

FOREST CERTIFICATION IN BRAZIL: TRADE AND ENVIRONMENTAL ENHANCEMENT ¹

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Executive Summary

The success of eco-labeling as a voluntary mechanism to enhance the environmental content of traded goods is evident from Brazil's experience with forest certification by both businesses and communities. The movement toward forest certification is a consumer-driven phenomenon that corresponds to a quest for competitiveness in the context of global sustainability. Consumers' willingness to pay for forest products of sustainable origin acts as an incentive in this direction, as these norms achieve the status of a market convention. Differentiated access to increasingly segmented world markets has stimulated certification by commercial Amazon forest managers, community enterprises and market leaders among Brazil's forest plantation enterprises. However, the sheer volume of timber flooding the Brazilian market originating from illegal extraction in the Amazon acts as a barrier to expansion in certified management. As regulation and sheer resource exhaustion limit access to formerly free access timber reserves, the certified area should grow. Voluntary certification is a cheaper means than regulatory control to internalize environmental costs of global benefit.

1. Overview of Brazil's forest sector

Comprising not only the largest share of the Amazon forest, the largest remaining tropical forest biome, Brazil is simultaneously the world's largest producer and consumer of tropical timber. In fact, 86% of the 26.5 million m³ of diverse timbers harvested annually from the Amazon, is consumed internally (Smeraldi & Verissimo, 1999). The populous industrial state of São Paulo alone consumes 5.6 million m³/year, which outstrips the tropical timber volume consumed by France, Great Britain and Spain combined (Ibid.). Though an avid wood consumer, most demand is in the construction sector, which places little emphasis on quality or sustainable supply.

The Amazon forest is a platform for innovations in community resource management and public forest protection, but pervasive illegal logging acts as a significant impediment to adoption of appropriate logging practices, further deflating prices and quality. Much of Brazil's tropical timber originates from deforestation: about 2.3 million hectares of forests are cut annually for agricultural expansion and other purposes (FAO, 2000).

Simultaneously one of the major industrial forest growers of the world, Brazil has five million hectares in plantations, of which 95% are exotic eucalyptus and pines (FAO, 2000).³ Long a major player in the global short fiber cellulose market, Brazil has specialized in planting high productivity trees raised in clonal nurseries. Most forest plantations are found near the Atlantic coast, in the states of Bahia, Espírito Santo, Minas Gerais, São Paulo and Paraná (see figure 1). Sustainably harvested forest plantations may help to take some of the pressure off the remaining tropical forests, although these are not used for the same products. Trees planted for pulpwood add to fuelwood plantations destined for the charcoal-based steel industry in Minas Gerais, and for ceramics industries, cement factories and bakeries throughout the country.



Figure 1. States and principal forest biomes of Brazil. Trees in red mark location of FSC certified enterprises in the case studies below. States mentioned in the text: BA – Bahia; ES – Espírito Santo; SP – São Paulo; PR – Paraná; PA – Pará; AM – Amazonas; AC – Acre.

Forest plantations in Brazil supplied 102.9 million m³ of industrial roundwood equivalent in 2001, of which nearly half is for renewable fuelwood and charcoal. Part of this plantation output was destined for the pulp and paper industry: Brazil produced 7.3 million metric tons of wood pulp in the same year (FAOSTAT, 2002). The remainder is destined for national and international markets in the form of furniture, plywood and panels.

Exports of wood products, accounting for 14% of Amazon timber production (Smeraldi, 1999), and as much as 40% of Brazilian wood pulp, are destined primarily for Europe, Japan and the southern cone. Wood product exports from Brazil constituted around 2.7% of global exports of these products in the year 2000 (ITTO, 2001).⁴ Exports of wood and pulp and paper products brought in annual foreign exchange revenues of \$3.2 billion in the year 2000 (FAOSTAT, 2002). In the same year, Brazil was the fourth largest global supplier of cellulose, accounting for 7.7% of world exports. Brazil also then occupied fifth place in exports of plywood, comprising 5.6% of global supplies (Ibid.).

