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The Prospects and Limits of Eco-Consumerism: Shopping Our Way to Less Deforestation?

Peter Dauvergne1 and Jane Lister1

Abstract
Firms and governments are increasingly turning to voluntary programs such as eco-certification and eco-labeling as core instruments for managing forests. To probe the prospects and limits of this shift toward eco-consumerism as a mechanism for global change, this article analyzes its value for improving forest management globally. It reveals that eco-consumerism is improving some aspects; yet, for both supply and demand-side reasons, the advances are incremental and unequal and overall doing little to slow deforestation. The article therefore highlights the danger of overestimating the potential of voluntary eco-certification and advances a set of policy and management solutions to enhance the effectiveness of eco-consumer initiatives such as forest certification. Solutions include internal incremental adjustments to certification programs, coordinated alongside more fundamental external systemic changes in the marketing, industrial use, and valuation of the world’s forests.

Keywords
eco-consumerism, new corporate environmentalism, forests, certification, eco-labels, voluntary corporate environmental initiatives, corporate social responsibility, CSR, consumption

Over the past decade, the amount of wood certified as “sustainable” has grown at an increasing rate (see Figure 1). It might appear that consumers are successfully driving a transition to sustainable forestry through markets for eco-friendly timber products. Yet despite increasing acceptance among firms of forest certification, more eco-labels, and bigger eco-markets for wood, deforestation is continuing at more than 12 million hectares per year (FAO, 2009). This raises some critical questions. Why is forest certification strengthening, yet the loss of forests continuing? To what extent can green labeling and individual consumer purchases of eco-labeled products slow global deforestation?

This article applies a critical lens to the limits and prospects of corporate environmentalism in the case of voluntary eco-labeling and certification initiatives such as forest certification. We examine the question of eco-consumerism effectiveness by analyzing the localized environmental impacts as well as the larger implications for global sustainability. We find while certification is improving forest management in some places, the effects are unequal and incremental, with

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relatively little capacity to alter the big picture of global deforestation. Eco-consumerism, we argue in the case of forest certification, has limited global effectiveness for two fundamental reasons. First, on the production supply side, the availability of a price premium and baseline government capacity heavily influences the adoption of certification, and these are lacking in critical places, including most of the tropical rainforests and biodiversity “hotspots” where deforestation is occurring fastest (e.g., Southeast Asia, South America, and sub-Saharan Africa). As a consequence, certification is failing to reach much of the world’s most vulnerable and biologically rich primary forests. And second, on the consumption demand side, individual consumers lack the purchasing power leverage to influence deforestation, as the development of markets for certified forest products (CFPs) shows. Household consumer demand for wood and paper products represents a small fraction of global timber consumption; CFP markets remain very small relative to the global forest economy; and consumption of forest products is not the only major global economic force driving tropical deforestation.

Recognizing that certification on its own is a partial environmental management solution, we propose a set of recommended actions that are both internal and external to this voluntary eco-consumer initiative (Christoff, 1996; York & Rosa, 2003). Internal recommendations include incremental adjustments to the implementation and effective delivery of forest certification eco-labeling programs. External recommendations focus on the role of governments, corporations, and nongovernmental organizations (NGOs) in achieving more fundamental structural and discursive shifts to mitigate the global environmental impacts arising from how global forests and forest products are sold, processed, and valued.

The purpose of this article is to contribute to the growing literature on voluntary initiatives and new corporate environmentalism (NCE) not just by synthesizing the empirical evidence of the prospects and limitations of eco-consumerism in the case of forest certification but also by expanding on the set of possible public policy and corporate management approaches for improving the process and outcome effectiveness of voluntary environmental governance efforts.

We organize our analysis into six sections. We begin with an overview of eco-consumerism and the specific case of forest certification, describing the evolution, design, and challenges of eco-labeling and eco-certification programs. The next two sections then explain the rise and current status of forest certification globally, outlining the successes in terms of improving forest management incrementally, mainly in high-capacity developed countries. Next, we turn to examine the limits of forest certification eco-consumerism, analyzing the supply-side limitations of certification outside of developed countries and the demand-side challenges of developing markets for CFPs. Finally, we propose possible ways to strengthen forest certification and bring about more fundamental systemic improvements to global forest governance. We conclude by discussing the significance of our findings to advancing NCE scholarship and for the overall prospects of eco-consumerism as a path to global environmental sustainability.

Eco-Consumerism: Opportunities and Challenges

Eco-consumerism is about leveraging the purchasing power of individual consumers to bring about a transformation toward sustainable consumption and a green economy. The basic idea is for citizens to induce market changes by “voting” for eco-friendly products with their shopping dollars. State- and private-led labeling and certification programs verify that these products are actually eco-friendly. The aim of these programs is to increase the environmental accountability and transparency of producers, encourage the adoption of green technologies, and ultimately provide consumers with enough information to make responsible shopping decisions (Böstrom & Klintman, 2008).
There are now thousands of “green” eco-labeled consumer goods and services and hundreds of different certification eco-label programs. Globally, these envelop a wide range of sectors, from mining, oil and gas, finance, fisheries, agriculture, chemicals, and forestry to apparel, coffee, jewelry, and tourism. Eco-labeling programs vary depending on a range of criteria that include whether the standards are mandatory or voluntary, involve self-declaration or third party audits, and include a technical product-based or stewardship process-based analysis. A credible program provides an independent “seal of approval” for products that meet high environmental standards. If a product brand meets the green criteria, then it can be certified and producers may pay a licensing fee to use the eco-label. The idea is that consumers can then easily identify which product lines and brands are sustainable and switch their purchases accordingly. Ideally, rising demand for green goods then creates a strong financial incentive for producers to green their production processes in order to capture new market niches, increase their market share, and perhaps realize a price premium on their eco-labeled products (Melo & Wolf, 2005; Rex & Baumaan, 2007).

Ecolabeling programs have achieved demonstrable successes, encouraging environmental improvements for hundreds of consumer goods and services and thousands of finished products. For example, the ENERGY STAR program (initiated in the United States) has now been adopted globally with consumers buying more than 2 billion products with ENERGY STAR labels since 1992. By encouraging the adoption of green technology, ENERGY STAR appliance models, for example, no longer emit chlorofluorocarbons, use less electricity, and are easier to recycle (ENERGY STAR, 2006).

