Ecosystem Services ∎ (∎∎∎∎) ∎∎∎–∎∎∎

Contents lists available at ScienceDirect

Ecosystem Services

journal homepage: www.elsevier.com/locate/ecoser

Linking forest ecosystem services to corporate sustainability disclosure: A conceptual analysis

D. D'Amato [a,*], N. Li [a], M. Rekola [a], A. Toppinen [a], F-F. Lu [b]

[a] University of Helsinki—Department of Forest Sciences, Latokartanonkaari 7, FI-00014 Helsinki, Finland
[b] Nanjing Forestry University—College of Economics and Management, Nanjing Forestry University, 210037 Nanjing, PR China

ARTICLE INFO

Article history:
Received 30 May 2014
Received in revised form
2 November 2014
Accepted 26 November 2014

Keywords:
Forest ecosystem services
Plantation forestry
Forest sector
Corporate sustainability reporting
Global reporting initiative

ABSTRACT

Despite the increasing awareness of corporate dependencies and impacts on ecosystems, and related business risks and opportunities, scientific and corporate-based information on these issues is lacking. In our paper we (1) summarise results of a literature review of the impacts and dependencies of plantation-based forestry on ecosystem services; (2) identify the existing and missing links between the corporate sustainability indicators and the ecosystem services framework; and (3) propose a set of possible ecosystem services indicators for corporate sustainability reporting. We particularly focus on the catalytic role of the Global Reporting Initiative (GRI) indicators framework for integrating the ecosystem services approach into corporate sustainability reporting. Finally, we discuss how an ecosystem services approach could benefit future sustainability reporting practices in the context of the forest sector, especially in relation to existing gaps and challenges.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Fast-paced economic development has been achieved at the cost of environmental degradation, loss of biodiversity and ecosystem services, resulting in the exacerbation of poverty and diminished benefits for future generations. According to the MA—Millennium Ecosystem Assessment (2005)[1], reversing ecosystem degradation while meeting increasing demands for their services can only be met by a change in policies, institutions and practices.

A main strength of the ecosystem services framework proposed by MA is its flexible and holistic approach, which can be implemented into existing public and private governance instruments. Research interest has recently grown on the linkages between the ecosystem services framework and business sustainability disclosure (Hanson et al., 2012; Waage, 2012; WBCSD—World Business Council for Sustainable Development, 2011), especially in regard to business impacts and dependencies on the environment[2] : suggesting that several economic sectors rely directly and indirectly on natural resources, while their operational activities are also a major driver of ecological change (Molnar and Kubiszewski, 2012).

Disclosure of sustainability information by companies is a form of soft regulation consisting of the adoption of external reporting standards on performance indicators, strategies and practices. Corporate reporting of selected sustainability indicators has become mandatory in several European countries and regulatory interest on this matter is foreseen to increase in the future (EC—European Commission, 2013; Ernst & Young and GreenBiz Group, 2012). In addition, responsibility driven investors, consumers and other stakeholders are increasingly interested in sustainability performance, which provides a rationale for voluntary sustainability disclosure. Corporations are thus progressively taking environmental issues into account due to legislative, economic and social motivations (Cho and Patten, 2006; Waage and Kester, 2014).

Sustainability disclosure is particularly relevant for resource-based industries, such as the forest sector. Forest industry globalization is leading to growing pressure on fragile ecosystems in the Global South (Toppinen et al., 2010). Deforestation still represents a major threat in tropical areas and important land use changes have also taken place in temperate and boreal regions (Hansen et al., 2014). A shift from northern boreal and temperate forests towards the highly productive south is occurring, with forest

* Correspondence to: Department of Forest Sciences, University of Helsinki, Latokartanonkaari 7, FI-00014 Helsinki, Finland. Tel.: +358 504160780.
E-mail address: dalia.damato@helsinki.fi (D. D'Amato).