2. Global shift toward certified forest management

Demands that forest goods and services be produced sustainably reflect global concern for biodiversity protection and combating climate change. These concerns have only recently begun to be internalized in markets through voluntary forest management and chain of custody certification for forest products.

The movement toward forest certification was led by boycotts from Northern consumers against tropical timbers originating from deforestation in the late 1980s. European and American tropical wood users concerned for the long-term prospects of their businesses formed a *Woodworker's Alliance for Rainforest Protection-WARP* and published a "Good Wood List" to protect timber supplies. In 1993 representatives of NGOs and of wood producers and consumers met in Toronto, to begin the process that led to creation of the Forest Stewardship Council (FSC). Responding to the lack of criteria for defining what in fact constituted good practice in forest management, three international panels representing business, social and environmental concerns agreed on ten principles and a rigorous set of subsidiary norms (Azevedo, 2002).

Since founding in 1995, the FSC has achieved an impressive record: almost 31 million hectares of certified forests controlled by over 450 companies operating in 56 countries. More than 2,500 product lines now carry the FSC chain of custody label (FSC, 2002). Over 700 enterprises have joined Forest and Trade Networks committed to the production, promotion and marketing of products certified according to the FSC scheme (WWF, 2002).⁵

3. Evolution of the certification movement in Brazil

Market drivers. The certified forest segment in Brazil began to emerge in the late 1990s, in response to several principal market drivers. Firstly, consumer concern for the environmental impacts of pulp and paper production stimulated technical shifts in the global industry (IIED, 1996). These consumer concerns were played through to the industrial plantation segment in Brazil when environmentalists raised consumer awareness of the controversial impacts of eucalyptus plantations on watersheds and biodiversity, and of child labor and near slavery in plantations and charcoal manufacturing (Ibid). Export of timber from Amazon deforestation also raised consumer alarm. Such concerns were dramatized by Greenpeace blockades of pulp exports by a leading Brazilian manufacturer and of Amazon timber on its way to a regional plywood enterprise on the eve of the Rio Earth Summit in 1992.

Secondly, corporate response to societal demands for sustainable development has increasingly been to perceive this as a market convention, affecting the parameters for competition in an ever more global market. To effectively compete for market share in this globalized context, industries must pursue new technological pathways and seek mutually beneficial relations with neighboring communities (Vinha, 2000). This emerging market convention has not gone unnoticed by the wood products industry in Brazil, which has gone out of its way to rebuild its image as environmentally and socially responsible. This is particularly true of the pulp and paper and industrial charcoal segments,⁶ which were the first to adopt FSC certification norms. Some firms in this group became interested in certification of their forests to enable them to more easily market sawn wood to diversify production (Tasso Azevedo, personal communication).

Finally, the wood products sector now admits that it must reflect its sustainable image in tangible changes in production technology and particularly in sustainable forest management, and that the only way to communicate such change to promote consumer confidence is through independent external audits and certification. In response to consumer preoccupations and buyer pressures in importing nations, the pulp and paper and plywood industries initially took the lead in adoption of ISO 14.000 environmental management norms. It later was quick to adopt FSC plantation forest management and chain of custody certification standards, once market leaders took the initiative to raise the bar.

In the Amazon region, importing market consumer preoccupations have been less influential as market drivers toward forest management certification, although the threat of boycotts against rare tropical timbers such as mahogany has spurred interest in adoption. During the 1990s, global trade in tropical timber products was still dominated by Southeast Asia. As the formerly abundant dipterocarp forests of Indonesia and Malaysia dwindled due to over harvesting and settlement expansion, buyers began to shift to Amazon supplies. A number of Asian firms sought joint ventures or outright control over these supplies.

Alarm in Brazil over the environmental effects of this global market shift led to congressional hearings on the purported “internationalization” of forest use and control in the Amazon (Viana, 1998). At the same time, leading socio-environmental organizations joined forces in 1997 to create a national FSC Working Group to define nationally appropriate criteria for forest plantations and natural forest management. With intense stakeholder involvement by industry, academia and NGO representatives, the group published its first operating norms for plantation forests in 1997 and for upland forests in 2000.

