Forest Certification in Brazil

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ABSTRACT

This paper reviews the Brazilian experience since the mid-1990s with certification of natural and plantation forests at corporate and community levels. Discriminating world markets, corporate social responsibility and image concerns stimulated certification by the plantation segment. Initial certifications were carried out according to FSC standards, according to criteria adopted by a national tripartite working group. A national certification scheme (CERFLOR) was recognized in 2002 by the PEFC. Over one million hectares in plantations and natural reserves had been certified by May 2004. Only about 500,000 ha of natural forests had been certified, although Brazil is simultaneously the world's largest producer and consumer of tropical timber. Deforestation and illegal extraction in the Amazon continue to flood the domestic market. Government policy affirms that voluntary certification is an important means to internalize socio-environmental costs but does not supplant national regulation. Local regulators have in some cases imposed additional burdens on those who have adopted certification, including small-scale community based enterprises. Concessions in public forests and forest family partnerships may draw regulatory norms and certification criteria closer together.

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I. INTRODUCTION

This paper reflects on Brazil's experience with forest certification since the mid-1990s, at corporate, partnership and community levels, in natural and plantation forests, channeling wood and non-timber forest products (NTFP) to both the domestic and international markets. Brazil's movement toward forest certification has been consumer-driven, corresponding to broader concern for sustainability as a new element in global competitiveness. A combination of access to discriminating world markets, corporate social responsibility and image concerns stimulated adoption of FSC forest management standards by leaders in the industrial forest plantation segment. Industrial associations developed a national certification scheme (CERFLOR), recognized in 2002 by the Programme for the Endorsement of Forest Certification schemes (PEFC).

In comparison to the plantation segment, a relatively limited proportion of natural forests have been certified, even though Brazil is simultaneously the world's largest producer and consumer of tropical timber from natural forests. This is explained by the fact that a substantial volume of timber originating from deforestation and illegal extraction in the Amazon continues to flood the domestic market. As regulation and controlled governmental concessions combined with sheer resource exhaustion in settled areas limit access to formerly open access timber reserves, the hope is that certified natural forest management will grow in relative importance, spurred by the creation of certified buyers' and producers' groups. Government policy reflects the view that voluntary certification is an important means to internalize socio-environmental costs (Brazil 2003), but does not supplant national regulation. In some localities, regulators have imposed additional burdens on those who have adopted certified natural forest management (André de Freitas, personal communication). Such restrictions have extended to small-scale community-based forest management efforts, despite supportive official rhetoric and donor support. Current plans to grant timber extraction rights in public forests may draw regulatory norms and certification criteria closer together, although the proposed law for concessions does not require certification, but rather encourages external auditing.

In the future, government and voluntary schemes for tracing timber origin should jointly ensure greater confidence in chains of custody. However, there remains quite a lot to be done to enhance the market share of certified timber and other wood products, both in Brazil and in positioning these products in international markets.

II. BACKGROUND FACTORS

Regulatory Structure and Institutions

Brazil's regulatory structure affecting forest management is primarily the responsibility of the federal government. Brazil established its first Forest Code in 1934, which also created the Brazilian Forestry Service. This was the predecessor of the Brazilian Forestry Development Institute (IBDF), set up in 1965 through revisions to the Forest Code (Law No. 4,771/65), but which was subsequently absorbed by an

environmental "super-agency", the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA) in 1989. Natural forests are considered by the 1988 Constitution to be a national patrimony and therefore the domain of IBAMA. The federal government also licenses plantations, subject to environmental impact assessment requirements (EIA/RIMA) when they exceed specified size limits (over 1,000 ha).

While the Forest Code permits forests in the Amazon to be utilized for timber extraction, such extraction from the Atlantic Forest has been prohibited since the early 1990s, due to dwindling stocks. The Forest Code goes on to stipulate that natural forests should be subject to sustainable management, but does not clarify what this implies. Specific regulatory requirements for Sustainable Forest Management Plans (PMFS) were imposed in steadily more rigorous fashion over the ensuing decades through administrative regulations and norms (particularly Normative Instruction #80, 1991, which specified required elements of a management plan, including 100% inventories and minimum harvest cycles). IBAMA enforces compliance with the Forest Code through its regional offices in each state, with the support of armed forest police battalions, since confrontations with illegal loggers have tended to be violent. On the other hand, lax enforcement of forest management criteria has often led to charges of bribery and corruption.

Although state governments have tended to be critical of IBAMA's forest enforcement role, this function has in general not been included in a more general trend toward federalization of enforcement functions to state environmental agencies. Several Amazon states, notably Acre, Amapá and more recently Amazonas, have adopted pro-active forest policy strategies, including support to community forest management projects and pilot concessions. Such distinctions in development of forest policy are due to different perceptions of the vocation of their states' economies on the part of regional political leaders and stakeholders.

