



Influence of the geographical scope on the research foci of sustainable forest management: Insights from a content analysis

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ABSTRACT

Individual approaches to sustainable forest management have to be operationalized according to the regionally specific environmental conditions and stakeholder requirements. Unique regional socio-economic conditions also significantly impact stakeholder requirements of globally acting forest sector companies. Therefore, forest-based sector decision makers have to be aware of regionally-specific and context sensitive sustainability concerns, when assessing and prioritizing sustainability issues. Sustainability research is considered to have a regional focus and a problem-driven perspective. Hence, research foci of scientific discussion on sustainable forest management can provide insight into regional differences and problems of sustainable forest management. We conducted a quantitative content analysis of 643 scientific abstracts in the context of sustainable forest management. We observed 16 different topic categories, out of which the topics of forest health and conservation and forest management practices represent the dominant foci. Furthermore, our results confirm a strong impact of geographic scope on the research foci. For example, the issues of climate change mitigation and adaptation are significantly more investigated in the Global North while social impacts of forest management are more researched in the Global South. Our findings suggest that decision makers should consider more than environmental issues when selecting corporate social responsibility activities or when making environmental policies. Otherwise, they can potentially overlook the impacts of forest management which are of high regional importance and intensively investigated by the scientific community.

1. Introduction

Sustainable forest management (SFM) is one of concepts which were significantly influenced by the publication of the Brundtland report (WCED, 1987). Main notions of the report (e.g. intra- and inter-generational equity, solidarity and environmental limits to global development) (Langhelle, 1999) prompted the policy debate on environmental governance to include multiple stakeholders and their diverse interpretations of sustainability (Sneddon et al., 2006). An understanding of the concept of SFM developed in a similar fashion. Although the modern understanding of SFM still retains some conceptual vagueness (Wang, 2004), its two main hallmarks are a theoretical foundation in the concept of sustainable yield management and an inclusion of a wide range of social demands through the adaption of participatory processes (Hahn and Knoke, 2010).

Together with the rise of sustainability discourse, the field of

corporate social responsibility (CSR) experienced a powerful resurgence in its activity (Vogel, 2005; Carroll, 1999). At the time, new theoretical contributions of stakeholder theory and business ethics theory sparked an increased interest in CSR (Carroll, 1999). Also, structural changes in the socio-legal and socio-economic framework over the last decades of the 20th century (e.g. globalization, liberalization of trade) were another driver of the increased interest into CSR because they further bolstered the role of large corporations as major social and political actors (Vogel, 2005; Keinert, 2008). At the same time, rising environmental consciousness has sparked an increasing social pressure on companies to take responsibility for the full extent of their impacts on society and environment. Hence, implementation of CSR has become one of the main priorities for business leaders (Porter and Kramer, 2007; Maon et al., 2010).

CSR and the related achievement of a social license to operate are of special importance in forestry and other extractive, resource intensive

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industries, (Moffat et al., 2016). Forest-based sector plays a key role in global sustainable development due to the importance of its raw material base and spread of the production areas into the developing countries (Li and Toppinen, 2010). When operating in emerging economies, the environmental performance of foreign owned companies is especially scrutinized (Kim et al., 2015). Thus, the inclusion of sustainability concerns of a companies' stakeholders into business operations is of high significance in the forest-based sector (Toppinen and Korhonen, 2012; Moffat et al., 2016).

However, the evaluation of what a companies' significant social and environmental sustainability impacts are, is exceedingly complex because it underlies the subjective valuation of different stakeholders. Namely, CSR is conceptualized as a stakeholder-oriented concept (Maon et al., 2010) and thus it is by definition focused on the concerns of a companies' stakeholder (European Commission, 2001).

In this context, scientists can be considered as one of the stakeholder groups which are essential for the promotion of SFM. Scientists are one of the actors with a high "standing" in the mass media debate on environmental problems, which gives them the ability to frame the public discourse regarding the discussed issues (Kleinschmit and Sjöstedt, 2014). Moreover, scientists also play a prominent role in the forest policy development process (Werland, 2009; Pregernig, 2014). However, it has to be noted that the extent to and conditions under which scientific knowledge impacts political decisions are still debated.² Nevertheless, there is a growing understanding that environmental governance has to strongly rely on the scientific expertise (Grundmann, 2009; Pregernig, 2014; Turnhout et al., 2016). Furthermore, scientists play a crucial role in the technology and knowledge transfer collaborations. Such knowledge and technology transition mechanisms have a long tradition and are of high importance for wood industry (Hrovatin et al., 2008; Van Horne et al., 2012). Industry-university collaborations have shown to be highly beneficial for the ecological restoration projects (Jones et al., 2017) and are also considered necessary to achieve sustainability goals (Orecchini et al., 2012).