Certification organizations and progress. Simultaneous with the elaboration of national criteria, several FSC-accredited forest certifiers launched their activities in Brazil. Imaflora, a Brazilian NGO based in São Paulo, led the field through association with the Rainforest Alliance SmartWood^{cm} program headquartered in New York City. Imaflora was soon joined by Brazilian affiliates of Scientific Conservation Systems (SCS), based in Oakland, California and of the Société Generale de Surveillance (SGS), whose Qualifor Program for forest certification is headquartered in South Africa. All three certifiers provide services both to native forest and plantation segments, and all certify both forest management and the chain of custody of forest products. Some criticism has been laid on the costs of certification that may arise from undue concentration in this services sector. Experience shows, however, that the charges for the certification review process are usually far lower than those associated with the upgrading of logging procedures and legal commitments necessary to meet certification standards (May & Veiga, 2000).

As of October 2002, plantation forests on 822 thousand hectares have been certified in Brazil according to FSC criteria, corresponding to the operations of 18 companies whose holdings comprise nearly 20% of the total estimated area planted in pine, eucalyptus and teak in Brazil. In the Amazon and Atlantic Forests, 10 companies and community organizations have obtained certification for their management activities on a total of over 358 thousand hectares (www.fsc.org.br).

Trends in FSC certification of forest product chains of custody (see Figure 2, below) indicate exponential growth since initiation of FSC activities in Brazil in 1997. Of the 109 companies certified along these lines today, 24 fabricate these products from native forest species, and include plywood and panels, designer furniture, knife handles, musical instruments, non-timber forest products (medicinal plants and hearts of palm, for example) and fiber hammocks. Plantation products are no less diverse, ranging from sustainably produced charcoal to doors and windows, furniture, handles for tools and utensils, blocks and panels.

Commercial benefits. The rationale for certification, besides assuring a potential price bonus, is to maintain the markets they have conquered and to open up new market prospects, particularly in more demanding countries. Nevertheless, a price bonus has often not materialized, particularly in markets for Amazon timbers. The majority of such wood originates from legally permitted deforestation activity by smallholders in the process of frontier expansion (Smeraldi, 2002). Although some buyers may offer to pay more for certified products from reliable sources, the overall effect of readily available wood from legal deforestation and continuing illegal logging in parks and indigenous areas is to depress prices.

