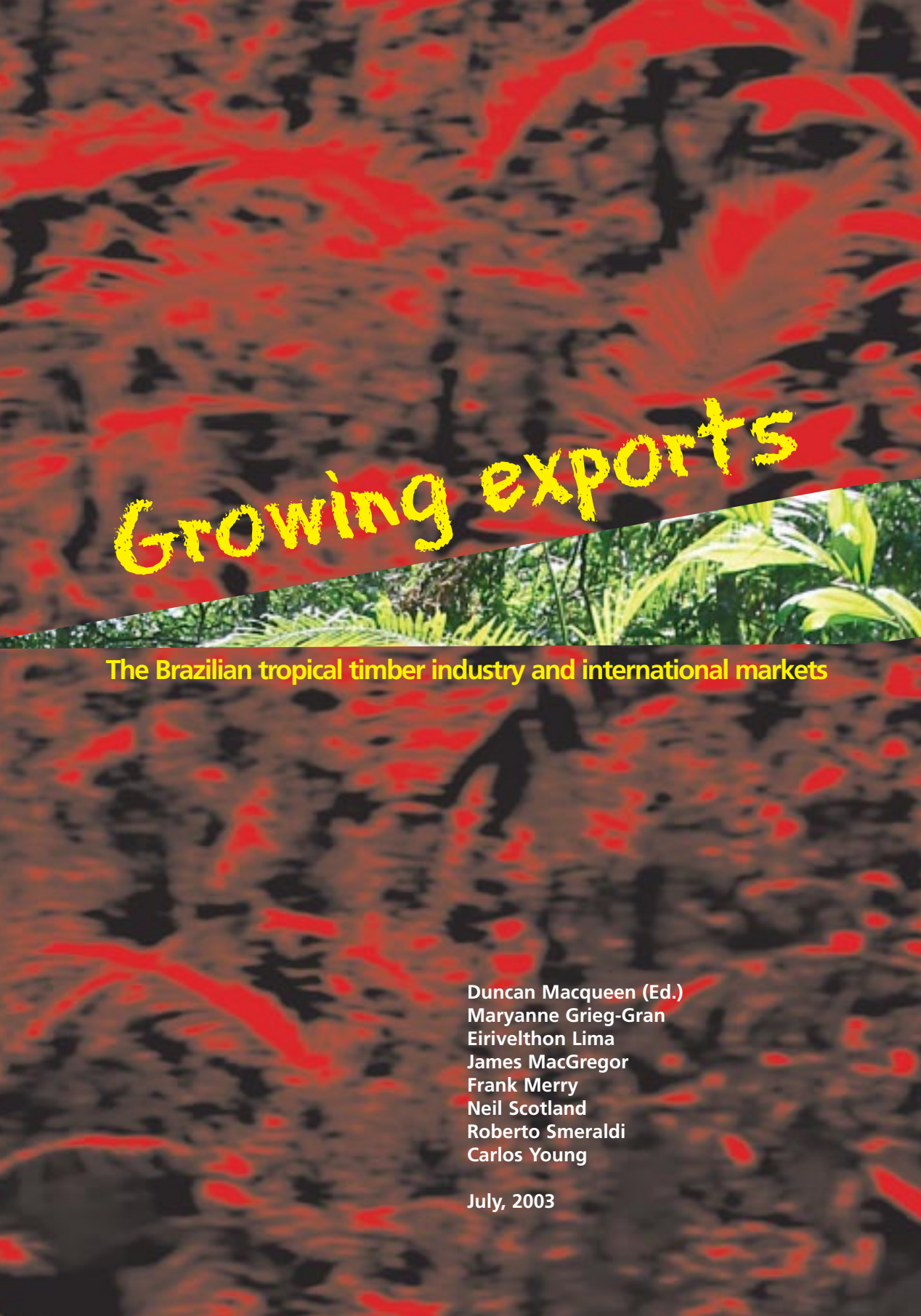

Growing exports

The Brazilian tropical timber industry and international markets

Duncan Macqueen (Ed.)
Maryanne Grieg-Gran
Eirivelthon Lima
James MacGregor
Frank Merry
Neil Scotland
Roberto Smeraldi
Carlos Young

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Correspondence should be addressed to:
Duncan Macqueen, Forestry and Land Use Programme, International Institute for Environment and Development, 4 Hanover Street, Edinburgh EH2 2EN
Tel: +44 131 226 6860
Fax: +44 131 624 7050
e-mail: duncan.macqueen@iied.org
Website: http://www.iied.org

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"English is a simple but hard language. It consists entirely of foreign words pronounced wrongly" - Kurt Tucholsky

Author Contact Details:

Maryanne Grieg-Gran
International Institute for Environment and Development (IIED)
3 Endsleigh Street
London WC1H 0DD
Tel: ++ 44 207 872 7325
Email: maryanne.grieg-gran@iied.org

Eirivelthon Lima
Instituto de Pesquisa Ambiental da Amazônia (IPAM)
Av. Nazare 669
CEP 66035-170
Belem
Pará
Brazil
Tel: ++ 55 91 2414647 / 2415495 / 2416700
Email: elima@amazon.com.br

James MacGregor
International Institute for Environment and Development (IIED)
3 Endsleigh Street
London WC1H 0DD
Tel: ++ 44 207 872 7327
Email: james.macgregor@iied.org

Duncan Macqueen (Editor / Lead author)
International Institute for Environment and Development (IIED)
4 Hanover Street
Edinburgh
EH2 2EN
Tel: ++ 44 141 226 6860
Email: duncan.macqueen@iied.org

Frank Merry
Instituto de Pesquisa Ambiental da Amazônia (IPAM)
Av. Nazare 669
CEP 66035-170
Belem
Pará
Brazil
Tel: ++ 55 91 2414647 / 2415495 / 2416700

Email: fmerry@vt.edu

Victor Prochnik
Instituto de Economia
Universidade Federal do Rio de Janeiro
Av. Pasteur 250
Rio de Janeiro
CEP 22290-240
Brazil
Tel: ++ 55 21 38735248
Email: prochnik@ie.ufrj.br

Roberto Smeraldi
Amigos da Terra - Amazônia Brasileira
Rua Bento de Andrade 85
São Paulo
CEP 04503-010
Email: foeamaz@attglobal.net

Neil Scotland
Rue Cardinal Lavigerie 23 (3rd floor)
Etterbeek
1040
Brussels
Belgium
Email: n_scotland@yahoo.com

Carlos Eduardo Frickmann Young
Instituto de Economia
Universidade Federal do Rio de Janeiro
Av. Pasteur 250
Rio de Janeiro
CEP 22290-240
Brazil
Tel: ++55 21 38735248
Email: young@novell.ie.ufrj.br

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EXECUTIVE SUMMARY

Brazil's forests comprise the world's largest timber resource. Historically they have contributed only a fraction of the revenues that could have been generated for Brazil's development. Current foreign exchange revenues from timber also fall well below their potential, since the domestic market absorbs 86% of total timber production. Moreover, the origin of much of this revenue has not been historically from sustainable forest management.

Negotiate a path through the minefield of multiple interests

Chapter 1 - Through its National Forest Programme (PNF) the Government of Brazil has set out targets to increase its share of the global timber market from 4% to 10% by 2010. It aims to increase the quantity of sustainably managed forest in private areas by 20 million hectares and simultaneously establish 50 million hectares of forest for sustainable production on public lands. Through such means the Government aims to ensure that the percentage of exports from sustainable sources rises from 5% to 30% by 2010. This study investigates how these ambitions might be achieved.

Multiple policies and institutions affect what happens to Brazils forests and wood products industry. Even greater is the diversity in people, both within and outside Brazil, who feel they have a stake in what happens to Brazil's forests. Environmental tensions exist between national development aims and the international preoccupations over climate change and biodiversity loss. Social tensions are evident in conflicts between the aspirations of rural colonists and the rights of indigenous forest dwellers. Economic tensions are apparent between large forestry operations and local community enterprises. Reconciling these multiple agendas will require a proactive approach of engagement to reach negotiated solutions within the forest sector.

Equally critical, it will require that those negotiated forest solutions be owned by the multiple Federal and State level, government and non-government agencies which have influence over realities on the ground. Deliberate and strategic infusion of a common vision about forests into those institutional mandates is a priority. Progress will be faster if the different elements of forest governance act in harmony.

Adopt the latest technology to adapt to moving markets

Chapter 2 - Trends in the international timber trade indicate that there is enormous potential for Brazil to capture an increased share of the global market for wood products. The depletion of forest resources elsewhere gives Brazil a natural competitive advantage in terms of its resource base. Nevertheless, the expansion in volume and value of trade is occurring in the competitive highly-processed sectors where market information systems, product design and trade restrictions (often non-tariff barriers and other trade impediments) play an important role. The big jumps in exports for Brazil between 1961 and 2003 have coincided with policies underpinning major advances in processing technology.

Transport costs underlie the predominance of intra-regional trade within the global timber marketplace. Brazil might therefore focus its export strategy on Southern American markets, North America and Europe. Breakthrough in the latter two markets will require advanced market intelligence, processing standards and environmental protocols. Overseas timber marketing councils, a policy environment which encourages investment in processing technology and state of the art training in forest management and processing are three pillars which will be central to the government's aims.

Link supply with sustainable management

Chapter 3 - Brazil's forest management context has changed dramatically over the last decade. In the 1990s, the dominant pattern was of widespread illegality in forest management activities within privately owned forests (80% of the total supply). In 2003 we now have a new situation in which the dominant form of timber supply is from legal deforestation from land clearance in new agricultural settlement schemes (75% of total supply). This constitutes a worrying over-dependence on a non-sustainable supply model which could easily result in the development of over-capacity in the sector - with long term negative implications for the forest resource. Significant reductions in formal illegality do not necessarily signify an improvement in the social and environmental performance of economic activity - indeed attempts at forest management with long-term forest employment prospects have often now been replaced by a reliance on deforestation without any long term forest employment prospects. Greater confidence in the pernickety export markets is unlikely to be engendered by this shift in timber supply, despite its greater formal legality.

Current patterns of timber supply threaten both exports and sustainable forest management and would benefit from immediate attention through taxation mechanisms that make timber supply from forest management competitive with timber from forest clearance. A link must be re-established between timber supply and forest management. Attempts to expand exports and make them more sustainable are unlikely to make headway unless they can be underpinned by a policy environment which eliminates the competitive advantage of the offer of cheap timber from land clearances.

Use foreign investment - don't be used by it

Chapter 4 - Contrary to the expectations of some within Brazil, the influx of foreign direct investment (FDI) into the forest sector has been quantitatively insignificant (forest FDI accounts for 2% of total FDI within Brazil as compared to forest production which accounts for 6.9% of total GNP in Brazil). The origin of FDI has also been extremely varied, rather than dominated by Asian logging companies, with European, American and Japanese capital established in the region for some time. The tendency has been for FDI to be associated with acquisitions rather than greenfields investments, with a trend towards larger companies and towards export markets. There are strong links between FDI and stability of tenure and investment in management.

Despite some notable exceptions in which predatory timber extraction, primarily mahogany, has been financed by foreign investments, the majority of FDI is associated with enhanced

environmental concern, improved management practices and more efficient processing, often linked to land acquisition. In order to encourage such positive investment the government will need to consider measures to increase credit flows to companies incurring the additional costs associated with forest management. the removal of log export bans for those companies achieving forest certification would provide an additional incentive. Improved tenurial security and the cessation of agricultural settlement in forest areas (which floods the market with cheap timber) would be similarly long-sighted. The eventual establishment of well-enforced long term logging concessions in national forests would ensure the optimisation of FDI which supported the objectives of the PNF.

Replace bureaucracy with capacity

Chapter 5 - From the perspective of Brazilian timber producers and exporters, there are a number of barriers which affect export capability along the value chain. The most significant obstacle in forest operations themselves is the cost and time associated with ever-changing government bureaucracy surrounding licensing, approval of annual plans and transport permits. The difficulties in accessing forest lands, the resultant rise in price of timber supplies, and the problems of assembling sufficient volumes of limited numbers of commercial species are additional issues. These problems particularly affect small and medium-sized enterprises which encompass the majority of Brazilian producers. A system is required in which emphasis shifts away from paper administration (which should be greatly simplified) towards active monitoring in the field of approved plans (to which reallocation of funds should be directed). If (and only if) the cheap supply of timber from land clearance can be dealt with, the establishment of concessions in public forests may be one way of improving access to timber resources while providing more reliable monitoring.

In the processing sector, Brazilian producers and exporters suffer from poor profitability due to a combination of outdated equipment, poorly trained staff and inadequate management. There is a need for policies which encourage sound investment in technology. There is also a need for a twofold strategy of improved professional training coupled with increasing attention to labour standards - so that improved levels of training are rewarded by better pay and conditions.

From the perspective of producers and exporters, breaking into the export trade is hampered primarily by a lack of specific information regarding timber markets (rather than the general export information currently provided). The fact that between 60% and 90% of timber exports are managed by intermediaries introduces a barrier between production and processing and the development of export markets. The oligopsony of these intermediaries leads to reduced timber prices and reduced profitability of those extracting timber. Legislation could be enacted to avoid such market imperfections. It might strengthen the position of those who do wish to furnish export markets directly with timber from sustainable management. More importantly, there is an urgent need for a timber marketing council which provides the sort of specific timber market information to producers which can help them assess their options with greater clarity.

Providing the necessary guarantees to access credit at reasonable levels of interest continues

to be a major problem particularly for the small and medium enterprises. Improvement in land tenure and other measures to improve the security of natural forest resources against invasion, fire etc. is one necessary strategy. Subsidised credit lines are another.

Care for customers through quality above cost

Chapter 6 - From the perspective of buyers of Brazilian tropical sawnwood, plywood and veneer, the Brazilian timber industry has not realised its potential in the global market place. Brazil is felt to produce a lower quality product than competitors (especially those in South-East Asia). The industry continues to compete by selling at lower cost and relying on the diverse properties of the principal hardwood timbers. Amongst buyers there is a degree of frustration at the general lack of customer service provided by Brazilian industries - failures to meet product specifications flexibly, reliably and on time. Much of this stems from the poor level of technological investment and staff training which occurs in Brazil. Improved training courses and credit subsidies for technological investment are obvious solutions.

The perceived lack of information both about Brazilian producers (for importers) and about importers (for Brazilian producers) is a major deficiency which afflicts Brazilian competitiveness. This stems in part from the insufficiently inclusive or proactive timber associations operating within Brazil and insufficient government / industry attention to marketing support for Brazilian timbers overseas (e.g. through regional Brazilian timber councils), especially in the light of the staunch support competitor's timber receive from their respective governments. Any strengthening of timber associations within Brazil must continue to improve product and environmental quality standards so as to counteract the negative image of logging in the Amazon.

The high level of transaction costs and bureaucracy is perceived by importers of Brazilian timber to be juxtaposed with inadequate government support for the sector (which results in insecure land tenure, inadequate fiscal incentives for technological investment and almost non-existent forest extension services). Improvements in timber export performance would be greatly strengthened by coherent supportive policies with a long term view which integrate forest production and export with other types of agricultural and industrial land use.

Learn the lessons of tenure and taxation

Chapter 7 - One of Brazil's major competitors, Indonesia, has rapidly expanded its market share but at considerable social and environmental cost. The Indonesian comparison offers many important lessons for Brazil. Overlapping agendas of different Ministries have caused some significant problems and forestry policy should be visibly grounded in development plans such as Avança Brasil. Security of land tenure has been a major issue for Indonesian forestry where an inadequate leasing system and concentration of land ownership in the public sector has been a fundamental failing of the Indonesian model. Caution is recommended for Brazil's attempt to move towards concessions in National Forests and the development of a transparent and competitive concession allocation system with independent monitoring and inspection should be a priority

Considerable damage to local communities has been done in certain forest lands in Indonesia due to disingenuously used mechanisms to include local communities in the forest decision making. In order to avoid civil unrest, Brazil should pay particular attention to the appropriate delegation of powers at least to municipal level.

Analysis of the Indonesian model suggest that taxation is a key policy lever which can increase government revenue while simultaneously providing incentives for good forest practice and greater efficiency. Appropriate taxation is best based on international timber pricing to avoid transfer pricing and graded taxes can be used to good effect to promote value added production. Taxation of land clearance is critical if over-capacity based on unsustainable timber extraction is to be avoided.

In its quest to increase exports, Brazil has certain advantages and disadvantages relative to Indonesia - associated with geographical location and the species composition of the forest. It is likely that Brazil would profit from a strategy that seeks to cultivate the high value niche markets for hardwood furniture and fittings. Such a strategy will require much better market intelligence, quality standards and sound environmental profile than is currently the case.

Foster the flow of information

Chapter 8 - The final chapter draws together the evidence from the literature and from the extensive participatory surveys presented in the previous chapters. It concludes that there is a significant opportunity to achieve the Brazilian Government's twin aims of increasing exports and increasing sustainable forest management. At the same time there are many important barriers to be overcome. Considerable consensus exists about nine issues that require attention:

- Better business practice and customer relations
- Improved market intelligence and promotion
- Financing and investment in new technology for greater efficiency
- Technical and administrative capacity development through association
- Enhanced social and environmental reputation
- Streamlining of regulations
- Incentives to offset short-termism
- Secure property rights
- Harmonisation of policies across different ministries

It is also concluded that, in order to achieve the Government's aims, three new or reinforced institutional structures may be needed in addition to what now exists. These include:

- An inter-ministerial working group on forests
- A market information and / or marketing body
- A functioning agency for credit provision or subsidy to the forest sector

The central conclusion is that no one set of actors will be able to resolve these issues in isolation. Negotiated solutions need to be found which are agreed and implemented across multiple institutions in government, civil society and the private sector. Each set of actors

have a useful role to play (from international finance agencies to farmers at the forest frontier). Capitalising on these potential synergies will require proactive ongoing engagement with the sector. Particular attention should be given to reaching and including the multiple small and medium scale operators who comprise the majority of Brazilian timber production.

ACRONYMS

ABIMCI	Associação Brasileira da Indústria de Madeira Processada Mecanicamente, Brasil
AIMEX	Associação das Indústrias Exportadoras de Madeiras do Estado do Pará, Brasil
ATPF	Autorização de Transporte de Produtos Florestais, Brasil
CDM	Clean Development Mechanism
CEC	The Commission of the European Communities, Belgium
CIA	Central Intelligence Agency, USA
CNI	Confederação Nacional das Indústrias, Brasil
DECEX	Departamento de Operações de Comércio Exterior, Brasil
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations, Belgium
FDI	Foreign Direct Investment
FEMA	Fundação Estadual do Meio Ambiente, Mato Grosso, Brasil
FLONA	Florestas Nacionais, Brasil
FSC	Forest Stewardship Council
FUNAI	Fundação Nacional do Índio, Brasil
GAEP	Grupo Assessor para Estudos do Promanejo , Brasil
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GNP	Gross National Product
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit, Germany
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, Brasil
IBGE	Instituto Brasileiro de Geografia e Estatística, Brasil
IIED	International Institute for Environment and Development, United Kingdom
ILO	International Labour Organisation, Switzerland
IMAFLORA	Instituto de Manejo e Certificação Florestal e Agrícola, Brasil
INCRA	Instituto Nacional de Colonização e Reforma Agrária, Brasil
INPE	Instituto Nacional de Pesquisas Espaciais, Brasil
IPAM	Instituto de Pesquisa Ambiental da Amazônia, Brasil
IPI	Imposto sobre Produtos Industrializados, Brasil
ITERPA	Instituto de Tierras de Pará, Brasil
ITR	Imposto Territorial Rural, Brasil
ITTO	International Tropical Timber Organisation, Japan
MCT	Ministério da Ciência e Tecnologia, Brasil
MDA	Ministério do Desenvolvimento Agrário, Brasil
MDIC	Ministério do Desenvolvimento, Indústria e Comércio Exterior, Brasil
MET	Ministério do Esporte e Turismo, Brasil
MIN	Ministério da Integração Nacional, Brasil
MMA	Ministério do Meio Ambiente, Brasil
MPOG	Ministério do Planejamento, Orçamento e Gestão, Brasil

MRE	Ministério das Relações Exteriores, Brasil
NGO	Non-Governmental Organisation
PDPI	Programa Demonstrativo dos Povos Indígenas, Brasil
PEFC	Pan European Forest Certification
PNF	Programa Nacional de Florestas, Brasil
PNQM	Programa Nacional de Qualidade da Madeira
PPA	O Plano Plurianual do Governo Federal, Brasil
PPG7	Pilot Programme to Conserve the Brazilian Rain Forest
PPTAL	Projeto Integrado de Proteção às Populações e Terras Indígenas da Amazônia Legal, Brasil
RIL	Reduced Impact Logging
RWE	Round Wood Equivalent
SAE	Secretaria de Assuntos Estratégicos, Brasil
SECTAM	Secretaria Executiva de Ciência, Tecnologia e Meio Ambiente, Pará, Brasil
SECEX	Secretaria de Comércio Exterior, Brasil
SEDAM	Secretaria de Estado do Desenvolvimento Ambiental, Rondônia, Brasil
UFRJ	Universidade Federal do Rio de Janeiro, Brasil
UNCTC	United Nations Centre on Transnational Corporations
WHRC	Woods Hole Research Center, USA
WTO	World Trade Organisation

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1 An introduction to the Brazilian forest context

Duncan Macqueen

1.1. The background to this study

The expansion of wood-based exports from Brazil is a sensitive but unavoidable issue in the context of increasing global demand for timber. Brazilian wood-based exports need not necessarily come from natural forests. Indeed, plantations have rapidly become a major source of industrial roundwood. But despite this, demand for timber originating in Brazil's natural tropical forests is still anticipated to increase between 2000-2010 (Joshi, 1997) This study focuses on such timber, not only because of the greater challenges which face exports from this sub-sector, but also because of the great interest in the social economic and environmental consequences of harvesting timber from natural tropical forests.

In its National Forest Programme thematic line 10, the Brazilian government states its intention that Brazil should increase its share of the global timber market from 4 to 10% by the year 2010 (MMA, 2001a). Recent studies have shown that 86% of current tropical timber production from the Brazilian Amazon is consumed internally (Smeraldi & Veríssimo, 1999). Exports from Brazil currently account for only a tiny proportion of the total tropical timber trade (FAO, 2001). Why has there been so little penetration of the international market by Brazil? What are the main barriers for Brazilian producers and international buyers wishing to engage in the international trade of Brazilian forest products? How could the situation be improved? This study investigates the barriers that prevent Brazilian-based companies from accessing international markets: focusing on issues of raw material supply (e.g. quality, sustainability, regularity, bureaucracy), processing (e.g. efficiency, product specifications, logistics), marketing (e.g. information, image, infrastructure) and financing (e.g. availability, interest, timeframe).

Coincidentally, in its National Forest Programme thematic line 3, the Brazilian government aims to increase the quantity of privately owned native forest areas under sustainable management to 20 million hectares in the Amazon by 2010. Over the same period, it also aims through thematic line 2 to establish 50 million hectares of forest for sustainable production on public lands (FLONAs) so that it can realise its aim in thematic line 10 of increasing the percentage of exports from sustainable sources from 5-30% by 2010 (MMA, 2001a). As export barriers are overcome in Brazil, the likely trend will be towards increasing pressure on Brazilian forest resources. Will this pressure benefit the local economy, local employment and the sustainable management of natural resources within the existing legal framework? What strategies do Brazilian companies use in the management of forest resources and how do these strategies incorporate sustainable management? How might international trade strengthen a move towards sustainable management? This study will assess the current situation, analyse future trends and consider this central question: "What can be done to ensure that Brazil manages to capture increasing global market share in wood based products without prejudicing future supply?"

