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Biodiversity and ecosystem services in supply chain management in the global forest industry

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ABSTRACT

Recognizing business risks and opportunities associated with biodiversity and ecosystem services (BES) has triggered a need for identifying, measuring, monitoring and developing business management on these issues to meet stakeholder needs. The extractive industries with direct impacts and dependence on BES are particularly apt to encounter stakeholder pressures for profound corporate responsibility (CR) reporting. In our study, we investigate how global forest industry companies address BES in supply chain management through CR reporting practices in reference to 30 environmental performance indicators (EPIs) of the Global Reporting Initiative (GRI) guidelines. The objectives of this study are: to identify the information content of the GRI EPIs for assessing directly or indirectly positive or negative impacts of companies' operations on BES; to examine the environmental strategies of these companies in relation to BES and supply chain management; and to identify needs and possibilities of indicator development. The material of the study comprises CR reports of thirteen large forest industry companies in the Dow Jones Sustainability Index analyzed with content analysis. According to the results, companies tend to disclose indirect BES impacts over direct ones, emphasize corporations' positive achievements over negative consequences, and focus on the supply chain in upstream activities rather than in downstream activities.

1. Introduction

Ecosystem services are benefits provided by the biodiversity of the nature for humans comprising, for example, food, fiber, climate and regulation, pollination and aesthetic values enhancing well-being of various groups of people (MA, 2005). Among global ecosystem service flows, a large extent of human benefits are derived from forests, which makes them fundamental area of impact assessment in enhancing sustainable use of natural resources (Patterson and Coelho, 2009). In addition, human beings affect biodiversity and ecosystem services (BES) in many ways as a result of subsistence use (e.g., exploitation of forests for firewood and conversion of forests for agricultural land) and industrial processing (e.g., acquirement of raw material for forest and energy industries) (MA, 2005; TEEB, 2010b; Fernholz and Bowyer, 2016).

It has been estimated that through deforestation alone the world loses ecosystem services worth US$ 2–5 trillion each year (TEEB, 2010a). Additionally, the annual cost of global environmental externalities is approximately US$ 7 trillion (i.e., 11% of the value of the global economy in 2008), of which around 35% results from the operations of the 3000 largest companies (UNEP, 2011). As a result of increasing awareness on the opportunities and threats involved with biodiversity loss have gained increasing company attention as a factor affecting their future strategies and survival (e.g., PWC, 2011; WBCSD et al., 2006; WRI, 2008; McKinsey, 2010; Natural Capital Coalition, 2015; van Den Burg and Bogaardt, 2014).

Companies are increasingly expected to be stewards of biodiversity and to enhance the sustainable use of natural resources as part of their businesses (TEEB, 2010a; Jones, 2010). Corporate responsibility (CR) refers to voluntary integration of environmental and social concerns to companies' business operations (European Commission, 2001). In addition, CR provides an avenue for having a comprehensive understanding of different sustainability aspects and to approach in management specific issues such as BES, which commonly have been forgotten in business thinking (Boiral, 2016). From a practical point of view, transforming the standardized aspects of CR reporting into practice is often a challenge for companies (Samkin et al., 2014). But, when solutions for the difficulties in reporting and communicating the impacts on BES have been found, companies may find new possibilities for strategic positioning in the markets and enhancing the acceptability of their operations in the eyes of different stakeholders (Houdet, 2008).

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Yet, if BES reporting is not providing holistic and coherent information on the companies' positive and negative ecological impacts, the information provision may cause distorted image of the trade-offs between different sustainability aspects (Lähtinen et al., 2014). As forest industry companies are operating in one of the sectors causing the highest risks for the biodiversity (Podtar et al., 2016), a special attention on sustainability impact assessments (e.g., biodiversity) and CR communication on acceptability issues (e.g., ecosystem services) should be paid among forest industry companies (Toppinen et al., 2016), and in the empirical part we therefore focus on this sector.

Currently, compared with small and medium-sized firms (for definition, see EC, 2015), large companies with relatively more abundant resources, higher awareness of BES importance, and higher dependence and impacts on BES, tend to adopt strategies to confront BES-related risks, and publicize more comprehensive BES disclosures (EC, 2010). Companies' impacts on BES are affected by operational day-to-day operations, regulatory and legal governance issues, reputational aspects, market and product (input in research and development), and financial (access to capital markets) aspects (WBCSD, 2010). According to the McKinsey global survey (2010) of 1576 corporate executives, 55% believe biodiversity should be among the top ten items on the corporate management agenda, while 59% consider biodiversity to be more of an opportunity than a risk for their companies. As an indication of the importance of BES in the strategic management of companies, for example, the Fortune Global 50 companies have largely addressed their BES concerns through reporting and proposing initiatives to mitigate BES impacts.

