Public Forestry Programs and Forest Certification in South America: State and Private Mechanisms for Forest Management and Conservation

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Abstract

State versus private mechanisms for forest management and conservation has been an enduring contemporary theme. This issue is particularly important in developed and developing countries in Latin America, where the percentage of forests certified is small, but increasing; and public forestry agencies are weak, but provide coverage for all forests. The relevance of this issue has increased as forest certification systems have developed in the 2000s in Latin America, providing an extremely visible non-state governance approach for conservation. National laws still provide the foundation to govern forest resource management, utilization, markets, and protection in all countries. The status of and interactions among forest certification, sustainable forest management, and national forestry laws in Latin America are discussed and their prospects for encouraging forest management and protection assessed.
Introduction

In the last decade, Sustainable Forest Management (SFM) and forest certification have become the dominant paradigms that address forest management and protection in the world. Each of these subjects addresses economic, ecological, and social components of forestry. Several international processes and accords address SFM in temperate and tropical forests. These generally include broad criteria that state principles for forest management, and indicators that can be used to measure and track the status of the world’s forests at the national, or perhaps forest management unit, level. Forest certification focuses on measuring forest management, environmental protection, and social benefits from forest ownership and forest practices at the forest management unit or stand level. These new public processes and private forest certification systems all work within the existing context of national, state, or province forestry laws and agencies. The interaction of these public and private policies for forestry and other resources determine the management and protection of forests.

South America has the largest share of its total land area in forests, with about 50% in total. Brazil has the greatest extent of forest in the Americas, covering the fourth largest share at 64% of the land base. Uruguay has the lowest share of forested land in the Americas at 7%. At 29%, Mexico has slightly more of its total land area classed as forested than the U.S. and Canada. In South America, the northeastern countries of French Guiana, Guyana, and Suriname have the highest percentages of their land base under forest cover, ranging from 78% to 90%. The northwestern countries of Bolivia, Colombia, Ecuador, and Venezuela in have a smaller share of their area classified as forests, though still more than North America at 40% to 56% (FAO 2003).

The loss of forest area from 1990 to 2000 was greatest in percentage terms in Central America, at –1.4% per year. South America lost 0.4% per year, and North America lost only 0.05% per year, virtually all in Mexico. In terms of total area, the losses of forests in Brazil and Mexico were the largest, at 2.3 million and 631,000 ha per year. In total, South America lost an average of 3.7 million ha of forests per year from 1990 to 2000.

In North America, planted forests comprise about 11% of U.S. total forest area. While in South America, plantations account for approximately 1% of Brazil’s forest area; 3% of Argentina’s forest area, 15% of Chile’s forest area, 48% of Uruguay’s forest area, and only about 1% or less of the other countries in South America. FAO (2003) also reports on forest types and wood volumes by country and region. Canada has 26% temperate and 76% boreal forests; the U.S.A. has 37% subtropical, 48% temperate, and 15% boreal; and Mexico has 70% tropical and 30% subtropical. Most of the countries in South America have 100% of their forest area classed as tropical forest. The only major exception is Chile, with 54% subtropical and 45% temperate forests. Brazil has 2% subtropical forests and Argentina has 5% subtropical and 4% temperate.

FAO (2003) indicates that Brazil has 64% of the timber volume in South America with 71 billion cubic meters, followed distantly by Peru, Venezuela, Bolivia, and Colombia, ranging from 10 billion to 5 billion cubic meters each. The rest of the South American countries each have less.
than 2.5 billion cubic meters of total timber volume each. In contrast, Canada has 29 billion cubic meters of timber volume, the U.S.A. has 31 billion, and Mexico has 3 billion.

**Forest Certification**

Forest certification has developed rapidly since 1993, and about 225 million ha, or 6% of the world’s forests were certified as of January 2005. Certification’s focus on monitoring, auditing, and improving forest practices as well as the economic, ecological, and social benefits at the stand level can make it a powerful tool for effecting change in forest management. Major forest certification systems include the Forest Stewardship Council (FSC, 51 million ha), Programme for Endorsement of Forest Certification (PEFC, 55 million ha), Sustainable Forestry Initiative (SFI, 51 million ha), and the Canadian Standards Association (CSA, 47 million ha).

Forest certification was largely developed as a means to encourage sustainable forestry in the tropics. About 95% of currently certified forest area is in the northern hemisphere, with only about 5% in tropics. There has been an increasing focus on developing and applying forest certification systems in the southern hemisphere. These systems include the Australian Standard, CerFlor in Brazil, CertFor in Chile, and the Malaysian Timber Certification Council.