Although such programs are creating measurable environmental benefits, eco-labeling also tends to confront two key implementation challenges: first, in terms of gaining consensus and acceptance and, second, with regard to achieving sufficient consumer awareness and demand for the eco-labeled products. Regarding acceptance, challenges arise because the process of green certification is not a strictly technical exercise, but inherently political. The science behind certifying a product must integrate with many diverse values, interests, ideologies, and visions of what comprises a “sustainable green product” (Boström & Klintman, 2008; Gulbrandsen, 2006). Questions often arise about the independence and type of experts involved as well as the objectivity of the science and appropriateness of the criteria for standards. For example, when the U.S. Green Seal program was launched in the early 1990s, the Soap and Detergent Association immediately opposed the program’s household cleaner eco-standard, arguing that the technical criteria were “inconsistent and scientifically invalid” (Conroy, 2007, p. 19). More recently, even some of the ENERGY STAR (2006) program claims have come under serious question.

To increase acceptance, virtually all eco-label programs work to engage a wide range of government, nongovernment, community, and industry stakeholders in the standards development process. As well, most programs rely on teams of independent accredited experts to conduct the certification evaluations. In addition, international eco-labeling standards such as ISO 14024 and oversight bodies such as the Global Ecolabelling Network and the International Social and Environmental Accreditation and Labeling Alliance (ISEAL) guide and evaluate the legitimacy of eco-label programs. Fundamentally, a successful eco-label comes down to securing public trust—consumers have to believe that the product claims are valid and not “greenwash.”

A second major challenge for eco-certification programs relates to information and awareness: trying to get consumers to recognize and understand the eco-labels, as well as convincing consumers that buying green products (which are often priced higher) is beneficial. Both are big hurdles. Store shelves are filled with an ever-increasing and confusing array of eco-symbols and green product claims. The sustainability criteria, moreover, can be technically complex and thus hard to explain. Also, the incremental environmental benefits from one consumer purchasing a single, higher priced eco-certified product are extremely small and typically realized out of sight,
very far from a shopper’s home. Not surprisingly, many consumers are initially skeptical, wanting to know what is wrong with the traditional products and wondering things like: Is a noncertified carrot “nonorganic”? The fact that noncertified products are sometimes fine, and may even be more environmentally responsible than a certified product, can further boost skepticism.11

At the end of the day, even when well-educated and aware consumers say they prefer to buy environmentally friendly products, many do not walk the talk, purchasing traditional (and often cheaper) goods at the point of sale.12 Economists refer to this as the gap between stated and revealed preference, which is well documented for green products.13 Ultimately, for most consumers (including green shoppers), factors such as product price, convenience, quality, habit, and style tend to trump environmental factors (Jackson, 2005; Ottman, Stafford, & Hartman, 2006; Rex & Baumaan, 2007). Political scientist Michael Maniates (2007) sums this all up nicely: “we, by nature, aren’t terribly interested in doing anything that isn’t private, individualistic, cost-effective and, above all, easy” (p. A37).

Despite these ongoing challenges, an increasing number of companies are participating in voluntary labeling programs. Not only are they trying to capture a price premium and increase their market share, they are also trying to guard their reputations and avoid things like “naming and shaming” campaigns and product boycotts (Green, Morton, & New, 2000; Gulbrandsen, 2006; Lyon & Maxwell, 2004). However, in many cases due to underdeveloped green product demand and the lack of a price premium, the upfront costs of certification exceed the financial gains (Rex & Baumaan, 2007). In these instances, risk management rather than financial reward becomes the main eco-certification driver. Although not necessarily more profitable in the short term, some business strategists argue that an eco-certified company has greater long-term value (Tapscott & Ticoll, 2003). Such a company is typically more technologically progressive as well as better attuned to societal demands, reducing its exposure to new regulations, shifting markets, changing consumer preferences, and potential reputational damage (Lyon & Maxwell, 1999, 2004; Sharma, 2002). As the next section shows, in the absence of large market demand or a price premium, many leading companies in the forestry sector participate in certification programs for precisely these reasons.

From Protests to Market Campaigns and Certification

Forest certification aims to encourage and improve sustainable management by linking environmentally responsible forest producers with eco-conscious consumers through the auditing of forestry practices and eco-labeling of forest products.14 Independent accredited auditors verify and certify the sustainable forest management (SFM) stewardship practices of a producer, based on a checklist of criteria spelled out in a certification standard. CFPs can then be awarded an eco-label by means of a chain of custody (CoC) certification audit that traces the certified fiber down through the product supply chain from the forest to the end customer. Ultimately, forest certification aims to provide producers with a market incentive to adopt more sustainable forest practices as well as supply manufacturers, retailers, and consumers with better information to make more environmentally responsible choices. CFPs include both primary commodities (e.g., pulp, paper, and sawnwood) as well as secondary manufactured consumer goods (e.g., flooring, furniture, diapers, and office paper).

Since emerging in the early 1990s, forest certification programs have gained increasing market acceptance (United Nations Economic Commission for Europe [UNECE] & Food and Agriculture Organization of the United Nations [FAO], 2009). As with most eco-labeling programs, however, they continue to struggle to maintain credibility and achieve consumer awareness (Boström & Klintman, 2008; Conroy, 2007; Rex & Baumaan, 2007). Forest certification was initiated because of growing concern over the conservation of forest biodiversity values and a desire by environmental NGOs (ENGOs) to create a new global mechanism (separate from failing intergovernmental
negotiations) to halt tropical deforestation and improve forest practices worldwide.\textsuperscript{15} Led by Friends of the Earth, Greenpeace, and the World Wildlife Fund, the Forest Stewardship Council (FSC) forest certification program was established in 1993. More than 130 participants from a wide range of sectors from 24 countries attended the founding meeting in Toronto in October 1993. Governments were invited to observe but were explicitly excluded as formal participants. The intent of FSC certification was to leverage the power of the global market as a means to get around what ENGOs experienced as frustratingly slow and ineffective government processes (Cashore et al., 2004; Meidinger et al., 2003).

Unprecedented, the FSC marked an important shift in ENGO forest activism away from valley-by-valley logging protests, government lobbying, and tropical timber boycott campaigns (during the 1980s) to market-based campaigning (Walter, 2003). This new strategy was essentially twofold. First, tap into consumer activism by creating a highly visible SFM eco-logo to drive the production and purchase of eco-friendly forest products (Gale & Burda, 1998). And second, pressure large retail companies to procure and sell certified wood products (Auld, 2009). Prominent early targets included the big print houses, office supply stores, discount retail chains, and do-it-yourself home renovation stores in the United Kingdom, Germany, the Netherlands, Belgium, and the United States. These included B&Q, Random House, Time Inc., Lowe’s, Staples, Wal-Mart, and The Home Depot—all big buyers of products sourced from tropical and old-growth (primary) forests. Activists at The Home Depot headquarters, for example, hung a five-storey “stop selling old growth” banners and dressed up as bears to urge shoppers not to buy wood from endangered forests. Within a year, in response to the ENGO pressure, the Home Depot Chief Executive Officer committed the company to procuring FSC-certified forest products. The story was similar with the other big retailers.