However, the challenge of providing and proving sustainability claims in the forest-based sector goes beyond acknowledging for, often conflicting, demands from disparate stakeholder groups. An appraisal of sustainability issues in the forest-based sector is additionally exacerbated by the fact that the meaning behind the concepts in forestry is dynamic and depending on the temporal and geographical context (Mårald et al., 2016). Moreover, Panwar and Hansen (2007) conclude that unique, regional, socio-economic structures strongly influence the CSR issues of forest product companies. Hence, when assessing and prioritizing sustainability issues, decision makers of the forest-based sector have to be aware of regional-specific and context sensitive sustainability concerns.

Sustainability focused research is inherently characterized by a problem-driven perspective and a regional focus (Kates, 2011; Miller, 2013). This makes the research foci highly suggestive of the existing local problems and trends. Therefore, by analyzing the geographical context and the emphasis awarded to individual topics of scientific discussion, we can gain additional knowledge on the main regional sustainability issues. Nevertheless, we found no scientific publication which investigated this kind of relationship within the scientific discussion on SFM. In order to shed light on the regional specific issues of SFM and to explore regionally different emphases of scientific discussion on SFM, we conduct a content analysis of 643 abstracts investigating SFM. The aim of the study is to answer the following research questions:

1. What are common research foci in scientific discussion on SFM?

2. How does the geographical scope impact the research foci and the intensity of the scientific discussion on SFM?
3. Do the content and the intensity of the scientific discussion on SFM change over the analyzed time period?

2. Methods

2.1. Content analysis

Content analysis was developed by communication researchers as an empirical research method for the analysis of mass media messages (Schreier, 2012). Over time, content analysis has gained importance in the social sciences and has been widely applied by many disciplines (Krippendorff, 2004). It has also become an increasingly important tool applied by forest policy researchers (Kleinschmit and Sjöstedt, 2014).

There are two distinct methodological approaches to the content analysis: quantitative (Bryman, 2012) and qualitative (Schreier, 2012). The qualitative content analysis is commonly conducted to analyze the public media discourse related to forest policy (Sadath and Rahman, 2014; Riedl et al., 2016) or to review changes and conflicts in policy development processes (Fischer et al., 2016). On the other hand, the quantitative content analysis is often applied to investigate the framing of the forest policy issues in the mass media (Sadath et al., 2013; Kleinschmit and Sjöstedt, 2014) or to investigate corporate communications (Korhonen et al., 2016).

In our study, we applied quantitative content analysis to investigate impact of a geographical and a temporal scope on the issues researched by the scientific community investigating SFM. We employed quantitative content analysis according to Bryman (2012), as an approach to the analysis of documents which quantifies content in terms of pre-determined categories in a systematic and replicable manner. The decision to apply the method draws upon its suitability for the research identifying: subjects and themes being discussed, the degree of emphasis awarded to the certain topics and the temporal trends in the discussion (Neuendorf, 2002; Bryman, 2012). Moreover, the quantitative content analysis allows a statistical analysis of the analyzed content and the generalization of the results (Neuendorf, 2002).

2.2. Unit of analysis

In our study, the abstracts of scientific papers published in peer-reviewed journals were considered as the unit of analysis. Based on the guidelines for abstracting, it can be assumed that abstracts include the most relevant aspects of each scientific paper. Compared to the analysis of a whole publication, the analysis of an abstract allows for an accurate identification of the research foci and simultaneously enables the analysis of a larger data sample.

2.3. Data collection

The data collection was performed by conducting a query on Scopus, the largest database for peer-reviewed literature. The query details are presented in Table 1. The final conditions of the query were selected regarding the methodological requirements, results of several test queries and careful discussion of the results with multiple researchers.

The keywords were selected to limit the scope of the study to the abstracts discussing SFM and the related impacts. The query encompassed abstracts published between 2008 and December 2015. As depicted in Table 1, 1834 scientific papers satisfied the query criteria. The keywords were carefully selected and discussed among multiple researchers. However, the initial data sample still included abstracts addressing the topics outside of the scope. For example, global consuming patterns (Koh and Lee, 2012), environmental labeling (Bergman and Taylor, 2011) or development of new indicators for sustainability assessment methods (Garrigues et al., 2012). Therefore, a two-stage

² For a recent and a comprehensive review of the theoretical models of scientific knowledge transfer in the science-policy interface please see a recent review by Böcher and Krott (2016).

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