Ownership and Tenure

Comprising the largest share of the Amazon forest, the largest remaining tropical forest biome, Brazil also holds the majority of the rapidly dwindling Atlantic Forest. Brazil's remaining natural forests suffer from severe problems of deficient, often overlapping land tenure definition. Such deficiencies act as a deterrent to rational forest management and hence to certification. Property titles are often of spurious legality, due to the practice of "*grilagem*",[1] particularly in the Amazon, where multiple tier property titling is common. Despite this, there is considerable public land in forests, in which potentially viable tracts for certified management concessions have been identified along with stakeholder consultation (Verissimo et al. 2000; Barreto & Arima 2003). Although these areas served initially as the basis for a governmental proposal for creation of new national production forests covering about 10% of the Amazon region, this proposal has

[1] Literally, "cricketing" (from *grilo*) – owing to the practice of fabricating false deeds and putting them in a box along with a few of these creatures, whose consumption and defecation age the papers.

now been expanded to include concessions on an array of public forestlands, including National Forests and other untitled lands. Discussions of this proposal among stakeholders has now led to a conciliation between an approach focused on corporate concessions and an alternative approach promoting partnerships between timber companies and communities in settled areas (Lima et al. 2003).

Indeed, this matter has not stopped short at the option between publicly owned concessions and private/community partnerships. The continuing regulatory pressure on illegal forest operations near settled areas in the so-called Arc of Deforestation[2] has led to demands by the timber industry to regularize its access to use of these and other forests in the public domain under government-approved management plans. Such an approach could potentially legalize timber extraction in a considerably larger area of "*terras devolutas*" (public unclaimed lands) in the Amazon region. Governmental promoters of this policy anticipate that this process will increase demand for certification of sustainable origin, since its regulatory requirements emphasize socio-environmental care.

In the Atlantic Forest region, which holds the majority of productive tree plantations, land tenure is better defined, after up to five centuries of occupation since colonization. In some cases of industrial forest establishment, companies have found it convenient to contract with their neighbors to produce trees, as a way to diminish the need to purchase land, hence minimizing criticism of tenure concentration. However, rights over tree products arising from partnership schemes with independent outgrowers need to be better defined in such contracts. In FSC certification, clear land title is usually required as a precondition. The possibility of stable and permanent or long-term usufruct agreements[3] by third party forest managers should be compared with the relative socio-environmental desirability of distinct institutional and property rights structures.

A further issue associated with property rights in the same region has to do with the sustainable use of areas that by law should be left permanently intact for environmental protection (APP). Such areas include steep slopes and hilltops, and riparian zones. According to the same law, 20% of private lands in the Atlantic Forest region must be dedicated to forest reserves. In practice, rather than obeying the forest code, agropastoral proprietors occupy these lands and cultivate them with annual crops or pastures rather than protecting them, while industrial forest plantations in general observe the Code. Revisions in the Forest Code under consideration in the Senate would permit small farmers to use part of these lands for agroforestry or small-scale tree lots for sustainable wood and NTFP production.

[2] The Arc of Deforestation is a huge swath of originally forested land in the eastern and southern fringes of the Amazon basin, which has been the target of much recent settlement and agroindustrial expansion pressure.

[3] "Usufruct" implies long-term rights to forest products but not ownership of the land on which forests are located.

Markets

Markets for Brazilian forest products are highly segmented by origin and type of timber as well as final demand segment. Brazil is simultaneously the world's largest producer and consumer of tropical timber. In fact, 86% of the 26.5 million m^3 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 m^3/year (log equivalents), 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. Owing to inferior and irregular quality of planed native lumber, variable mechanical characteristics of poorly delimited species, inadequate post-harvest treatment and other factors, Brazil's furniture and associated markets (flooring, doors, panels, etc.) are increasingly reliant on planted forests, agglomerates and synthetics. Plantation produced short fiber eucalyptus cellulose is a global market commodity which Brazil dominates, although domestic demand for pulp and paper is growing and supplies of pine and eucalyptus fiber are projected to be insufficient in the near term. Brazil has five million hectares in plantations, of which 95% are exotic eucalyptus and pines (FAO 2000).[4] Recognition of the need for long-term low interest capital for forest establishment has recently stimulated the offering of new credit lines by the national development bank and the family farm administration. Whether these initiatives will be sufficient in the near term to respond to growing demand, and whether such demand can be cajoled into being more insistent on socio-environmental criteria in the conditioning of this expansion remain to be seen.

Forest plantations in Brazil supplied 102.9 million m^3 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, lumber, plywood and panels.

Exports of wood products, accounting for 14% of Amazon timber production (Smeraldi & Verissimo 1999), and as much as 40% of Brazilian wood pulp is destined primarily for Europe and Japan, while a larger share of paper exports is bound for the Southern Cone. Wood product exports from Brazil constituted around 2.7% of global exports of these products in the year 2000 (ITTO 2002).[5] Exports of wood and pulp and

[4] These official statistics reported to the United Nations Food and Agriculture Organization-FAO by the Brazilian government (FAOSTAT, 2000) have been estimated by national enterprise groups at around 4.8 million ha (André de Freitas, pers.comm.).