Beyond sparking a reaction from retailers, the FSC also spurred fears among forest producers and regulators that the ENGO-led standard would create a harmful trade barrier and unfair market disadvantages. These groups decided to develop competing national forest certification programs.\textsuperscript{16} Since 1995, many different forest certification programs have been battling for acceptance globally, resulting in increasing harmonization of the competing programs.\textsuperscript{17} Presently, 320 million hectares of the world’s forests are certified under two main international programs—30% under the FSC standard and 70% under the Program for the Endorsement of Forest Certification (PEFC) program (an umbrella program that recognizes national standards; UNECE & FAO, 2009). Figure 1 shows the rise in certified forest area under each of the two programs since 1995.

**Deforestation and Sustainable Consumption**

Each year, loggers harvest only 1% of the wood reserves in the world’s 4 billion hectares of forest.\textsuperscript{18} In addition, in recent years, global demand for forest and paper products has been relatively flat (growing at about 1% per year over the past 10 years; United Nations Environment Programme [UNEP], FAO & UNFF, 2008). Many factors are moderating demand: the availability of substitute construction and packaging material (e.g., concrete, steel, plastic, and composite materials), technological advances to improve the efficiency of fiber usage,\textsuperscript{19} increased recycling, and the growing acceptance of electronic media. Forest plantations are also meeting an increasing proportion of the global fiber demand, expanding in area by 40% over the past 20 years.\textsuperscript{20} Furthermore, a growing awareness of the ecological importance of forests is leading to improved forest planning, regulation, and protected forest areas (Glück, Rayner, & Cashore, 2005; Siry, Cubbage, & Ahmed, 2005). Overall, global forest cover has been relatively stable over the past 50 years and is even increasing in many temperate forest regions (e.g., Western Europe, China, and North America) due to forest protection, afforestation, and reforestation. With global fiber supply expanding and demand relatively stagnate,
some resource analysts already evaluate the level of global forest product consumption as sustainable—that is, the world is not running out of trees (Nilsson, 2007; Sedjo, 2004). So, why is forest certification even necessary?

Certification is important and beneficial because the economic balancing of global timber supply with demand, and net maintenance of global forest cover, constitutes only part of global forest sustainability. Current forest consumption involves critical regional imbalances (FAO, 2009). Overexploitation and degradation of large areas of natural forest, illegal logging, and poor logging practices are common (Dauvergne 2001). Deforestation is concentrated in tropical forests where conversion to faster growing plantations, agricultural crops, grazing lands, and development land uses is resulting in losses of millions of hectares of primary forest each year. What’s more, although global demand for forest products has been growing at a relatively flat rate, forests are under new and increasingly intense threats. These include mounting pressures from the rapidly expanding Asian economies, increasing North American and European demand for low-cost wood products, an accelerating worldwide demand for biofuels, and increased risks of climate change-related extreme weather events and natural disturbances such as wind storms, wildfires, and infestations.

The impacts of these mounting pressures vary across forest regions with the most adverse effects occurring in tropical countries (FAO, 2009). Whereas, historically, temperate forests were cleared for energy, agricultural, and settlement purposes (e.g., Europe has lost 50% to 70% of its original forest), similar pressures are now playing out in tropical forests, with consumptive pressures from the North driving the forest loss in the global South (Shandra, Leckband, & London, 2009). The result is that second-growth temperate forests of Europe and North America are generally expanding under well-regulated management regimes, while tropical forests are receding as a result of weak governance capacity, corruption, poverty, and population pressures.

Although ecological losses are occurring in the last remaining temperate rainforests and undisturbed Canadian and Russian boreal forests, the greatest forest losses are taking place in three tropical hotspots: South America, Southeast Asia, and Africa. Specifically, of the world’s annual tropical forest loss in recent years, the highest losses have been in Brazil and Indonesia, as well as Central and West Africa (Hansen et al., 2008). A fifth of the Brazilian Amazon is already gone, with overall forest losses in South America continuing at about 4.3 million hectares per year (FAO, 2009; UNEP, FAO, & UN Forum on Forests [UNFF], 2008). Southeast Asia has lost...
50% of its original forest and continues each year to lose a further 1.2% of its remaining native forest (UNEP, FAO, & UNFF, 2008). And African forests are disappearing at about 4 million hectares per year (FAO, 2009). At the current rates of global deforestation, NASA has calculated (drawing on satellite imagery) that primary tropical forests are on a trajectory to completely disappear within 100 years.\(^{25}\)

The situation is critical not only because tropical forests support the livelihoods of more than 1 billion people and are home to the majority of animal and plant species on the planet, but also because tropical forest losses are a major contributor to global climate change—accounting for up to 20% of all anthropogenic greenhouse gas emissions (UNEP, 2009). Thus, as the UNEP (2009) report on the state of the global environment summarizes, “the consensus among scientists and experts is that conserving tropical forests represents one of the central ecosystem management priorities of our time.” Forest certification is intended to aid in addressing this pressing global challenge.\(^{26}\)

**Forest Certification Effectiveness**

Over the past decade, even in the absence of measurable financial rewards (e.g., price premiums), many forest owners and operators have endorsed and are actively participating in certification. They have signed on in order to gain market access and have embedded the additional audit and management costs into their forestry operations as simply “the right way to do business” (Cashore et al., 2004). Governments have also been certifying public lands as well as establishing procurement policies to favor legal and CFPs. Non-industrial forest owners have increasingly taken advantage of cost-effective group options to certify their family-owned woodlots. And buyers and retailers such as Wal-Mart, The Home Depot, and IKEA have been auditing their global supply chains and seeking CFPs as part of corporate their social responsibility (CSR) strategies.

Forest certification programs are demonstrating a range of benefits as they grow and strengthen. Analyses of the corrective action requests from certification audit reports reveal how certification is requiring forest operators to make changes to increase conservation and biodiversity values. Specifically, the studies confirm that certification standards often go beyond legislative requirements to encourage increased riparian protection, decreased herbicide use, enhanced stakeholder engagement, greater consideration of cultural values and aboriginal rights, increased transparency and public reporting, improved operator training, and greater overall integration of social, environmental, and economic forest values into landscape-level inventories and long-term forest planning (Auld et al., 2008; Cubbage, Moore, Henderson, & Araujo, 2008 to 2009).