Until the Brazilian and Chilean certification schemes were initiated in 2002, forest certification in Latin America was dominated by FSC. FSC is the only forest certification system that has been applied throughout the world, and is one of the top three systems in terms of area of forests covered. As of January 2005, the Forest Stewardship Council (FSC) had provided 685 third party audits and certification certificates to 51,320,494 ha in 62 countries. This includes 104 certificates and 5,572,553 ha in 10 countries in South America (Forest Stewardship Council 2005). FSC is generally considered the “greenest” of the various systems based on its creation by World Wildlife Fund and the Rainforest Action Network, as well as its strong focus on environmental protection and social concerns. Brazil and Bolivia have the largest FSC certified areas in South America, followed by Chile (Table 1).

**Table 1. Total Forest Certification for FSC in South America, 2005**

<table>
<thead>
<tr>
<th>Country</th>
<th>Hectares</th>
<th># Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>131,214</td>
<td>8</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1,537,832</td>
<td>15</td>
</tr>
<tr>
<td>Brazil</td>
<td>3,034,066</td>
<td>52</td>
</tr>
<tr>
<td>Chile</td>
<td>483,843</td>
<td>16</td>
</tr>
<tr>
<td>Colombia</td>
<td>58,444</td>
<td>2</td>
</tr>
<tr>
<td>Ecuador</td>
<td>21,341</td>
<td>2</td>
</tr>
<tr>
<td>Paraguay</td>
<td>61,133</td>
<td>2</td>
</tr>
<tr>
<td>Peru</td>
<td>26,936</td>
<td>1</td>
</tr>
<tr>
<td>Uruguay</td>
<td>75,094</td>
<td>5</td>
</tr>
<tr>
<td>Venezuela</td>
<td>139,650</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5,572,553</td>
<td>104</td>
</tr>
</tbody>
</table>

Source: Forest Stewardship Council 2005
With the implementation of the Brazilian and Chilean certification schemes, substantial areas of industrial forests, mostly plantations, have been certified in those countries. CerFlor in Brazil and CertFor in Chile are strongly supported by the forest industry in each country. In total, they are anticipated to enroll millions of acres within a few years. To date, 1.8 million ha are enrolled in CertFor and 0.4 million ha in CerFlor. In addition, several major firms in Uruguay, Argentina, Chile, and Brazil have received ISO 14001 certification. This includes at least 127,000 ha in Uruguay and 233,000 ha in Argentina that are not certified under other forest certification systems. Most of the 1.8 million ha of CertFor in Chile also is ISO 140001 certified, and probably much is ISO certified in Brazil as well.

The FSC framework for evaluating sustainable forest management consists of ten Principles and associated Criteria that focus on social, economic and ecological issues. The individual principles cover (Forest Stewardship Council 2000): (1) compliance with laws and FSC principles, (2) tenure and use rights and responsibilities, (3) indigenous people’s rights, (4) community relations and worker’s rights, (5) multiple benefits from the forest, (6) environmental impact (biodiversity), (7) management plans, (8) monitoring and assessment, (9) maintenance of high conservation value forests, and (10) plantations.

The Brazilian Certificacão Florestal (CerFlor) certification program encompasses five broad principles: (1) compliance with the law, (2) rationality in management and forest resources striving for sustainability, (3) care for biological diversity, (4) care for air, water, and soil resources, and (5) socio-economic and environmental development (Inmetro 2003). The Chilean Certificacion Forestal (CertFor) has nine fundamental Principles, translated roughly as follows: (1) sustainable forest management planning, (2) native ecosystem values and biodiversity protection, (3) productivity and protection from damaging agents, (4) water quality protection, (5) respect for community rights and assistance in developing the quality of life, (6) respect for agreements and indigenous rights, (7) respect for workers rights, health, and fair pay, (8) respect for laws, regulations, and treaties of Chile, and (9) evaluation and improvement of the preceding principles (CertFor 2003).

Each of these three systems have strong components related to environmental protection, community rights, and worker relations and protection. FSC is probably the ‘greenest’ and strictest regarding high conservation value forests, justification for plantations, and a complete ban on genetically modified organisms (GMOs). FSC is considered most rigorous for community benefits, but CerFlor and CertFor have many of these principles as well. FSC has certified a large area of forest plantations in Latin America. The implementation of CerFlor and CertFor is indeterminate since they are new, but the standards are strict.