1.2 Why this study is relevant

The expansion of timber exports without prejudicing the resource base is a considerable challenge. There are persuasive arguments in favour of exposing Brazilian wood based industries to the stringent concerns of the international markets, especially if these demand greater efficiency with reduced social and environmental impact. But there are also powerful arguments against a poorly planned drive for a greater share of the international market with pressures to expand production and cut costs, regardless of environmental and social impact. The forest-based social, economic and environmental turmoil in many parts of South East Asia should give pause for thought.

Any new study is justifiable if it is timely, pertinent and changes or consolidates decisions made by key stakeholder groups. We make the case below that there is indeed need to examine evidence on how trade expansion can be achieved without unacceptable social, economic and environmental consequences.

A study which addresses the Brazilian government's ambitions for timber exports is *timely* because wood-based exports are to date embryonic in all but the Southern plantation-based pulp and paper industries. Total tropical timber exports as yet comprise only a small fraction (14%) of total production (Smeraldi and Veríssimo, 1999). Tropical hardwood exports began to accelerate only from the 1990s with improved processing technologies and still only comprise a tiny percentage of total wood product exports. Concurrently, and despite alarm over deforestation rates, much of the Brazilian Amazon remains intact, and land use and forest policies have the potential to make rational and efficient use of the products and services which remain. Contributions to a strategy for export development are thus timely at this juncture.

This study is *pertinent* because it seeks to answer how Brazil might expand its share of global wood-based exports without contradicting plans for the rational, efficient and sustainable use of land and forest resources at the landscape level. The study offers new insights from extensive surveys of real life situations and perspectives from both producers, traders and buyers of Brazilian wood-based products within an international context. Moreover, it focuses specifically on overcoming barriers to wood-based exports from the perspectives of producers and consumers. It therefore offers additional detail to theoretical or modelled approaches and adds specificity to the other recent studies (e.g. Stone, 1997; Scholz, 2001; Angelo, 2002; Delapinasse and Bonse, 2002; CNI, 2002; ITTO, 2002; STCP, 2002; Siqueira, 2002). A series of practicable recommendations are framed within the context of implementing Brazil's agreed National Forest Programme.

It is widely acknowledged that the forest sector has only limited control over the policy and institutional environment that shapes forest use. This study therefore targets a wider group of decision makers in its recommendations and will be packaged and disseminated accordingly.

1.3 Why Brazilian forest resources are important nationally and internationally

In 2000, there were 543,905,000 ha of forest out of Brazil's total land area of 845,651,000 ha in Brazil (i.e. forests cover 64.3% of Brazil's land mass - FAO, 2001). Some 4,982,000 ha of that total consists of plantations mainly as monocultures of pine and eucalypt, almost exclusively in the South of Brazil. After the Russian federation, Brazil has the largest area of forest on the planet (more than double that of the next largest area in Canada) and Brazil's forests contain more biomass than any other country (FAO, 2001). In terms of tropical forests, Brazil boasts three times more than the second ranked country of the Democratic Republic of Congo, and most of this forest occurs within the Legal Amazon. The sheer magnitude of Brazil's forest resources has engendered all manner of proprietary claims on their use. Diverse national and international stakeholders press their social, environmental and economic agendas within the region.

1.3.1 Social concerns - development and indigenous people

From an international perspective, a fundamental social issue relating to Brazil's forests is the word "Amazon". The literature of centuries evokes mystery from the word. It conjures the vast untamed jungle of green, mythical woman warriors, enormous anacondas and unnamed species. It infuses the sterility of modern life with a dash of wildness - something unexplored. Its mere existence provide an international mental refuge from the urban mundane in which much of the world's population lives. The Amazon has come to stand for "unfettered life itself" (Scholz, 2001), and the recent images of its destruction on mass-media are an attack on the psychological refuge of distant peoples, irrespective of their actual claims to sovereignty over the forest itself.

More recently, some donors have been drawing attention to the level of social inequality within Brazil and the differentiated poverty afflicting the Amazon region (DFID, 2002). The switch from environmental to social concern, and from absolute to relative poverty has happened too quickly to yet feature in the mainstream international consciousness.

More tangible social issues are felt at the national level. The Brazilian forests, and particularly the Amazon basin are home to more than 170 different indigenous peoples, 50 of which have no regular contact with the outside world. The total indigenous population amounts to more than 180,000 (Capobianco, 2001) only half of whose languages have been studied (Ricardo, 2001). Yet the indigenous population is dwarfed by the 12,900,000 inhabitants of the Amazon states (IBGE, 2002). The influx of peoples over the 500 years of Brazil's history has been both spontaneous and sponsored through a range of government settlement schemes, most notably those beginning in the 1970s. The Tranzamazon settlement scheme (1970-), PoloAmazônia (1974-) and Polonoreste (1981-) involved major components of road-building, land distribution, service provision, agricultural tax credits of various kinds (Browder, 1985; Schneider, 1994; Franco, 1995; Young and Clancy, 2001).

The extent of colonisation projects has underlined the strong social and political commitments of successive governments, in which some portion of the forest has been expendable in the quest for territorial control, social cohesion and growing government

revenue. The balance of forest and other land uses is yet to stabilise, although extensive recent zoning is beginning to shape future defensible territorial boundaries for national forests for production (Schneider *et al.* 2000; Baretto and Arima, 2002; Baretto and Veríssimo, 2002; Souza Jr *et al.* 2002) indigenous peoples (MMA, 2002) biodiversity conservation (MMA, 2001b). These developments form part of the wider programme *Avança Brasil* which has the social development of the Amazon as its prime objective and about which there is much current debate (Nepstad *et al.* 2000).

1.3.2 Environmental issues - biodiversity and climate change

The extent of the Brazilian forest resource generates environmental interest beyond national borders, particularly in the arenas of biodiversity conservation and climate change. Brazil has more species of animal and plant than any other country, approximately 10-20% of the 1,500,000 species catalogued to date. It has 55,000 species of higher plant (22% of the world total), 502 species of mammals (10.8% of the world total), 1677 species of birds (17.2% of the world total) 600 species of amphibians (15% of the world total) and 2657 species of fish (10.7% of the world total) (Capobianco, 2001). The numbers of invertebrates are staggering, since they comprise 95% of all animal species. Not surprisingly the Brazilian Amazon has been ranked as one of the top ten global hot spots by number of endemic species (Bass, Hughes and Hawthorne, 2001).

The number of species uncatalogued and unnamed is perhaps even more impressive than those that are named, especially in less visible taxa. For example, it is estimated that more than 70% of invertebrates collected do not yet have scientific names, nor will do for some considerable period (Overal, 2001). Yet the fundamental lack of even the most basic of scientific activities in the Amazon (classification) is seen throughout the different groups of plants and animals. More than 40% of amphibians collected are yet to be named (Azevedo-Ramos and Galatti, 2001). In mammal surveys along the river Jurua, up to 20% of the rodents collected were new to science (Da Silva *et al.* 2001).

In terms of plant species the identification problems are equally daunting. Large areas of the Amazon have never been subject to botanical collection and identification missions. Even in one of the most highly collected areas in the Amazon, the 100km ² Flora Ducke reserve adjacent to Manaus, the forest was much more diverse than had at first been suspected. Following an intensive effort to produce a woody flora of the area, researchers found that the initial estimate of 1200 woody species in 1993 bore little resemblance to the actual 2200 woody species documented six years later (INPA, 1999). Only a tiny fraction of these species (10-30) are utilised by the Brazilian timber industry in significant volumes (GTZ, 1997, AIMEX, 2000). With the exception of some highly experienced and increasingly rare tree-spotters (mateiros) who may be able to identify several hundred species, most timber extraction operations do not have the capability to identify reliably more than the handful of commercially attractive species. The lack of knowledge extends to the market, and the market prices for lesser known species are a fraction of the commercially most valuable species which further discourages their characterisation and use (Smeraldi and Veríssimo, 1999).

The blanket of ignorance which surrounds species identification of the Amazon forest is dwarfed by the lack of knowledge of each species reproductive biology, regeneration ecology and genetic diversity, despite important new research in this area (Kanashiro *et al*. 2002) Without such knowledge it is almost impossible to predict what the impact of timber extraction will be on the future composition and sustainability of the forest, irrespective of whether Reduced Impact Logging (RIL) techniques or conventional methods are used. (Blate *et al*. 2001). The precautionary principle to natural resource use adopted at the UNCED in Rio,1992 has particular relevance to ecosystems about which so little is known. In the absence of any certainty over long term impacts, lower harvesting rates should be preferred over higher, and RIL over conventional logging.

Owing to its enormous geographical extent, the Amazon forest is also critical to global carbon balances. Even under a strict emissions control fossil fuel emissions scenario the upward trend in atmospheric carbon concentrations will only be reversed by halting deforestation by 2020 and an international afforestation programme which provides a sink of around 0.6 Gt/year by 2050 (Bass *et al.* 2000). The present annual increase of carbon dioxide into the atmosphere is 6-10 GtC/yr. Approximately 20% of this total (i.e. 1.6-2.1% GtC/yr) has been estimated to come from deforestation and Brazil currently accounts for 24% of global deforestation and is the largest current emitter of carbon from deforestation. (FAO, 2001, Fearnside, 2001). More precise calculations of Brazil's component increase in atmospheric carbon dioxide throiugh deforestation in 1990 were estimated at just over 0.35 GtC/yr (Fearnside, 2000a). While uncertainty over the ratification of the Kyoto protocol has persisted, only limited carbon trading has occurred, amounting to some 0.0025GtC/yr or 0.25% of what is required (Vrolijk, 2000). Land use change in the Amazon is clearly of great significance for global carbon balances (Fearnside 2000b)

At present, forest conservation activities are not eligible for payments under the Clean Development Mechanism (CDM) (Aukland *et al.* 2002). Since only about 7% of the carbon emitted by deforestation is eventually reabsorbed by the landscape that replaces forest in the Amazon, it will be important to find some mechanism for deforestation avoidance within the CDM, rather than to allow the gravitation towards plantation establishment (Serôa da Motta *et al.*, 2000; Fearnside, 2001).

1.3.3 Economic dimensions - employment and revenues

Brazil's forest sector accounts for 6.9% of Brazil's GNP and 7.14% of Brazil's exports. It generated estimated annual revenues of US$ 53 billion between 1993-1995 (Lele *et al.* 2000). More conservative estimates put employment in the Brazilian forest sector at more than 500,000 people (the sixth largest forest sector in the world), although as few as 150,000 are in the formal sector. Forestry operations in which informality is highest account for most of the employment (ILO, 2001). While employment in the pulp and paper industry accounts for more than 30% of the employment in the formal sector. (Viana *et al.* 2002) the tropical timber industries still account for the majority of employment. Wages in the tropical forest industries average about US$ 7500 per annum, about half of those in the pulp and paper sector.

The production of tropical timber occurs in over 2500 forest enterprises (Veríssimo and Lima, 1998) in 75 timber hubs throughout the Amazon (Smeraldi and Veríssimo, 1999). Approximately 92% of these entities are micro (<4000m³/yr), small (4-10,000m³/yr) and medium sized (10-20,000m³/yr) enterprises. The dynamics of these timber hubs are increasingly well known (e.g Veríssimo *et al.* 2002).
The fact that Brazil has the world's largest domestic market for tropical timber is reflected in the production and consumption figures for different product lines. For example, Brazil is the second largest producer of tropical logs (24.5 million m³/yr) after Indonesia, but also the second largest consumer of tropical logs (ITTO, 2000). It is the world's largest producer of tropical sawnwood (9.86 million m3) and also the largest consumer of tropical sawnwood. It is the third largest producer of veneer (0.15 million m3) and the fifth largest producer of tropical plywood (1.1 million m3 and increasing) and only in these categories is there proportionately less domestic consumption (ITTO, 2000). While Brazilian timber exports comprise a small percentage of total timber production, Brazil is still the second largest exporter of tropical sawnwood (900,000m3) principally of high value species such as *Tabebuia spp.* and *Cedrela spp*., the fifth largest exporter of tropical veneer (74,000m3), and the third largest exporter of tropical plywood (574,000m3). Brazil is also a major exporter of tropical secondary wood products (which bring in a revenue of US$584 million per year) (ITTO, 2000)

While Brazil is still a relatively minor player in the international timber markets, its economic importance in such markets is likely to expand (Vincent, 1997). This is conditional on technological progress to ensure that Brazil's timber industry is competitive (Tomaselli, 1997).

1.4 Government vision for Brazilian forest resources and forest industries

1.4.1 Historical context

Since the beginning of the Portuguese occupation in the 1500s the Brazilian Government's attitude towards natural forests and especially the Amazon has been coloured quite legitimately by the need to protect and consolidate their vast and sparsely populated territorial possession. In the face of constant international intrusion into Amazônian issues, it is hardly surprising that this attitude has concretised into a more or less permanent mindset within Brazil. For example, a sociological survey in 1996 found that 75% of all respondents agreed with the statement that "Foreigners are trying to take over Amazônia" (Barbosa, 1996). Historic policies have therefore tended to be primarily about control over the forest rather than control over activities within it. Until the second world war most of these policies centred on controlling trade based on extractive activities (Franco, 1995).

After the second world war the paradigm of extractivism collapsed with the vestiges of the rubber industry, although it has been reshaped more recently in carefully framed proposals for ecodevelopment (Allegreti, 1995). It was replaced by a new paradigm of national development, based upon extensive settlement within forest areas and their conversion for commercial agriculture under schemes such as the Tranzamazon settlement scheme etc. (Young and Clancy, 2001). It must be noted from the outset that the fate of the forests

under such schemes also was driven by Ministries other than the Ministry for the Environment (MMA) such as the Ministry of Planning, Budgets and Management (MPOG), the Ministry of Agrarian Development (MDA), the Ministry of Development, Industry and Export Trade (MDIC), the Ministry of National Integration (MIN), the Ministry of External Relations (MRE), the Ministry of Sport and Tourism (MET) and the Ministry of Food Supply, Science and Technology (MCT). Major areas of plantation development also occurred in Southern Brazil between 1967 and 1987 under a system of tax incentives.

It was not until the publication in 1965 of the Forest Code (Law 4771) that the idea of forest management was written into Brazilian Law in order to accommodate the burgeoning forest industry that had begun to export tropical timber from the 1950s. Guidance about what management actually involved was not codified over the next 20 years (see Hirakuri, 2003 for a detailed study of Brazilian forest law). But with mounting national and international concern over deforestation, this was unlikely to remain the case. In 1986, the requirement for sustainable management was stipulated (Law 7511). In 1989, IBAMA defined for the first time what a management plan might entail (Order of Service 002/89). In 1991, a group of forest technicians provided scientific input into what sustainable management involved (Normative Instrument 80). This was eventually incorporated in 1994 into Decree 1282 and finally in 1995 was used to specify what the original 1965 Forest Code meant by 'management'.

1.4.2 Recent developments and the vision of the National Forest Programme

Since 1995, the country has been awash with legislation which has: limited deforestation on privately owned forest land in the Amazon to 20% (Provisional Measure 1511 of 1996); suspended Mahogany extraction (Decree 1963 of 1996); distinguished between the scale of forest operations (Decree 2788 and Normative Instruments 4, 5, and 6 of 1998); and provided specific guidelines for Viola extraction (Normative Instrument 1). Concurrently, it was recognised that the historical pattern of policy development was inappropriate to the complexities within the forest sector.

The MMA began in 1995 to formulate a more comprehensive programme to determine a set of solutions to the main forestry problems and demands. The Programa Nacional de Florestas (PNF) was set up on 20th April, 2000, by Presidential Decree No. 3420. The forest policy embodied in the National Forest Programme (PNF), published in 2001, constituted a marked departure from the historical pattern both in terms of process and of substance. In terms of process, it employed an extensive set of consultations with some 600 institutions in order to define ten priority thematic lines. In terms of substance, it developed specific targets for each of the ten thematic lines and sought to match those targets with appropriate funding mechanisms.

The PNF's mission is that of promoting sustainable forestry development, reconciling exploitation with protection of the ecosystems, and making forestry policy compatible with other public policies so as to promote domestic and export market growth as well as the institutional development of the sector" (MMA, 2001a) Although the PNF to date has fallen short of receiving block funding, it has benefited from being a subcomponent of the federal

governments multi-years plan - the PPA (2000-2003) which has specific lines in support of afforestation (Florestar), sustainable management (Sustentar) and the prevention of deforestation and fires (Florescer). Moreover, each of the thematic lines has seen some support from diverse funding lines, including international aid. The thematic lines span a much broader range of issues than has hitherto been the case, including Amerindian issues, forest education and extension, institutional strengthening, environmental services provision and forest product marketing.

The vision for Brazilian forest resources and forest industries is stated as "to promote sustainable forest development, making resource use compatible with the protection of ecosystems, and making forest policy consistent with all the public policies, encouraging the institutional strengthening of the sector". The intention is therefore to balance commercial activity with social and environmental safeguards. Within thematic line 10 for example, the PNF aims both to increase Brazil's share of the world tropical timber market from 4-10% by the year 2010 but also to increase exports of timber from sustainable origin from less than 5% to more than 30% over the same period. In thematic line 3 the aim is to incorporate into a system of sustainable management an area of 20 million hectares in the Amazon by 2010 (MMA, 2001a). An important foundation for achieving these aims will be the establishment of national forest areas within which commercial activities can take place (Veríssimo *et al.* 2000) The investigation of how to achieve these ambitious aims is the subject of this study.

1.4.3 The challenge of building a common vision across multiple interest groups

It is not to be expected that any set of policies will survive unchallenged, particularly since the MMA is only one of many Ministries with a mandate over natural resources. Within the MMA forestry is governed by one small Secretariat (Secretaria de Biodiversidade e Florestas - SBF). The MMA may play a decisive role in the initiation of new legislation, but there are other important and powerful actors, and there is no obligatory co-ordination of new legislation with the PNF. For example the forest related budget lines are determined by the multi-year planning (PPA) of the Ministry of Planning, Budgets and Management (MPOG) under the inter-ministerial development plan Avança Brasil. The determination of land use in rural areas through incentives and settlement schemes is largely the responsibility of the Ministry of Agrarian Development (MDA) and its subsidiary body INCRA. Moreover, the incentives for industry and export trade are governed by the Ministry of Development, Industry and Export Trade (MDIC). Issues of reputation and international NGO pressure on forests are largely the domain of the Ministry of Foreign Affairs (MRE) The infiltration of this vision for forestry into other Ministries policies and planning will remain a challenge for the future as will the development of an over-arching agency to co-ordinate inter-ministerial decisions on forests.

Another challenge at the Government level is that of decentralisation, whereby State-level institutions are now responsible for the implementation and enforcement of environmental legislation. At the local level, Federal authorities such as IBAMA and INCRA interact with State level environmental authorities (e.g. the Secretaria Executiva de Ciência, Tecnologia e Meio Ambiente - SECTAM in the State of Pará, the Fundação Estadual do Meio Ambiente

- FEMA in Mato Grosso and the Secretaria de Estado do Desenvolvimento Ambiental - SEDAM in Rondônia). Federal legislation may be further interpreted by State legislation which may endorse or strengthen further the federal legislation, but never contradict or loosen it. The relationship between state level institutions and the traditional federal institutions such as IBAMA is uneasy and poorly defined and considerable further negotiation is required in several regions. States vary widely in their forest environment and in the capacity of their local institutions and politicians to govern it. Inevitably, federal legislation will be more applicable in some States than in others. The willingness and capacity of States to adopt and adapt federal legislation which suits their forest sector conditions will be an important issue in realizing the vision enshrined in the PNF.

In addition to these government organisations, there are a host of private sector organisations that have considerable influence over realities in the field. Many of the better organised or export orientated companies in Brazil belong to one of a number of timber associations, the best known of which are the Associação Brasileira da Indústria de Madeira Processada Mecanicamente (ABIMCI) and Associação das Indústrias Exportadoras de Madeiras do Estado do Pará e Amapá (AIMEX). ABIMCI was established in 1972 and serves as a forum for consultation between members and as an instrument to support members on technical, legal and political issues. Ensuring that such industrial representation owns policy on exports and sustainable forest management is critical for its long term success.

Building a common vision for timber exports and sustainable forest management does not end with the timber industries themselves. There are numerous other actors whose needs must be accommodated. Investors in the timber industry wield power over the criteria under which finance is made available. International finance agencies impose forest conditionalities accompanying loans. The World Trade Organisation's (WTO), defines and enforces the rules under which forest trade is promoted, with periodic rounds of negotiations aiming to reduce tariffs and non-tariff barriers. Only Article XX on general exceptions to the GATT, and Article XIV, allow trade restrictions which are necessary to protect human, animal or plant life or health, or which relate to the conservation of exhaustible natural resources. Neither article has been invoked to ensure the sustainability of forest operations. Both the Committee of Trade and Environment (CTE) and the Committee on Technical Barriers to Trade (CTBT) within the WTO are currently considering the impact of eco-labelling (e.g. certification) on trade and whether existing WTO rules stand in the way of eco-labelling policies. Ensuring that a clear picture of Brazilian forestry is infused within these institutions will help to create a supportive context for Brazil's own ambitions.

Civil society interest groups also have an important role to play in influencing forest realities on the ground in Brazil. Consumers of Brazilian forest products influence not only the type of export specifications, but also increasingly the extent to which products can be traced to sustainably managed forests. Consumers of forest services such as environmental carbon sequestration, watershed conservation and recreational tourism / conservation are increasingly able to buy these services in the market place (Landell-Mills and Porras, 2002). Researchers, consultants and NGOs work with such consumers and are another important group who raise awareness about the situation and campaign for a number of different

outcomes.

Another critical interest group are the many millions of farmers who live within or adjacent to dense forests and depend on them to a high degree. Trees are used for construction timber, non-timber forest products or occasionally in agroforestry systems to help them to sustain agricultural productivity and generate income. Farmers are not a homogenous group, and range from wealthy established land-owners to poor shifting cultivators. In Brazil smaller subsistence farmers have often been associated with migratory patterns at the forest interface due to the requirements of slash and burn agriculture (Lele et al., 2000). This is often followed by more consolidated land occupation by wealthier farmers and ranchers with assistance from Government support programmes. Decisions which they take over the use of adjacent forests and the mandatory forest 80% forest reserve on their land will greatly influence the prospects for sustainable management and timber exports.

In addition to immigrant farmers are the 180,000 indigenous peoples who inhabit Brazil's forests constituting 170 different people groupings (Capobianco, 2001) Almost everywhere in the world, there is a record of encroachment on the lands of indigenous peoples (Bodley, 1993). Studies demonstrate that such forced integration rarely allows tribal peoples anything more than a transition into the impoverished classes of the nation state and unsustainable use of the transferred natural resources (Cariño, 1997). In Brazil there have been numerous well document examples of incursions onto indigenous peoples land in the quest for export timber (see Chapter 3). There are several instances of deals for timber being struck between indigenous peoples and outside traders. But in many instances, different cultures reject the 'for-profit' use of the natural forests and violent clashes have resulted (Dudley et al. 1996). The process of registration of indigenous lands has been extremely slow, despite PPG7 pilot programme support. In part this may reflect the value clash between the modern mantra of maximising the efficient use of all resources for maximum profit of the nation state, versus the stewardship of all resources for the cultural well-being of a limited number of indigenous peoples. The outcome of this struggle will have a bearing on perceptions over Brazilian timber exports.

Each group has a different and often diverse perspective on forestry and a certain amount of influence over activities along the value chain. Building a common vision for increasing timber exports and sustainable management will require co-operation between these diverse actors. We return to these actors and explore the ways each might contribute to the vision developed in the PNF in Chapter 8.