Certification is also encouraging organizational learning and better forest administration. For example, in the case of the 12 state governments across the United States that have adopted certification for state-owned forestlands, the state forest departments have realized higher best management practice implementation, more secure access to program funds, increased departmental coordination, much shorter planning cycles, better forest models, more systematic tracking, greater monitoring and continual improvement of forestry practices, and an opportunity to demonstrate state forest management leadership (Lister, 2009). As well, in Sweden, certified companies and family forest owners have been playing an important role in aiding the government to refine and achieve the country’s national forest policy targets, particularly regarding protected areas.\(^{27}\) Overall, certification has been supplementing state forest governance by reinforcing and encouraging continual improvements in the SFM practices of both public and private forest operators.

Despite growing examples of local certification successes, on a global scale it is achieving only a very modest and uneven environmental impact. On the supply side, less than 10% of global forests are certified (UNECE & FAO, 2009). Moreover, 90% of the certified forests are
located in the highly regulated and expanding temperate forests of Europe and North America and not, as ENGOs originally intended, in the jeopardized, poorly governed tropical forests of Southeast Asia, Africa, and South America. On the demand side, the market for CFPs remains very small, with little consumer awareness, negligible price premiums, and low manufacturer and retailer participation. The next two sections explain and analyze these challenges.

Supply-Side Limits of Forest Certification

Forest certification, as we mentioned earlier, began as a way to protect ancient old-growth forests and curtail tropical deforestation. Yet, today, less than 1% of primary tropical forests have been certified (UNECE & FAO, 2009). Of the total of 320 million hectares of certified forest worldwide, only 6% is in tropical countries (20 million hectares), most of which is managed plantation forest. As Table 1 shows, from a supply-side perspective, certification is falling short as an effective mechanism to combat deforestation primarily because regions with high deforestation rates are not adopting it. Certification is functioning mainly as a mechanism to reinforce industrial forestry leaders in developed countries where forests are expanding rather than improving management among lagging timber operators in underregulated developing regions.

Incremental advances are occurring as transitioning economies such as Brazil, China, and Russia slowly begin to certify their vast forests. Most of the emerging tropical forest certifications are plantations, however, rather than primary natural forest. For example, in Brazil, approximately 43% of the eucalyptus and pine plantation forest area has been FSC-certified versus only 0.07% of the (productive) natural forest area. In many other tropical countries, only plantations have been certified (e.g., Argentina, Colombia, Panama, Sri Lanka, Swaziland, Thailand, and Uruguay; Carrere, 2003).

Even the idea of certifying plantations is a divisive issue for conservation and environmental advocacy communities. Some argue that certifying plantations eases pressure on natural forests, enabling better forest protection (FAO, 2009). Others, however, highlight the environmental losses from establishing plantation forests (Carrere, 2003). For example, although, ideally, plantations are established on degraded nonproductive land, in reality, in many cases, natural forests are cleared and biodiversity is lost to make way for faster growing, more profitable, nonindigenous tree crops. Optimists stress that certification will discourage this activity, while critics counter that this rarely seems to work in practice (Centre for International Forestry Research, 2003).

There are a variety of reasons that forest certification has mostly failed, beyond plantations, to achieve uptake in developing countries. But the major one is financial. The relative costs of implementation are higher in developing regions as a result of low forest governance capacity and weak regulatory frameworks (e.g., lack of tenure rights, high corruption, and poor forest laws; Becker & Laaksonen-Craig, 2006; Cashore et al., 2006). For example, while incremental certification costs in the United States typically add 2 to 3 cents per cubic meter, for tropical producers it ranges from 26 to 110 cents per cubic meter—10 to 50 times higher (Gullison, 2003).

Table 1. Certification of Global Deforestation Hotspots

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Forest Area (Million Hectares)</th>
<th>Certified Forest (Million Hectares)</th>
<th>Percentage of Forest Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>649.9</td>
<td>3.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Latin America</td>
<td>964.4</td>
<td>15.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Asia</td>
<td>524.1</td>
<td>2.0</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Certification is also failing in developing regions, in part, because price premiums are inadequate to compensate operators for the higher costs of producing certified wood (Anderson, Laband, Hansen, & Knowles, 2005; Oliver, 2006). For example, a recent study calculated that a minimum price premium of 11% was required in order to avoid a loss on certified wood products (Yuan & Eastin, 2007). The same study then noted that certified wood products were obtaining only a 6.3% premium in European markets, 5.1% in the United States, and just 1.5% in Canada. Such premiums are simply not high enough to create a financial incentive for tropical producers to certify. Certifications occurring in developing countries are instead driven primarily by a need to secure market access (Cashore et al., 2006).

Other than financial and governance hurdles, the overall potential for certification adoption in developing countries is also limited by the fact that a large percentage of the tropical forest harvest never becomes a commercial forest product. Instead, it is consumed locally as woodfuel. For example, 90% of the forest harvested in the Congo is used for domestic heating and cooking (FAO, 2009). Because large quantities of tropical wood are directed to subsistence energy purposes rather than commercial trade, certification has inherently limited application in many developing regions.

The very low level of certification participation in developing countries, the relative ease of tropical plantation forest certification, and the minimal application of certification to noncommercial local forest benefits highlight a critical point. Fundamentally, forest certification is functioning more effectively as an industrial forest production standard than a forest protection standard. With greater cost advantages and participation by large-scale commercial timber operators than local forest communities (with timber and nontimber interests), forest certification has inherent limitations as a mechanism to guard the last remaining primary tropical forests.

Moreover, by serving to reinforce the market advantages of multinational forestry corporations in developed countries more than helping smaller scale producers in developing countries achieve competitive gains, certification is contributing to increased global market inequities. For example, although South American, African, and Asian countries represent 11% of the global industrial roundwood export market, they produce less than 1% of global certified roundwood (FAO, 2009; UNECE & FAO, 2008). North America and Western Europe, on the other hand, export 11% and 18%, respectively, of global industrial roundwood, yet account for a 55% and 44% share of certified forest production (FAO, 2009; UNECE & FAO, 2008). In other words, developing countries are marginalized in the emerging certified global markets (Sexsmith & Potts, 2009). This redistribution of forest export income from developing to developed countries has the potential to increase tropical deforestation by exacerbating a major underlying driver: poverty (Gan, 2005).