[5] 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.

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.).

III. THE EMERGENCE OF FOREST CERTIFICATION

Initial Support

The movement toward forest certification in Brazil began as a consumer-driven phenomenon, corresponding to a quest for competitiveness in the context of global sustainability. Northern consumers' willingness to pay for forest products of sustainable origin acted as an incentive, leading to differentiated access to increasingly segmented world markets (May 2002).[6] The emergence of a certified tropical timber segment in Brazil began with a combination of such niche consumer demands and the threat of environmental boycotts from the North as consumer perception linked deforestation to the tropical timber trade (Azevedo 2001).

In the case of the industrial forest segment, compliance with ISO 14.000 series in the cellulose processing stage to access a discriminating final demand segment in Europe was a first step toward adoption of complementary standards relating to planted forests. Industrial associations in this segment began to articulate an interest in standardization as early as 1991, when they first launched the idea of a national certification scheme (see Standards, below). 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 (IIED 1996). 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.

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 panel, pulp and paper and industrial charcoal

[6] However, it is difficult in hindsight to consider that the export market acted as the principal driver toward certification, since exports of certified cellulose and wood panels have been rather small proportionally (André de Freitas, pers.comm.).

segments,[7] 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 de 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 a clear way to communicate such change to promote consumer confidence is through independent external audits and certification.[8] In response to consumer preoccupations and buyer pressures in importing nations, leaders in the Brazilian market pulp and plywood industries were quick to adopt FSC plantation forest management standards, once market leaders took the initiative to raise the bar.

In the Amazon region, importing consumer market preoccupations have been even more influential as market drivers toward forest management certification than has been the case with the pulp and panel industries (André de Freitas, personal communication). The threat of boycotts against rare tropical timbers such as mahogany has been an additional spur toward adoption of certification.

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).[9] External, independent auditing by foreign certifiers of forest resource use and management was perceived to represent another related channel for foreign meddling, part of a protectionist backlash against growing Brazilian competitiveness.

Institutional Design

Steps toward FSC-Brazil

Leading socio-environmental organizations joined forces with industry in 1997 to create an FSC Working Group to define nationally appropriate criteria for forest plantations and management of dryland forests in the Amazon. The Working Group was initially housed at WWF-Brazil, and relied upon international support channeled through

[7] 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.

[8] This affirmation is based on a number of personal interviews with wood products manufacturers at the April 2004 Fair of Certified Forest Products in São Paulo.

[9] In retrospect, the Malaysian "sellout" turned out to be quite a bit less threatening than initially imagined, since the complexities of Brazilian bureaucracy and additional payoffs to permit timber extraction, transport and export proved to be beyond even the most savvy Asian timber company executives.

the WWF networks to cover the development of nationally agreed-upon standards. National NGOs and certifiers were engaged in a protracted debate on the socio-environmental content of the standards, as well as in their field-testing.

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. The latter were recognized by FSC International in 2002, while the norms for plantations have not yet been recognized by FSC International. The Working Group was later transformed into an FSC-affiliated National Initiative (see www.fsc.org.br). There is interest in Brazil in transforming FSC-Brazil to a national accreditation body, a role that has been retained by FSC-International. This could potentially augment the number of national certifiers, thus reducing costs (André de Freitas, personal communication).

Simultaneous with the elaboration of national indicators, several FSC-accredited forest certifiers had launched their activities in Brazil. Imaflora, a Brazilian NGO based in the state of São Paulo, had initiated forest and agricultural certification activities in 1995, seeking to establish a hitherto unavailable frame of reference for such activity in the southern hemisphere. Imaflora led the field in Brazil through its association with the Rainforest Alliance SmartWood^{cm} program headquartered in the US, following a model combining certification with training and promotion of the newly certified industry. In its inception, support from the MacArthur and Ford Foundations, GTZ and NOVIB were critical to successful launching of this endeavor.

Imaflora was soon joined by Brazilian affiliates of Scientific Conservation Systems (SCS), based in Oakland, California and of the Societé Generale de Surveillance (SGS), whose Qualifor Program for forest certification is headquartered in South Africa. These 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.

The CERFLOR national standard

The reaction of some industry groups to what were deemed excessive and inflexible FSC norms spurred determination by industry associations such as the Brazilian Silvicultural Society (SBS) to work toward the creation of a national forest management standards-setting process parallel to FSC. This system, entitled CERFLOR, is administered jointly by the national standards and metrics institute INMETRO (a government agency) and ABNT (a quasi-private agency specialized in capacity-building and monitoring application of technical norms such as the ISO series throughout industrial segments in Brazil). INMETRO accredits and ABNT trains certifiers for forest management and chain-of-custody systems.