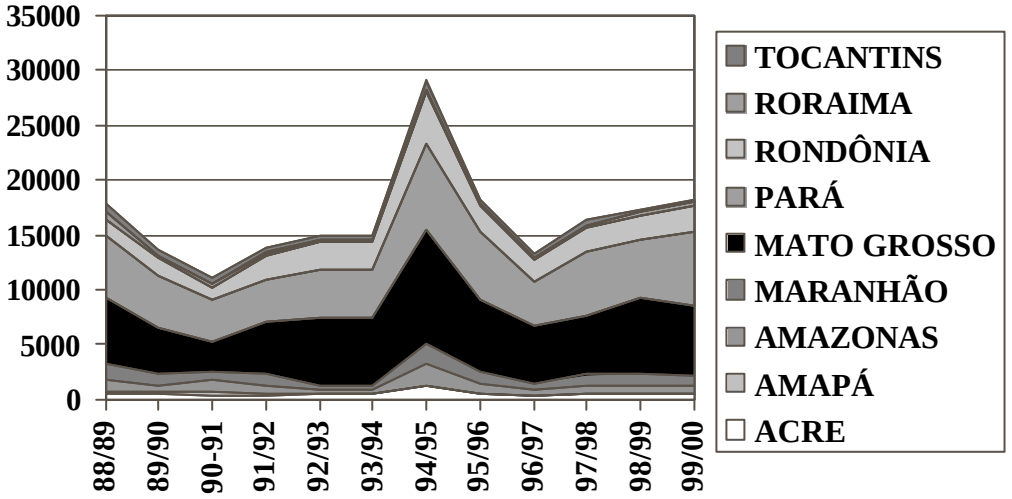
1.5 Brazilian concerns over forest resources and industry

The PNF states the ambition that Brazil's forest should generate jobs and economic wealth while also providing environmental goods and services. Its primary concern over forest resources within Brazil is stated as the "the use of technologies that are incompatible with good economic uses of resources" meaning that "the efficiency of the Brazilian forest sector has been threatened by non-sustainable management, clearances and fires" (MMA, 2001a). The threefold threat of deforestation, unsustainable management and fire are counteracted specifically by the three main budget lines of the multi-year plan 2000-2003.

1.5.1 Deforestation

In terms of deforestation the rates continue at high levels, although a promising satellite mapping and enforcement initiative in Mato Grosso (FEMA, 2001) has seen deforestation rates fall in that state over the last two years (Figure 1). There appears to be some correlation between economic growth and deforestation. For example the introduction of the Plano Real which curbed inflation in 1994/95 coincided with a marked increase in deforestation and subsequent decline. After low growth in 1999, the economy picked up in 2000 and deforestation rates started to increase slightly. In the year 1999/00 18226 km² was deforested, equivalent to 0.52% of the total forest area. Just less than 90% of deforestation occurs in blocks greater than 15ha in size, indicating that it large land owners who are responsible for the majority of forest clearance (INPE, 2002). The rate of plantation in Brazil is currently about 10 per cent of the rate of deforestation and most of the large areas of plantation have been established in the South of the country rather than the Amazon region (Figure 2). Nevertheless, the productivity of forest plantation greatly exceeds that of natural forest. On a global scale, although plantations only account for 5% of the forest area, they furnished 35% of global timber volumes, a figure that is predicted to rise to 46% by 2040 (ILO, 2001)

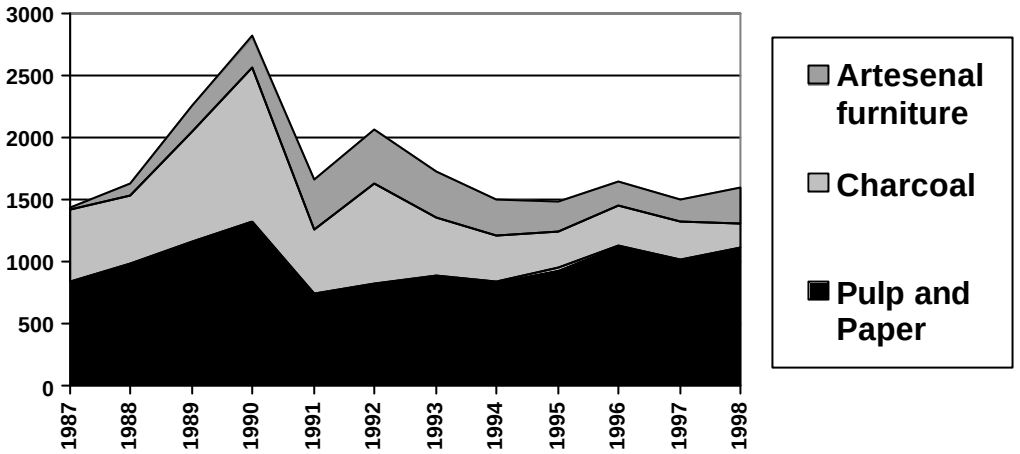
Figure 1 Deforestation rates in States of the legal Amazon km²/yr. (Data from INPE, 2002)



Although there are many complex and synergistic causes for deforestation in the Amazon (Geist and Lambin, 2001), it is predictably increased by two factors: human population density and road access, especially in areas with severe dry seasons (Pfaff, 1996; Laurance *et al.*, 2002). Control of the factors which encourage or discourage migration and road-building is therefore pivotal (Richards, 1997). The drive towards a network of 50 million ha of national forests by 2010 is currently the preferred option to control population density and access in commercial forest areas in order to reduce deforestation (MMA, 2001). Sustainable management in these areas is believed to be a viable economic option, but will have to compete with low cost logging associated with forest clearance often culminating in

ranching (Schneider *et al.*, 2000, Margulis, 2002). The key to controlling deforestation will be mechanisms to break this destructive cycle. Production is also expected to continue its shift towards plantations and it will be necessary to ensure that this is not detrimental to natural forest management.

Figure 2. The rate of establishment of plantations in Brazil by end-use purpose (km²/yr)



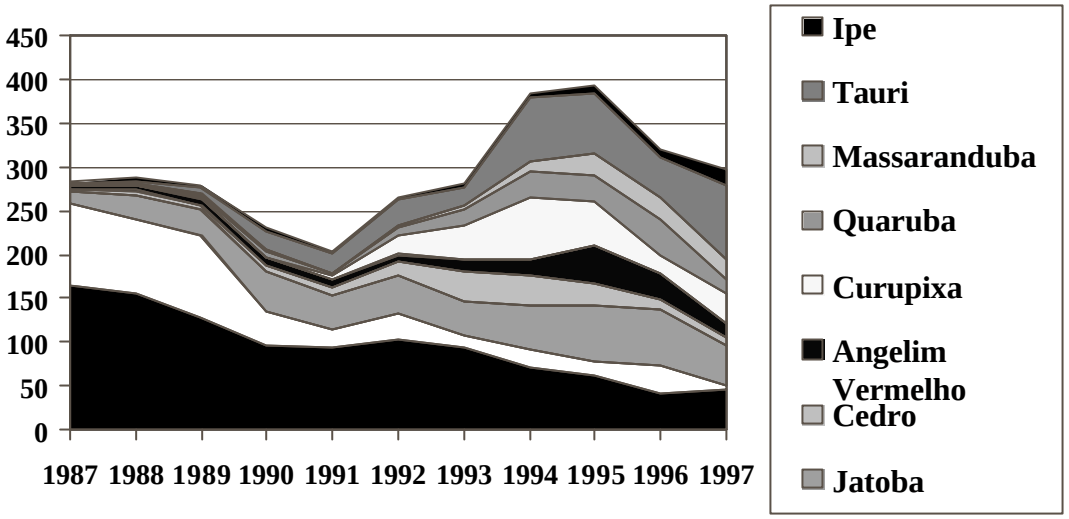
Source: Data from Viana *et al.* 2002

1.5.2 Unsustainable management

Insecure tenure in the Amazon region discourages long-term planning in forestry. Without security of tenure, 'managed' and 'unmanaged' forests tend to be mined of their most valuable resources as soon as they become accessible. To increase security of tenure the government is contemplating a system of concessions in National Forests (FLONAs). In the interim period, private companies who wish to adopt longer term management plans with annual felling blocks must invest heavily in security and local relationships.

Due to the small number of marketable species, logging practices in the Amazon forests favour selective logging over clear-felling. Tree selection is therefore a critical decision in sustainable management (Thompson and Yared, 1997). Export data from the state of Pará in Figure 3 suggests that sustained yield of the principal timber species has not been achieved. Instead there appears to have been a gradual commercial extinction of the principal timber species. Prominence is given to one new species after another as the availability of preceding species declines (Figure 3).

Figure 3. Export volumes of key commercial timbers from the State of Pará



Source: Data from AIMEX, 2000

An additional issue is that when extracting these limited numbers of species, logging practices tend to be highly damaging which diminishes the likelihood that the forest will regenerate, enabling future cutting cycles (Uhl *et al.*, 1991). Studies of the costs and benefits of improved logging practice in the Amazon have demonstrated that 'reduced impact logging' (RIL) can increase net revenues by some 19% through reduced wastage of wood and savings in machine and labour time (Homes *et al.*, 2002). Nevertheless there are a number of factors which dissuade forest industries. There may be upfront costs requiring injections of capital which can be daunting for many companies (Viana *et al*., 2002). There may also be considerable inertia in existing routines in which more than adequate profits are to be had (Blate *et al.*, 2001). The key to improving forest management will be to find ways of breaking these comfortable routines (Scholz, 2001) and resolving the real issues of investment and training that RIL requires.

1.5.3 Fire

In 1997/98 an estimated 3.3 million hectares of land burnt of which 1.5 million hectares was rainforest in the State of Roraima. In 1999 IBAMA declared that 80% of Brazil was under serious risk of burning and by August 31,000 fires had been reported in 15 states (Rowell and Moore, 1999). The El Niño phenomenon generated extreme conditions, but land use practices predisposed areas to burn. Approximately 52% of the fires in the Amazon were deliberately started, while 48% were accidental or natural. More worryingly, almost 10% of the mature forests which had previously seemed almost impervious to fire had also become flammable (Nepstad *et al.*, 1999a). The surface fires which burn in forests after logging increase the flammability of the forest, leading researchers to claim that official deforestation figures capture less than half of the forest which is impoverished each year (Nepstad *et al.*, 1999b). The key to preventing such fires will be to find ways of promoting reduced impact logging techniques and developing a system to prevent accidental forest fires.

1.6 Conclusions

Threats and opportunities exist for the many different people who have (or believe they have) a stake in the Brazilian Amazon. The ethos behind the Brazilian Governments stance has been one of 'careful stewardship' in recognition that forests not only provide financial income but also enhance the quality of life of many different interest groups in many different ways. The PNF is necessarily a compromise document. It panders neither entirely to the wants of commerce nor entirely to the concerns of environmentalists or social-scientists. It seeks to provide a balance between different agendas. From its inception, the PNF recognised that the reconciliation of these multiple agendas would require a proactive approach of engagement across sectors to reach negotiated solutions within the forest sector. The need for engagement with the multiple sectors is ongoing and requires a continuous process of review which spans all of the Federal and State level government and non-government actors who influence forest activity.

Key message:
What happens in the Brazilian forests is determined by many different actors, inside and outside government, at international, national and local levels and across various sectors. The development and ownership of a clear and agreed vision for these forests is imperative. The National Forest Programme needs to maintain a process by which its aims are refined and integrated within the multiple programmes of other sectors and institutions at all levels.

2. What is the current context of Brazilian timber production and trade? *James MacGregor and Maryanne Grieg-Gran*

2.1 Introduction:

The following summary of the timber trade originating in Brazil aims to set the context within which export expansion based on sustainable forest management might take place. Consumption, production and trade flow data have been analysed using the on-line Food and Agriculture Organisation's FAOSTAT databases (FAO, 2002).

In relation to the data itself, volumes have been estimated in roundwood equivalents (RWE) in cubic metres, so that for processed products, volumes are expressed as the volume of logs that would have been necessary to obtain one unit of volume of the processed product. The conversion rates used are taken from FAO (1991) and supplemented pulp and paper conversion rates published by IIED (2002). All values are reported in US$ at current prices except where stated. We have followed FAOSTATs categorisation of wood product trade and use: wood fuel, roundwood, sawnwood, panels, pulp and paper (including paperboard). Fuelwood is almost never traded internationally and hence is excluded from trade flow sections.

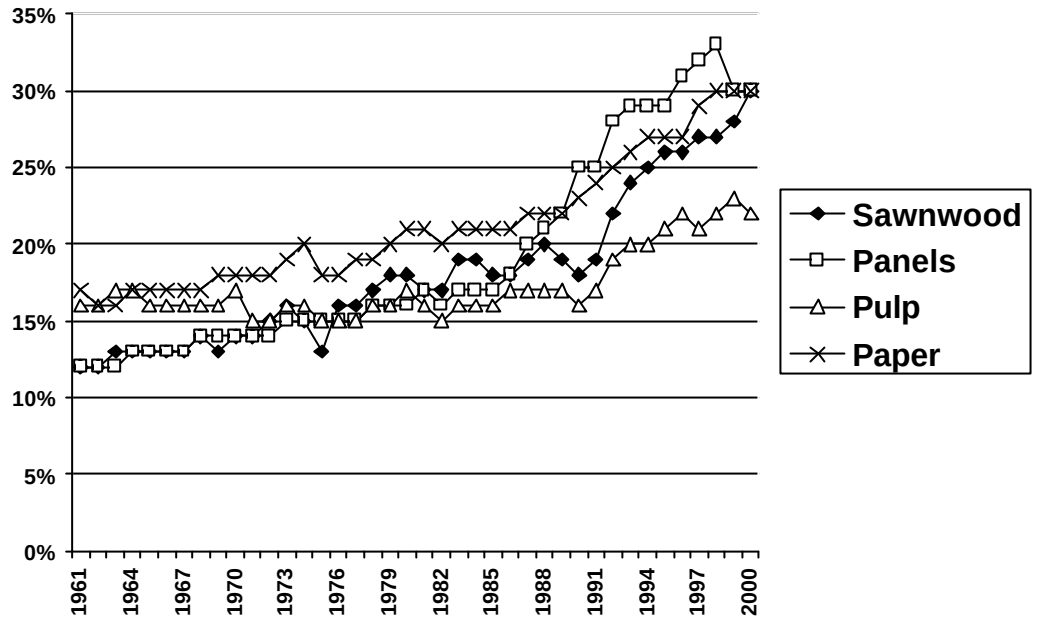
Data on the type of wood input (hardwood and softwood) is available only for three selected wood categories: sawnwood, roundwood and fuelwood. Where available, these data are presented, but there is insufficient coverage to distinguish between plantation based softwoods and tropical hardwoods for all aspects of Brazils timber trade. Production data are available for 1961–2000, but trade flow (volume and value) are limited to 1992–2000.

2.2 General global context

The Brazilian trends in forest cover fit the global pattern of a net decrease, particularly in tropical areas. This net decrease both globally and within Brazil, masks regional differences with some expansion of forest cover in non-tropical areas (e.g. in the south of Brazil, China, Europe, and North America).

For all forest product categories, trade at the global level is increasing faster than production (Figure 4). Since some of the major producer countries have recently implemented protective measures in order to conserve depleted forest resources(e.g. the logging ban in China in 1998) this upward trend in trade represents a considerable opportunity for Brazil where remaining timber volumes exceed any other country.

Figure 4. Percentage of each forest product category that enters international trade, 1961-2000



At the global level, Foreign Direct Investment (FDI), industrial scale and outsourcing are all increasing, but the sector as a whole is still dominated by small and medium sized industry (e.g. in Europe 90% of timber industries have less than 20 employees - ILO 2001). Nevertheless, international trade is generally dominated by larger firms.

International trade is primarily regional in nature, although it is gradually internationalising. Figures 5-8 display data on wood product balances aggregated by regions. The dominance of both exports and imports by Europe and North America is clearly shown by such data. Tariff barriers in the forest sector are low, normally 0-5% in developed countries for semi-processed products or 5-10% for value added products (such as windows, doors and door-frames and laminated timber). Even in developing countries, tariff barriers are normally between 10-20% (Bourke 2002). Although non-tariff measures and trade impediments may be significant, the regional nature of forest trade is also heavily determined by transport costs. Ensuring access to regional markets in North, Central and South America through regional trade agreements should be a priority for Brazil.

Figure 5. Wood product balances by region and product category, 2000 - Pulp in metric tonnes

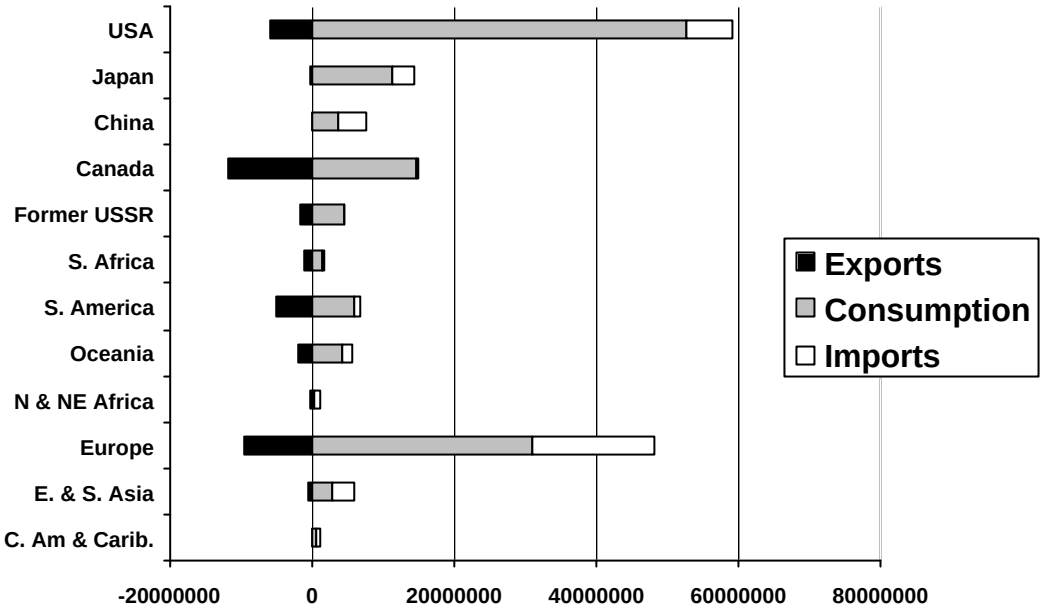


Figure 6. Wood product balances by region and product category, 2000 - Paper in metric tonnes

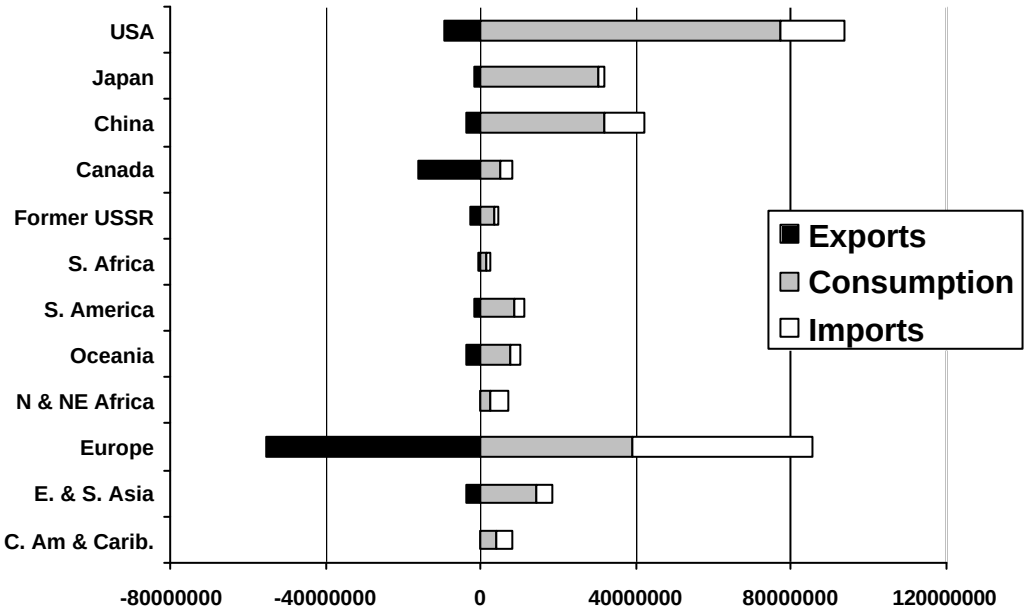


Figure 7. Wood product balances by region and product category, 2000 - Panels in cubic metres

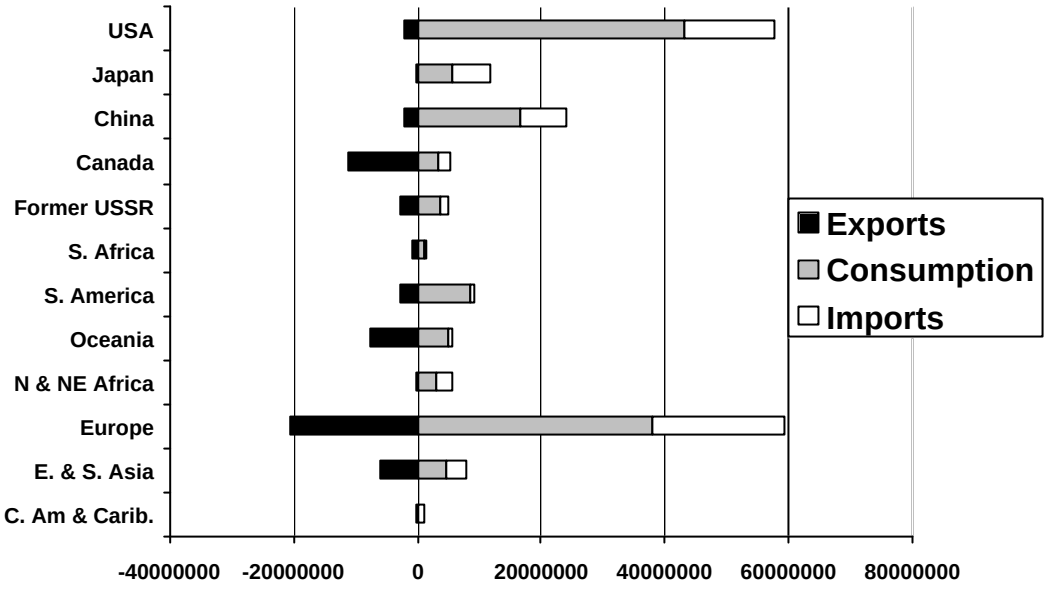
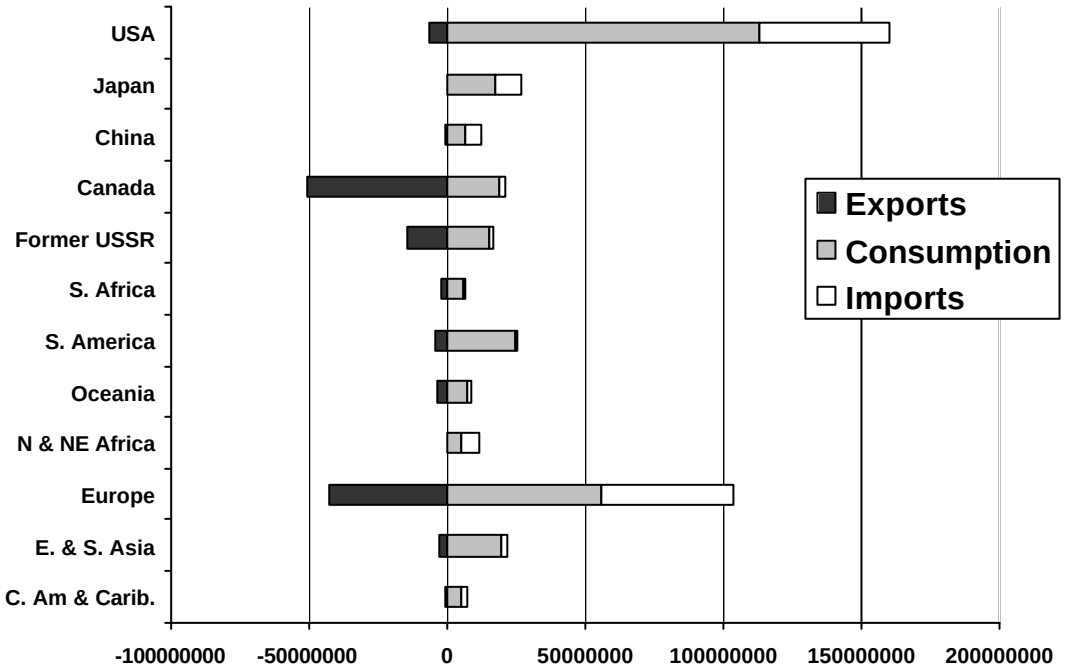


Figure 8. Wood product balances by region and product category, 2000 - sawnwood in cubic metres



Two issues at the global level are worthy of particular note. First, the fastest growth in trade is linked to processed wood products (wood panels and pulp and paper). For example, competitive strategies for regions such as Europe are defined in the following way:

"EU producers should put further distance between themselves and competitors in terms of efficiency at production level, speed of introduction of new technologies, etc. This is targeted at further reducing the impacts of higher labour costs in EU countries and matching disadvantages such as wood costs…. When examining trends in key quantitative competitive driving forces such as wood cost and labour, it is apparent that with the former there is convergence across major wood producing regions, and with the latter there is a growing aspiration for higher wages and quality of life in the emerging economies. While equivalence with EU levels is still far distant, these trends will first draw many competing countries closer to EU costs and second, mean that qualitative advantages become even more important and sometimes the only differentiators in the future." (European Commission, 2000)

It is clear that, in order to expand export markets Brazil will have to give similar attention to production efficiencies, design, speed of introduction of new technologies, customer relations and feedback etc.