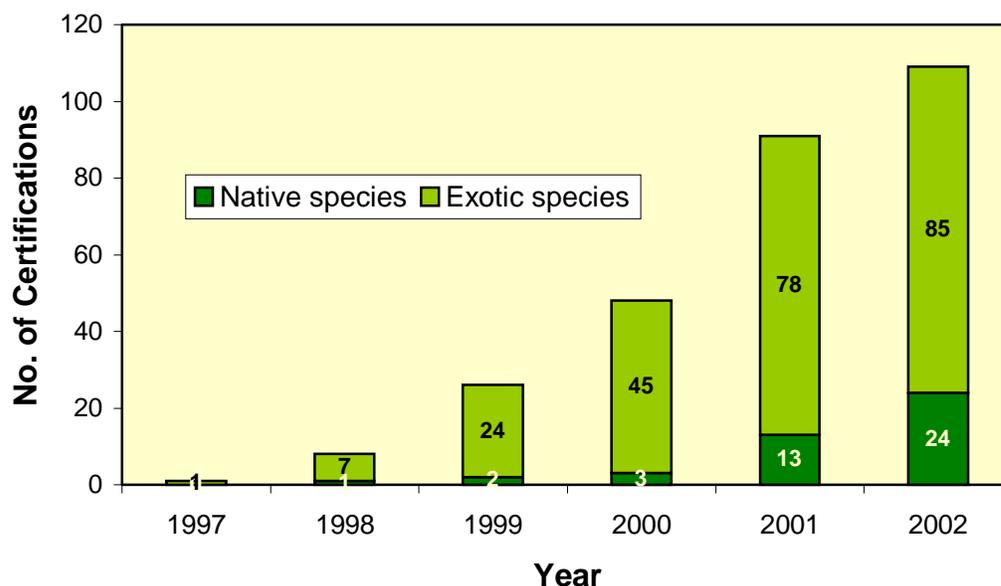


Figure 2. FSC accredited chain of custody certifications for wood products made in Brazil: 1997-2002. Numbers refer to number of companies with FSC certified product lines, and do not include those that have both certified forests and products. Source: Tasso Azevedo (pers. comm.).

Since Brazil itself is such a significant consumer as well as producer of tropical timber, one logical avenue of organization in the sector was creation of a Brazilian Certified Wood Buyers' Group, parallel to similar groups established in many northern countries. In mid-2000, some 42 companies, joined by a few municipal and state governments, altogether accounting for 10% of national wood demand, adhered to this group, committing themselves to gradually increase their

purchases from certified sources to 50% of their total wood requirements over a five-year period. They were permitted to display the Buyers' Group logo on their products and promotions, but were also exhorted to disseminate the Group's objectives in their advertising, and to insist that their suppliers also seek wood purchases from certified sources. Today, the Group is made up of 70 members, representing buyers of pulp and paper, charcoal, furniture, oils and resins, utensils and the construction industry – the greatest wood consumers in Brazil. About 90% of the original group is made up of buyers of eucalyptus products, and over half of their products are exported (Viana et al., 2002).

Though they still represent a fairly small share of the market, Buyers' Group members were initially unable to assure sufficient supplies to meet their targets, particularly among those associates interested in purchasing sustainably managed tropical timbers from the Amazon. One major utensil manufacturer found it had to invest in its own certified production forests to comply. There are many reasons for this, not least of these being the aforementioned plethora of legal timber from deforestation activities. Other barriers were also to be surmounted, such as the lack of human resources trained in the techniques of sustainable timber extraction, shortage of credit for initial investments, and the difficulties in acquiring land and abiding by labor codes. But this initial profile is now changing rapidly as forest managers move toward certification as a means of securing market share, both at home and abroad.

Recognizing the need for independent external assessment and certification of sustainable origin for forest products derived from the Amazon forest, the federal government has also adopted progressively tougher standards for legally mandated management plans. As of 1999, federal regulations required a 100% inventory of merchantable timber and pre-planning of felling paths, following successful pilot trials of sustainable management in the Amazon. A chain of custody approach to combat illegal logging in protected areas and unmanaged forests is currently being promoted for all Amazon timbers. This program would employ cutting edge technology that would require loggers to imbed an origin traceable chip in each log, enabling regulators to correlate the expected yield of approved management plans with logs actually transported to market. Finally, the regional development bank of the Amazon region (BASA) provides preferential lines of credit for certified forest enterprises.

The growth in area certified according to FSC criteria, and the creation of a Buyers' Group and more recently, of a Certified Wood Producers' Group suggest that certification is here to stay in Brazil. It is indicative that this expansion has stimulated a movement by some industry leaders (dissatisfied with the FSC norms) to create a set of national standards for certification of forest management and chain of custody systems (CERFLOR). These standards, initially proposed in 1991, are in the final stages of field tests by the wood products industry in collaboration with the National Technical Standards Association-ABNT. The Brazilian Institute of Metrology-INMETRO will accredit and train certifiers, as it does with ISO series.

CERFLOR criteria and procedures, initially applicable only to plantations, follow norms similar in name to those established by FSC in Brazil, but are considerably more flexible in regards to observance of international environmental norms, socio-cultural impacts and labor relations with third party suppliers. There is some question, however, whether international markets will recognize such national norms. Globally, consumer confidence adheres to the FSC label.

4. Incremental financial returns to sustainable logging

The process of conversion to sustainable forest management itself may generate additional benefits to adopting enterprises, even with the initial incremental costs associated with this change. Recent comparative studies of timber exploitation practices using conventional and sustainable management techniques summarized by May & Veiga (2000) offer evidence in this direction.