CERFLOR was initially proposed by industrial organizations as early as 1991, but its institutional structure only began to be defined beginning in the late 1990s, by which time the FSC Working Group had already advanced substantially in the definition of the national standards. Though the FSC process benefited from substantive involvement by

industry, representatives of CERFLOR considered it desirable to create the parallel standard "to offer an alternative, and to stimulate the evolution of concepts". Furthermore, it represented a protective response on the part of the industry to international environmental groups' concerns regarding plantation certification by FSC-accredited organizations. Finally, CERFLOR proponents believe that its process, by engaging government agencies directly in the discussion of standards and monitoring their application and compliance, promotes dialogue to improve regulatory procedures (Rubens Garlipp, SBS, personal communication).

Standards

The national FSC standards-setting process followed the overall structure of FSC principles and criteria, with the integration of national labor, indigenous peoples' and land tenure codes to complement forest management protocols and environmental protection features. The standards were subjected to a series of stakeholder consultations over several years, a time consuming and intensely participative process that was open to public discussion. They now constitute a broadly accepted set of indicators and criteria for forest management, environmental protection and social relations of production (Walter Suiter, personal communication). Although FSC-International has endorsed application of the Brazilian forest management standards, it has not yet done so for plantations.

After field tests, the CERFLOR standards have now been applied in practice on a trial basis in 50,000 ha of pine plantations controlled by the International Paper subsidiary, INPACEL, in the state of Paraná. The certification process for INPACEL, carried out under contract to Bureau Veritas Qualifor International (BVQI), the only accredited CERFLOR certifier to date, also involved participation by international monitors associated with the Programme for the Endorsement of Forest Certification schemes (PEFC). Initially applicable only to plantations, CERFLOR has now adopted standards for natural forest management, which are awaiting field testing. CERFLOR follows norms similar in name to those established by FSC in Brazil, but are considered more process-oriented than FSC, and more flexible as regards observance of international environmental norms, socio-cultural impacts and labor relations with third party suppliers.

CERFLOR, listed as a national scheme by PEFC, became operational in early 2003, and now seeks international co-recognition as a forest management certification standard. In seeking such co-recognition, CERFLOR's standards-setting process has been placed under scrutiny for compatibility with international criteria. Some critics complain of lack of transparency in the CERFLOR process, absence of social and environmental groups on its technical panels and unavailability of standards and certification process details to the public (Greenpeace 2002; Timmer 2004). Indeed, CERFLOR's scheme for stakeholder representation is markedly distinct from the tripartite structure of FSC, with panels of consumer groups, producers, regulators and "neutral" parties (academics, research institutions). Its standards and certification procedures have been available for discussion on-line during their development, but standards documentation, once adopted,

is only available to interested parties for a fee, on the grounds that the accreditation organization relies on such fees to cover its institutional maintenance costs.

Government officials welcome CERFLOR as part of a generalized move toward independent auditing of forest management (Nelson Barbosa Leite, PNF/MMA, personal communication). However, most Brazilian pulp and paper manufacturers have opted for FSC certification as a more broadly accepted standard (André de Freitas, personal communication).

Forestry Problems

Certification sought to recognize good forest management in the Amazon and in plantations. Its principal challenges have been associated with (1) illegal logging, forest degradation due to selective but destructive extraction, and deforestation in the Amazon and (2) socio-environmental conflicts associated with aggressive expansion in plantation forests in the coastal zone. As a voluntary approach to industrial regulation, it could not resolve land use conflicts between rural households and forest enterprises at a regional scale, nor supplant public regulatory requirements. Rather it was hoped that certification would raise the bar on industrial performance and through enhanced competitiveness, encourage broader sectoral change.

The rationale for certification, besides assuring a potential price bonus, is to maintain markets conquered by progressive firms 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. Since a good share of such wood originates from legally permitted deforestation activity by smallholders in the process of frontier expansion and over half from continuing illegal logging in parks and indigenous areas (Smeraldi 2002; André de Freitas, personal communication), the overall effect of readily available wood is to depress prices. Some buyers have been able to offer more for certified products from a reliable source, which has sustained the attractiveness of the move toward certified forest management, but this is still chiefly directed at discriminating overseas markets.

Problems that have emerged in plantation forestry include impacts on water, soil and biological resources, property and land access constraints for smallholders caused by dominance by large-scale industrial monocultures, and conflict over indigenous lands. The industry has responded with actions to protect riparian areas with native species, beneficial also to the control of pests in large monospecific forest stands (blocks are often on the order of 1,000 ha in size) primarily formed of pine and eucalyptus. Yet organized opposition persists against further expansion of large sole owner holdings for forest plantations. Outgrower schemes with regional landowners have been able to supply a relatively small but growing share (approximately 20%) of the industry's raw material, leading to less animosity.

Roadblocks and Challenges

One of the challenges to success in natural forest certification is to overcome resistance on the part of some elements in the national forest regulatory agency, IBAMA, toward independent voluntary certification. Although a good part of the norms required by FSC go beyond the IBAMA forest management requirements,[10] certification may be perceived by local regulatory officers as an effort to facilitate licensing of forest management plans by IBAMA. In fact, however, experience suggests efforts to achieve certification bring forest operations under more intense scrutiny. In some cases this has called attention to outstanding management or procedural deficiencies, resulting in fines and/or harassment.