A second important point is that low wages have little bearing on competitiveness in the highly processed wood products sector - rather it is skill levels that create competitive advantage (ILO, 2001). The current paucity of vocational and higher education and training in Brazil is a serious impediment, both to Brazil's competitiveness in export markets, and also to the wages and conditions of those employed by Brazil's timber industries.

2.3 Brazilian production

The production of wood products in Brazil has been increasing in aggregate in RWE terms by an average of 2.7% per year (Figure 9 and Table 1).

Figure 9. Trend in estimated total production of wood products by category, 1961–2000 (RWE in cubic metres)

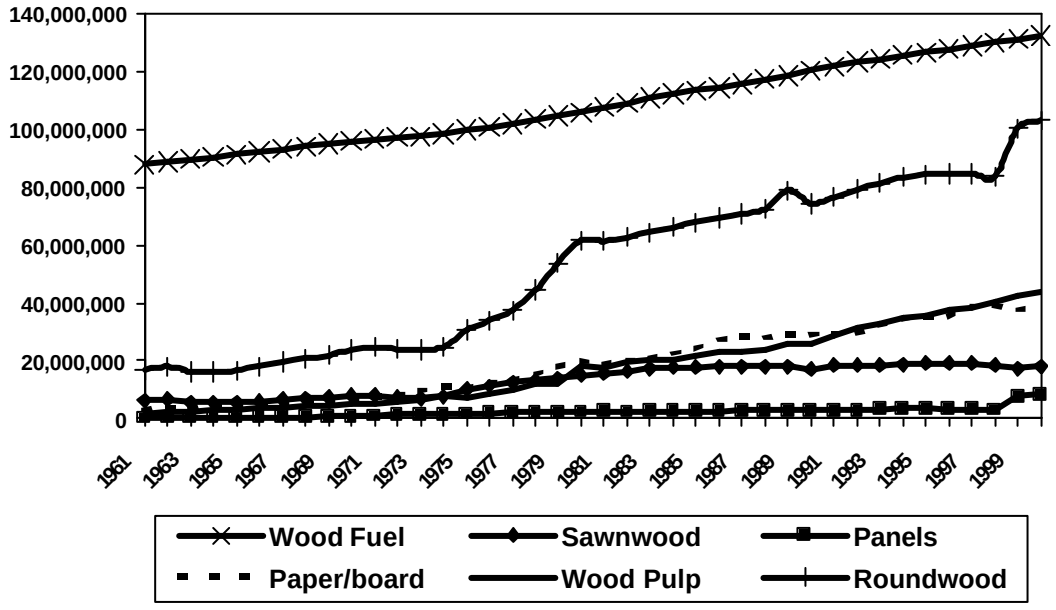


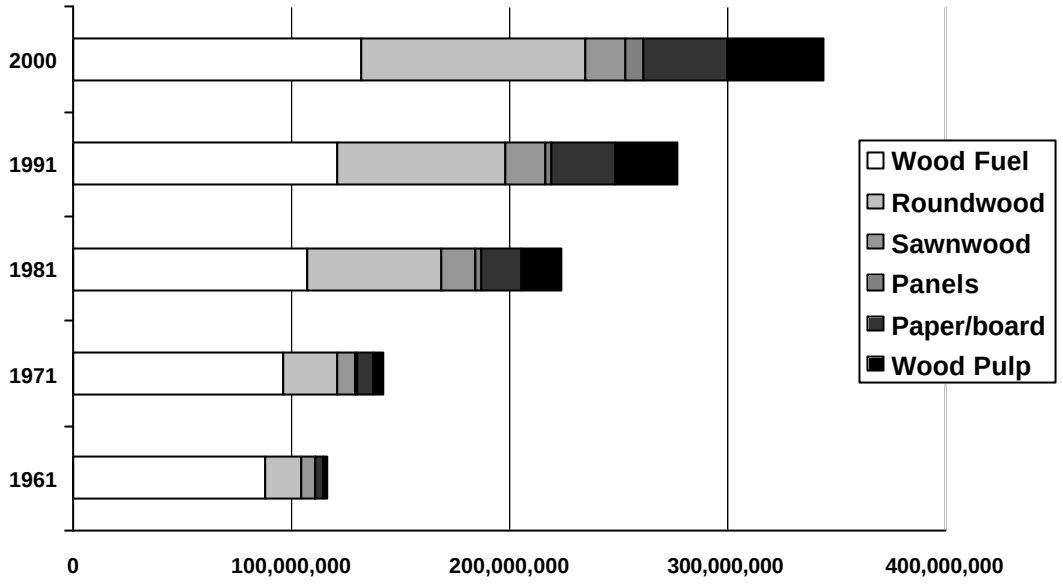
Table 1. Average decadal production, 1961–2000 and average annual growth (RWE in cubic metres)

Category	1960s	1970s	1980s	1990s	Annual growth
Wood fuel	91,824,757	100,601,654	113,937,432	127,143,944	
	0.88%	*0.91%*	*1.12%*	*0.84%*	*1.09%*
Roundwood	18,875,300	35,924,701	68,825,908	86,168,103	
	3.51%	*9.58%*	*1.95%*	*2.99%*	*5.19%*
Sawnwood	6,526,251	10,670,421	17,474,600	18,581,900	
	2.22%	*6.27%*	*0.81%*	*-0.29%*	*3.55%*
Panels	463,895	1,827,220	2,641,100	4,150,800	
	11.35%	*9.17%*	*1.16%*	*11.83%*	*7.58%*
Paper/board	2,337,930	6,260,040	12,365,700	17,505,300	
	7.50%	*10.51%*	*4.56%*	*2.85%*	*6.94%*
Wood Pulp	1,683,690	4,676,580	11,142,000	18,309,600	
	10.30%	*14.11%*	*3.74%*	*4.52%*	*8.28%*
Total	**121,711,822**	**159,960,616**	**226,386,740**	**271,859,648**	
	1.66%	***4.10%***	***1.65%***	***2.01%***	***2.71%***

The chief trends in production over the last 40 years have been rapid growth (>5%) in roundwood, panel, paper and pulp production, steady growth in sawnwood (2.5–5%), and modest growth in wood fuel (2.5%<). While sawnwood production increased rapidly during the late-1970s and early 1980s, its growth stabilising during the late-1980s and 1990s at around 18 million m^3 per annum (RWE).

As shown in Figure 10, Brazil's wood production expanded from 114 to 303 million cubic metres between 1961-2000, but with marked changes in product composition, in part reflecting technology development. In 1961 wood fuel made up 77% of all timber production, but by 2000 this had fallen to 43%. By way of contrast, in 1961 roundwood constituted only 15% of production, but by 2000 this percentage had risen to 34%. The changes in pulp and paper have been even more dramatic, expanding from 2% of total production in 1961 to 15% of total production in 2000.

Figure 10. Trends in production of wood products by industrial sector, 1961–2000 (RWE in cubic metres)



The following table reports the contribution to world production of wood products by Brazil since 1961. It is evident that Brazil's production has expanded more rapidly than global production since the 1970s in each product category.

Table 2. Brazil's production of wood products as a percentage contribution to world Production, 1961–2000

Category	1961	1971	1981	1991	2000	Overall
Wood fuel	6.63%	7.05%	6.93%	7.10%	7.50%	7.06%
Roundwood	1.67%	1.91%	4.33%	4.92%	6.49%	3.76%
Sawnwood	1.86%	1.88%	3.69%	4.07%	4.30%	3.09%
Panels	1.06%	1.32%	2.57%	2.28%	4.43%	2.25%
Paper/board	0.69%	0.96%	1.81%	2.01%	2.00%	1.75%
Wood Pulp	0.49%	0.81%	2.38%	3.04%	4.28%	2.42%
Total	**3.64%**	**3.53%**	**4.69%**	**4.93%**	**5.57%**	**4.45%**

In terms of wood inputs to Brazilian production, data is only available for wood fuel, roundwood and sawnwood. Wood fuel is primarily gathered from natural forests where hardwoods predominate. Figure 11 shows that roundwood production is still predominantly from hardwoods, despite the massive increase in Southern plantations of softwoods as well as hardwoods. Figure 12 demonstrates the input pattern for sawnwood production in which hardwoods overtook sawnwoods inputs during the late 1970s.

Figure 11. Wood inputs towards industrial roundwood, 1961–2000 (Cubic metres)

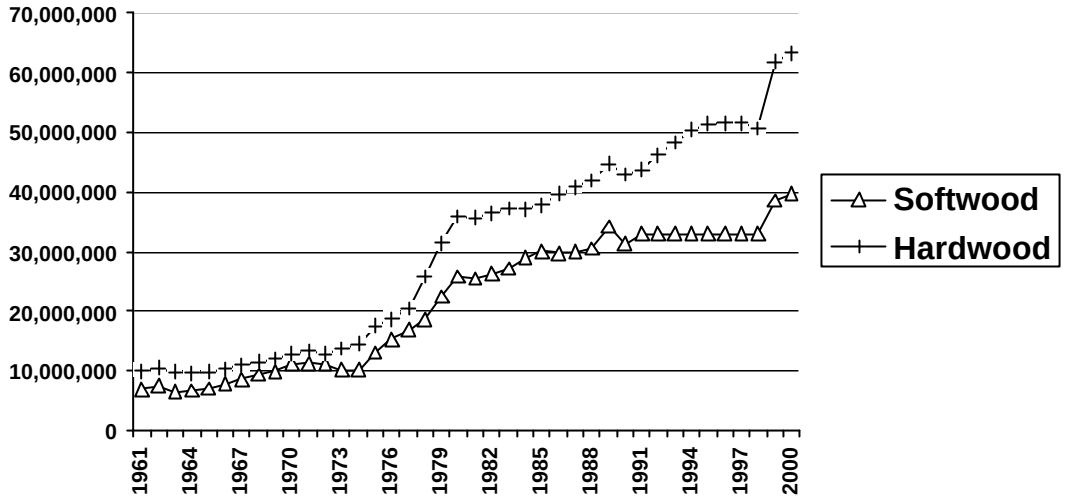
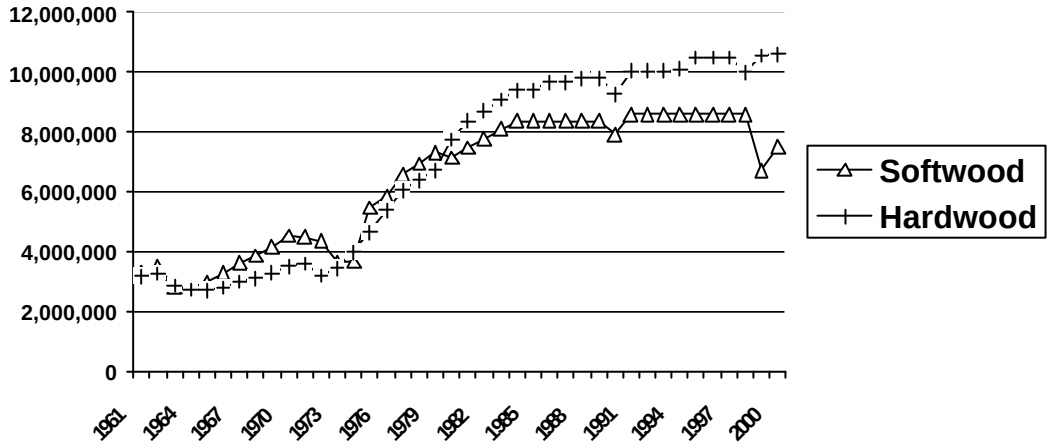


Figure 12. Wood input trends for Brazilian sawnwood production, 1961-2000 (RWE in cubic metres).



2.4 Brazilian exports

Exports constitute only a small percentage of Brazilian production for all wood products (Figure 13). Nevertheless, since 1978 Brazil has been a net exporter of wood products and the trend for exports is upward. Indeed, since 1981, exports have outpaced imports by over 150% (see Figure 14).

Figure 13. Exports as a percentage of total production for Brazil, 1961-2000 (RWE in cubic metres)

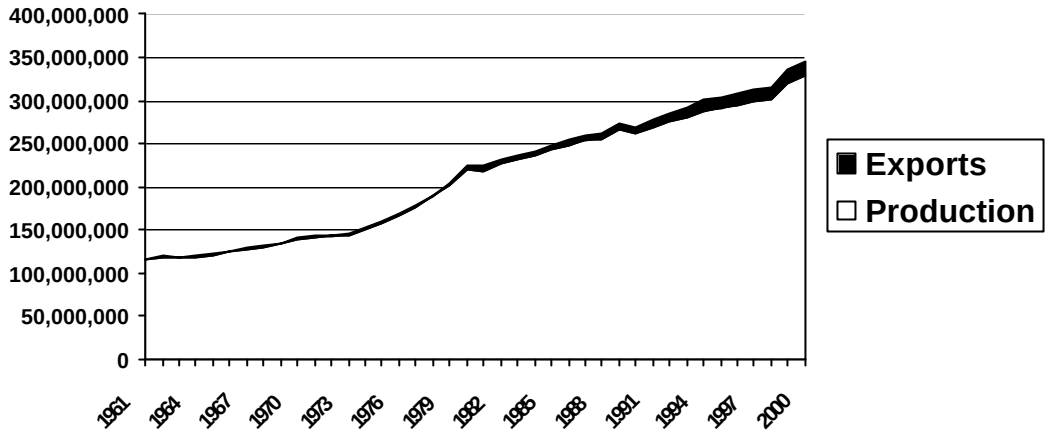
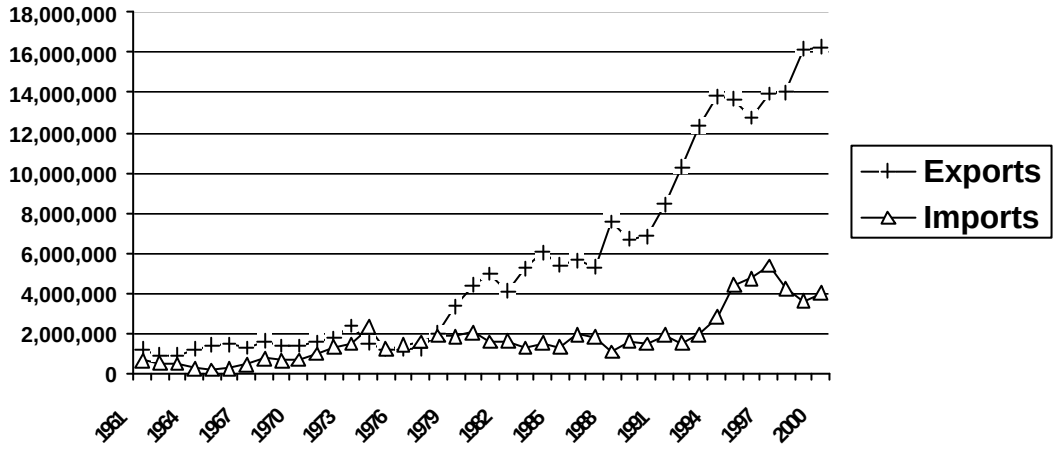


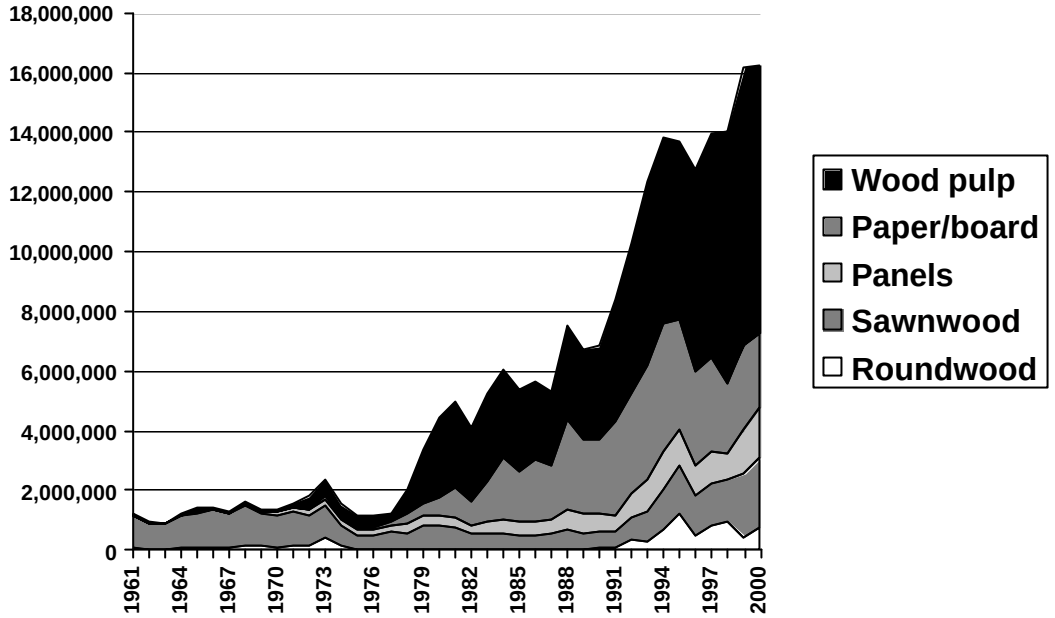
Figure 14. Import and export volumes, 1961–2000 (RWE in cubic metres)



Although relative to domestic production the volumes are insubstantial, wood products make an increasingly large contribution to the total value of Brazilian exports (5.74% in 2000), and the trend is positive. The breakdown of export categories is given in Figure 10.

Pulp and paper exports have led Brazilian wood product exports since 1977 when the main processing facilities came on stream using newly established plantation timber. The sudden rise in value-added sawn wood products ('beneficiados') in Brazil in the early 1990s has been attributed to the relaxation of import restrictions on high-tech foreign processing machinery under the administration of Fernando Collor de Mello. Relaxation of previous import barriers on technologies which could be produced by Brazilian industry allowed an influx of state-of-the-art processing equipment which increased competitiveness in Northern markets.

Figure 15. Estimated total export volume by wood product category, 1961–2000 (RWE in cubic metres)



Wood products exports in 2000 exceed US$ 3 billion from an estimated volume of 16.2 million m^3. The wood products sector has seen considerable expansion during the past 40 years of 5.96% per annum in volume and 10.56% in value in current prices.

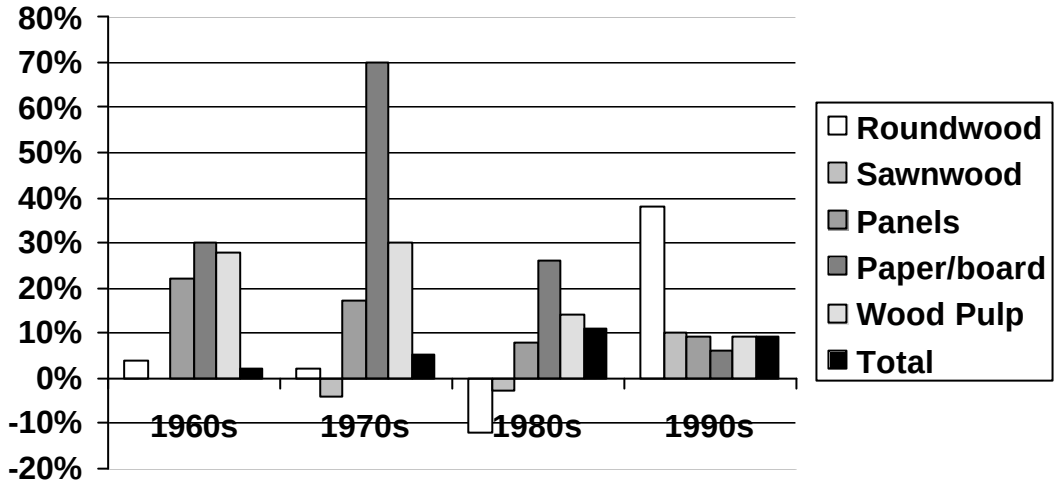
Table 3. Volumetric increases and percentage variation in average annual Brazilian wood product exports by volume and value, 1961–2000 (current prices)

Category	1960s	1970s	1980s	1990s	% volume increase	% value increase
Roundwood	69,630	88,490	23,689	601,907		
	4.36%	*2.43%*	*-12.35%*	*38.20%*	***7.45%***	***5.12%***
Sawnwood	1,106,740	770,210	558,150	1,390,301		
	-0.37%	*-3.56%*	*-3.17%*	*9.56%*	***0.76%***	***5.50%***
Panels	45,020	225,740	485,930	1,110,399		
	22.17%	*17.50%*	*7.97%*	*8.62%*	***11.28%***	***11.71%***
Paper/board	930	183,000	1,878,810	3,219,622		
	30.20%	*69.59%*	*26.22%*	*5.53%*	***31.21%***	***29.60%***
Wood Pulp	56,160	789,180	2,836,470	6,849,099		
	28.11%	*30.25%*	*13.65%*	*9.22%*	***17.37%***	***18.64%***
Total	**1,278,480**	**2,056,620**	**5,783,049**	**13,171,328**		
	1.51%	***4.87%***	***10.89%***	***8.58%***	***5.96%***	***10.56%***

Table 3 indicates that the unit value of roundwood has fallen between 1961-2000, but that

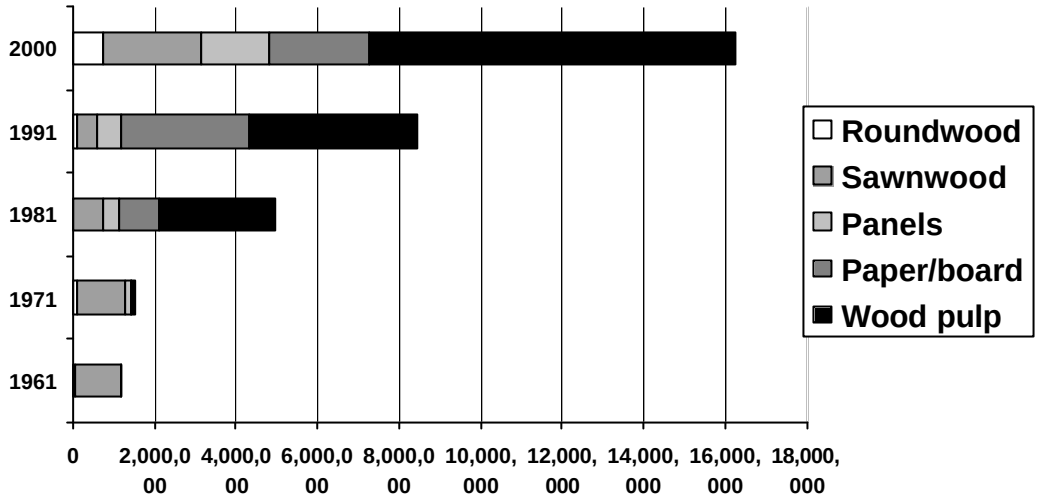
for more processed products (panels, paper and paperboard and pulp) the value of exports has been maintained per unit volume. For sawnwood, value increases have outstripped the volume supplied, most probably due to the rapid improvement of processing technology following the reduction in import tariffs for processing machinery. A diagramatic representation of average annual percentage change in export volumes in each decade since 1960 is given in figure 16.