Studies underway by AMAZON since the early 1990s in the township of Paragominas in the state of Pará, found that the merchantable timber volume in a sustainably managed area was 30% greater than that obtained on a neighboring site subject to conventional practices (38.6 m³/ha vs. 29.7 m³/ha, respectively). This difference was associated with smaller losses from clearing of roads and patios, with better planning and layout, as well as to reduction in wastage from damaged logs. In reduced impact logging (RIL), vines that would bring down neighboring trees are cut in the previous harvest period, dramatically reducing such damage. Another important factor leading to wastage arises from inadequate information: transport crews that simply could no longer locate the logs that had been cut leave 20% of timber volume in the forest. These losses are minimized in RIL. Overall, adopting sustainable logging practices was estimated to be 35% more lucrative in net terms than conventional operations (Barreto et al., 1998).

In the long-term, treatments such as vine cutting and road planning yield considerable improvement – as much as 50% – in potential future harvests from the same forest. Despite the greater initial outlays required, use of skidders rather than the conventional bulldozers offer gains in productivity with much less damage to the forest ecosystem, assuring a long-term bonus.

In another study in Paragominas, Homes et al. (2002), compare conventional logging (CL) with RIL and conclude that the total costs were 12% lower in RIL than in CL while net revenues were 19% larger, arising from the same factors previously described by Imazon. Irreversible loss of commercial trees due to damage was reduced by over 50%, while the total area affected by use of heavy machinery was 37% smaller per tree harvested, than that under CL. These two parameters suggest that regeneration will be delayed under the CL system: it will take much longer for trees to grow to merchantable size. Hence, future economic and ecological benefits will be greater under RIL.

5. Case studies of certified wood enterprise in Brazil

Besides the positive financial returns obtainable from sustainable forest management, certification according to FSC norms requires adherence to legal requirements and demonstrable efforts to ensure affected communities benefit from hosting the enterprise. Although adherence to these norms implies incremental costs and may imply a change in corporate culture and community relations, they are of equal weight to the certification process as are the management practices themselves.

The following case studies describe how firms and communities in several distinct geographic contexts in Brazil have risen to the challenge of sustainable forest management, at a corporate and community level, in native forests and industrial monocrop plantations.

Box 1: Certified Forest Management Enterprises in the Amazon⁷

Gethal Amazonas S/A and Cikel Brazil Verde S/A are among the first major timber companies in the Brazilian Amazon whose forest management systems, summing 40,800 hectares and 140,658 hectares of tropical forests, respectively, were certified according to FSC principles.⁸ Both companies now also possess chain of custody certification for their plywood and flooring, and both are now expanding the management areas under their control to better respond to growing demand for certified wood products.

Both companies had spent several years in the certification process, learning and training to adapt their existing practices to a sustainable management system. The overseas market represents a substantial portion of their total revenues, as a preponderant factor in the decision to certify their forests, although both companies also market a share of their products in the domestic market. Their principal clients, however, are members of Certified Timber Buyers' Groups in the United States and in Europe. For this reason, their rationale for certification was to maintain the markets they have conquered and to open up new market prospects, particularly in more demanding countries, such as Germany and the UK. Another factor influencing the decision to certify is that of capital investment. When the US fund manager GMO Renewable Resources purchased Gethal, its buyers insisted that the company first complete FSC certification, perceiving this as a precondition for successful market penetration for its tropical plywood.

For these corporations, the certification process itself does not engender the most substantial costs of adaptation. The principal investments are in the transition from the conventional system to sustainable management, such as human resources training, acquisition of the entire forest area placed under certified management as well as of new equipment, particularly skidders whose use would reduce impacts on the forest ecosystem.

In this transition, Cikel benefited from its relationship with the Tropical Forest Foundation-FFT, an organization created in 1995 dedicated to demonstration and training for RIL. Cikel offered FFT a block in its forest management area in Paragominas, Pará as a training ground for its field staff. FFT went on to offer courses for industry executives and timber crews from other forest product enterprises throughout the Amazon.

