to cultural and