Figure 16. Annual average percentage change in export volume by product category over the decades, 1961–2000



After recovering from a growth slowdown during the 1980s, pulp, paper and paperboard exports currently dominate export of wood products accounting for an estimated 76% of volume in 2000 (Figure 17). Panels trade has also expanded appreciably since the 1960s. Sawnwood exports dominated the early period of export development in the Brazilian timber industries, but export fell during the 1970s and 1980s, recovering only in the 1990s with the advent of more competitive processing technologies. Indeed, the 1990s was a period of strong growth for all product categories, swelling the total volume of exports by over 100%.

Figure 17. Trends in export of wood products by industrial sector, 1961–2000 (RWE in cubic meters)



Brazilian exports of all goods and services totalled $55.1bn in 2000, while in the same year Brazil's imports totalled $55.8bn (CIA Factbook, 2001). In the year 2000, the wood product economy in Brazil exported goods to the value of $3.2 billion, or 5.74% of total exports. Within this total figure, roundwood exports comprised only 0.06% of Brazil's total exports by value. Other more processed wood products prove more important in terms of export revenues with sawnwood, panels and paper/paperboard encompassing almost 1% each of the total export value and wood pulp almost 3%.

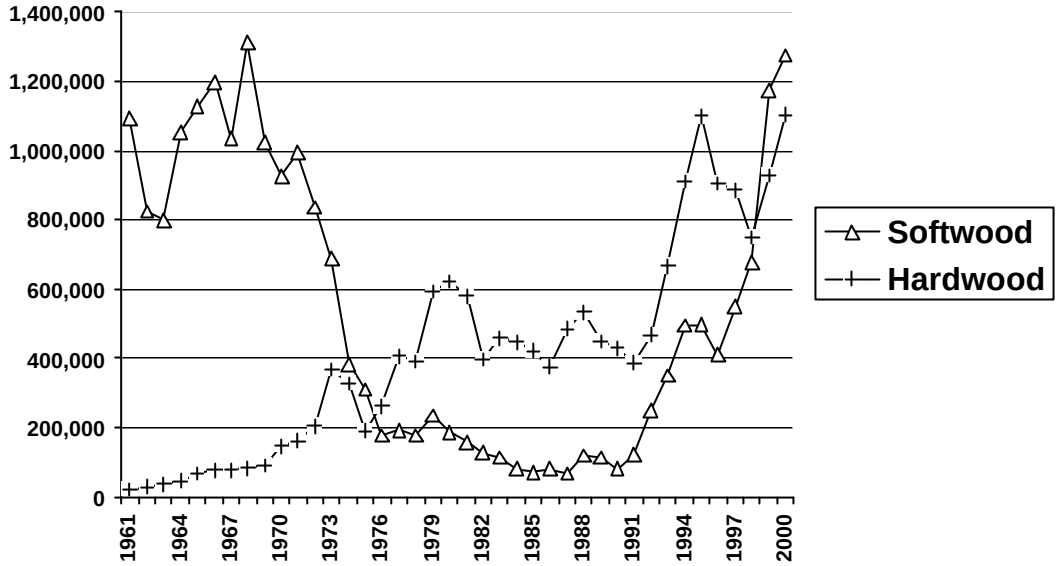
Table 4. Value of Brazilian wood product exports as a percentage of total Brazilian exports, 2000

Product category	Export Value (USD)	% Brazil's Total Exports
Roundwood	34,523,000	0.06%
Sawnwood	519,267,000	0.94%
Panels	467,251,000	0.85%
Paper/board	540,758,000	0.98%
Wood Pulp	1,601,376,000	2.91%
Total	**3,163,175,000**	**5.74%**

The export of roundwood is dominated by plantation wood on account of the natural forest log export ban in place since 1974. From the early 1970s, softwood inputs to sawnwood export volumes fell sharply due to fierce competition from northern markets until a resurgence in 1991 due to technological advances. In contrast exports of hardwood sawnwood have grown steadily in volume from 1961-2000 (Figure 18).

Figure 18. Export volumes of sawnwood by wood input, 1961–2000 (RWE in cubic

metres)



In terms of average unit prices (Figure 19), hardwoods have commanded slightly superior prices since the late 1980s, but the differential suggests that little progress has been made in finding high-value niche markets for tropical hardwoods. Deflated values would show a marked decrease in real unit value over the last 40 years.

Figure 19. Unit values of sawnwood exports by wood input, 1961–2000 (US$ RWE per cubic metre)

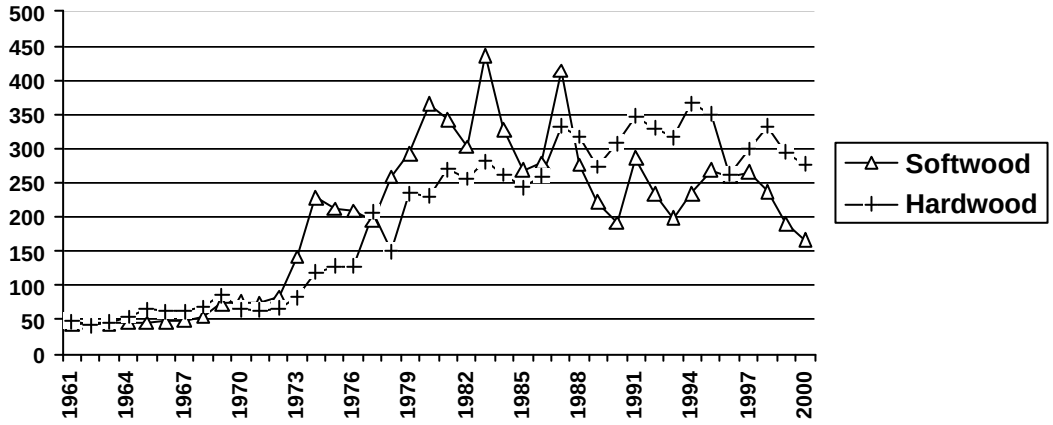
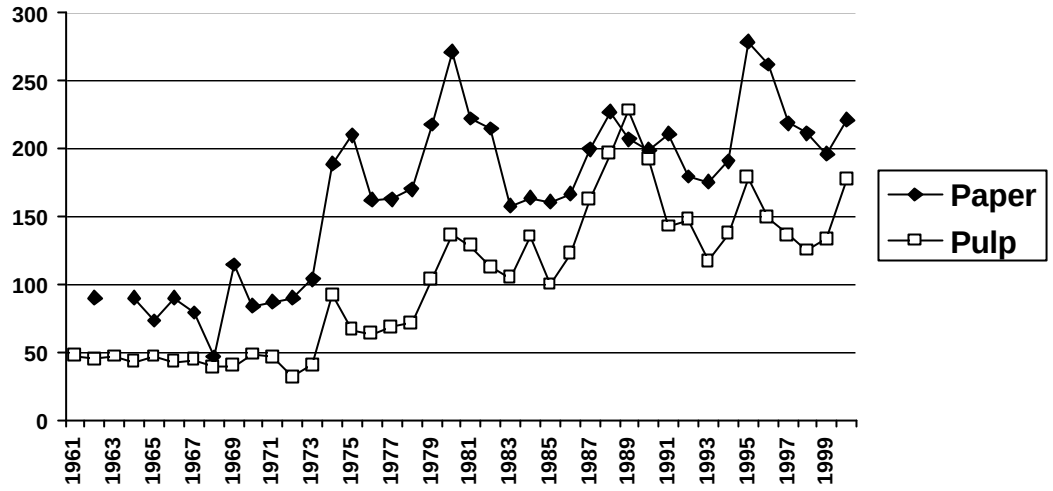


Figure 20. Unit values of pulp and paper product categories, 1961–2000 (US$ per RWE cubic metre)



The number of destinations of Brazilian exports and origins of Brazilian imports for different wood product categories is given in Table 5. These data are broken down into their regional components for different wood product categories in Figures 21-23.

Table 5. Trading destinations for Brazilian exports and origins for Brazilian imports, 1999

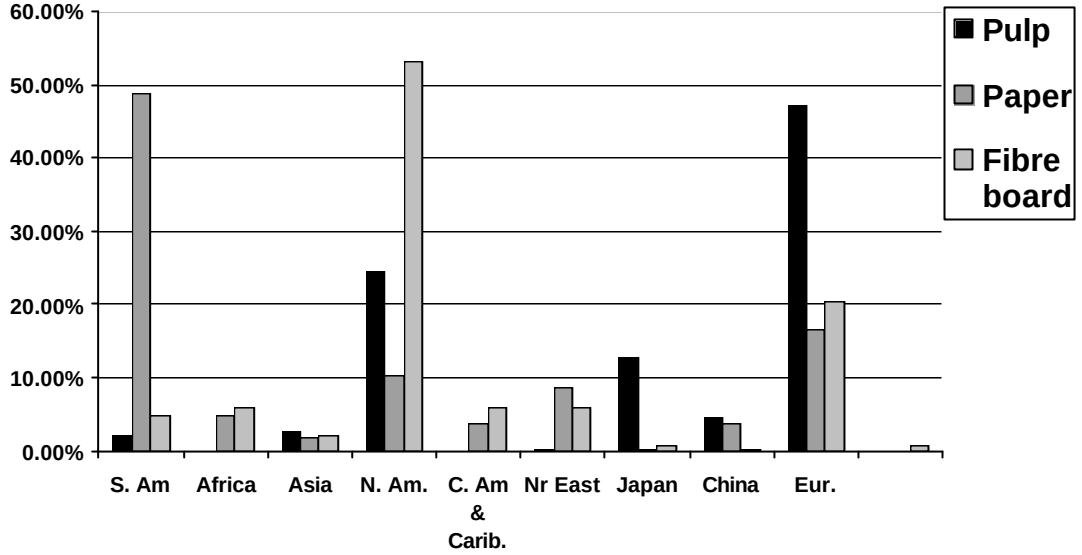
Category	Trade Flow	No specified countries++	Total Volume (Cubic Metres)+++	Total Value (USD)+++
Paper+	Export	104	962,190	557,762
	Import	45	348,778	390,555
Fibreboard	Export	76	248,000	68,827
	Import	18	101,690	21,378
Veneer Sheets	Export	51	108,918	53,913
	Import	16	20,792	10,136
Plywood	Export	70	1,003,508	341,903
	Import	13	2,391	1,453
Pulp	Export	43	3,088,099	1,229,410
	Import	14	419,001	214,593

+ Paper not paperboard or newsprint

++ FAO (2002).*Provisional*.

+++ For statistical simplicity, this omits unspecified flows and FAO adjustments and hence might be inconsistent with FAO totals.

Figure 21. Export destination by value of pulp, paper and fibreboard 1999 as a percentage of total Brazilian exports for different product categories



North America and Europe are the main destinations for all categories except paper. Paper is primarily exported within the South American region. Along with South America, the Near-East and North Africa is also an important importer of veneer. Japan and to a lesser extent China are significant destinations for pulp and roundwood. Asia, Sub-Saharan Africa, Oceania, Central America and the Caribbean are relatively insignificant. The volume of imports was a prime consideration in selecting case study countries for surveys of buyer perspectives about Brazilian timber (Chapter 3).

Figure 22. Export destination by value of exports of veneer and plywood as a percentage of total Brazilian exports for different product categories

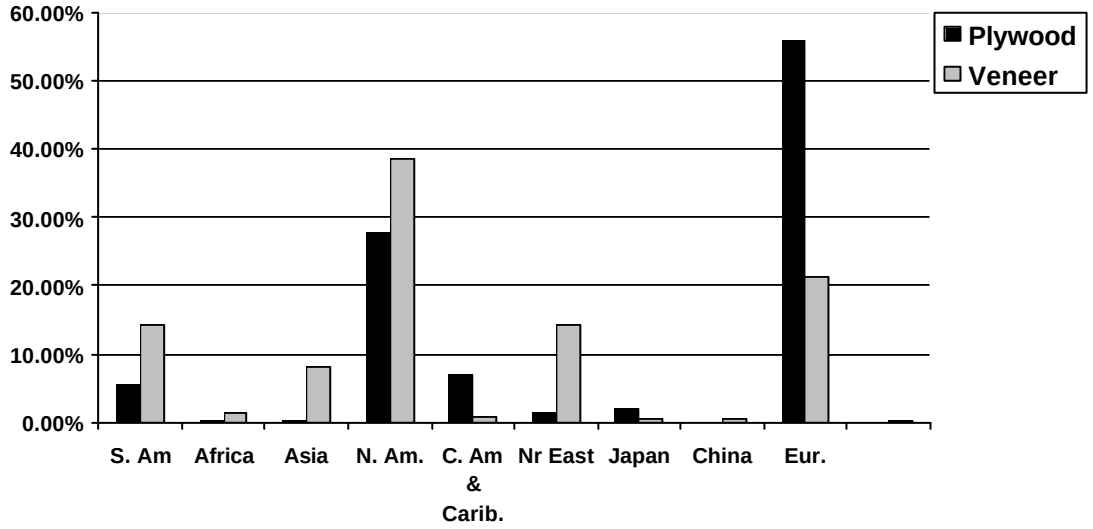
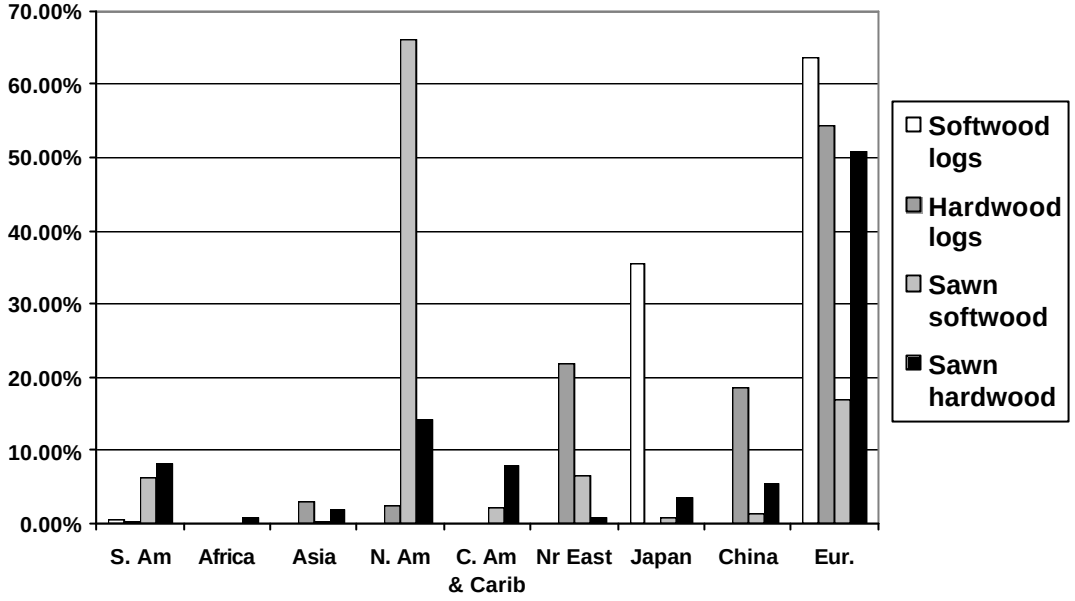


Figure 23. Export destination by value of softwood and hardwood roundwood and sawnwood as a percentage of total Brazilian exports for different product categories



In general, there is a correlation between the international trade in all wood products and the rate of export from Brazil. For most wood products (except roundwood) the total value in current prices of wood product exports from Brazil is statistically correlated with international trade developments (Table 6). Sawnwood was somewhat less correlated than other wood products as its exposure ebbed during the mid-1980s, recovering in the 1990s, which may be attributed to market imperfections surrounding trade restrictions on machinery inputs.

Table 6. Statistical Relationship between World Export of Wood Products and Brazilian Exports, 1970–2000 (in value terms)

Wood Products	**R^2**	**Brazilian Exports as a Proportion of World Exports**		
		1970	**1985**	**2000**
Roundwood	22%	0.18%	0.05%	0.42%
Sawnwood	76%	2.95%	1.20%	2.24%
Panels	95%	2.19%	2.81%	2.52%
Paper	82%	0.01%	1.22%	0.78%
Pulp	82%	0.23%	3.55%	7.73%
Total	**96%**	**0.91%**	**1.62%**	**2.27%**

Brazil's trade is small relative to international trade flows in all wood categories. The most important category is pulp, with Brazil reporting 7.73% of global exports.

2.5 Consumption:

Despite technological advances in energy provision and low levels of annual growth, wood fuel remains the most substantial category in domestic Brazilian timber consumption. Nevertheless, Brazilian consumption of other wood products has grown steadily with consumption of panels, pulp, paper and roundwood increasing by 5-7% per annum throughout the period 1961-2000 (Table 7).

Table 7. Decadal estimates of average annual consumption and average annual growth, in each decade from 1960

Category	1960s	1970s	1980s	1990s	Average annual growth
Roundwood	18,810,090	35,901,341	68,840,158	85,578,116	
	3.50%	*9.63%*	*1.94%*	*2.93%*	5.18%
Fuelwood	91,824,757	100,601,654	113,937,432	127,143,944	
	0.88%	*0.91%*	*1.12%*	*0.84%*	1.09%
Sawnwood	5,419,681	10,077,072	17,217,220	17,496,074	
	2.69%	*7.66%*	*0.92%*	*-1.45%*	3.98%
Panels	418,955	1,621,650	2,211,390	3,159,185	
	10.39%	*9.85%*	*0.14%*	*12.25%*	6.97%
Pulp	3,554,940	8,394,420	16,846,260	24,201,739	
	7.96%	*9.81%*	*4.92%*	*3.12%*	6.60%
Paper	5,333,640	13,860,300	22,393,560	32,708,910	
	6.75%	*8.93%*	*3.51%*	*4.38%*	6.23%

Table 8. Consumption by Volume and as a Percentage of Production, 1961–2000

Category	1961	1971	1981	1991	2000
Roundwood (Softwood)	6,947,000	11,343,000	25,487,008	32,993,169	39,143,000
	100.00%	*100.00%*	*100.00%*	*99.99%*	*98.68%*
Roundwood (Hardwood)	10,013,000	13,375,000	35,723,000	43,609,834	63,131,600
	100.00%	*100.00%*	*100.00%*	*99.84%*	*99.69%*
Sawnwood (Softwood)	2,180,300	3,506,450	7,317,600	8,471,000	6,225,000
	66.57%	*77.92%*	*97.89%*	*98.60%*	*83.00%*
Sawnwood (Hardwood)	3,155,100	3,439,550	8,132,400	9,905,200	9,653,600
	99.37%	*95.54%*	*97.08%*	*98.69%*	*91.07%*
Panels	265,500	877,904	2,286,500	2,179,500	6,922,400
	95.03%	*85.07%*	*88.76%*	*79.49%*	*82.54%*
Paper	3,989,400	8,739,600	18,003,600	25,284,000	38,832,000

	124.72%	*117.72%*	*96.73%*	*86.21%*	*99.98%*
Pulp	2,287,800	5,317,200	12,393,600	20,548,200	27,951,600
	125.35%	*107.34%*	*69.22%*	*72.65%*	*63.49%*

It can be seen from table 8 and from graphs of production and consumption that the Brazilian domestic market consumes the vast majority of Brazilian wood products. The two extremes shown in Figures 24-25 are sufficient to demonstrate that even in perceived 'export sectors' such as pulp, domestic consumption (in pale grey) exceeds net trade (the visible black portion) by some margin. Steady expansion in trade flows as an important driver for pulp production began in 1973 after a period of slight net import. By 1991, exports comprised 27.35% of production, and by 2000, this had risen to 36.51%.

Figure 24. Production, consumption and net trade of hardwood sawnwood, 1961–2000 (RWE in cubic metres)

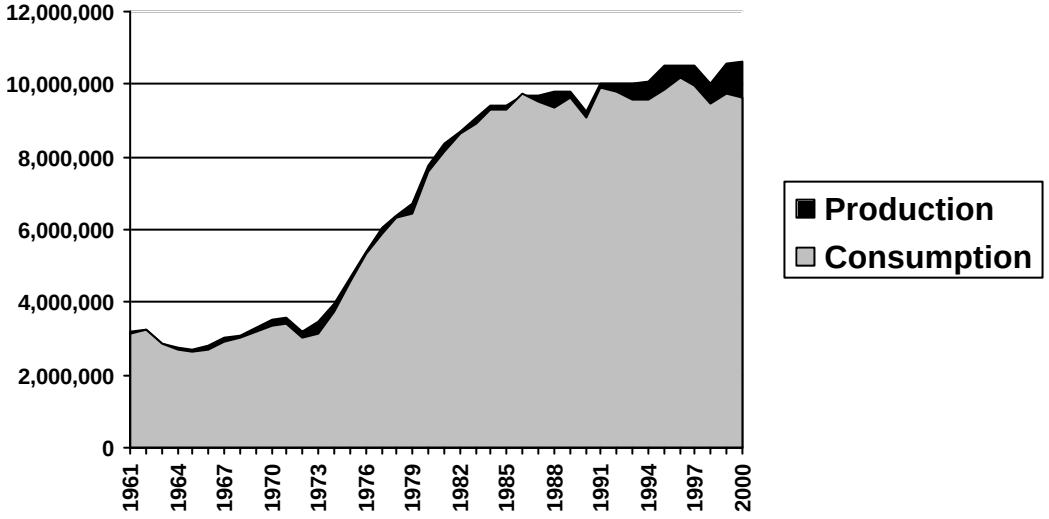
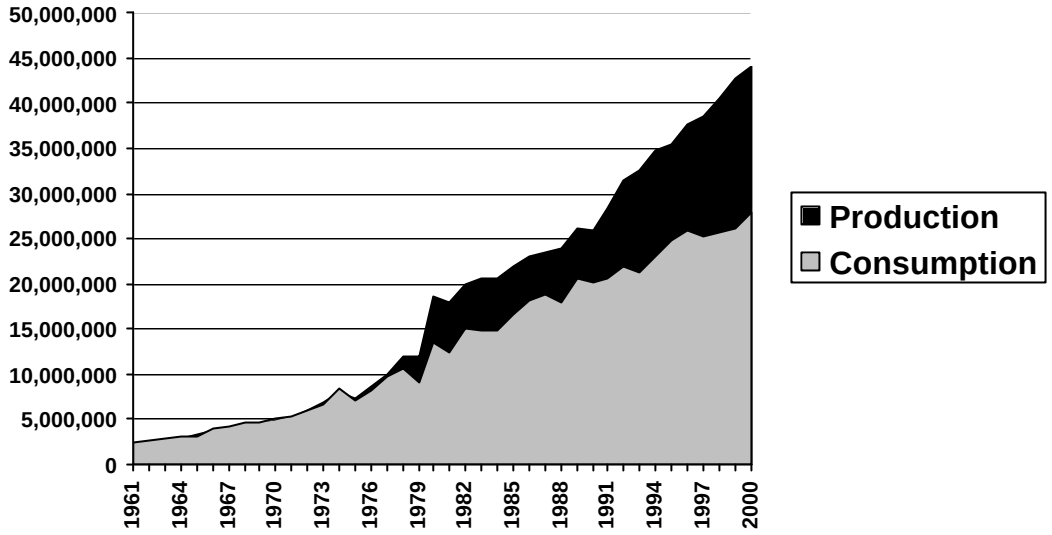


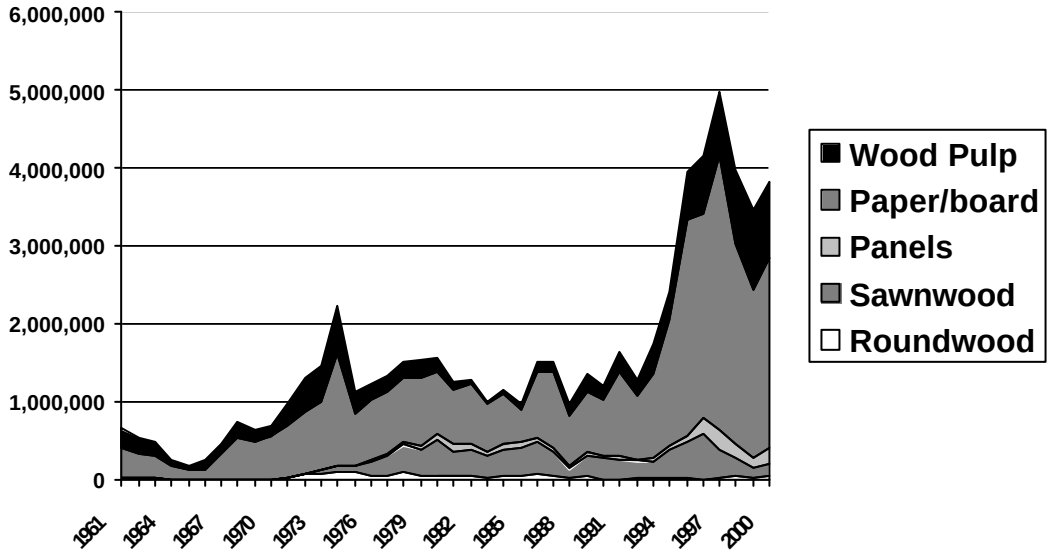
Figure 25. Production, consumption and net trade of pulp, 1961–2000 (RWE in cubic metres)



2.6 Imports

Paper is the most important wood product import into Brazil both in volume and value. In no sector, however, is Brazil a net importer of particular wood products under the categories set out by FAO. This may be somewhat misleading, since there may be net imports of highly processed fibre and paper boards from regions such as Europe which could be masked by overall exports of basic pulp and paper products. The extent of imports in FAO categories is given in Figure 26.