Although some new practices are introduced, the certification process is perceived principally as a reinforcement of existing regulatory requirements, such as observance of environmental and labor law. But their adoption is distinct from habitual practice in the Amazon, where generalized illegality is emblematic in the timber industry. Beyond this, however, certification levies a new demand on timber companies, arising from the social principles that compel companies to actively sponsor sustainable community development in the locales affected by timber extraction.

Although some company management feel that these principles transfer governmental responsibilities to the corporation, they concur with the need to compensate for local sociocultural impacts provoked by major enterprise investment in remote forest environments. One potential avenue for partnerships with local communities is through provision of long-term access to non-timber forest products (NTFPs) in logging areas. Gethal, for example, compensated the traditional riparian community members whose access to the management area in Manicoré in central Amazonas was restricted by logging. They were guaranteed usufruct rights to their homesteads, and granted exclusive rights over Brazil nut harvesting in the Gethal area, whose access was facilitated by the inventorying of tree locations and opening of access paths. Community members in turn keep watch over the forest, protecting it from fire and incursion, so ensuring the company's long-term viability.

Box 2: Community forest management for timber and non-timber products⁹

Certification of community managed forests has the advantage of providing benefits directly to local communities, rather than requiring that corporations such as Cikel and Gethal find ways to indirectly compensate those affected by their impacts, in response to certification criteria. Community forest management has a history at least as long as the certification movement at the corporate level, but it is only recently that the first community forests have actually attained certification. Some of the difficulties faced by these enterprises include: a) greater transactions costs in provision of certification services to multiple smallholders; b) complexity of collective resource management; c) capital rationing for equipment acquisition and maintenance; and d) difficulties in community enterprise management and distribution of returns.

The first community forest management project certified in Brazil according to FSC principles is located in Xapuri, Acre, where rubber tapper and union leader Chico Mendes lived and struggled. There, an “extractive reserve” (Resex) – a common property resource management area under community control – was created in the early 1990s, covering nearly one million hectares. Although the rubber tappers’ movement had been initially suspicious of timber extraction as a violation of the forest ecosystem’s integrity, it has become increasingly clear that sustainable forest livelihoods must rely on a combination of NTFPs, sustainable low-impact timber harvesting and agroforestry activities in “forest gardens”.

To test the application of RIL approaches at a community level, a small number of households who reside in the Chico Mendes Resex initiated a certification process on 900 hectares of native Amazon forestlands. To this end, they obtained support from WWF-Brazil to help defray costs of auditing, equipment, documentation and training for management according to FSC standards.

One of the unique factors in certification of this project was the fact that the land is federal property conceded in long-term usufruct agreement subject to a management plan, but it was the Association of Residents and Producers that obtained FSC certification. Timber extraction is accomplished with simple equipment and the logs transported by oxen. The management plan calls for harvesting an average of only two m³/hectare, to assure minimal ecosystem impact. The wood is destined to supply a recently developed designer furniture factory in Xapuri, supplied solely with certified wood, and directed toward eco- and fair trade export markets. This forward linked investment has also stimulated efforts by other regional timber operators to seek certification, adding further value to the local economy. The furniture industry is now offering cabinetry design and fabrication courses for Xapuri’s youth, with a goal of directly benefiting more than 130 people tied to forest management, besides indirectly helping to create 50 to 100 jobs linked to the furniture industry.

The principal barriers to certification faced by community forest management projects, are related with their small scale of production and consequent marketing difficulties, as well as problems regarding wood quality standardization and access to buyers. Certification has been pointed to as one of the main alternatives to break these barriers, signaling to buyers the differential character of the product and its sustainable origin. The problem of limited scale may be partially resolved through creation of links to a local furniture industry. Access to buyers may be improved through exhibition in stores and trade fairs.