To some extent, IBAMA personnel view certification of forest operations as a ploy on the part of some firms to obfuscate their extraction of timber from other areas not within management plans nor titled to the forestry enterprise The proposal described above regarding concession of public forests for sustained management responds in part to the scarcity of titled, accessible and productive forestland in areas of sufficient scale to enable long-term wood production and forest rejuvenation (Nelson Barbosa Leite, PNF/MMA, personal communication).

Other areas constituting important challenges include financing of the costs of conversion to certified standards , labor and managerial training, organizational capacity building for community management projects, community-enterprise interfaces, such as partnerships with outgrowers and partner enterprises. Conversion costs in tropical forest management typically include the fairly modest costs of certification itself (estimated at around 0.4% of average wood sales value) (May et al. 2000). More significant is the investment in skidders to replace outmoded bulldozers, as well as other equipment necessary to undertake reduced impact logging (geographical information systems, for example). Labor costs and preparation time involved with inventories, felling and road-building plans, vine cutting and block demarcation add to the equation. Practical training of field crews is essential to avoid needless felling of non-merchantable trees and destruction of adjacent juveniles, as well as reduced impacts of skidding and storage patios and the local road network.

Transactions costs relative to land acquisition, community relations and compensation tend to be relatively insignificant in monetary terms but are time consuming and can impede implementation of management plans if not carried out

[10] For example, IBAMA requirements demand compliance with legal restrictions on land use such as permanent protection areas, but not the establishment of a permanently untouched forest area for comparison purposes of 5% of total managed area to assess management impacts on biodiversity. FSC standards are analytical and evolutionary, allowing for pre-requisites and progress over time, while IBAMA either approves or cancels a PMFS license. Furthermore, FSC standards apply to concerns beyond the management practices themselves, such as corporate/community relations, road-building, overall land use planning, etc., which are not incorporated in IBAMA requirements (André de Freitas, pers.comm.).

sensibly. Overall, these costs can add significantly to timber extraction operations and can affect the "social license to operate". Yet those who have embarked on such practices have found that price premiums (to the extent these exist), and access to niche markets have compensated for additional costs.

IV. THE REACTION TO CERTIFICATION

Forest Policy Community and Stakeholders

Debate continues in the policy community over a number of substantive issues associated with forest policies with implications for certification. These include: large-scale forest concessions vs. settler-enterprise accommodation as alternatives for Amazon forest management; FSC vs. CERFLOR norms and certifiers (see Standards, above); and the relationship between governmental regulation and voluntary certification schemes (see Roadblocks and Challenges, above).

An innovative proposal for the integration of "forest families" with wood products enterprise arose out of the MAFLOPS project in Santarém-Pará, in the Amazon basin. Small farmers are legally permitted to deforest up to three ha annually for agricultural production. Some such farmers have entered into a partnership with the local enterprise, which offers support toward land titling, farm-level and community forest management and fair wood pricing. The local wood products enterprise is now seeking certification. This experience has now served as a model for conciliation and convergence of interests between what were until then mutually exclusive land users in frontier communities (Lima et al. 2003). Both this model and the proposal for forest concessions on public lands arose in response to a recognized need for greater regulatory control over illegal timber extraction in the Arc of Deforestation in the Amazon (see discussion under Ownership and Tenure, above).

Forest Owners

There has been surprisingly little ex-post assessment of how forest owners have responded to their role in certification. In many cases of successful certified enterprise development, forest ownership or usufruct is usually closely tied to forest processing enterprise. However, Almeida and Uhl (1999) found that conventional logging enterprises in the eastern Amazon that purchase timber from third parties have higher returns on investment than similar vertically integrated enterprises. Industry incapacity or unwillingness to engage in sustainable forest management has led to the emergence in some areas of "forest owner-managers" not directly integrated with the timber enterprise. Industrial and community certification experience to date in Brazil helps shed light on the role of forest ownership as an option in certified forest production systems.[11]

[11] The following case study material is derived substantially from May (2002), with updates by stakeholders in each case.

Klabin Paper and Cellulose, S.A., a one hundred year old company, is the largest integrated paper producer in Latin America. One of the first certified forest operations in Brazil, Klabin has 230,000 ha of certified pine plantations in Paraná in southern Brazil and is in the process of certifying other holdings in neighboring Santa Catarina. The company has a history of working with external wood suppliers. Outsourcing has been a problem for certified wood products manufacturers, who are often forced to obtain supplies from firms whose forests are not certified, thus making it necessary that they guarantee the integrity of the chain of custody of certified products. In the Klabin case, several large outgrowers also became certified as a group, thus guaranteeing a sufficient flow of certified raw material to meet demand. Because certification of surrounding forestlands also required that they be titled, pending land tenure disputes were resolved in the process, also ensuring that substantial areas of native forest were permanently protected, as part of management plans.