In short, on the supply side, forest certification currently has little influence over global deforestation as very little tropical forest area has been certified. The majority of certified tropical wood is from plantations, much of which has replaced natural forest (i.e., contributed to deforestation). Certification disadvantages small-scale timber producers who face larger marginal cost increases. And finally, a significant percentage of the tropical forest harvest never reaches a retail shelf as it is used locally for woodfuel. The next section examines how market challenges limit the potential of individual consumers to influence deforestation through certified, eco-labeled forest product purchases.

**Demand-Side Limitations of Certification**

In theory, consumer demand for eco-products should drive producers to certify in order to capture an expanding market niche. The reality in the case of the CFPs market, however, is that individual consumers are playing a minor role. Fundamentally, this is because industrial, commercial,
and institutional (ICI) customers, not individual consumers, account for the majority of forest product demand and consumption. Household consumption of goods such as wood furniture, decking, and flooring, as well as tissue and paper products, account for a much smaller percentage of the global market than large ICI demands for major end uses such as printing, packaging, building materials, and shipping (UNECE & FAO, 2009). In other words, beyond signaling to retailers, individual consumers have a limited economic ability to influence forestry practices through their purchases because only a fraction of the global industrial roundwood harvest (whether certified or not) ends up as finished goods on the retail shelf.

In the specific case of the CFP market, three demand-side hurdles also limit the capacity of consumers to influence tropical deforestation. First, in the absence of consistent and sufficient price premiums, the volume and number of CFPs remains small. Second, consumer awareness is low as many CFPs are marketed without an eco-label. And finally, forest certification has limited impact on sectors beyond forest products that are also driving tropical deforestation (e.g., agriculture and energy).

Despite its strategic economic importance, the CFP market remains very difficult to measure as trade statistics do not distinguish and track commodities on the basis of how they are produced (i.e., whether they are certified or not). As well, many certified products are sold without a label. Consequently, no reliable data exist on actual certification market demand and consumption (UNECE & FAO, 2008, 2009). Relying on extrapolations from global certified forest area, analysts estimate that approximately 45% of the global wood supply will come from certified forests by 2017 (FAO, 2009; UNECE & FAO, 2008). By 2008, global forest producers were halfway to this mark, producing 416 million cubic meters of certified fiber a year, or roughly 24% of the global industrial roundwood market (UNECE & FAO, 2008). Yet while the certified wood supply is increasing, on the basis of company sales data, the actual CFP market within the $200-billion global forest economy remains relatively small.

There are many reasons why the CFP market has been lagging. These include insufficient certified supply to achieve economies of scale; difficulties in labeling due to mixed fiber streams from the various; competing certification programs and low market awareness. But above all, the biggest factor delaying the development of the global CFP market is the lack of a sufficient price premium (UNECE & FAO, 2009). Fundamentally, industrial customers lack a financial incentive to market CFPs.

Nevertheless, despite the lack of direct financial incentive, there are signs that the CFP market is growing. For example, the FSC estimates that, between 2005 and 2008, sales of FSC-labeled products increased fourfold (to $20 billion; FAO, 2009). As a proxy measure of market demand, the number of CoC certifications doubled over the past 2 years, which means that in the future a greater number of companies will be able to bring CFPs to market with an eco-label (Sexsmith & Potts, 2009). Large multinational do-it-yourself (e.g., Home Depot, IKEA) and hypermarket discount retail chains (e.g., Wal-Mart, Costco, Tesco, Carrefour) are increasingly major drivers of the CFP market, insisting on certified wood and paper products as part of their CSR commitments. As well, many businesses and large public sector institutional purchasers—such as governments and universities—are implementing green procurement policies to stimulate demand for CFPs. Planners, designers, architects, builders, and homeowners are embracing green buildings constructed with legal and responsibly sourced certified wood products. In particular, many are adopting the U.S. Leadership in Energy and Environmental Design (LEED) green building standard that requires the use of at least 50% of wood materials from certified sources. Major publishers around the globe are also increasingly procuring CoC certified paper. And ENGO campaigns continue to target the lagging sectors, including recent ones directed at the North American catalogue producers and tissue manufacturers that have been relying on uncertified virgin pulp from Canada’s old-growth boreal forest.
Furthermore, issues such as illegal logging and climate change are also driving certification demand. Specifically, primarily to protect their reputations, manufacturers and retailers are increasingly looking to certification to provide reassurance that procured wood products have been harvested within the law and that their forest product supply chains have a minimal carbon footprint (in particular, avoid contributing to tropical deforestation). So, although the market for CFPs is presently very small, it is slowly growing. The three biggest CFP markets are the United Kingdom, Germany, and the United States (UNECE & FAO, 2009). European companies hold two thirds of the global total of CoC certificates and are therefore the primary drivers of the CFP market. Although a major forest product consumer and producer, China is significantly lagging with only 300 FSC CoC certificate holders out of the 200,000 Chinese importers and manufacturers of wood and pulp (UNECE & FAO, 2009). Certified fiber demand in China is increasing, though. In a recent survey of Chinese companies, more than half indicated that they are facing a shortage of supply of certified wood raw materials (Yuan & Eastin, 2007).

ICI organizations, then, are gradually shifting their purchases. There is, however, little market movement among individual consumers. Across all jurisdictions, individual consumers are playing a very minor role in CFP markets. Shoppers remain largely unaware of forest certification, a problem compounded by the fact that most certified wood products are sold without an eco-label (UNECE & FAO, 2009).

Why is this happening? A key reason is that some companies, even when producing or purchasing some certified wood, are not bothering to label and market their forest products under an eco-label because they cannot secure sufficient CFP volumes to guarantee regular supplies. For example, although 15% of the Home Depot’s dimensional lumber comes from FSC-certified sources, the company mixes it in with noncertified lumber (rather than market it separately as an eco-labeled product), because they have not been able to secure a reliable and large enough supply to stock every store (Arrais, 2006). So, even though entire product lines like windows and doors at most Home Depot stores are manufactured using FSC wood, the company does not advertise this (Arrais, 2006). In addition, some of the large retailers are not placing the forest certification label on sustainably produced forest products because they fear it would compete with their own store brand logos and confuse consumers. For example, Home Depot has its own EcoOptions green label that includes more than 3,000 products, offering benefits in terms of energy efficiency, water conservation, clean air, healthy home, as well as sustainable forestry.