**Sustainable Forest Management Criteria and Indicators**

In addition to forest certification, multi-country and multilateral initiatives have led to the development of regional and international criteria and indicators for measuring and monitoring success in achieving sustainable forest management (SFM). SFM criteria are large-scale reflections of publicly held key forest values, while indicators are means for measuring forest conditions and tracking subsequent changes in them. Sustainable forest management criteria and
indicators (SFM C&I) are usually tools for assessing forest conditions and sustainability at national and regional levels, not performance standards for certifying forest management.

The regional and international SFM C&I processes are being used to characterize sustainable forest management; coordinate data collection, storage, and dissemination; monitor and assess the trends in forest conditions; and inform decision-making. These efforts are supported by a number of international organizations (e.g. the Food and Agriculture Organization, the International Tropical Timber Organization, the Center for International Forestry Research) (Montreal Process 2003b).

As of 2003, close to 150 countries were participating in at least one of nine international and regional processes to develop, implement, and use SFM C&I. Today, the principal SFM C&I initiatives that are active and making progress are the Montreal Process for temperate forests, the International Timber and Trade Organization (ITTO) guidelines for tropical forest products producers and global forest products consumers, the Helsinki Protocol for European forests, the Tarapoto Process for the Amazon Basin, and the Dry Forest Asia Process. Here we will discuss the Montreal Process, the ITTO initiative and the Tarapoto Process.

Of the nine criteria and indicator initiatives worldwide, the Montreal Process (2003a) is geographically the largest, encompassing most of the world’s temperate and boreal forests, and 60% of all of the world’s forests (http://www.mpci.org). The 12 current signatory countries of the Montreal Process include Argentina, Australia, Canada, Chile, China, Japan, the Republic of Korea, Mexico, New Zealand, Russia, Uruguay, and the U.S.A. Together, they account for 45 percent of world trade in wood and wood products about half the world’s population.

The International Tropical Timber Organization (ITTO) has been developing SFM C&I for more than a decade and is considered a pioneer in the field. Their work has evolved through a series of guidelines, each developed within a framework of criteria and indicators. These include Guidelines for the Sustainable Management of Tropical Forests (1990), Guidelines for the Establishment and Sustainable Management of Planted Tropical Production Forests (1993), Guidelines for the Conservation of Biological Diversity in Tropical Production Forests (1993), and Guidelines on Fire Management in Tropical Forests (1997). By 1999, ITTO had updated many of their guidelines to help apply and understand SFM and had produced manuals to facilitate the implementation, evaluation and reporting related to the revised C&I. In late 2004, ITTO again revised its C&I for natural tropical forests, retaining the essence of the original seven criteria, but modifying some language to make them more compatible with other international initiatives. They also reduced the number of indicators from 89 to 56 (ITTO 2005).

In terms of C&I, ITTO is primarily focusing current efforts on national-level training to introduce its FMU-level guidelines to forest practitioners in tropical countries (Elias 2004). As of December 2004, 13 workshops had been convened, “providing training to nearly 600 professionals responsible for or working in forest management units” throughout the tropics (ITTO 2005).

The Tarapoto Process for Amazonian Forests was first developed in 1995 by the Amazonian Cooperation Treaty Organization (ACTO) countries (Brazil, Bolivia, Colombia, Ecuador,
Guyana, Peru, Suriname and Venezuela). The proposal included 12 criteria and 77 indicators for application at global, national, and FMU levels. In its development, the participating countries sought to encompass the distinct environmental, social and cultural characteristics of the Amazonian Basin (Carazo 1997). Between 1196 and 2000, validation exercises were conducted throughout the region to evaluate the relevance and applicability of the C&I with regard to national conditions, needs and priorities (FAO/LACFC 2000). Based on these exercises, a revised set of C&I was developed in 2001. Today, the ACTO countries are in the process of validating a subset of 15 national-level indicators to be introduced into public policies as a verification or reference tool to Amazonian forest sustainability (ACTO 2005).

**National Forestry Laws and Agencies**

Despite being the principal means of developing and implementing policies to manage and protect forests for decades, information on national forestry laws and agencies is actually more difficult to find and summarize than that on international accords or on forest certification systems. Table 2 summarizes our initial attempts to simply identify the principal agency responsible for forestry in South America and their principal statutory authority. Details on forest policy and agencies for a select few countries follow.