In the case of certified management of native Amazon forests, where the great diversity of timbers and orders for wood from specific species fluctuate as tastes shift among buyers, the need to integrate with third party suppliers is also paramount. Some members of the still small group of certified forest enterprises in the Amazon have experimented with outsourcing and stimulation of certification among local forest owners. Cikel Brazil Verde S.A., the largest certified enterprise in the region, with 140,658 hectares under certified management, has initiated support to community-managed forests in its vicinity. Gethal, a plywood enterprise in the state of Amazonas initially supplemented timber from its 40,800 hectare estate in Manicoré with supplies from a neighboring forest owner (uncertified) and from a complementary certified forest operation – Mil Madeireira (formerly Precious Woods) – in Itacoatiara, with which it swapped certified hardwood for the softer woods it requires for plywood manufacture. These arrangements have since been suspended for administrative reasons.

Small-scale community-based forest enterprise for timber and NTFP is often highlighted in the development literature, but it must be admitted that progress has been slow in certifying the 15 community forest management schemes that have sprung up over the past decade throughout the Brazilian Amazon (Amaral & Amaral Neto 2001). By late 2002, the only certified enterprise was the Porto Dias project, on 800 hectares in Xapuri-Acre, but in 2003, another five community enterprises either initiated or completed certification. (See data under Current Status, below).

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. One of the advantages of such enterprise within extractive reserves is the fact that families do not own the land – they have exclusive long-term usufruct rights, which are hereditary rather than transacted in the market, for land maintained under sustainable forest use. This removes the incentive to clear forest for other uses, perceiving short-term gain.

Current Status of Forestland Certification

As of April 2004, Brazil ranked fourth among all nations in terms of the number of certified forests (42), and eighth in regard to area (slightly under 1.6 million hectares[12]), but remains the leader in terms of FSC certification in the tropics. Of its certified forest area, 529,079 ha are native forests of the Amazon and only 69 hectares in the Atlantic Forest. The latter are managed only for NTFP; native forest management for timber is no longer permitted in the Atlantic Forest as a conservation policy. There are over one million ha (including native forest reserves) of certified industrial plantations, nearly all in the Atlantic Forest biome.

Trends in FSC certification from 1997 to 2003 show a steady exponential increase in the number of certified operations, with a considerably larger share arising from plantation sources. The growth in certified area was on the order of 10% in 2003 (FSC-Brasil 2004). While the area in certified plantations was substantially greater at the outset of the certification process in the mid-1990s, in 2003 for the first time, newly certified natural forests (54%) outstripped plantations (46%).

IMAFLORA had been responsible for certifying 53%, monitoring the majority of Brazilian certified forests. The two other Forest Stewardship Council (FSC) accredited organizations that have certified operations in Brazil are Scientific Certification Systems, Inc (30%) and Société Générale de Surveillance Forestry, Ltd. (13%) (Jones 2003).[13]

Current Status of the Certified Marketplace

The chart in Figure 1 below traces growth in the number of products from chain of custody certifications originating from natural forest management and plantations.

The data show a nearly exponential rise in number of certified products and chain-of-custody certifications over the years. The role of export markets is important in stimulating adoption, but with the creation of the Certified Wood Buyers' Group in 2000, that now includes 64 Brazilian wood-using corporations, retail outlets and institutions, more domestic users are demanding certified raw materials (Amigos da Terra 2003). The vast majority of such products are still being derived from planted eucalyptus and pine, but a significant effort has now begun on the part of Amazon timber enterprises, to expand their numbers and output so as to meet the expanding demand for certified native timber species. These goals are being pursued through expansion in the number of enterprises associated with the Certified Wood Producers' Group, created in mid-2003,

[12] Certification figures include both FSC (41 forests and 1,547,719 ha) and CERFLOR (1 forest on 49,942 ha). Sources: FSC-Brasil (2004); http://www.internationalpaper.com.br/docs/resumo.pdf.

[13] Although this source lists Skal as a forest certifier in Brazil, its only certification has been suspended (Andre de Freitas, pers.comm.).

and as yet only loosely linked with the Buyers' Group, under the guidance of a consortium of national NGOs.

