



Perceptions of the general public on forest sector responsibility: A survey related to ecosystem services and forest sector business impacts in four European countries



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ABSTRACT

This paper investigates public perceptions related to forest ecosystem services (ES), which have been identified as one of the key topics in forest sector communication. ES represents a prime example of an issue that merits more in-depth analysis. In this study, we (I) evaluate the views of the general public on the importance of forests contributing to different ES; (II) determine the public's need for information on the impact of forest sector businesses on ecosystems; and (III) assess how responsibly the public believes that forest sector companies act in relation to their impacts on ecosystems. A structured questionnaire using a 5-point Likert-scale was made available as an online survey targeting respondents from four European countries (Austria, Germany, Finland and Slovenia) in each national language and English. Between May and September 2015, 219 responses were received and analyzed using descriptive statistics, exploratory factor analysis, *t*-test, and ANOVA. Respondents showed high levels of agreement for items accounting for regulating and supporting ES. Information needs on forest sector business impacts were found to be high, whereas there was much greater division about the level of perceived forest sector responsibility. Regarding the public perception of forest ES, three dimensions were identified: "primary ES", "consumable ES", and "social cohesion related ES". Some relationships between the respondents' socio-demographic characteristics and the three dimensions of ES were uncovered: for example, "Consumable ES" are more important for female respondents and those who do not derive income from the forest sector.

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1. Introduction

A growing public interest in environmental and social issues has led to intensified pressure on business actors in nature-dependent sectors, such as the forest industry, to gain legitimacy by meeting different and sometimes even conflicting stakeholder expectations (Winn and Pogutz, 2013). Thus, a focal issue is how these business organizations manage to secure ecosystem services (ES), which comprise the physical components of the ecosystems, the functions and interactions of those components, and the contribution of the ecosystems to human welfare (Danley and Widmark, 2016). Alongside societal pressures, business organizations have also started to realize that the loss of ecosystems

and biodiversity poses a risk to their long-term profitability. This has motivated them to employ information and tools provided by different ecosystem conservation programs, such as The Economics of Ecosystems and Biodiversity (TEEB) initiative, in their sustainability management (e.g., Robinson, 2012) and disclosure (D'Amato et al., 2015).

Ecosystem-based considerations should be the starting point for making decisions about the various resource usage options when seeking to harvest the ecological, socio-cultural, and economic benefits provided by European forests (Andersson et al., 2000). Currently in Europe, the forest sector plays a pivotal role in the development of a sustainable, bio-based society (e.g., Ollikainen, 2014; Bugge et al., 2016), in which the economic (e.g., profitability of businesses), environmental (e.g., securing ecosystem services), social (e.g., rural employment), and cultural (e.g., forest-related traditions) aspects of using natural resources are taken into account (e.g., Lähtinen et al., 2014). In creating appropriate conditions for developing a bio-based European society, the following are required: an understanding of forest ecosystem functions

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and how to integrate different sustainability dimensions (i.e., economic, environmental, social and cultural) into decision-making processes, more attention to be paid to public views on forest ecosystems (Marchetti et al., 2014), an understanding of the potential conflicts that might arise among people who value different ES (Von Döhren and Haase, 2015), and, finally, information about the development of consumer preferences in the evolving bioeconomy markets (Kleinschmit et al., 2014).

For a bio-based society, the concept of social license (SL), which was introduced in the early 2000s by Gunningham et al. (2004), is considered as particularly important and refers to the need for business organizations to build and secure the legitimacy of operations through better fulfilment of social obligations and management of stakeholder relations. As an empirical case, Gunningham et al. (2004) used pulp and paper production, which until the late 1990s involved severe emissions of dioxin from chlorine-based bleaching processes causing severe legitimacy gaps in companies' operations. The SL approach has also been employed to the mining industry to evaluate how companies have responded to the needs and pressures of society (Hall et al., 2015).

As pointed out by Hall and Jeanneret (2015), SL, or social license to operate (SLO) provides a stakeholder-centric extension of insights into corporate sustainability practices. In other words, while corporate responsibility reporting may enhance the acceptability of business operations, it is the SLO that acts as a proxy for the perceived acceptability of a company's operations in their business and in the natural environment (Mikkilä, 2003; Lähinen et al., 2016a). For reputation-sensitive industries, it is especially crucial that they provide information that goes beyond the obligations of law (Gunningham et al., 2004). Thus, to gain an SLO, businesses need to close their legitimacy gap by minimizing the difference between stakeholder expectations about “what ought to be” and stakeholders' current perception of business activities, i.e. “what is” (Panwar et al., 2012).