Argentina has no explicit forest policy expressed in terms of a national forestry plan. Law 25.080 on Investments for Planted Forests requires environmental impact studies and monitoring for forest related initiatives receiving state incentives. Provincial laws encompass protection of forest land and call for management plans before forest concessions are awarded. Jurisdiction over national forestry matters is divided among several organizations including the Secretariat for the Environment and Sustainable Development, the Secretariat for Agriculture, Food, Fishing, and Cattle Industry, the National Institute of Farming Technology, and the Timber and Related Industries Research and Technology Center (CITEMA).

Table 2. Summary of National Forestry Agencies and Laws

<table>
<thead>
<tr>
<th>Country</th>
<th>Primary Forestry Agency</th>
<th>Key Statutory Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Secretariat for the Environment and Sustainable Development</td>
<td>No explicit national forestry law, Law 25.080 on Investments for Planted Forests</td>
</tr>
<tr>
<td>Bolivia</td>
<td>Forest Supervisory Authority</td>
<td>Forest Law 1700</td>
</tr>
<tr>
<td>Brazil</td>
<td>Brazilian Institute of the Environment</td>
<td>Forest Law 1700, Law 4.771/65</td>
</tr>
<tr>
<td>Chile</td>
<td>National Forest Corporation</td>
<td>No explicit national forestry law</td>
</tr>
<tr>
<td>Colombia</td>
<td>Forest Policy Advisory Committee</td>
<td>National Council for Economic and Social Planning Legal Document 2.834</td>
</tr>
<tr>
<td>Ecuador</td>
<td>The National Forest Directorate</td>
<td>Law on Forests and the Conservation of Natural Areas and Wildlife (1982 and amendments)</td>
</tr>
<tr>
<td>Guyana</td>
<td>National Forest Institute, National Council for Protected Areas</td>
<td>National Forest Policy, National Protected Areas Policy of 1999</td>
</tr>
<tr>
<td>Paraguay</td>
<td>National Forest Service</td>
<td>Forest Law 422, Resolution 11681 and</td>
</tr>
</tbody>
</table>
In Bolivia, a National Code of Forest Practices was established under Forest Law 1700 in 1996, which aims to regulate the sustainable use and protection of forested lands. The Strategic Plan for Forest Development is a component of Bolivia’s General Plan for Economic and Social Development intended to support forests’ contribution to increasing the GDP and improving forest stakeholder’s standard of living. The Ministry of Sustainable Development and the Environment is in charge of implementing the Forest Code as the national policy-making institution, the Forest Supervisory Authority is the regulatory institution and the National Forest Development Fund is the designated financial institution. Prefectures and municipalities also provide support to forest related governance.

Article 225 of Brazil’s Federal Constitution of 1988 covers the environmental aspects of forest resources. Articles 24 and 175 specifically cover forest management. Law 4.771/65 encompasses the National Code of Forest Practices. Forest policy is set by the Ministry of the Environment through the Directorate of the National Forest Program. The Brazilian Institute of the Environment (IBAMA) is responsible for implementation of forest related policies at the federal level. States are given the responsibility of administering forest resources under their jurisdiction.

Paraguay established a forest policy in 1972 through Forest Law 422. Later resolutions (i.e. 11681 and 18831) placed increased importance on the forestry sector as a contributor to the GDP and reinforced rules and regulations on forest harvesting. Paraguay also implemented an aggressive national reforestation program through agricultural sector reforms 2002. The National Forest Service is in charge of the administration of forest resources, and jointly oversees forest project approval with the General Directorate of Environment and Natural Resource Quality and Control and with the General Directorate of Biodiversity Protection and Conservation.

In Peru, the Forest and Wildlife Law was established in 2000, with related regulations published in 2001. A highly participatory process led to the development of the National Forest Development Strategy for 2002-20021. The National Institute of Natural Resource is the state forestry authority, which is a decentralized public agency of the Ministry of Agriculture. Since 2001, the National Institute of Natural Resources has implemented various institutional instruments dedicated to forest development, such as the National Fund for Forest Development and Promotion, the Ad Hoc Commission for Forest Concessions, and the Supervisory Body for Timber Forest Resources.

**Discussion and Conclusions**
The Americas contain about 38% of the world’s forests, and Brazil has about 38% of all the forests in the Americas and 14% of all the forests in the world. Forest loss continues to be significant in Central and South America. Means to prevent these losses range from markets to public intervention. Three possible approaches for forest protection include the market-based approach of forest certification, the national approach of forestry laws and regulations, and the international agreements with national implementation, represented by Sustainable Forest Management Criteria and Indicators.