Figure 26. Imports of all wood product categories into Brazil, 1961–2000 (RWE in cubic metres



For some product categories such as roundwood and paper there is an inverse relationship

between import volumes and unit value. Roundwood figures exhibit a noticeable drops in imports during price hikes (1979–83, 1988–9) and peaks during value drops (1984–6). Paper imports exhibit a similar relationship until the 1980s, with drops in imports during price hikes (1981–3, 1985, 1988, 1992) although this pattern reverses in the 1990s.

2.7 Conclusions

Although Brazilian exports in the forest sector still only comprise a small fraction of total production, the rapid increase in exports indicates that the ambitions of the Brazilian government for greater market share are not misplaced. The natural evolution of exports towards processed products suggests that any future strategy should be built around investments in processing technology.

Brazil's main export markets have to date been located in Europe and North America. In order to compete in these competitive processed wood markets Brazil will have to pay attention to production efficiencies, design, speed of introduction of new technologies and customer service. Technical training is a priority within such a development strategy. Since the vast majority of Brazilian production continues to be absorbed by the domestic market, any measures which can be used to increase the sophistication of the market (in terms particularly of design and customer service) will strengthen Brazilian companies export prospects.

Key message:
The existing trends of increasing exports in the processed wood products indicate that a strategy of technological investment may be the quickest way of achieving the government aims of capturing market share. A central issue is that speed of introduction of new technology, technical capacity and design innovation are as important as the technology itself in generating competitive advantage in Brazil's main export markets. Adequate investment in workforce training should be a priority for Brazil's timber industry. Technologies which increase production efficiency would also have the added positive benefit of decreasing the wood inputs needed for each unit output.

3. Expedient plunder? - the new legal context for Amazônian logging

Roberto Smeraldi

3.1 Historic development of timber exports in Amazônia - 1950-2003

We move now from the general picture of Brazilian timber trade to the specifics of the tropical timber trade originating in the Amazon.

3.1.1 The paucity of good data on Amazônian exports

The history of the development of timber exports from Amazônia is difficult to trace due to lack of statistics. For example, records of the exports of sawn timber and plywood from the whole of Brazil (e.g. from the *Câmera do Comércio Exterior do Brasil* - Foreign Trade Chamber of Commerce of Brazil) show the monthly exports of sawn timber and plywood from 1989 to 2002. But for our purposes, those records suffer a few limitations. Firstly, they do not show the difference between sub-tropical and tropical timber. Second they do not segregate timber coming from plantations or from natural forests. Finally, they do not make a distinction between timber from the Atlantic Forest and that from Amazônia.

During the period 1950-1970 it is unlikely that exports would have included exports of sub-tropical timber and timber from plantations because those species existed in abundance and were quite common in Europe, North America and in the Southern Cone (Uruguay, Paraguay and Argentina). Apart from this, the domestic market in the South-Central region of Brazil was experiencing spiralling growth during this time and would have absorbed such material. So, the only source of raw materials that could have been exported during that period as sawn timber or plywood came from the Atlantic Forest and Amazônia. We believe, therefore, that those historical records give an approximation of the development of exports from Amazônia provided that the timber from the Atlantic forests can be discounted. Hence we have used them in conjunction with statistics from other organizations such as AIMEX (Associação das Empresas Exportadoras do Para), data from a review of existing literature, and the personal correspondence of some specialists in the area.

3.1.2 Exports during the period from 1950 to 1970

Amazonian timber has been extracted and traded since the early colonial period but to a limited extent (e.g. for fine furniture and construction). This pattern continued until the beginning of the 1950's, when timber exports were mainly in the form of logs of fine species (Mahogany - *Swietenia macrophilis* and Cedar - *Cedrella odorata*), and railway sleepers for railroads in Europe and Southern Brasil (Barros and Uhl, 1995). The demand for railway sleepers came to an end by the end of the decade of the 1950's. But trade in tropical timber continued to attract interest in setting up companies for wood processing in the region. So, huge sawmills, plywood factories and steam-driven or hydraulic energy based laminating plants were established in the region of the estuary of Amazônia river (FAO, 1976; Silva,

1987; Knowles, 1965; Bruce, 1976). Such initial investments in forest operations on a large scale were accomplished by means of Foreign Direct Investment (FDI). At that time, forest exploitation was highly selective, that is, only one or two trees per hectare were extracted. The exploited species were principally Virola (*Virola surinamensis*) and Andiroba (*Carapa guianensis*). But in spite of the difficulties encountered by the pioneering activity of logging in Amazônia, exports went from 54 thousand metres at the beginning of the decade of the 1950s to 218 thousand cubic metres of processed wood a year by the end of the 1970s - an increase of over 400 percent (Figure 27).

3.1.3 Exports during the period from 1980 to 1990

Following this period of accelerated growth up until the end of the 1970's, exports of processed wood from Amazônia during the 1980s and 1990s experienced a period of modest growth. The numbers given in Figure 27 show that exports in 1978 were around 268 thousand, reaching 367 thousand cubic metres of processed wood by the end of the 1980s. Unfortunately, we cannot examine the annual variations that took place during that period due to the lack of information.

Although the volume of exports has grown in a modest way, the profile of the exports changed significantly during that period. This occurred because, at the beginning of the 1980's, the military government decided to integrate Amazônia with the rest of Brazil. It planned and built thousands of kilometres of highways. These highways are located in the southern arc of Amazônia. In addition to the highways, the government created settlements along them, offered fiscal incentives for anyone who wanted to invest in the region, and built hydroelectric power stations and railroads for the mining programme known as Grande Carajás (Mahar, 1988). As a result, logging activities gained access to *terra firma* forested areas that were previously inaccessible, and the occupation encouraged by the government brought in cheap labour for industry. Between 1980 and 1984, Mahogany (*Swietenia macrophilla*) accounted for more than 30 percent of the volume of timber exported throughout Brazil (Browder, 1987). Apart from Mahogany, extraction of a further 10 species from *terra firma* became economical as a result of these Government actions, and thus began to enter the market.

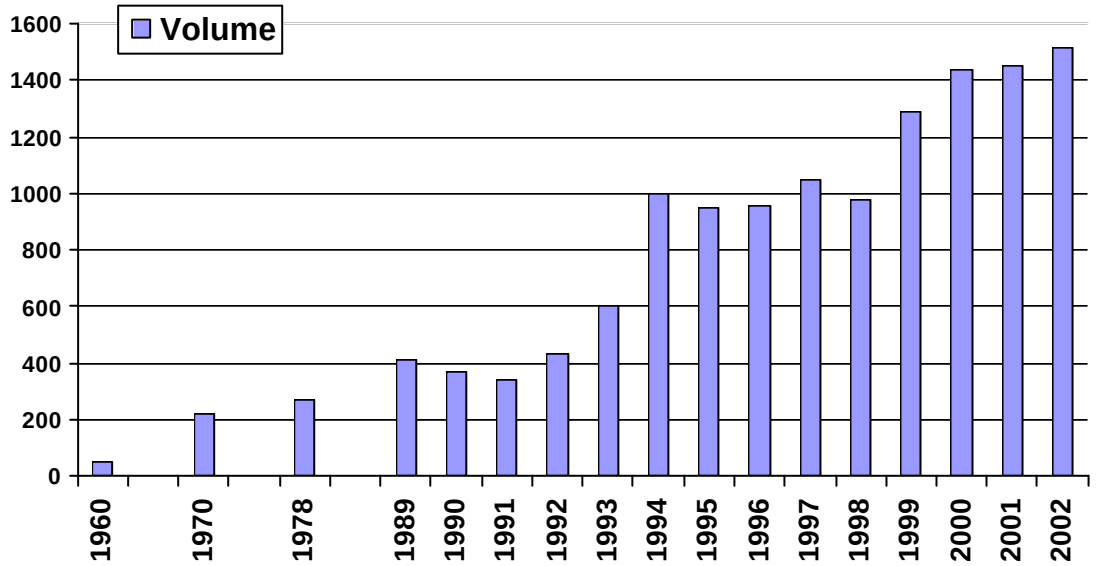
3.1.4 Exports During the period from 1990 to 2000

Up until the beginning of the 1990s, very high tariff and non-tariff protection, [currency] exchange controls and exchange rate devaluations were the instruments used by the Brazilian government to protect the domestic industry (Bonelli and Brito, 1997). As a result, the vast majority of equipment necessary to run a timber harvesting enterprise was put beyond the reach of most Brazilian industries. For example, the importation of skidders, trucks and computers for planning and implementing forest management was practically impossible. In 1990, all of the non-tariff barriers that had no legal basis were removed. The tariffs on equipment produced outside Brazil, for example, were reduced to zero (Muendler, 2000). Additionally, the government drafted the Kandir Act, reformulating ICMS – "Imposto sobre Circulação de Bens e Serviços" (Tax on the Circulation of Goods and Services). The enactment of this law exempted from the payment of ICMS such things as the exports of

primary and semi-finished products, the acquisition of capital goods, consumed energy and company usage and consumption of goods. During this time, exports took another leap, one comparable with the beginning of logging activities in Amazônia. The amount of wood exported, which was around 330 thousand cubic metres went up to 1.5 million processed cubic metres. This was a growth of 450% (Figure 27).

The reforming of international trade laws had a great impact on Brazilian industry in general and this took place in three different ways. Firstly, high-quality technology became importable and directly increased the productivity of the companies. Secondly, the elimination of tariff barriers increased competition on the product side, forcing Brazilian industry to modify production processes and increase efficiency. And lastly, increased competition eliminated the less efficient companies from the market. However, in the case of the timber industry there were no timber imports to supply the domestic market. Consequently, the elimination of less efficient businesses did not take place, neither was there an increase in the competition for wood products. Thus, the rise in exports in the 1990s is explained mainly by the acquisition of foreign technology and new export support programmes created by the Brazilian government.

Figure 27. Production of wood processed in Amazônia for export, 1960 to present (in thousand cubic metres)



Source: Ministério da Indústria e Comércio (MDIC), Secretária de Comércio Exterior (SECEX), Companhia das Docas do Pará (CDP).

3.1.5 The rise of illegality

Analysis and classification of different types of forest exploitation and trade of wood in the Brazilian Amazon began in December, 1992, with the investigation that produced a major report on illegality (Amigos da Terra, 1994). Focusing on activities in 1993, it stated that 'virtually all of the mahogany logged in the Brazilian Amazon – whether for domestic

consumption and for export – is either produced by illegal practices or is not subjected to any reliable official control'.

Between 1993 and 1994 an intensification of illegal activities was reported in an update of the report. It was noted that illegal activities were migrating towards public lands such as conservation units (Amigos da Terra, 1995). This second report documented an enormous illegal operation in the indigenous Indian area of Trincheira-Bacajá by one named logger. It was during this period that the *"Núcleo de Direitos Indígenas"* [Centre for Indigenous Rights] (which would, subsequently, co-found the Instituto Socioambiental [Socio-environmental Institute] launched the first public civil campaigns against the companies in the State of Pará that were exploiting indigenous Indian lands (Millikan *et al*., 1995). Also at that time, the arrival of the illegal exploitation of the areas between the rivers Iriri and Xingu, known as "Terra do Meio" [Middle-Ground] was documented (Amigos da Terra, 1995). The regular condemnation of illegal activities was taken up by some in the information media, mainly the newspapers *Jornal da Tarde* (1994) and the *Estado de São Paulo* (1994, 1996, 1999, 2001, 2002). Through a series of special reports these newspapers helped to put the issue into the public arena as never before.

The illegal activities documented in these and other subsequent reports (e.g Amigos da Terra, 1995) related to violation of conditions in forest management plans and deforestation permits or harvesting without authorised plans or permits, fraudulent use of transport permits (known as ATPF), the use of forced and slave labour, tax evasion, and the corruption of government officials. Illegal activities have mostly been concentrated in the state of Pará, although there is ample documentation concerning the states of Rondônia, Mato Grosso and Acre.

In 1997, a new collaborative study provided a much more detailed picture of the situation in each of the nine States of the legal Amazon (Amigos da Terra, 1997). It included detailed analyses of plans and permits. It also assessed the procedures used by IBAMA for licensing and monitoring, enforcement of fines, the analysis of illegal activities according to type and the new situation created in 1996 with regulations dealing with mahogany and virola. It dealt with the suspension of new management plans involving such species, which had left commercial trading in the hands of five companies. It documented the promotion of the sale of wood that resulted from forest clearance (an issue which has become increasingly relevant over time). It was at this time that the 'Mahogany Kings' were identified.

Also in 1997, it was estimated that 80% of all timber in the market was illegal in some form or other. The estimate appeared in a confidential report by a government task force set up by the then *'Secretaria de Assuntos Estratégicos - SAE'* [Secretariat for Strategic Matters] of the *'Presidência da República'* [Office of the President] which was leaked subsequently to the press (SAE, 1997; Folha de São Paulo, 2000). The report had focused on the situation up until 1996 preceding the land reform process and the beginning of various open inspection activities conducted by IBAMA.

3.2 A new context and the increasing cost of illegality

Within the recently published PNF there is emphatic mention of the over-utilization / predation of forest resources and their replacement by alternative land uses. The analysis makes the point that these conditions create unfair competition between the supply of wood raw materials from deforestation and those produced by sustainable forest management. In terms of solutions, the PNF suggests the need to reduce the operational costs of sustainable management in comparison with other land uses to the detriment of predatory exploitation. It also recommends the expansion and consolidation of forest concessions on public lands, such as FLONAs (MMA, 2001a).

In March 2001 the former Minister José Sarney Filho set up the *"Comissão Regional para o Licenciamento Ambiental"* [Regional Commission for Environmental Licensing] in consultation with relevant stakeholder groups (MMA, 2001c). This Commission aimed to make forestry management more financially attractive than the alternative of procuring raw materials from deforestation (A Crítica, 2000). From the outset the commission encountered serious institutional resistance. By early 2002, it had produced only a few extremely soft measures. The new minister, José Carlos Carvalho, reiterated his intention of using the Commission for improving licensing procedures.

Another important development was the formation of a buyers group for certified wood to encourage producers to adopt FSC certification. This group, which now has 67 members, is also associated with similar groups in another 14 countries who together form a Forest and Trade Network, with almost one thousand members worldwide, capturing even greater demand for certified products. However, the production of certified wood has not yet been sufficient to meet the demand (Amigos da Terra, 2002).

Up until the mid-1990's, illegal practice incurred relatively small costs in comparison to the profits made. It was also extremely easy to obtain approval for a forestry management plan from the great majority of IBAMA's supervisory agencies. In some instances such as that of Rondônia, IBAMA charged the equivalent of 5,000 Reais (approx. US$1,600) US for a superficial inspection using outside inspectors (Amigos da Terra, 1995).

Since 1996, the development of the legal framework (described in 1.4.2) has led to innumerable prohibitions and restrictions (Act 9605/98) dealing with environmental crimes and providing for fines that were far higher than before (Hirakuri, 2003). Inspection operations have been launched more frequently. Because these inspections have a strong media component, they need to show significant quantities of impounded raw materials and/or the imposition of fines. Based on the figures given below, it is estimated that the cost of the illegal activities has reached approximately R$ 10-12 (approx. US$ 3.3-4) per cubic metre in fines or avoidance, which is significantly more than the price of the raw material paid to settlers or extractors.

The logging company Cilla Indústria e Comércio Ltda, was the first company to be fined under the law against environmental crimes in October, 1999. It sparked a record number of actions taken by IBAMA (Gazeta de Cuiabá, 1999). The company operates out of Altamira (Pará) and was allegedly regularly involved with illegal extraction from the Indian reservation of Baú. It was fined R$ 700 thousand (approx. US$230 thousand) for the illegal

extraction of 1,300 cubic metres of mahogany (O Estado do São Paulo, 1999). In the two months following this, the value of the fines in Pará alone rose to R$ 3.5 million (approx. US$1.2 million - Pontes Júnior 1999). The operations intensified in subsequent years. In 2001, during the month of August in the state of Pará, more than 30,000 cubic metres of timber was impounded and more than 600 fines issued, to a total of 40 million Reais (approx $13 million - O Estado de São Paulo, 2001). The total amount of wood impounded in 2001 reached more than 80 thousand cubic metres (Correio do Tocantins, 2002). The largest fine imposed in 2001 was for R$ 2,680,180 (approx. US$890,000). The fine was charged against Jurilândia Empresa da Amazônia Ltda, of Altamira, accused of storing mahogany without authorization and transporting wood without a legal source (Ambiente Brasil, 2002; O Liberal, 2002). The total of all fines imposed during 2001 reached R$ 48,730,061 (approx US$ 16.2 million), amounting to more than eight times the value of fines imposed in 1997. However, the percentage of imposed fines that were actually successfully collected in 2001 was a mere 6%, a rate well below that of 1997. This percentage collection rate has dropped even lower in recent years (it was not possible to obtain official details from IBAMA).

Inspection operations have become commonplace and have often caused strong tensions with loggers who see them, in many instances, as a violation of the working relationship previously enjoyed.

"Nowadays the fees are so high that folk even prefer to make things official. Now, Ibama's staff will have to change their standard of living." (Roberto Pupo, Vice President of AIMEX and President of Nordisk do Brasil quoted by Amigos da Terra)

Amigos da Terra recently conducted a survey of sawmills responsible for processing a total amount of 43 thousand cubic metres/year in the municipal districts of the area of lake Tucurui (Pará). The survey showed that in the last three years the cost of the 'paper work' for legitimising suspect timber rose from R$ 1.50 to R$ 10.00 per cubic metre. This cost is higher even than the supply costs. Eighty percent (80%) of those interviewed admitted to paying this sum (Sobral et al., 2002).

Table 9. Summary estimate of the cost breakdown of wood to sawmills at the main logging centres in Brazil (per cubic metre in 2002)

	Beginning of the Nineties	**Beginning of Current Decade**
Approximate average cost for the supply of logs (with wide regional and type variations)	Between R$ 1 and R$ 5 (approx. US$0.3 – 1.7)	Between R$ 1 and R$ 5 (approx. US$ 0.3 - 1.7)
Average approximate cost of corruption for regularization (with wide regional, seasonal and type variations)	Between R$ 1 and R$ 3 (approx. US$ 0.3 – 1.0)	Between R$ 10 and R$15 (approx. US$ 3.3 - 5)

TOTAL COST	**Between R$2 and R$ 8 (approx. US$ 0.6 – 2.6)**	**Between R$11 and R$ 20 (approx. US$ 3.6 - 6.6)**

Sobral et al., 2002

The crack down led to the progressive increase of the cost of maintaining illegal activities. Suspect inspectors tended to become increasingly demanding (in order to become remunerated for the risk that they took). They were also encouraged to issue a greater number of fines and for larger sums, facilitated by the new regulations. Even if the fines are not paid, the act of being fined incurs cost to the company due to several factors:

- The need for legal services to dispute the case;
- The bad public image portrayed to the press, NGOs, competitors, suppliers and buyers, with consequences to the reputation of the enterprise;
- The possibility of temporarily freezing company assets through court action and the resulting difficulty of providing guarantees for credit operations;
- The possibility of being caught in a vicious circle of fees, also involving the judiciary;

The possibility of losing part of the raw materials impounded, not always likely to be recovered (sometimes being sold on at auctions without benefit to the company).
In this context, forest management plans were subjected to the greatest scrutiny. The number of approved management plans was drastically reduced over the years. Of the 2,806 management plans that were monitored in 1997, just 866 remained by December 2000, and only a further 34 new ones were approved over this period. One year later, only 490 companies had permits to operate (Fontes, 2001).

3.4 The agrarian settlements revolutionize timber supply

Since 1995, the Brazilian Amazon has been experiencing one of the largest Government planned and supported human resettlement process in history (comparable with endeavours such as the Indonesian *Transmigrasi* of former President Suharto). Land settlement in Brazil is broadly based on a huge process of land privatisation. During the Military Regime in Brazil there was a ruling that designated as "Terras da União" [Federal lands] all lands 100km on either side of existing or planned highways. The responsible government agency (INCRA) thus became at that time the largest landowner in the world. Brazilian land reform has been carried out mainly in the Amazon region which is host to about 62% of the area for resettlements, comprising about 50 thousand families a year in the last five years. (MDA, 2002).

Timber is undoubtedly the most readily available source of capital for settlers, even if a lot of timber from land clearance cannot be sold to the wood industry as it exceeds current capacity. Government policies have acknowledged this fact and have not provided any alternative to a settlement model based on deforestation. Current laws stipulate that settlers may deforest 3 ha/year up to a total of 20% of their land holdings. The few and isolated attempts to change the model arose within social movements generated by the settlers

themselves, but until now they have been limited in scope and are of a pilot nature. Since it is almost impossible to license and effectively monitor the practices of the subsistence farmer over such huge areas, the government settlement policy has opened the way for widespread harvesting of timber through land clearance. This has allowed such timber into the commercial cycle. While such harvesting provides important revenues for small farmers, it has also led to a situation in which timber procurement is largely based on non-sustainable practice.