Clearly much remains to be done to ensure the competitiveness of community forest management. As witness of this, progress has been slow in certifying an additional 15 such schemes that have sprung up over the past decade throughout the Brazilian Amazon (Amaral & Amaral Neto, 2001). But despite the difficulties, forest peoples are committed to building new enterprises that will be socially and environmentally sustainable. Regional development banks and multilateral agencies have begun to support efforts to overcome barriers to market entry by community organizations.

Box 3: Klabin Pulp and Paper: protecting Atlantic Forest remnants

Klabin Paper and Cellulose Industries S.A. began operations nearly 100 years ago in São Paulo. Today, the company is the largest integrated producer of pulp and paper products in Latin America, with 27 industrial facilities. Its holdings include a total of 236 thousand hectares in high productivity eucalyptus and pine plantations in five states in Brazil's Atlantic Forest (Paraná, Santa Catarina, Rio Grande do Sul, São Paulo and Bahia).

A historical concern for nature led the Klabin Group to preserve species rich native forests that now constitute 40% of the company's total landholdings of over 400 thousand hectares, a considerable heritage for biodiversity conservation and research in a region that has been largely deforested. Less than 7% of the Atlantic Forest still remains intact 500 years after colonial occupation (SOS Mata Atlântica, 2002).

A leader in adoption of voluntary environmental standards, Klabin was the first enterprise to receive FSC plantation forest certification in Latin America for its operations in Paraná, in 1998. At the time, a number of major pulp and paper enterprises in Brazil were seeking certification according to ISO 14.000 environmental management norms. With the considerably more rigorous FSC certification of Klabin's operation, the rest of the sector was soon forced to follow suit – the market leader set the pace, raising the bar across the sector.

The Klabin Paraná operation began in 1934 in the township of Telêmaco Borba, on lands originally covered with native *Auracaria* pines, that served as the initial feedstock for the company's paper products manufacture beginning in 1946. At the time of certification, the company's plantations occupied 120,000 hectares in pine and eucalyptus species; its holdings included native forest reserves of over 98,000 hectares, on its own properties and those of third party contractors in the vicinity. Klabin's forests covered nearly 85% of the township, thus constituting the principal landscape element in the area (Imaflora, 1997).

One of the unique factors in Klabin's certification was the extension of its management area to third party suppliers, and its provision for resolution of land tenure disputes. Outsourcing has been a problem for certified wood products manufacturers, who are often forced to obtain supplies from firms whose forests are not certified or which have disputed titles, thus making it necessary that they split their industrial processing operations to assure the chain of custody of certified products. By extending the certified area to include external suppliers, Klabin guaranteed that its flow of certified raw material would be sufficient to fill orders, and at the same time helped to resolve land tenure disputes in its surrounding area.

Its protection of the state's principal natural forest reserves constituted a major socio-environmental benefit. Besides providing a context for continuing campaigns of environmental education and research, Klabin's certified forest operation had as a spinoff, certification of the company's herbal plants nursery and natural medicinal products facility. This facility now provides phytotherapeutic remedies applied in 70% of medical consultations by company employees, reducing treatment costs by an estimated 56%. Medicinal and aromatic herbs are now converted into a range of natural products sold both on the national and international market, including herbal teas, creams, pomades, colorings, shampoos, and syrups (Klabin, 2002).

5. Certification versus regulatory measures: costs and benefits to society

The expansion of certified forest management in Brazil, as elsewhere in the tropics, accompanies a growing awareness that regulatory control measures and penalties alone are unable to assuage the pressures that motivate predatory logging. A market incentive is also needed.

Forest certification is thus part of a broader debate over the relative efficacy of command and control measures (the “stick”), versus economic incentives (the “carrot”), as environmental policy options. The basic principle of certification is that of a stimulus to promote voluntary adoption of more sustainable management practices, guided by the potential economic benefits to be obtained thereby. Such benefits can arise either from the demand side or guided by production costs: a) prices superior to average market value; b) enhancement or maintenance of market share; and c) greater productivity and profitability in forest utilization, arising from adoption of RIL techniques and other prerequisites for certification.