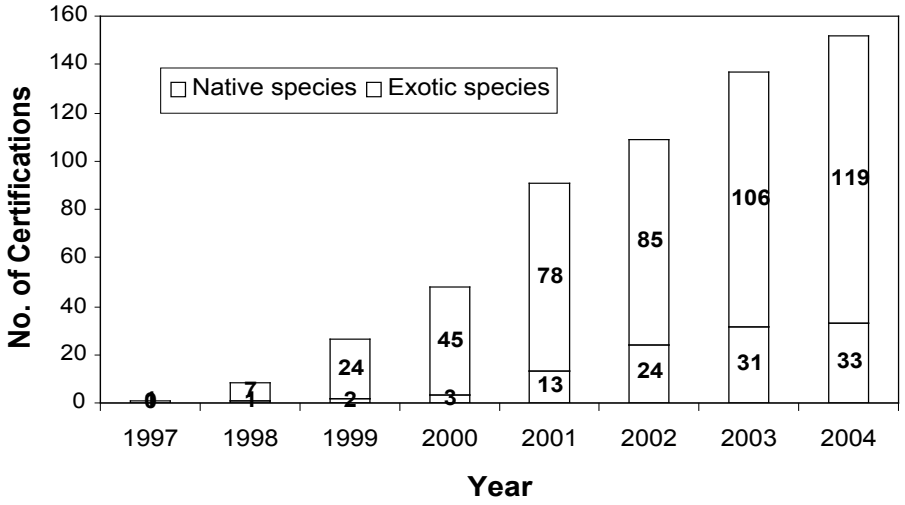

Figure 1. Chain of custody certifications, in cumulative number of products certified, by year, in Brazil. Note that 2004 includes certifications only up to April. Source: FSC-Brasil (various years).

One tactic for enhancing the number of certified forest managers in the Amazon is to seek out those enterprises which are engaged in medium quality forest management (about 10% of all timber extraction area in the region), which could be recognized as meeting (necessarily more flexible) regulatory and FSC criteria, and working with them to progress toward certified status. Such a proposal will face hurdles in the regulatory bureaucracy, but it offers the opportunity to incorporate new areas, with the potential to more than triple the area under certified management in the medium-term (Adalberto Veríssimo, personal communication).

V. EFFECTS OF FOREST CERTIFICATION

The several distinct forest origins, product destinations, and enterprise structures present in Brazil's certified forest constellation suggest the effects of certification may be summarized as in Table 1, below. This section provides greater detail on the effects of certification along the variables of power and sustainability.

Power

As mentioned above, the external bargaining chip of certification is not readily parlayed into greater acceptance on the part of national regulators. An exception in this

sense is related to community forest management enterprises, which are explicitly dedicated to improving socio-environmental conditions of forest product extraction (both timber and NTFP). Alliances with progressive Amazon state governments such as Acre and Amapá, and promotion by international and regional NGOs coupled with efforts to forge forward links with local processing enterprise have fortified community enterprises' bargaining power in their respective market niches.

With regard to plantation operations, industry leaders have readily adopted certification as part of a series of societal demands for corporate responsibility. Yet certification norms have not been without contention, leading to development of a competing set of national standards through the CERFLOR process, initially focused only on plantations. The effect of certification has enhanced the market power of those firms that have assumed leadership in the global market. The consolidation of such power may have promoted a greater degree of concentration in the industry over the past few years.[14]

Table 1. Effects of certification along sustainability and power dimensions by enterprise type in Brazil.

Enterprise Type/Effects	**Power**	**Social**	**Environ-mental**	**Economic**
Managed Terra Firme [Amazon]				
- Corporate	enhanced competition, regulatory problems	improved labor and community relations	considerably improved through RIL	enhanced access to markets
- Community (timber, NTFP)	may fortify political alliances	improved associates' conditions	very low extraction impact	access to credit and markets
Plantation [Atlantic] *				
- Corporate estate	may affect competitive-ness	improved labor relations	not substantial over ISO	some markets require

* Since there is only one community NTFP enterprise certified in the Atlantic Forest, an **erva-mate** producer on 69 ha in southern Brazil, it is difficult to assess the relationship between certification and improvements along these lines specific to this biome. The respective effects for community enterprises in the Amazon can be taken to apply equally in this case.

[14] Mergers and acquisitions of forest assets and industries by leading national pulp and paper manufacturers such as Klabin and Aracruz responded more to a decision by Cia. Vale do Rio Doce to get out of the forest sector, and to their exceptional profits from overseas sales than any benefit derived from certification. Aracruz as yet has no certified plantations, except for one purchased from Klabin in southern Brazil. However, it cannot be ignored that the largest five or so pulp and paper companies in Brazil control over half of their respective markets.

Social

Social accommodation with neighboring communities has tended to be a favorable result of certification, although there are few cases to date of communities becoming partners or suppliers of certified timber or NTFP to corporations. The small number of certified community enterprises and their insignificant management scale minimizes their overall impact on the socio-environmental sustainability of Amazon forest peoples. The "forest family" approach to partnership between small forest landowners and medium timber enterprises may offer greater opportunities than community enterprise development for incremental scale in certified forest management in the Amazon.

Social benefits of certification in the case of plantation forests have been fairly modest, though direct employees have been assured access to health and education. The role of certification with regard to labor relations practiced by third-party service providers (such as charcoal kiln operators) is not always favorable, though some progress has been made in reducing child labor in such activities. Accusations of land concentration and expulsion of smallholders have continued in some cases. Plantation forest enterprises have embarked on outgrower schemes such as the "*fomento florestal*" system in Espírito Santo and Minas Gerais in part as a response to such criticism. Overall, the social impacts of certification have been the most uneven among the enterprises appraised (André de Freitas, personal communication).