The only illegality that is likely to be monitored within the settlements is the felling of the Brazil nut tree (prohibited by law). Even in this case it is difficult to enforce the law due to the complex social circumstances:

"Almost all of the Brazil nut timber comes from INCRA settlements in the area. The settlers sell a cubic metre to the samillers for up to R$ 30. The sawmills of the area are full of Brazil nut logs" (Passos, 2000)

"We have sought out the sawmillers to sell the Brazil nut logs because we are suffering deprivation" (Silva, 2000).

As the clearance of forests in settlement areas became widespread, sawmill owners realised that they had a simple and inexpensive alternative to forest management, which at the same time had become expensive and complex (as described above). The sawmill owners discovered that they were able to: avoid bureaucracy; drive down prices because of the abundance of timber from land clearance; avoid inspection operations; be liberated from any responsibilities to manage the forest resource and most importantly, have access to a vast supply of timber thanks to new and existing settlers.

"Management is an investment that requires such a vision for the long term. But today it is preferable to carry on without buying lands and without investing in management but buying wood from third parties. As a consequence the chain is a long one. We have the loggers, the sawmills and then [manufacturing] industry. It is difficult to identify where it [wood] is coming from or what took place." (Pupo, 2001)

A quick calculation shows that the estimated total of 1 million settler families (from current and previous immigrations) when able to supply 20 cubic metres per hectare of wood from 3 ha/year, could inject into the market up to 60 million cubic metres of legal wood per year. This is about double the current processing capacity of the sawmills.

As a specific example, in the State of Acre during 2002, there were 20,000 petitions for licences to clear 3 ha of lands from settlers. The total clearance will therefore have been in the order of 60,000 ha. Assuming that 20m³/ha is a conservative estimation of commercial timber density, land clearances will have liberated 1,200,000m³ of timber. Since the processing capacity of the State of Acre is in the order of 300,000m³ it can be seen that there is little need for alternative sources of timber (Macqueen, 2002).

The volume of potential supply from the settlements increases considerably when you take

into account the additional volume that could come from activities that 'add value' by 'encouraging squatting' - the movement of settlers to new areas is often not a result of their preference, but is forced on them by powerful landowners to allow speculators to acquire new lands (Gazeta Mercantil, 2000). The most noticeable cases have involved a few large-scale land-grabbers (Araujo, 2000), but there is no shortage of smaller incidents that are linked to businessmen, mayors, etc.

In 2000, 62% of the management plans in Pará had falsified landownership documentation, and 25% of these were for lands supposedly owned by one single land-grabber (Araujo 2000). Such discoveries were made only after 360 of the 935 management plans that existed in 1998 had already been cancelled.

"We don't know the origin of the raw material. We don't know where the land deeds come from. Today, there are many approved management projects that are environmentally sound but which cannot go ahead because of land problems. It either originates with a specific land-grabber or is an area of dispute between ITERPA and INCRA" (Pupo, 2001)

The key point is that the amount of wood on the market stimulated by the new land settlement and clearance policy in the Amazon (legally in the case of land reform and illegally as in the case of squatting) is more than enough to keep wood prices low, hampering the success of any environmentally and socially sustainable activity in achieving economic profitability.

The new land settlement and clearance policy also makes the implementation of PNF more difficult in its aim of promoting concession management in FLONAs. The costs of operating such concessions cannot compete with the minimal costs of the current supply model, thus making FLONAs probably unsustainable from an economic point of view. It will also be almost impossible to achieve the PNF aim of bringing at least 20 million hectares of Amazônian forest under a regime of sustainable management by 2010 (the said aim includes private and public areas).

3.5 The extinction of forest management activities

Gradual extinction of the traditional logger (who at least owned land, even if not managing it) in the Amazon has resulted from the situation described above. The lack of secure tenure, the difficulty in access to capital, the exhaustion of forests in and around traditional production centres, the rejection of the lifestyle of perpetual migration, the opportunities for diversification into livestock, as well as the more affordable alternative supply of timber have all caused a momentous shift in the supply chain compared to a few years ago.

Only two types of tradition have survived in loggers at both ends of the spectrum of legality and both are minority entities. At one end is the clandestine timber trafficker who defies the law and keeps certain highly profitable niches of activity with high risks.

At the other end of the spectrum is the certified sustainable logger, generally a medium-large

sized company (Sobral *et al.* 2002) who takes a gamble not only on legality, but also on a model of socio-environmental management which is geared to the longer term, with significant investments in training. The latter entrepreneur seeks a particular niche in demand in order to make his company a long-term business and links sound forest management with a stable processing operation (see 3.8).

In the middle of the spectrum, almost no timber enterprise attempts to manage the forest. Most do not have any desire or need to be involved in clear illegality. But neither do they think that the sophisticated world of certification and sustainable management is within their grasp (see section 3.8). As local forest resources have been depleted, increasing numbers of such enterprises refuse to accept the continuous migrations heading towards the new exploitation frontiers. This gives rise to new players, mainly middlemen (some of whom are transformed loggers or processors) who now act as agents to procure timber from new land settlements and bring them to established processing centres. Most of these middlemen focus their business only on supplying sawmills and no longer on forest management linked to ownership. According to one study in the area of Tucuruí, less than a fifth of the loggers declared themselves as owning or being interested in owning lands, and about 60% reported that they use middlemen for obtaining their supplies (Sobral et al., 2002), a fact confirmed by research in this volume (Chapter 5). Over the last four years there has been a significant increase in the use of middlemen by the sawmills to obtain supplies from settlers.

The concern here is not about the legitimate livelihood benefits of farmers at the frontier from timber sales, nor about the policy of settlement, but rather the dependence of the timber industry in the short term on unsustainable harvesting from land clearance. The abundant supply from such sources leads to inefficiency in the use of timber and leads to an expediency which undermines incentives for forest management.

3.6 The new context of expedient plunder

The analysis by Amigos da Terra in 1995 of the 2,800 management plans then in existence, the violations issued and deforestation permits granted led to the estimate of 80% illegality in Brazilian forestry operations (SAE, 1997). This data was set as a benchmark for purposes of debate and continues to be used widely by the press and by campaigning institutions.

Today, in the light of the situation described above, it is possible to describe a markedly different policy framework, diametrically opposite in terms of percentage legality. It is assumed that the Amazônian production of wood in log form is approximately 30 million m^3 a year, that is, a little above the volume (28 million m^3) ascertained by the last reliable study of production based on primary data (Smeraldi and Verissimo, 1999). After that study, a recent study by the same institutions (Sobral *et al*., 2002) of the largest consumer market - São Paulo, which takes up a fifth of the Amazônian wood - showed that there was an increase in consumption of about 5-10% over 1998. An estimate of 30 million ^{3} per year, therefore, is used here for the overall current production.

The deforestation permits issued in 2000 and 2001 in the Amazon covered an area of about 11 thousand square kilometres a year, or 1.1 million hectares (A Crítica, 2001). In a

deposition to the *Comissão Regional de Licenciamento Ambiental* [Regional Environmental Licensing Commission] of the MMA, the president of this agency confirmed that this amounted to "about 60% of the area that is deforested each year in the Amazon" - i.e. 60% of 17,000km² (INPE, 2002). Even using a conservative figure of 20 cubic metres per hectare (caution is necessary because there are some cases in which the subsequent use of the raw materials has not occurred) this means that such permits automatically generated a legal volume of 22 million cubic metres. There is therefore a legal origin for approximately 75% of the region's output solely through deforestation permits.

Some management plans have survived in the Amazon. Their authorized annual extraction volume just exceeds 3 million m³, which is about 10% of the total of the regional output. These plans have been subjected to rigorous inspection by several reviews. Even so, it is realistic to estimate, based on the analysis of the arrests made and the statements of local informants, that approximately half of this volume (1.5 million cubic metres) may be affected by fraud. So it is only possible to estimate with confidence that an additional 5% could be derived from legal means, taking the total of 'legal' timber up to 80%. The remaining production under forest management plans equivalent to 5% of total production might now be classified as 'illegal'.

Finally, we must not forget the volume of completely illegal extraction: theft mainly in indigenous areas such as Cinta Larga (see 3.7); theft from other conservation units (FLONAs and invaded reservations, especially in Rondônia); theft from other Federal lands (mainly the area known as Terra do Meio in Pará, a place of recent arrests); and theft from private areas belonging to third parties (such as the case of Fazenda do Vale do Formoso in Mato Grosso, among others). Based on these known cases and others that were the subject of recent investigations in the press, it is possible to assess the volume at around 4.5 million cubic metres (200,000 thousand of the which is of the mahogany species). This volume is equivalent to 15% of the total output of the Amazon.

In conclusion, it is possible to estimate at present that approximately 80% of Amazon wood extraction is covered by law, while 20% is clearly illegal. The fact that it has legal status does not mean that the wood necessarily has a 'legitimate' origin from an environmental or social point of view.

An attempt to estimate the volume of wood produced under some criteria of sustainability would, even now, lead to deeply differing conclusions. In this category it would be possible to include the experiences with FSC certification and some other forest management examples. There are some smaller efforts of low-impact community management and other isolated activities of effective and consolidated management. It is an overall picture not including more than 20-30 enterprises, with an installed capacity to generate approximately a little over 500,000 m³/year. It is therefore possible to conclude that only about 1.7% of Amazônian wood comes from management that might credibly be termed sustainable.

3.7 The residual niches of current illegality

Illegality is at present a rarefied activity and those practicing it can often be readily identified

at different stages of the value chain. Organized crime tends to concentrate on the most lucrative activities (e.g. mahogany) that compensate for the risks taken.

The smuggling of valuable hardwoods from indigenous Indian areas is certainly the main activity within this segment. In Pará, Amigos da Terra has named two principal and five other traders who are responsible for timber smuggling from indigenous areas.

The greatest incidence and seriousness of timber theft - and related illicit activities - in indigenous Indian areas are recorded in the Pará municipal districts of Redenção, São Félix do Xingu e Tucumã, involving the areas of Apiterewa (Parakanã), Baú, Trincheira Bacajá, Xikrin do Bacajá and Kararaô (Kayapó). Negotiations with the Indians are often difficult and some villages periodically enter into armed conflict with the loggers who repeatedly violate their rights. Illegal commercial activities have also led to violence in Mato Grosso and Rondônia, in the area of the Indian region of Cinta-Larga. At the end of 2001, the Indian Carlito Cinta Larga was murdered for having reported the activities of some loggers in the municipal district of Aripuanã (MT) who had allegedly not honoured verbal agreements previously negotiated with the Indians (Diário de Cuiabá, 2001).

In Maranhão, the illegal activities associated with timber are concentrated in the municipal districts of Açailândia, Buriticupu, Santa Inês, Imperatriz and Amarante, where they are closely linked to drug-trafficking, theft and dealing in stolen vehicles and sale of weapons. The *Operação Pau d'Arco* of 1999 discovered numerous marijuana plantations when investigating wood extraction (Noticias e Opinões, 1999).

The most common fraud revolves around the *Autorização de Transporte de Produtos Florestais -ATPF* [Permit to Transport Forestry Products]. Locally, ATPF is considered to be a virtual currency whose value rises and falls depending on its scarcity at a given time and in the trading situation. There are ATPF dealers that regularly operate out of accountancy offices, solicitors' offices and even in businesses such as printers and business consultants. Recently, a Federal Police operation at an office in Belém was filmed by a TV broadcasting station that showed an employee explaining the operation and cost of the system:

"The paper to cover up... comes to R$ 3.6 thousand (approx US$1.2 thousand), for 300 metres" **(**TV Liberal / Rede Globo, 2002).

One of the most common ways to obtain fraudulent management plans is for an agent to register management activity in an area on behalf of some well-known proprietor who may be totally unaware of the use of his/her name. This paves the way for inspection activities to be carried out and a seemingly proper management plan issued - even if the timber extraction is controlled by other parties and located in other areas. An example was that of Bennarraz who is a logger, legally established in Tomé-Açu, Pará. He discovered that his name was being used as the owner of dozens of management plans. A detailed report on the means of granting management plans in return for 'something-in-kind' in Pará was delivered by the *Procuradoria da República de Marabá* [Attorney's Office of the Republic of Marabá] to IBAMA in November, 2000 (O Liberal, 2000).

"One of IBAMA's foresters goes to the area to be exploited and does an inspection. After this, the plan is approved. With this done, the logger's agent starts to remove wood from the area. IBAMA is deceived or lets itself be hoodwinked. And everything runs "legally" until somebody discovers the fraud and reports the crime to the Federal Police" (Bennarraz, 2000).

In the area of exports, the main form of cheating on the legislation continues to be the completion of wood tracking forms, using generic codes of 'other sawn timber', or even of other species, to cover up the shipping of valuable hardwoods, mainly mahogany. It is interesting to note that this situation continues exactly as it was during 1993-94, when it was condemned by the report *"Para Inglês Ver"* (Amigos da Terra, 1995).

The port of Paranaguá (PR) is the site of the most notorious fraud. It is alleged that the main company continues to be the same as was documented almost a decade ago (Amigos da Terra, 1995). In December 2001, the Federal Police indicted the head of the station and also an inspector from IBAMA in Paranaguá, Paraná, under the charges of receiving backhanders from that same company. The charge was that IBAMA had been paid to sign for the release of shipments of mahogany for export as if they were shipments of other wood. Two IBAMA employees were to receive R$ 1 (approx. US$ 0.30) for each cubic metre of mahogany secretly shipped by the company. IBAMA of Curitiba launched an inquiry to investigate the accusation and it suspended the employees (O Globo, 2001). Faced with this situation, IBAMA's general coordinator of inspection at the time admitted:

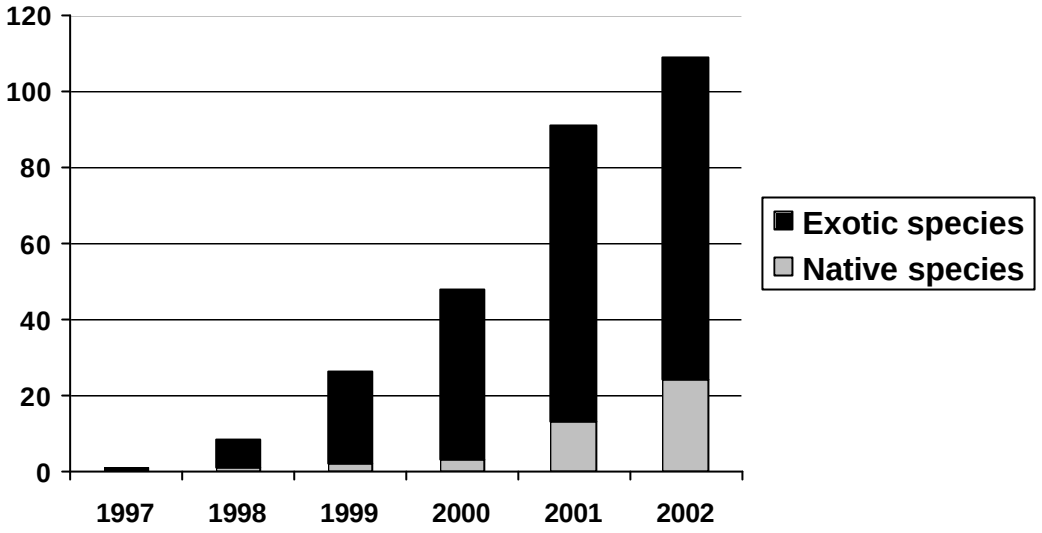
"I don't want to point a finger at anybody, but the pressure to succumb and the intimidation of the people that work with this (loggers and exporters) is very strong." (Leland, 2001).

The number of purchasing companies abroad is quite limited. According to information gathered by the environmental organisation Greenpeace, only 5 companies (the multinational Danish DLH Nordisk, the North Americans Aljoma Lumber, J.Gibson McIlvain Co. Ltd. and International Hardwoods Inc.) would be responsible for 85% of the trade in mahogany exported from Brazil (Greenpeace, 2001).

3.8 Independent certification and the campaign against it

Independent forest certification (until now, through the Forest Stewardship Council – FSC) serves as an important tool in the effort to differentiate and promote sustainable management. It has been adopted in Brazil mainly by purchasing companies and by producers of plantation-based wood, charcoal and pulp . Adoption by companies operating in the natural forests of the Amazon is increasing (see Figure 28, May, 2003) primarily as a result of heavy demand. Domestic demand alone now exceeds 3 million m³/year, more than five times the current Amazônian output of certified timber. Those who have obtained certification have in general been able to sell products for higher prices, with notable variations according to the type of forestry product and the species used (May and Neto, 2000 quoted in Bass *et al.*, 2001). Nevertheless, there are considerable costs associated with certification which favour the larger producers (Sobral *et al.*, 2002).

Figure 28. Number of FSC certifications issued. Source: May, 2003.



Surprisingly, this small segment of sustainable timber production from the Amazon has been the target of a campaign against it in defiance of the stated position of IBAMA. At the beginning of 2002, all of the three main companies with FSC certification in the Amazon were subjected for several weeks to continuous inspection (IMAFLORA, 2002). No equivalent inspections were made of non-certified companies. As one of many examples, the logging company Mil (State of Amazonas) was issued the largest fine in Amazônian history on 18 March, 2002 - R$ 31,500,000 (approx. US$ 10 million) for allegedly having transported timber within the confines of its own property without any ATPF since 1995. In fact, such a practice had been agreed with IBAMA itself, and the company makes a monthly record of its internal transport (A Crítica, 2002).

According to recent information from the office of the Minister of the Environment, the judgements on these cases were immediately revoked at the direction of the Minister himself, something that was confirmed by Gethal. A number of interpretations link this campaign to demoralize forest certification with internal conflicts within IBAMA itself over illicit revenues and attempts to damage its Chairman at the time (Adário 2002).

3.9 Classification of legal and desirable activities

The new context of legal plunder described in this paper can be summarised in terms of their legality and desirability with sustainability in mind. An initial typology might be as follows:

A) Activities considered legal but undesirable

- the ready availability of deforestation [land clearance] permits in comparison with forest management permits;
- the major bureaucratic hurdles imposed in governmental decrees and regulations;
- timber waste through inefficient extraction and processing;

- burning of timber residues;
- credit priority for activities that require forest conversion;
- legitimisation by INCRA of recently deforested areas (thereby circumventing the regulation that bans settlements in the forest).

B) Activities regarded as illegal but desirable

- well-managed community forestry for timber and non-timber products (almost always illegal due to the lack of appropriate regulations;
- advanced management practices and tree selection processes, without adherence to annual harvesting blocks, which are therefore considered as illegal;
- sustainable management in indigenous Indian lands, regarded as illegal with the exception of an *ad hoc* authorized pilot-project (Xicrin of Catete).

C) Activities regarded as illegal and undesirable

- squatting (land-grabbing) to open up new areas;
- widespread corruption in the regulatory and licensing agencies;
- extraction of wood from conservation units;
- trading of transport permits (the ATPFs);
- use of slave, forced or child labour.

3.10 Conclusions

Based on the preceding chapter it is clear that an effective strategy is needed to overcome both the prevailing framework of undesirable legality and the persistent and significant portion of undesirable illegality. The strategy must also include measures to foster legal and desirable activities. This might require:

- a more adequate correlation between policies of the MMA and those of other Ministries in other sectors, such as land development, infrastructure, manufacturing and trade;
- a progressive process to remove bureaucracy in licensing procedures and combat corruption in environmental agencies;
- a process of inspection that is efficient and separate from licensing procedures, together with bodies of environmental police who operate with processes harmonised between them, the Ministry of Justice and/or the civil and military police;
- an effective regime of concessions on federal lands regulated in law by the National Congress;
- a reorientation of development and credit instruments aimed at the economic use of the legal reserve of conserved forest on private properties (the part that cannot be cleared in settlement schemes).

All of the above activities will require concerted attention over a considerable period of time - they will also involve a certain degree of technical, political and budgeting complexity.

During the time that preparations are being made for such activities, it would seem wise to prioritise the use of existing tax instruments to make progress.

Recent studies done by MMA have shown concrete and feasible examples of how such instruments can be used (Rezende and Haddad, 2002). Using tax measures it would be possible to tackle those elements which are legal but undesirable (O Paraense, 2002). For example, revisions to the rules applied to collecting the *Imposto Territorial Rural –ITR* (Rural Property Tax); changes in calculations for the *Imposto sobre Produtos Industrializados – IPI* (Tax on Manufactured Goods) and alterations to the imposition of tax liability for sustainable timber extraction could be used judiciously.

Key message:
Most timber within the Brazilian Amazon currently originates from legal land clearance for settlement via middlemen working for small and medium scale enterprises who have no interest in forest management. Despite its legality, this is a threat both to the sustainability of the timber industry and to the reputation of Brazilian exports. Attention must therefore be directed to altering the incentives for such small and medium scale enterprises by changing the balance of policies for land clearance and forest management

4. Foreign direct investment and the industrial structure of the Brazilian forest sector

Carlos Young and Victor Prochnik

4.1 Background

In preceding chapters we have drawn attention to the social, environmental and economic importance of Brazilian forests. We have introduced the many interest groups who are concerned about the fate of these forests (Chapter 1), the broad patterns of production and trade (Chapter 2) and the most recent changes to the logging framework within the Amazon region (Chapter 3). In each chapter we have touched on the companies involved in forestry activities. In this chapter we explore in more detail the patterns of industrial structure and ownership and the implications that this has had for patterns of trade and its impact on sustainable forest management. We focus particularly on the nature and implications of Foreign Direct Investment (FDI) in the Brazilian forest sector.

Exploring FDI in more depth is justified by the sincere concerns of many Brazilians at the extent to which foreign powers are interested in Brazilian forests and particularly the Amazon region (see 1.4.1 and Barbosa, 1996). What sorts of companies are involved in the Brazilian forest sector and who are the owners? Are there differences between companies controlled or supported by foreign interests and those controlled by Brazilian investors? What are the implications of FDI for the export trade based on sustainable forest management? These are some of the questions which this chapter addresses, starting with an introduction to FDI more generally before examining the forest sector in particular.

4.2 An introduction to Foreign Direct Investment (FDI) in the Brazilian economy

Brazil is among the largest receivers of foreign direct investment (FDI) in the developing world. During the 1990s, the volume of FDI in Brazil increased considerably, surpassing Mexico and Argentina as the main destination of foreign capital in Latin America. In the early 1990s, it captured between 2% to 4% of the total FDI in developing countries. But since the mid 1990s this figure has increased, reaching values between 10% and 14% in the 1998-2001 period. This corresponds to an annual average investment of US$ 29.5 billion for the same years (Table 10).

Table 10. FDI inflows (US $ Billion, prices of January 2003)

Year	Brazil	Developing countries *	Developed countries	World	% Brazil/ Developing countries	% Brazil/ World
1990	1.078	41.872	211.143	253.015	2,6	0,3
1991	1.285	51.410	133.686	185.095	2,5	0,3
1992	2.351	61.670	136.518	198.188	3,8	0,3
1993	1.457	89.458	156.473	245.931	1,6	0,1
1994	2.887	123.573	161.790	285.365	2,3	0,2
1995	6.065	139.735	227.843	367.578	4,3	0,8
1996	11.734	180.744	239.106	419.850	6,5	2,8
1997	20.123	222.637	283.888	506.525	9	4
1998	30.448	221.814	510.949	732.762	13,7	4,2
1999	30.452	266.926	892.686	1.159.612	11,4	2,6
2000	34.301	276.734	1.159.612	1.561.193	12,4	2,2
2001	22.656	234.055	507.599	741.656	9,7	3,1

* Central and Eastern European countries were added to developing countries
Sources: WIR (1995), WIR (1997), WIR (2000) and WIR (2002)

During the period 1996-2001, the proportion of total global FDI which was invested into Brazil (2-4%) was a higher proportion than Brazil's relative participation in the total international commerce, which fluctuated around 1%. The proportion of total global FDI into Brazil was also higher than Brazil's proportional contribution to global gross domestic production (between 1,5% and 2,0%).