The potential of forest certification to influence consumer choices is further hampered by often complex and sometimes confusing sustainability criteria and programs (Gale, 2002; Gulbrandsen, 2006). The various forest certification programs all have different logos and a whole range of different labeling criteria. For example, the FSC has the FSC Pure, FSC Mixed Sources, FSC Recycled, and the FSC Controlled Wood labels and has recently proposed adding a further label to distinguish wood sourced from community forests versus industrial forests. The Canadian Standards Association and U.S. Sustainable Forestry Initiative (SFI) programs also have various labels that distinguish between how the certified fiber content is counted (e.g., physical separation vs. input/output percentage). Forest certification labels thus present a confusing range of green claims for even the most ambitious eco-conscious shopper to sort through and comprehend. Most consumers, however, never face the labeling information challenge as they are completely oblivious to forest certification. Even green shoppers with concerns about deforestation are largely unaware of the out-of-sight environmental benefits of eco-certified forest products.

Finally, even in the ideal scenario of a well-developed CFP market, the capacity of eco-conscious consumers to mitigate global deforestation would still be limited as timber product purchases by individuals is not the major cause of tropical forest loss (FAO, 2009). In recent years, commodity booms associated with high food and fuel prices have increased forest conversion...
across all tropical forest regions. For example, in the Brazilian Amazon, after a brief period of decreasing deforestation (2004-2007), record high global prices for beef and soybeans have accelerated forest clearance for commercial cattle ranches and industrial-scale soybean crops. The Brazilian government estimates that clearing for cattle grazing is now responsible for upwards of 80% of deforestation in the Amazon region. In Southeast Asia, companies are clearing tropical forests for oil palm plantations, shrimp farms, and rice cultivation to meet rising global demand and capture record-high commodity prices. For example, oil palm plantations in Malaysia have increased 10-fold since 1975 and have quadrupled in Indonesia over the past decade. More than half of oil palm expansion in Malaysia and Indonesia has been at the expense of native forests (Pin Koh & Wilcove, 2008). High oil prices are also driving further interest in oil palm production as a possible alternative energy source to substitute for high greenhouse gas-emitting fossil fuels. However, despite the substitution gains, oil palm plantations are not helping to alleviate global warming. In fact, it is the reverse. Some analysts have ranked Indonesia as high as third in the world for greenhouse gas emissions because of forest conversion, forest fires, and peatland drainage (as well as energy and waste sources; Pelangi Energi Abadi Citra Enviro [PEACE], 2007).

In short, green consumer leverage to influence deforestation through forest certification is not limited only by underdeveloped CFP markets, low consumer awareness, and the relatively small scale of individual consumer purchases. It is also restricted by the fact that grocery purchases as well as forest products are now a major driver of tropical deforestation. In other words, to a large degree, the real impacts of consumer purchases on tropical forests remain as hidden as ever. Thousands of grocery products—from soaps to butter to cereals to cosmetics to toothpaste—contain soy and/or palm oil grown on recently deforested tropical land. Partly as a result of advocacy campaigns, retailers and manufacturers are beginning to recognize the business risks of failing to address the full environmental impacts of their production and procurement decisions. Cadbury, for example, recently reversed its decision to use palm oil instead of cocoa butter in its chocolate products, and Lush has banned the use of palm oil in its cosmetic products. Nevertheless, even though a few retailers are becoming slowly attuned to the impacts of their global commodity chains, most individual consumers remain largely unaware of how their grocery and forest product purchases link to tropical forest destruction.

Coordinated Incremental and Systemic Solutions

There is no simple remedy to the overall challenges for eco-consumerism and the specific supply- and demand-side limits of forest certification. Drawing on the typology developed by Christoff (1996) that distinguishes between weak versus strong reforms, we propose both internal incremental adjustments and broader external systemic changes to advance the prospects of eco-consumerism as a means to lessen global deforestation. Expanding on Christoff’s typology, we see these two sets of solutions as interconnected rather than mutually exclusive. In this sense, neither is especially weak nor strong, but, rather, both are necessary to achieving global environmental improvements.

Internal Adjustments

Internal solutions include changes within the certification programs to improve their delivery and effectiveness. On the supply side (regarding certification uptake), this would include government and industry providing financial incentives and subsidies to compensate lower income tropical forest producers as well as smaller family forest owners for their higher marginal certification costs (relative to industrial forest operators in developed countries). On the demand side,
major consumers of forest products—especially, industrial companies, commercial businesses, and larger institutions (e.g., government offices and schools)—could play a much greater leadership role in establishing preferential green procurement policies for CFPs. As well, governments and retailers, in particular, could participate to a larger degree in delivering forest certification implementation training and educational materials to both the ICI and household sectors to enhance their awareness of CFP markets and the many eco-labeling options. And finally, the various competing forest certification programs would benefit from greater mutual recognition and harmonization of the confusing array of eco-standards. Gains would also be achieved by certification bodies working cooperatively with the large retail chains to simplify the growing number of eco-labels, logos, and green brand claims.

Even with these actions, however, certification would only be able to slow global deforestation in very limited ways. As well, broader changes in the macro-environment must occur. These include a shift in the green marketing discourse, stronger regulatory programs, and greater corporate accountability for the impacts of global commodity chains.

**External Redesign**

External solutions include systemic changes to the market and regulatory environment within which eco-certification functions. Ultimately, fundamental restructuring in the valuation, marketing, and global industrial use of forests is also required to deter continuing tropical deforestation. On the production side, this translates to greater efforts by governments and industry to implement full cost accounting so as to internalize the full range of forest benefits into land valuations and industrial development proposals. This includes incorporating the benefits of non-commercial timber usage such as woodfuel for local heating and cooking purposes and the non-timber value of soil, water, biodiversity, and climate-related ecological services provided by forests. Internalization of forest values rather than just timber value would provide a measurable financial rationale to slow tropical forest conversion.

Consumption-related solutions include engaging advocacy organizations, leading green producers and smaller retailers to strengthen an eco-consumer discourse able to counter the powerful rhetoric of the large big box retail chains (one that is increasingly trying to convince shoppers that bargain hunting for cheap, mass-produced products will help to sustain people and the planet). A new green marketing discourse focused on revealing the high costs of low prices would help to draw attention to how the global retail quest for low-cost sourcing and manufacturing is shifting the ecological and social costs of high Northern consumption onto fragile ecosystems and poor communities in the South (Dauvergne, 2008). As well, such a discourse could help reveal how the causes of tropical deforestation are largely hidden in soy, palm, and beef products well beyond the sight of even the most caring and conscientious green shoppers.