[1] The MA—Millennium Ecosystem Assessment (2005) defined ecosystem services as the benefits that people obtain from ecosystems' functions, e.g. clean water, carbon storage, pollination, pest reduction, food, timber and recreation. Ecosystem services are grouped into four categories: provisioning, regulating, cultural and supporting services.

[2] The concept of 'impact', 'dependency' and 'response' of economic sectors on ecosystem services has been introduced by several initiatives linking business and nature, such as the 'Approach for reporting on ecosystem services' (GRI— Global Reporting Initiative, 2011), the guidelines released in 'The Corporate Ecosystem Services Review' (Hanson et al., 2012; TEEB Business, 2012), as well as in scientific works (e.g. Houdet et al., 2012).

(*footnote continued*)

http://dx.doi.org/10.1016/j.ecoser.2014.11.017
2212-0416/© 2014 Elsevier B.V. All rights reserved.

Please cite this article as: D'Amato, D., et al., Linking forest ecosystem services to corporate sustainability disclosure: A conceptual analysis. Ecosystem Services (2014), http://dx.doi.org/10.1016/j.ecoser.2014.11.017

companies establishing fast-growing plantations and facilities in Asia, Africa, South America and Oceania (Kirilenko and Sejo, 2008; Vihervaara, 2010). The area of fast-growing plantations worldwide, expected to increase in the future, represents approximately 4% of the total forest coverage, but contributes to one third of the global wood and fibre supply (Bauhus et al., 2010; FAO, 2005, 2006; Indufor, 2012).

The rapid pace of forest industry globalization has triggered a great need for companies to acquire and secure operational legitimacy by regularly disclosing information of their sustainability related activities (Li and Toppinen, 2011). Forest enterprises are concurrently called at responding to several challenges, such as securing resource a base, meeting growing energy demand, globalization of production and consumption, evolution of international environmental policies, industry competitiveness, communication and public relations and more comprehensive acknowledgement of social and equity issues (Vihervaara and Kamppinen, 2009). In addition to a mere act of 'social responsibility' or compliance with governmental regulations, sustainability reporting can be motivated by financial or strategic opportunities: creating or improving a solid reputation and stakeholder dialogue; improving current practices, e.g. in land management, and securing access to resources for the future (Brody et al., 2006; Dyke et al., 2005; Scherr et al., 2006).

Despite the increasing awareness of corporate dependencies and impacts on ecosystems, and related business risks and opportunities, scientific and corporate-based information on these issues is lacking (Whiteman et al., 2013; Winn and Pogutz, 2013). Measuring and reporting about sustainability performance represents an increasing challenge to businesses of all kind, and previous research has focused on identifying gaps and challenges in current reporting practices (e.g. Lozano and Huisingh, 2011; Li and Toppinen, 2011; Rimmel and Jonäll, 2013), including incorporating meaningful qualitative and quantitative indicators; articulating the discussion on biodiversity, land and resources use; addressing the compartmentalization and failure to acknowledge the inter-linkages between reporting of economic, social and environmental dimensions. In addition to the existing limitations of sustainability reporting practices, previous research has pointed out the need to promote development of standardized protocols for assessing biodiversity and ecosystem service related impacts and dependencies (Houdet et al., 2012).

Our paper argues how an ecosystem services approach could benefit future sustainability reporting practices in the context of the forest sector. To do so, it identifies potential existing and missing links between forest sector corporate sustainability disclosure and the ecosystem services framework, building on a literature review of plantation-based forestry impacts and dependencies on ecosystem services. We then also propose a set of ecosystem services indicators for corporate sustainability reporting. Our study particularly analyses the catalytic role of the GRI— Global Reporting Initiative (2011) framework of indicators for integrating the ecosystem services approach into corporate sustainability reporting. The GRI framework was selected for our analysis because it is currently the most comprehensive voluntary standard for corporate sustainability disclosure covering all dimensions of sustainability – environmental, social and ethical aspects – and holding worldwide recognition (Brown et al., 2009a,b; Kolk, 2010; Levy et al., 2010; Toppinen and Korhonen-Kurki, 2013). The GRI also aligns with other international reporting standards, including the OECD and UN guidelines, and represents a platform for developing the holistic corporate responsibility standard ISO26000 (Levy et al., 2010; Hahn, 2012). Large forest companies with high business diversity are found to be active in adopting GRI disclosure (Toppinen et al., 2012). Moreover, GRI has set a transition timeline to its most recent guideline indicators: corporate reports issued after December 2015 must follow G4.