The most widespread and oldest approach to forest resource management and protection, except for laissez-faire, has been through the passage and implementation of national forestry laws. This may consist of broad national laws that cover forests as an entire sector, or smaller individual laws and regulations that cover various components of forestry ranging from land use and conversion to reforestation incentives and taxes to protection from fire, disease, or pathogens. These laws have formed the basis for policy interventions in the Americas for centuries. They have not, however, prevented continuing attrition in the area of forests, nor in the diminution of valuable native timber species, loss of biodiversity, and other problems. Laws may well have prevented existing problems from becoming worse, and incentives surely have encouraged plantation forests in Latin America, but laws alone have not been a panacea that solves all issues. Implementation is variable, higher land use values overwhelming, enforcement feeble or corrupt, and agency funding dyspeptic. Thus other means have been sought to enhance laws and to prevent loss of forests, timber, and biodiversity, and social benefits.

Sustainable Forest Management Criteria and Indicators for temperate and other forests have been developed in various international agreements. The Montreal Process SFM mandates national measuring and monitoring of progress toward sustainable forestry for a broad range of environmental, economic, and social goods and services. This process is informative, but not prescriptive. It is largely the focus of governments and policy experts, and perhaps forestry researchers and a small number of forest practitioners. To date, SFM is not a strong tool for advocacy, regulation, or encouraging public or private forestry investment per se. Instead, SFM standards may provide a benchmark for forest certification standards and national policies. Explicit connections between most SFM C&I and forest certification standards or national laws have not been made yet in South or North America, although this is pervasive in Europe. Future connections are most likely to be made where government ownership of forest land predominates, which includes most countries in the tropics. SFM C&I are likely to evolve to be instrumental in setting some, but not all, of the national forest policy agenda in most countries, including for laws, incentives, and education efforts. However, this evolution will be slow.

Forest certification, which mandates and audits standards of forestry practice at the stand or ownership level, has potential for a much larger immediate impact on natural and plantation forest management and measurement and protection of biological diversity. Forest certification by FSC requires that managers favor natural stands and biodiversity. The Sustainable Forestry Initiative certification process in North America includes wildlife and biodiversity as major components of its standards. FSC mandates rigorous standards for forest plantations, especially of exotic species, and careful planning to justify how they complement natural forests and are juxtaposed in the forest landscape. Social forestry standards also are important for FSC. The new CerFlor and CertFor approaches also have rigorous standards for both social and
environmental components. Compliance with national laws is required under all forest certification systems, which will clearly enhance implementing those laws. Having certified organizations document and comply with national laws can substitute for weak national agency implementation.

The key forest values set forth in national laws, the different SFM C&I, and forest certification systems are related, but differ enough that they are certainly not functionally equivalent across all systems. Indeed it is the differences among systems that make for interesting challenges in determining which is more effective for evaluating particular economic, ecological, environmental, and social criteria for different scales of application. These differences also raise the question of whether or how to modify the systems so that they are more compatible. For example, certification, SFM C&I, and any national standards should rate various aspects of SFM in the same way, and the data generated for certification should feed directly into C&I and/or national standards.

These detailed measurements of forest management practices, combined with prescriptions to protect biodiversity and manage planted forests carefully, will have significant on-the-ground effects on forestry in the Americas. Some forest products firms have become sincere believers and practitioners of forest certification, under either FSC or the nascent Brazil and Chile standards. For example, FSC certified plantation operations have generally set aside more than 25% of their natural forest areas for conservation. Chile has almost 2 million ha of forests certified by CertFor. Our discussions with managers at many major firms indicate that certification has reformed thinking and practices about the economic, ecological, social, managerial, and scientific aspects of sustainable forestry. While some of this is rhetoric, the new view toward forestry is being imbued throughout the organizations as the certification standards trickle down to most employees and operations.

Furthermore, forest certification audits are performed by major international firms. The reputation of these firms depends on their transparency, independence, and rigor. The audits require rigorous evaluation of environmental management systems, forest policies, and forest practices to meet economic, ecologic, and social standards. Establishing and implementing a quality program to meet the detailed forest certification standards is absolutely required to successfully pass the external audits.

The continued application of SFM criteria and indicators and various forest certification schemes will enhance data collection, scrutiny, management, and protection of biodiversity throughout the world. At the same time, SFM and forest certification offer promise for the continued social imprimatur to grow and manage intensive forest plantations under reasoned guidelines and standards. They also can strengthen national programs by increasing interest and support for forest production and protection in general. In total, national laws, international SFM C&I, and private forest certification approaches promise to continue to enhance forest management, forest protection, and social benefits in the Americas in the future.
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