At the moment, no up-to-date understanding exists of the public perceptions or expectations affecting the legitimacy and SLO of the forest sector in Europe, especially in a cross-national context. In a review of consumer and business surveys from the early 2000s, Rametsteiner et al. (2007) found that consumers thought wood was a renewable material in general, but many seemed unsure whether increasing timber harvesting was acceptable for substituting non-renewable materials. Regarding wood energy, Hitchner et al. (2014) found that the public discourse in Europe is positioned around its potential for green economic growth, energy security, rural development, and climate change mitigation. In a recent study (Korhonen et al., 2016), eight topical themes (namely, innovations, forest ecosystem services, forest conservation, global warming, economy, added value, wood construction, and efficient use of wood) were identified as important in online stakeholder communication in reference to the aim of developing a bio-based, sustainable society in Europe. Finally, in the context of western Canada (Hajjar and Kozak, 2015), it was found that there are a multitude of experiential, attitudinal, demographic, and perceptual actors affecting people's views about accepting or rejecting forest adaptation strategies to climate change.

With global awareness of ES building momentum and business organizations increasingly required to gain SLO, more in-depth analysis is required into how the responsibility of forest sector operations is actually perceived by European stakeholders. For example, according to Valkeapää and Karppinen (2013), there is a divide between the legitimacy of forestry and nature conservation policies, which reflects the conflicting interests between the intensive use of forests and biodiversity conservation. Thus a wider perspective on the benefits of the forest, such as its health and recreational uses, is needed for forest industries to obtain legitimacy among the general public.

Regarding the practical consideration of the expectations of the general public, understanding their perceptions of the contents and characteristics of forest ES is fundamental in enhancing the forest sector SLO. While concepts and issues related to forest ES are being broadly tackled

by business organizations and societal decision-makers, there is still a lack of comprehensive information at the European level about the perceptions of the general public (i.e., private people) of the different types of forest ES, as well as their views on the responsibility of the forest sector operations in relation to forest ES.

Therefore, the overall purpose of this study is to shed light on the views of the general public on forest ES and the linkages between forest ES and their potential to enhance the SLO of the forest sector. In total, there are three related aims that combine to meet the overall objective of this study: (I) to evaluate the views of the general public on the importance of the contribution of forests to different ES; (II) to determine the public's need for information on the impact of forest sector businesses on ecosystems; and (III) assess how responsibly the public believes that forest sector companies act in relation to their impacts on ecosystems.

2. Conceptual background

According to the Millennium Ecosystem Assessment (MA, 2005), human beings acquire benefits from biodiversity via ES, which contributes to well-being by providing material for a good life, freedom of choice, health, social relations, and security. Conceptually, biodiversity sits at the core of ES by providing support to the key processes in ecosystems, affecting the delivery of some ES, and also being a service itself (Mace Georgina et al., 2012).

In this study, the ES approach is grounded in the MA framework (2005), which is applicable, for example, when making evaluations both from strategic and societal viewpoints (Bull et al., 2016). From a scientific point of view, the MA framework is based on the largest study ever made on the ES approach, whose aim was to identify the connections between ES and human well-being (Pereira et al., 2005). A drawback of the ES approach is that it does not sufficiently acknowledge the trade-offs between different ES and the negative impacts of ES on human well-being (see, e.g., Von Döhren and Haase, 2015); another is that it represents “a reflection of a utilitarian and anthropocentric view of nature” (Bull et al., 2016). Yet, Reid (2006) has emphasized that adding utilitarian and economic arguments as motivations for securing ES does not take away their non-monetary value.

Despite its deficiencies, such as the simplified description (Danley and Widmark, 2016), the results of Bull et al. (2016) show that many strengths and opportunities lay in the use of the ES approach. These strengths comprise its applicability in strategic and political decision-making, its potential to increase environmental awareness in society, and use in interdisciplinary research. In addition, in the future the applicability of the ES approach can be enhanced by conceptual development targeted at different decision-making contexts (i.e., organization management, policy making, and science) (Danley and Widmark, 2016). From the perspective of interdisciplinary development, there is potential in increasing the consideration of trade-offs between different ES by incorporating anthropocentric views (e.g., in connection to social sciences and economics) related to the expectations of different groups of people about ES in ecological management (Von Döhren and Haase, 2015).

In the ES approach, humans and their cultural diversity are considered as an integral part of ecosystems, while business sectors and governments are seen as a focal group in transforming the ES approach in practice (Vihervaara and Karppinen, 2009; Winn and Pogutz, 2013). In the MA framework, ES are categorized into provisioning, regulating, socio-cultural, and supporting ES, as illustrated in Fig. 1. In addition to this categorization, the MA framework also attempts to provide information on the relationships between ecosystems and constituents of well-being, both from the perspective of the mediative potential of a particular ES to well-being as well as the intensity of those linkages (Pascual et al., 2016).

The changes in ES are caused by direct (climate change and deforestation) and indirect (global trade and demographics) drivers (Carpenter et al., 2006). In Europe, the sustainable supply of provisioning, regulating,

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