The rest of the paper is divided in three parts. Section two describes the data and methods used, section three covers the results, including a literature review of the impacts and dependencies of plantation-based forestry, and the future development of corporate sustainability indicators based on the identified gaps. Discussion and conclusions are drawn in section four.

2. Methods

This paper is based on a literature review of the environmental and social impacts and dependencies of plantation-based forestry and on a content analysis of the existing GRI indicators. During the literature review (Section 3.1), several studies have been identified that deal with plantations forestry, however these mainly focus on water resources, soil and nutrients, carbon storage and climate change, biodiversity and habitat maintenance at site level. On the other hand, regional or global trends, and links between forestry and some ecosystem services (e.g. genetic resources, pollination, and cultural services) have received little attention by scientific research. For this reason, in addition to a literature search (Web of Science) for peer-reviewed articles in English, an internet search for grey literature was conducted. Various combinations of key words were used in the search, from the general to the more specific. The terms 'plantations, monocultures' were combined with terms 'ecosystem services, impacts, dependencies' and then more specifically with: 'carbon, biodiversity, genetic resources, soil, pollination, recreation, water' and related terms (climate change, floods, fire, pests, rainfall, etc.). When possible, literature was restricted to sources with regional or global scope. The time scope for articles was restricted to year 2001 and beyond. The resulting database for the review includes 23 sources, including empirical studies and literature reviews. The literature used for our review is listed under Table 1. For each source, the spatial scale (global, regional, local) and the main findings regarding impacts and dependencies on different ecosystem services were highlighted, following the stepwise procedure on conducting systematic reviews (e.g. Khan et al., 2003). Most ecosystem services can be broadly classified as operating at local, regional, global or multiple levels (Eftec, 2005; Kremen, 2005; Petrosillo et al., 2010).

The qualitative content analysis (Section 3.2) focused on the most recent set of corporate responsibility indicators (version G4) released by the GRI— Global Reporting Initiative (2013). The descriptions of the indicators were examined in the content (Krippendorf, 1980) to find potential links and gaps with the ecosystem services MA framework. In analysing the data, sustainability guidelines and other relevant documentation from GRI were carefully reviewed. We identified those indicators that hold potentially relevant information regarding forest ecosystem services. We also considered indicators linking to wider social and environmental benefits, such as employment, equality, community involvement and well-being (the importance of these is discussed in e.g. Kettunen and ten Brink, 2013); indicators linking to supply chain responsibility and to disclosure of financial information. The GRI—Global Reporting Initiative (2011) identifies three categories for the indicators: dependency, impact, response. Indicators of impacts include information regarding the pressures exerted on the environment by the company, such as the amount of pesticides spread around plantations. Indicators of dependencies include information on the importance of ecosystem services to the company's operations and general performance. An example of dependence is the water used for growing trees in plantations. Indicators of responses refer to actions or behaviour by the company that can compensate for its negative impacts in any part of the supply chain. This can refer, for instance, to sustainable management of ecosystem offset.

Building on the gaps between the GRI indicators and the ecosystem services framework, we identify possible future indicators of ecosystem services for corporate sustainability reporting in the

Please cite this article as: D'Amato, D., et al., Linking forest ecosystem services to corporate sustainability disclosure: A conceptual analysis. Ecosystem Services (2014), http://dx.doi.org/10.1016/j.ecoser.2014.11.017

Download English Version:

https://daneshyari.com/en/article/6556741

Download Persian Version:

https://daneshyari.com/article/6556741

Daneshyari.com