Certification can therefore be categorized as an economic instrument of environmental benefit, since it incorporates existence of a financial stimulus, the possibility of voluntary action and the intention of maintaining or achieving improvement in environmental quality through its application. For developing nations, among particular advantages of such an instrument is the prospect of providing incentives for a permanent change in producer behavior, permitting firms to become less vulnerable to pressures for bribery and corruption and the otherwise frequent collusion between illegal loggers and government agents (May & Veiga, 2000). Forest certification thus portends a virtuous circle, reinforcing the link between market forces and protection of local and global environmental values.

6. Conclusion: broadening socio-environmental benefits from certification and trade

For the first time, wood based enterprises in Brazil – historically perceived as enemies of society and nature – are being impelled by market forces to comply with social as well as environmental objectives. Consumers in northern countries played an important role in instigating this change, as buyers of high value wood products who increasingly insist on certification of sustainable origin as the grounds for market entry. But its benefits to Brazil are increasingly recognized and have brought complementary change in governmental regulation and parallel efforts to establish national production norms. The result has been to raise the bar of social and environmental responsibility in the domestic wood industry, bringing benefits to producers and consumers as well as to local communities affected by forest operations.

Non-governmental organizations and visionary businesses instigated these advances. Actions on the domestic front are still needed. Overcoming illegal timber mining is a prerequisite to successful expansion of certified enterprises, while actions to restrain the dynamic of shifting agricultural expansion at the frontier remain imperative. The effective dissemination of national production standards, upgraded by voluntary ecolabeling according to FSC criteria, is another challenge that lies ahead.

The assumption of power by the Lula government – professing strong commitment to socio-environmental objectives – bodes well for advances in certification of community enterprises as

well as redoubled efforts to combat corruption in forest sector regulation. The new government is also committed to enhancing the role of agricultural and forest product trade as a source of foreign revenues to stabilize the national economy and fuel a new cycle of growth and employment. Discriminating consumers in northern countries increasingly procure products differentiated by socio-environmental characteristics of sustainable origin. A new window of opportunity exists to promote greater trade and international cooperation with Brazil's certified wood products industry.

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³ There is a range of estimates of the area under plantations in Brazil, from 1.4 million hectares (Bracelpa, the pulpwood industry association) to over 6 million hectares (Brazilian Silviculture Society, representing the reforestation segment). We have used the official statistics reported to the United Nations Food and Agriculture Organization-FAO by the Brazilian government (FAOSTAT, 2000).

⁴ ITTO reports exports in logs, sawnwood, veneer and plywood from Brazil summing \$928 million in 2000. Global exports in this year, according to the same source, totaled \$34 billion.

⁵ The networks are an outgrowth of the Certified Wood Buyers' Groups, the first of which was created in the UK in 1991, that unite wood consuming companies in response to the environmental concerns of their final consumers, committing themselves by sub-sector to acquire increasing shares of the wood they purchase from certified origin. Besides rejecting uncertified wood from occasional suppliers, they begin to pressure their habitual suppliers to move toward certification. Buyers' Groups already exist in the UK, Belgium, Holland, Austria, Australia, Germany, Switzerland, the USA, Canada, Spain, France, Ireland, Norway, Sweden, Denmark and Finland, and others are being formed in other major wood importing countries, but the Group in Brazil is the only one in existence in a major tropical timber exporting country (www.amazonia.org.br/compradores).

⁶ See www.bracelpa.com, www.abracave.com, and www.sbs.org.br, for expressions of environmental image construction in the Brazilian pulp and paper, charcoal-based pig iron and reforestation industries, respectively.

⁷ Sources: Cikel (2002); May & Veiga (2000). The author expresses appreciation for information provided by Alcir Almeida, Roberto Bauch and Manoel Pereira Dias.

⁸ The first such enterprise to be certified was Mil Madeireira, now known as Precious Woods Amazon.

⁹ Sources: Amaral (2001); Amaral & Amaral Neto (2000).