Beyond a shift in discourse, institutional pressure by governments, NGOs, and consumers on multinational retailers to improve the transparency and accountability of their global supply chain practices is needed to spur companies to adopt new environmental management tools necessary for revealing and internalizing their full global supply chain costs and halting the negative impacts of their global purchasing activities on forests. These include CoC certification as well as lifecycle assessment, carbon accounting, and carbon and forest footprint financial risk analyses.

Ultimately, the challenge of addressing deforestation involves a combination of internal technical solutions along with external communicative and institutional redesign that will need to draw on all actors, with key roles for new regulatory and strategic business management approaches as well as innovative research to enable implementation and ensure continual improvement. Connections between micro-level adjustments to improve forest certification effectiveness and broader macro-level shifts to green the global forest economy are crucial and can only occur as
a consequence of government, industry, NGOs, researchers, and consumers working together across public and private spheres rather than in isolation.

Unfortunately, effective coordination is currently lacking, which undermines the potential of either set of solutions. For example, the internal technical exercise of incorporating carbon indicators into forest certification is occurring separate from the external institutional redesign of full cost accounting methods within the international REDD (reducing emissions from deforestation and forest degradation) process. The soy, palm, cattle ranching, and forest eco-certification programs are developing technical indicators and sustainability rhetoric independent of each other. In addition, the large retail chains like Wal-Mart and The Home Depot are not centrally engaged in international environmental processes—such as the 2009 Copenhagen climate summit or the current Marrakech process to draft a 10-Year Framework on sustainable production and consumption for the 2011 session of the UN Commission on Sustainable Development—despite their enormous governance power to implement global supply chain CSR policies that could reach deforestation drivers from beef and timber to soy and palm oil. Ultimately (as summarized in Table 2), to influence tropical deforestation in any sort of serious way, there is a need for better coregulatory coordination between voluntary eco-certification programs, international mechanisms, and global retailer supply chain strategies.

**Conclusion**

The theory of NCE demonstrates the importance of business going beyond legal compliance and profit maximization to contribute as corporate citizens to positive improvements in social and environmental conditions (Crane, Matten, & Moon, 2008; Jermier et al., 2006). Our analysis reveals some prospects—and many limitations—of NCE in the case of eco-certification as an effective mechanism to advance global sustainable consumption. One limiting factor is that forest certification is a stewardship standard and thus faces a broader set of challenges than a more technical—and more successful program—like ENERGY STAR. In many developed countries,
certification is improving forest management practices incrementally, but ultimately it is failing on a global scale as tropical deforestation continues largely unabated. On the demand side, markets for CFPs remain very small as a result of a low level of participation by the industry’s biggest consumers—ICI organizations. Calling on individual green shoppers to increase their CFP purchases can certainly do some good, particularly in terms of market signaling; but, it is misleading, indeed counterproductive, to assume this alone is an effective way to address global forest sustainability.

This article proposes a set of internal and external solutions for advancing the effectiveness of forest certification as well as bringing about more fundamental changes in the global forest economy. We challenge the ecological modernization theoretical categorization of radical versus reformist approaches, arguing that neither the internal nor external approach can be considered particularly weak or strong, as it is together, through the coordination of these micro- and macro-level efforts, that global environmental improvements will be achieved. As well, we stress the importance of cooperation among business, government, NGO, and research institutes so as to facilitate greater coordination—and hence greater effectiveness—in the development and delivery of environmental management, policy, advocacy, and research efforts. As new governance scholars such as John Braithwaite and Neil Gunningham argue, effective environmental governance will ultimately emerge through hybridized coregulatory approaches that leverage both NGO radicalism and reformist corporate innovation alongside stabilizing government meta-regulatory oversight. The findings of our study reinforce the new governance scholarship as well as highlight the opportunity and need for future NCE research to more closely examine the nature and effectiveness of corporate greening within the broader coregulatory political environment.

In summary, eco-labeling and green shopping do have value. Eco-consumerism can be an effective voluntary policy instrument to spur environmental improvements. Yet overestimating its potential on its own to produce global change can leave consumers overconfident in the power of their eco-purchases, thereby releasing pressure on governments and corporations for more fundamental changes in the industrial use, marketing, and valuation of the world’s natural resources.

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Notes
1. Achieving a “green economy” would require a redesign of the global economy and consumerism along ecological principles to ensure environmental protection, social justice, and economic prosperity (see Daly & Cobb, 1989; Hawken, Lovins, & Lovins, 1999; Henderson, 2006). “Sustainable consumption” requires greater efficiency in the consumption of energy and resources, minimization of waste, and ecologically sound purchasing habits (see Jackson, 2006).
2. For an example of the vast range of green products, see the U.S. Consumer’s Union Web site at http://www.greenerchoices.org. For a compendium of eco-certification programs and standards, see http://www.yorku.ca/csr/Home.
3. Voluntary stewardship programs are also referred to as CSR standards and go beyond individual product specifications to include environmental management system requirements and supply chain responsibilities.

4. See, for example, http://www.greenerchoices.org.

5. ENERGY STAR products include office equipment, consumer electronics, home appliances, residential heating and cooling equipment, and lighting (see ENERGY STAR, 2006).

6. The focus here is on the key management challenges of achieving effective eco-labeling and certification implementation that cut across all eco-consumer programs, whether initiated by states, industry, or ENGOs. For literature regarding specifically the role and effectiveness of ENGO-led private environmental governance voluntary initiatives, see in particular, Newell (2000), Princen (1994), Shandra (2007).

7. For a comprehensive overview of the importance of green politics to corporate environmentalism see Jermier, Forbes, Benn, and Orsata (2006).

8. For example, the U.S. Government Accountability Office’s second audit report of the ENERGY STAR program (released in December 2008) found that claims regarding greenhouse gas reductions and energy savings were “not accurate or verifiable.” As well, the American Council for an Energy-Efficiency Economy and Consumer Reports recently released statements that ENERGY STAR testing procedures contained loopholes (e.g., testing computer equipment while it was in standby mode) that permitted energy-inefficient products to receive the ENERGY STAR labels.

9. ISO 14024 is the “Environmental labels and declarations—Type I environmental labeling—Principles and Procedures” standard. The Global Ecolabelling Network is a nonprofit association of 25 third party, environmental performance leadership labeling and certification eco-labeling organizations. See: www.globalecolabelling.net. International Social and Environmental Accreditation and Labeling Alliance includes founding members such as the FSC, Marine Stewardship Council, the International Federation of Organic Agriculture Movements, and Fairtrade Labeling Organizations International and serves as a hub to guide the development and accreditation of social and environmental standards. See www.isealalliance.org.