The purpose of CR reporting is to enhance the accountability of companies' economic, environmental and social impacts within the society and to communicate to stakeholders their efforts and progress towards sustainability (e.g., Lozano, 2013). In addition, CR reporting provides opportunities for companies to enhance the acceptability of their operations by more profound consideration of local circumstances in particular communities (regarding the forest industry companies, see Lähtinen et al., 2014). International initiatives for CR reporting comprise principles and policies (e.g., UN Global Compact, OECD Guidelines for Multinational Enterprises), international standards (e.g., ISO 14001) and reporting guidelines (the Global Reporting Initiative, GRI) (UNGC, 2013; OECD, 2011; ISO, 2004; GRI, 2011). Among the reporting guidelines, the Global Reporting Initiative (GRI) is one of the most comprehensive guidelines for voluntary CR reporting systems spanning economic, ecological and social issues (e.g., Hussey et al., 2001; Morhardt et al., 2002; Lozano and Huisingh, 2011; Li et al., 2011).

To fill the gap in the existing empirical CR management literature identifying the potential and need for companies to involve in BES reporting (e.g., McKinsey, 2010) and scientific research information showing the challenges in BES reporting (e.g., Samkin et al., 2014), this study describes the current state of BES reporting of forest industry companies in reference to the environmental performance indicators (EPIs) of the GRI (2011) guidelines. For example, initiatives for biodiversity conservation cause positive impacts, while volumes of spills result in negative impacts. In addition, depending on the assessment context, for example, energy consumption may be either a positive or negative sign of effects on BES. Previous research has adopted the GRI indicators for evaluating the information content of CR reporting of companies; including environmental reporting in the oil and gas sector (Alazzani and Wan-Hussin, 2013), the petrochemical sector (Samuel et al., 2013) and in the mining sector (Boiral, 2016). An analysis of BES impacts from the perspective of the direction of impacts has not been done in prior studies. In order to evaluate the actual interdependencies between companies' operations and BES, comprehensive information on the direction of impacts communicated through indicators is fundamental in assessing the content of CR disclosure.

The first aim of this study is to identify the information content of the GRI EPIs for directly or indirectly assessing positive or negative impacts of companies' operations on BES. The second aim of this study is to examine environmental strategies and supply chain management associated with BES, and discuss shared value creation potential of the case companies. It aims to present the development needs and possibilities on these issues. The third aim is to investigate BES indicator development needs and suggest solutions from the perspective of the forest industry companies. The focus of the study is in evaluating the state of BES reporting of the forest industry companies listed in the Dow Jones Sustainability Index (DJSI).[1] The rationale behind focusing on the DJSI listed forest industry companies is based on two perspectives: they can be considered to be more comprehensive and elaborate in their CR reporting than their peers, and as natural resource-dependent manufacturers they are more likely to disclose BES information than companies with weaker links to the natural environment (Havas et al., 2014). As a point of reference for CR measurement and communication, the environmental performance indicators (EPIs) of the GRI guidelines were employed in the study.

2. Supply-chain aspects of biodiversity and ecosystem services (BES) in the GRI REPORTING

Despite the abundant literature on CR reporting overall (Jones, 2010) existing research on accounting and reporting of BES is very limited, and the importance of biodiversity has been poorly understood among professional accountants, practitioners and academics (see, van Liempd and Busch, 2013; Rimmel and Jonäll, 2013; Boiral, 2014). In CR reporting, companies do not yet seem to pay attention to biodiversity issues (Grabsch et al., 2011), and only a limited number of BES disclosures contain sufficient and industry-specific information (Rimmel and Jonäll, 2013; van Liempd and Busch, 2013). An explanation for this is that BES reporting is a new topic raised in recent years, and reporting on the changes in BES natural capital stocks and flows causing impacts from and to natural capital (Vira and Adams, 2009) is particularly challenging and often beyond the capabilities of individual organizations (D'Amato et al., forthcoming). According to Nyenrode et al. (2010) and TEEB, (2010b), the lack of strategic cognition of BES issues, the finiteness of stakeholders' demand for BES information, the complexity of the BES concept, the difficulty of defining the scope of BES issues, and the absence of integrated legislation and a consistently applied reporting framework have all contributed to the current underdeveloped state of BES reporting.

Although there are challenges in implementation of BES reporting in practice, appropriate reporting references with applicable indicators have emerged under the GRI (GRI, 2011). The GRI guidelines were launched for the first time in the late 1990s, and currently nearly 2000 companies follow them in CR reporting (see Alonso-Almeida et al., 2013). Although most CR reports based on the GRI guidelines are produced by European companies, the proportion of Asian and Latin American companies has notably increased since 2005 (Shmelev, 2012). Among the global forest industry companies, a growing number of companies have declared the voluntary adoption of the GRI guidelines to verify their

[1] Dow Jones Sustainability Indices (DJSI) comprises a set of index families covering economic, environmental and social clusters, such as global indices (e.g., DJSI World), regional indices (e.g., DJSI Emerging Markets) and country indices (e.g., DJSI United States), enabling evaluation of the sustainability practices of corporations (DJSI, 2014).