Environmental

Environmental benefits of reduced impact logging are substantial, despite the fact that any human intervention in natural forests is likely to result in biodiversity loss, either directly or indirectly (Putz et al. 2000). In adopting extremely low impact timber extraction (employing animal traction rather than machines, and very low extraction rates) combined with multipurpose management objectives, the biodiversity impacts of community forest enterprises can be considered the lowest among firms engaged in sustainable management.

With regard to environmental performance, certification has made it imperative that plantation enterprises observe land use codes, thus ensuring maintenance or recuperation of riparian areas and hillside vegetation. This has led to some alleviation in criticism of the environmental impacts of monospecific plantations.

Economic

Although demand is growing for certified tropical timbers both within Brazil and overseas, the intensity of investment, continued difficulties in licensing and transport, unclear land tenure as well as conflict with competing land uses at the frontier, imply that the overall effect of certification has not been to dramatically enhance sustainability at a sectoral level, especially in the Amazon. Nevertheless, embarking on a certification strategy in most cases can consolidate the bargaining position of certified timber

enterprises with their buyers, as well as providing potential economic advantages. However, up front costs are significant and not readily financed by national development banks or other rural credit lines. Private bankers such as ABN-AMRO/Banco Real and the Amazon regional development bank, BASA, are now beginning to close this gap in available financing by offering investment credit to firms that commit themselves to attain certification.

With regard to community forest enterprises, they now effectively compete in markets that have been monopolistically controlled by intermediaries or by timber companies, or have launched new product lines in which larger firms have no comparative advantage (marquetry, musical instruments, design furniture). Partnership approaches such as the "forest family" proposal are not without dangers. First of all, partnership typically involves families in exclusive sale arrangements for timber, which can result in monopsonic relations with a timber enterprise. Prices will undoubtedly be higher, however, than those offered for timber currently obtained from clear-cutting for agricultural conversion. The question is whether family forests may indeed become economically viable as production units. There will be need for investment of returns from timber sale in perennial species and agroforestry systems that will only prove their capacity to provide for household necessities in the medium-term. If these returns are not capitalized and are simply liquidated in consumption, leading to continuing frontier migration of forest families, this approach will not substantially affect the currently unsustainable process of legal wood extraction for permanent conversion to agropastoral production in the Amazon.

Diversification by leading pulp and paper enterprises into the wood panel industry has also enhanced the stability of profits and built new market channels for plantation products, adding value to certified plantations. It is also fairly evident that involvement with outgrowers can reduce the enterprise's own land acquisition requirements, and may be more economically efficient, since labor costs are at least partially absorbed by farm households. Data from Minas Gerais suggest that the costs of eucalyptus under farm forestry per m^3 are on a par with those in the industry, and yields are only slightly lower (Bacha 2001). Outgrower schemes have thus far rarely been subject to certification, due to the incremental transactions costs involved, and the fact that stands are rarely contiguous, making monitoring more difficult.

There is very little in the way of certified community forest management in the Atlantic Forest, due to legal strictures against timber exploitation, which also extend to most NTFP extraction. Yet the option for certified agroforestry and NTFP enrichment in secondary forests is one of few means of fortifying the economic value of the highly fragmented remaining forest along the Atlantic coast. These land use alternatives are expected to substantially grow as demand increases globally for organic shade coffee, "*cabruca"* cocoa and products such as certified hearts of palm and native fruit juices derived from exotic species (some successfully transplanted from the Amazon). These socioeconomic options for smallholders are being linked with markets for ecosystem services such as terrestrial carbon storage, water resource protection, ecotourism and biodiversity conservation, all within a framework of certification, validation and

monitoring, offering attractive opportunities for "green" finance (May et al. 2003). Nevertheless, cases of successful implementation of such options are still few and far between, diluting their effects on behavior of most economic actors, whose activities continue to degrade the scarce native forest remnants.

Other issues to be explored

Intangible benefits obtained from certification processes, such as enhanced administrative capacity and human capital, and the recognition of community forest enterprises as players at a policy level are also deserving of mention in this context. In general terms, leaders in the certified wood products industry have also raised the bar on overall performance in the sector, making other actors aware of the need to adopt more stringent practices and to better husband threatened forest resources.

VI. CONCLUSION

There is clearly a strong continuing need for further research and monitoring of the effects of certification on the sustainability of local, enterprise and sectoral development in the forest sector. It will also be necessary to continually adjust certification procedures and norms to reach the greatest number of enterprises and forest area. Whether this comes from the creation of national norms and a greater number of national certifier organizations, thus bringing prices down, or by making FSC norms more flexible to variations and complexity in the industry remains to be seen.

Conciliation between public regulation and voluntary certification standards is called for, while beneficial partnerships among corporate and community enterprises and forest families will add synergy to the growing process of certified forest-based production in Brazil.

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