10. The Oxford dictionary defines greenwash as “disinformation disseminated by an organization so as to present an environmentally responsible image.”

11. This occurs for many reasons. A small business, for example, may be producing a product sustainably but cannot afford the certification licensing fee.

12. For example, a 2008 survey by McKinsey consultants of consumers in Brazil, Canada, China, France, Germany, India, the United Kingdom, and the United States found that 53% were concerned about sustainability issues but were not willing to take action to shift their purchasing habits. See World Business Council for Sustainable Development (2008).

13. For literature on the discrepancy between “revealed” versus “stated” behavior, see Tversky and Kahneman (1981) and Vatn and Bromley (1994). For studies demonstrating the inconsistency of “attitudes” versus “behavior” with respect to eco-labeled products, see Casadesus-Masanell, Crooke, Reinhardt, and Vasisith (2009), Clark, Harvey, and Kane (2006), Gupta and Ogden (2006), and Verbeke and Vermeir (2005).


15. For summary overviews of the history of forest certification, see Gulbrandsen (2010), Auld (2009), Cashore et al. (2004), and Tollefson et al. (2008).
16. Examples include the CSA SFM Z809 standard in Canada and the Sustainable Forestry Initiative in the United States, as well as more than 40 other programs worldwide.

17. The literature comparing forest certification programs is extensive. While political debate continues regarding the standards’ varying emphasis on sustainability process versus performance elements (e.g., supply chain management responsibilities vs. specific on-the-ground performance targets), fundamentally, the programs have converged in terms of including multistakeholder decision-making processes; social, environmental, and economic sustainability criteria; and third party independent auditing. For example, see Confederation of European Paper Industries (2004), Central Point of Expertise on Timber (2006), McDermott and Cashore (2008), and Worldwide Fund for Nature and World Bank (2006).

18. A total of 3.5 billion cubic meters out of the estimated 400 billion cubic meters. See UNEP, FAO, and UNFF (2008).

19. For example, since 1970, the amount of roundwood required to produce 1 cubic meter of sawnwood or plywood has fallen from an average of more than 2.6 cubic meters to less than 2.0 cubic meters. As well, with increased paper recycling and de-inking technology, the proportion of wood fiber used in papermaking is approximately one third of 1970 levels. See Hammond and Matthews (1999).

20. Today one third of industrial wood comes from planted forest, whereas 50 years ago, it was all from natural forest (Bael & Sedjo, 2006). The potential industrial wood production from the approximate 271 million hectares of plantations (at 70% efficiency) is about 1.2 billion cubic meters (two thirds of global wood production). Cate and Holmgren (2008) project that, by 2030, plantation forest area will increase to up to 300 to 350 million hectares, and potential wood production from planted forests will reach between 1.5 billion and 2 billion cubic meters per year.

21. For example, from 1990 to 2006, China’s wood product imports rose 280% (from $5.4 billion to $20.6 billion), while India’s rose 309% (from $587 million to $2.4 billion). See FAO (2009).

22. Accelerating U.S. and European demand for low-cost wood products made in China (e.g., indoor and outdoor wood furniture, flooring, plywood, and hardwood lumber) is putting tremendous pressure on the forests of Russia, Indonesia, Papua New Guinea, and the Congo. See Shell (2009).

23. For example, the FAO projects biomass energy use in Europe will triple by 2020 in response to renewable energy targets (FAO, 2009). For an overview, see Dauvergne and Neville (2009).

24. An exception is China where restrictions on domestic logging and widespread afforestation have resulted in an increase of more than 4 million hectares per year over the past decade (UNEP, FAO, & UNFF, 2008). However, the decrease in domestic forest production resulted in a tripling of imports, which in turn is driving timber smuggling into China and illegal logging in Indonesia, Papua New Guinea, Myanmar, and Russia to meet Chinese demand for wood fiber imports.

25. For NASA satellite-based research on deforestation, see http://earthobservatory.nasa.gov/Features/Deforestation/deforestation_update4.php.

26. For example, both the FSC and the Program for the Endorsement of Forest Certification have recently revised their certification programs to include forest carbon criteria and indicators.

27. Sweden has been a flagship country for certification adoption as it was the first country to develop a national FSC certification standard. For literature on the role of certification forest governance in Sweden, see Elliot (2000), Boström (2003), Gulbrandsen (2010), and Lister (2009).

28. As well, approximately 40% of certified forest in tropical regions is under certification schemes that are not accredited by independent third parties (UNECE & FAO, 2008).

29. See FSC-Brazil at http://www.fsc.org.br/.

30. See Green et al. (2000) for a broader discussion of the underappreciated role of organizational purchasing in eco-consumerism and the greening of the economy.

31. For example, see the Forest Certification Resource Centre CFP search tool at www.certifiedwood.org. As well, see Markets Initiative (2009), UNECE and FAO (2006), and World Business Council for Sustainable Development and World Resources Institute (2009).
32. The LEED standard is a green building rating system developed in 1994 by the U.S. Green Building Council.
33. Over the past decade, 60% of literary publishers in Canada and 40% in the United Kingdom have started shifting to eco-friendly options, such as high-recycled fiber and FSC-content papers. See Markets Initiative (2007).
34. See http://www.forestethics.org/protect-forests.
35. For example, see the Forest Footprint Disclosure project launched in the United Kingdom in June 2009 to assist investors in identifying how retail company supply chains contribute to tropical deforestation. See http://www.forestdisclosure.com.
36. As well, an increasing number of companies are signing onto CoC certification in Japan, China, and Brazil. See UNECE and FAO (2008).
37. See http://www6.homedepot.com/ecooptions
39. Brazil has the largest commercial cattle herd and is the world’s largest beef exporter by volume.
40. Initially, the Indonesian government contested the PEACE findings, but later backed a report going into the 2009 Copenhagen negotiations on climate change that supported the data showing Indonesia as the third largest emitter (stressing that up to 85% of the country’s emissions were from deforestation and forest degradation). See PEACE, “Low Carbon Development,” at http://www.peace.co.id/?page_id=44.
41. For the Lush decision, see http://www.lush.com/shop/palmoil; for the Cadbury decision, see Pearce (2009).
42. REDD is a United Nations initiative to provide international financing to developing countries to keep their tropical forests standing (as a global carbon sink) rather than having to harvest them to generate local income. The FSC participated on the periphery at the Copenhagen summit, holding a side event on the potential role of forest certification in the REDD program.
43. There is a large and growing “new governance” literature. For foundational studies, see Ayres and Braithwaite (1992) and Gunningham and Sinclair (2002).

References


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