Such large increases in the inflow of FDI have had significant impacts in the Brazilian economy. Firstly, FDI had important effects on the balance of payments, increasing the short-term supply of foreign currency. The macroeconomic impacts of this are controversial. On the positive side, FDI helped to finance the deficit in the current account and improved the access of the productive sector to cheaper sources of credit (considering that foreign owners have better access to international lenders, so that the very high domestic interest rates could be avoided).

In the medium and long term, however, the expansion of FDI results in more pressure in the current account deficit since it increases the volume of profits that are sent to non-resident owners of capital.[1] This would not be a problem if exports had grown at the same pace as FDI compensating for profit sent to non-residents, but this has not been the case in Brazil. In spite of its magnitude, the effects of FDI in the real economy have been relatively small, being hugely concentrated in non-tradable sectors. As a consequence, the level of "productive investment" has not increased, and the ratio of Investment/GDP has remained basically constant (see table 11).

[1] Another possible secondary effect of the expansion of FDI since the mid 1990s would be the appreciation of the exchange rate, thus depressing the export growth. However, the contribution of FDI to this was minor if compared to the so-called hot money, short-term capital flows attracted by the very high interest rates in Brazil. Moreover, FDI is much less volatile than hot money - the sudden withdrawal of the latter has had crucial importance in the devaluation processes in 1999 and 2002.

Table 11. Investment, FDI and GDP, Brazil, 1995/2001

Years	1995	1996	1997	1998	1999	2000	2001
Investment/GDP (%)	16.7	16.5	18.1	17.7	16.3	15.8	16.5
FDI/GDP (%)	0.8	1.4	2.3	3.6	5.9	5.7	n.a.
FDI/Investment (%)	3.8	7.0	11.7	18.4	31.3	30.6	n.a.
Annual GDP growth rate (%)	4.1	5.8	3.0	3.3	0.2	4.5	1.7

Source: Bielschowsky (2002)

It is important to understand the difference between FDI and "productive investment". Productive investment necessarily refers to the formation of fixed capital in the economy through civil construction and spending on machinery and other capital goods. FDI on the other hand refers to the increase in capital ownership by non-residents, including the acquisition of already existing domestic companies. In the Brazilian case, the small impact of FDI on the productive investment reflects the vast preference by multinational enterprises for acquisitions instead of greenfield investments. This results in relatively minor multiplier effects on the level of economic activity and expansion of the productive capacity.

Another unfulfilled expectation was that FDI would be a tool to boost exports and to improve the balance of trade. Until the mid 1990s, FDI was traditionally oriented to the transformation industry, and there was a strong connection between the expansion of foreign-owned capital and exports. But a recent analysis by Laplane and Sartri (2003) showed that this situation had changed and that there was no clear evidence that foreign-owned firms would now exhibit a larger propensity to export than domestic-owned companies. Instead the same study showed that multinational firms have had a larger propensity to import than Brazilian firms, indicating that the net contribution of the expansion of FDI to the Brazilian trade accounts has been negative. The reason for this is that the recent wave of foreign investment has been concentrated in non-tradable sectors (Table 12). The incentives provided in the process of privatisation of former state monopolies, such as telecommunications and electricity, have underpinned this change and most FDI that has landed recently in Brazil has been directed towards services and other net-importing sectors.

Table 12. Distribution of FDI flows by economic activity 1996/ 2001 (US$ Million)*

Year	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
Units	US$ Million	US$ Million	US$ Million	US$ Million	US$ Million	US$ Million	%	%	%	%	%	%
Primary activities (agriculture, cattle raising and mining)	111	456	142	423	649	1494	1,4	3,0	0,6	1,5	2,2	7,1
Forest exploitation and related activities	0	108	50	0	0	4	0,0	0,7	0,2	0,0	0,0	0,0
Other primary activities	111	348	93	423	649	1490	1,4	2,3	0,4	1,5	2,2	7,1
Industry	1740	2037	2766	7002	5087	7001	22,7	13,3	11,9	25,4	17,0	33,3
Wood products fabrication	0	88	17	23	32	71	0,0	0,6	0,1	0,1	0,1	0,3
Pulp, paper and paper products	22	0	0	13	10	150	0,3	0,0	0,0	0,1	0,0	0,7
Furniture industry and diverse industries	43	43	44	0	0	41	0,6	0,3	0,2	0,0	0,0	0,2
All other industries	1675	1905	2706	6967	5045	6739	21,9	12,4	11,6	25,3	16,9	32,0
Services	5815	12818	20362	20147	24139	12547	75,9	83,7	87,5	73,1	80,8	59,6
Total	7665	15311	23271	27572	29876	21042	100,0	100,0	100,0	100,0	100,0	100,0

* Inflows lower than US$ 10 Million per receiving company/year were not considered
Sources: Foreign Capital Census of 1995 and 2000, Central Bank of Brazil, International Affairs Directorate.

Another characteristic of FDI in Brazil has been the very small share for primary activities. In recent years there was an increasing trend of foreign participation in the oil and natural gas exploration and production because of the deregulation of this sector (previously a monopoly of the state owned oil company Petrobras). But the participation of FDI in forest exploitation and industrial wood based activities is negligible (see table 12). Even though inflows inferior to US$ 10 Million per company/year were not included in Table 12, it is clear that the volume of FDI in wood-based activities represents a tiny proportion of the total FDI.

The relatively small participation of foreign capital in the wood-based industries in Brazil is confirmed in Table 13, which shows the stock of FDI in wood-based industries in 2000according to the Capital Census elaborated by the Brazilian Central Bank. Total stocks of foreign capital in the wood-based industries was 2% of the total stocks of foreign capital in all economic activities, and three quarters of that were directed to the pulp and paper productive chain. Since the total contribution of the forest sector to Brazil's GNP is 6.9% (Lele *et al* 2000) it is clear that FDI plays a comparatively small role in the forest sector

Table 13. Total stock of foreign capital, Brazil, 2000

Main economic activity	Forest exploration and related activities	Wood products fabrication	Pulp, paper and paper products	Furniture industry and diverse industries	Subtotal wood based industries	Total
Stock of foreign capital (US$ 1000)	87,767	239,690	1,572,733	182,750	2,082,940	103,014,446
% of total foreign capital	0.1	0.2	1.5	0.2	2.0	100.0

Source: www.bancocentral.gov.br on 05/12/2003

Nevertheless, in relation to the activities of these wood-based sectors, FDI is qualitatively important, as foreign firms are among the largest firms of the industry with atypical patterns of behaviour in comparison with the Brazilian norm. In many cases, multinational firms employ the best environmental protection practices and introduce new techniques, which are slowly diffused to the other firms. A more detailed analysis of FDI in the native forest timber sector is provided further ahead in this paper.

4.3 The quality of Brazil as a destination for FDI

According to Kearney (2002), Brazil was ranked in thirteenth place among the most attractive destinations to FDI in the world. Being a large participant in the international flows of FDI, Brazil has developed a fairly sophisticated economic and legal structure to absorb foreign capital. There are several different sources of information, like law firms, subsidiaries of international consulting companies and governmental agencies that are able to help new investors. The local banking and financial system is well developed, business practices are similar to the international standards and the basic infrastructure (postal services, energy supply, telecommunications and transports) is spread over most of the country.

The legal system also favours FDI inflows. Constitutional distinctions between foreign-owned and Brazilian-owned companies were removed in the middle of the nineties, thus allowing equal treatment between domestic and international firms in almost all of the economic sectors. Trends in antitrust laws and intellectual property have been favourable to the protection of productive investments in general (Harris and Soares, 2001).

Despite these positive elements, however, there are many remaining constraints for FDI in Brazil. According to the World Economics Forum (2000), Brazil was placed in the bottom 15 (46 out of 59 countries) for "time spent by management with the governmental bureaucracy". According to the same report, Brazil was ranked in the 48th place in relation to excessive "regulation costs", and in 46th place in relation to the "quality of management conditions for new firms".

Other reported complaints by multinational firms include the "high manpower costs with social benefits which can reach 100% of wage levels, bureaucratic inefficiency and large scale corruption, vestiges of protectionism in areas like intellectual property, technology transfer and work permits, deficiencies of the country infrastructure…" (SAIE, pers. com.). As discussed further ahead, many of these problems are particularly important

in the native forest production chain, and so may be contributing factors to the relatively modest participation of foreign capital in the sector.

4.4 The debate over the likely impact of FDI on the Brazilian environment

An important debate within Brazil is linked to the environmental performance of foreign owned companies in Brazil. This responds to the ongoing debate in the literature over whether FDI is improving or worsening environmental conditions in developing countries.

Defenders of the positive environmental aspects of globalisation argue that higher competition would close down companies operating with old and inefficient equipment. A more competitive atmosphere would force them to adopt modern ways of production, which tend to be more efficient in all respects including the environment (in terms of emission avoidance and reduced wastage of raw materials). The reduction of barriers to FDI would favour the import of modern, state-of-the-art equipment. Since this machinery is developed to follow the more rigorous environmental standards of industrialised countries, the acquisition of this equipment would result in an overall improvement of the environmental performance of the importing country. Moreover, according to the theory of comparative advantage, liberal trade and capital policies would favour a shift in developing countries towards labour intensive activities, which tend to be less pollutant. Finally, consumers in developed countries are more aware about the environmental standards of products they buy. This would force a more responsible behaviour by multinational companies when operating abroad, either because these companies would be interested in exporting to developed countries or because they fear consumer boycott campaigns and other kind of pressures in their headquarters.

On the other side of the debate, critics argue that under the existing institutional conditions in countries such as Brazil, globalisation may magnify the effects of poor environmental enforcement, increasing the tendencies of overexploitation of natural resources in areas where policies are deficient (the "race to the bottom" hypothesis) or increasing industrial pollution (the "pollution havens" hypothesis). A basic assumption of these arguments is that the enforcement of environmental standards is weaker in countries such as Brazil, stimulating the migration of activities intensive in natural resources. The competitive pressure from the world market would make it impossible to forge the necessary political support at home to upgrade standards and control policies that would deter the environmental degradation.

We start by assessing the debate through an analysis of general production before moving to the specific case of forest production. The results of general theoretical and empirical studies are often contradictory, and there is no definitive answer to the opposing arguments outlined above. Ulph (1998) comments:

"(Our) recent analysis is capable of providing starkly different predictions of environmental policy under liberalised trade regimes from those derived from the traditional literature, but there is a severe problem of non-robustness of results. This is especially problematic when it comes to trying to draw policy conclusions from this new literature, although (this) analysis does not support some of the policy prescription discussed in popular debates". (Ulph

1998, p.237-238)

Empirical studies for the Brazilian industry confirm these apparent contradictions. There is a huge gap in reliable data for indicators of environmental impact. In the absence of actual observations on environmental impact, one possible proxy is to use emission coefficients that assume fixed ratios between production output and pollutant emissions for different products. Using these emission coefficients, it was shown that the industrial output of products with high-pollution potential has consistently grown above the average of the industry, and that Brazilian industrial exports present a much higher intensity of potential emissions (i.e. kg of pollutant per unit of output) than the output that is destined to domestic markets (Young, 1998, 2001; Young and Lustosa, 2001).[2] In other words, Brazilian industrial exports have become more specialised in potentially "dirty" products over time, confirming the pessimistic perspective of more concentration of these activities in the Third World.

However, the use of fixed emission coefficients does not capture the efforts by firms to improve their environmental performance and the resultant technological changes in production. In order to evaluate the importance of environmental reasons in the investment decisions, a series of empirical studies have analysed the survey of economic activities in the State of São Paulo (PAEP), which refers to voluntary answers from 43,900 industrial and commercial firms for the year 1996. Lustosa (2002) and Young and Lustosa (2001) show that foreign owned companies (and also those with higher exports/output ratio) tend to be more concerned with environmental issues, to invest more in "cleaning" their production processes, and to perceive the competitive advantages of environmental innovations. Ferraz and Seroa da Motta (2002) indicate that these differences are statistically significant in a model that estimates the causes of any firms' expenditures in environmental protection. The trend towards higher environmental standards in foreign owned or exporting companies is compatible with the hypothesis that the trade and capital openness process tends to encourage the adoption of environmentally sound practices and products.

In spite of methodological limitations our assessment is that globalisation has resulted in a dual movement within the Brazilian economy: the growing specialisation in the supply in products based on natural resources (including in this category manufactured goods with higher pollution potential), and increasing environmental awareness by the companies with international interests (foreign owned or exporters). However, regional and sector differences are also relevant factors that must be considered in the analysis. For this reason, the following sections focus on the wood-chain activities (logging in native forests, planted forests, pulp and paper, charcoal and furniture).

4.5 The links between the current forestry framework, FDI and sustainable forestry in Brazil

[2] Young and Lustosa (2002) show that this trend of increasing participation of products with higher toxicity potential in the exports basket was also perceived for other Latin American countries.

As described in Chapter 3, the main pattern of deforestation in the Amazon is the conversion of forest land into pastures or cultivation areas with most deforestation occurring in Pará, Mato Grosso and Rondônia. The extraction of commercial valuable logs is an important co-product of this process. In many cases, revenues from this unsustainable pattern of logging finance the investment in land conversion or pasture restoration, particularly for those without access to credit. Studies show how logging, ranching and cultivation systems become linked (Veríssimo *et al.*, 1992). Three common links include:

- Paths opened to extract the logs are used by farmers to move ahead into forest areas.
- Loggers finance pasture reforms in exchange for timber.
- Many of the farms that have cultivation have also small cattle herds.

The sawmill centres in the Amazon follow a mobile frontier with few official or social controls, and this mobility discourages investment in improved technology and the capacity for sustainable management. Given the low capital intensity of this dispersed mobile production there is little need or incentive for FDI in these situations.

In terms of FDI, one perception is that foreign firms are complicit in unsustainable practices, a view reinforced by news headlines about the apprehension of foreign firms illegal loads of mahogany destined to foreign markets such as the USA (see 3.7). But a glance at the magnitude of the internal market (table 14) suggests that unsustainable forest use is much more likely to be linked to Brazilian-owned companies that destine their production towards domestic markets.

Table 14. Consumption of Brazilian Amazon timber, 1997

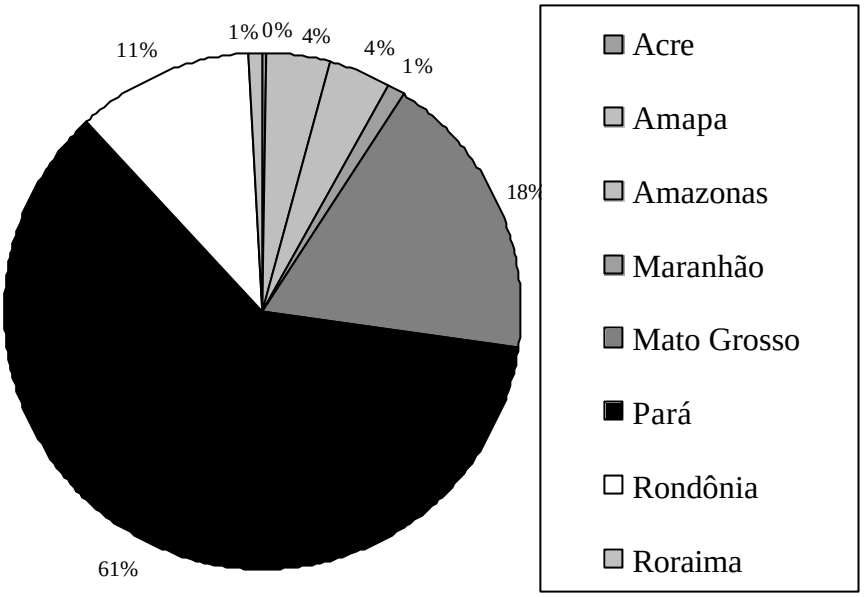
Destination	Foreign markets	Brazilian Amazon	State of São Paulo	Rest of Brazil
Millions of m^3	4.0	2.7	5.6	14.0
% of total	14%	10%	20%	56%

Source: Smeraldi and Verissimo (1999)

In assessing the patterns of FDI it is worth looking in more depth at the pattern of exports from Brazil (although it is worth noting that there is no a priori reason why FDI should lead to exports, nor that Brazilian firms are not equally involved in exports). There is a distinct division between states that are linked to Southern Brazilian markets by road transport, and those which are not. The most important exporter states in the Amazon in absolute terms are Pará, Mato Grosso, Rondônia (all linked to Southern markets by road), (Figure 29 and Table 15). These three states are dominated by the domestic market and by timber from land clearance due to settlement.

The state of Pará is the single largest exporting State in Brazil, although the domestic market still greatly exceeds the export market. The main international markets from Pará are USA, Western Europe (mostly France, Spain, Netherlands and Portugal) and, more recently, China. In spite of the presence of relatively large foreign-owned companies (see table 15), most of the production is controlled by Brazilian capital.

Figure 29. Timber exports by source, 2001



Source: Own elaboration, using SECEX data

Table 15. Evolution of timber exports by origin, 1990/2001 (US$ 1000)

	Acre	Amapá	Amazonas	Maranhão	Mato Grosso	Pará	Rondônia	Roraima	Tocantins	Subtotal Amazon	Other states	Brazil
1989	1664	4322	10883	434	6462	126041	12320	0	0	162125	247411	409536
1990	2168	2893	12126	1110	6850	138612	7755	0	0	171513	254478	425991
1991	1993	475	11185	1567	10486	141205	12094	20	0	179024	262972	441995
1992	1784	656	18730	2610	8619	172069	12516	298	101	217383	349711	567094
1993	3444	9639	32129	4253	14651	259705	19163	962	21	343968	495944	839911
1994	3964	18685	37429	6158	24906	324538	19275	743	84	435781	611325	1047107
1995	5134	15509	37157	7114	22757	346632	25346	421	0	460070	671328	1131398
1996	2381	56940	28312	4119	30678	300860	22670	865	64	446891	658860	1105751
1997	109	27265	38217	2250	37270	330775	28938	682	164	465670	747969	1213639
1998	262	37863	26101	1768	29016	255041	29448	1098	20	380618	739363	1119981
1999	899	26499	22849	2933	58148	277630	43122	1520	0	433600	950454	1384054
2000	949	21501	19078	4142	77628	309031	55226	2281	0	489837	984425	1474261
2001	1103	18117	18015	5810	84308	286265	52426	3487	0	469530	1017558	1487088

Source: Own elaboration, using SECEX data

Mato Grosso is the second largest exporter, although its exports are less than one-third of those from Pará, even though extraction in both states are about the same magnitude. However, there is a recent trend of exports expansion in Mato Grosso, concentrated in plywood, veneered panels and similar laminated wood (around 70% of the total), and sawn wood (around 25%) linked to graded taxation for added value processing. The most important markets are Europe (60%) NAFTA (20%) and Mercosur, although the latter markets is losing ground to Japan and other Asian countries. The expansion of Asian demand shows that there remains space for expanding non-certified timber exports - market which are not as environmentally conscious as argued by those who believe that there would be an spontaneous greening of tropical timber markets. The situation in the state of

Rondônia is very similar to the one in Mato Grosso with limited exports and strong domestic demand.

Amazonas is only the fifth largest exporter, but in this case exports can be considered the main source of demand. This is primarily related to the state's natural isolation, with no perennial roads connecting to the southern markets. There is also a lower density of commercial species in the State's forests and a low level of agricultural settlement due to low population. Under these conditions, there was much less domestic interest in timber activities, explaining the relatively high proportion of export-oriented companies. This also explains the higher proportion of foreign-owned firms and a more concentrated industrial profile than in the neighbouring states. The main destination markets are USA and Western Europe.

Within the State of Amazonas, the main production pole is in Itacoatiara, 250 km from the state capital Manaos. The most important companies are foreign-owned -- Gethal (owned by US investors), Carolina (Asian investors), Mil (Swiss investors) and Braspor (Portuguese investors)--, and their production is almost completely directed towards foreign markets. Indeed, these four companies were responsible in 1997 for 67% of the total value in wood exports from Amazonas, and more than 13% of the total state exports.

Another difference in Amazonas is that property rights are better defined, thus allowing the logging companies to buy land and to assure reliable sources for their forest management plans. As a consequence, in spite of localised problems, corruption is much less a problem in the Amazonas' sawmill industry than in the rest of the region. Altogether, it can be said that export-driven logging activities in Amazonas represent a lower threat to forest preservation than in other parts of the region, where the activity is much more domestic oriented.

It is clear, therefore, that contrary to some domestic opinion, FDI and international trade in wood products is not, *per se*, a more important cause of deforestation than domestic ownership and trade. However, for specific areas or tree species (mainly mahogany), one cannot rule out its potential negative impacts.

4.6 Changing patterns of industrial structure linked to FDI

The industrial structure of of the Brazilian forest sector is made up primarily of numerous non-integrated firms (Table 16 - from May and da Vinha, 2003). It can be seen 81.1% of all firms have nine or fewer employees, and that many of these smaller firms pay lower salaries and use informal labour (May and da Vinha, 2003). The few larger firms in forestry operations, processing industries and furniture manufacture tend to pay higher salaries and use officially registered staff.

Table 16. Firms, employees and salaries in wood products industries in Brazil - 2000

Classification of activities by number of total employees	Number of firms		Total personnel		Salaried (officially registered) personnel		Average salary per employee R$/yr
Forestry industries	**4.653**	**100%**	**63.571**	**100%**	**57.006**	**89,7%**	**3497**
to 4	3.301	70,9%	5.120	8,1%	982	19,2%	1254
5 to 9	474	10,2%	3.147	5,0%	2.176	69,1%	2658
10 to 29	510	11,0%	8.552	13,5%	7.698	90,0%	2843
30 to 49	162	3,5%	6.237	9,8%	5.957	95,5%	3078
50 to 99	122	2,6%	8.398	13,2%	8.188	97,5%	3631
100 to 499	70	1,5%	13.682	21,5%	13.575	99,2%	4457
500 and over	14	0,3%	18.435	29,0%	18.430	100,0%	3935
Processing industries	**28.069**	**100%**	**255.849**	**100%**	**214.226**	**83,7%**	**3762**
0 to 4	19.058	67,9%	31.923	12,5%	7.294	22,8%	1154
5 to 9	3.772	13,4%	24.949	9,8%	18.131	72,7%	2560
10 to 29	3.664	13,1%	58.926	23,0%	52.010	88,3%	3106
30 to 49	748	2,7%	28.029	11,0%	26.584	94,8%	3555
50 to 99	533	1,9%	36.254	14,2%	35.135	96,9%	3849
100 to 499	270	1,0%	52.795	20,6%	52.142	98,8%	5284
500 and over	24	0,1%	22.973	9,0%	22.930	99,8%	6996
Fabrication of furniture	**27.656**	**100%**	**242.574**	**100%**	**200.877**	**82,8%**	**4654**
0 to 4	19.015	68,8%	33.405	13,8%	8.018	24,0%	1284
5 to 9	3.958	14,3%	25.925	10,7%	18.821	72,6%	2721
10 to 29	3.252	11,8%	52.830	21,8%	46.676	88,4%	3621
30 to 49	685	2,5%	26.073	10,7%	24.730	94,8%	4252
50 to 99	452	1,6%	31.122	12,8%	30.173	97,0%	4941
100 to 499	270	1,0%	52.966	21,8%	52.271	98,7%	6822
500 and over	24	0,1%	20.253	8,3%	20.188	99,7%	9785

Source May and Vinha, 2003 from IBGE online database, 2003.

These recent analyses of the Brazilian forest sector might be thought to provide a rather bleak general picture for potential acquisitions or greenfield investments (although there are some differences by State and many notable exceptions). The mobility of the numerous small timber firms, coupled with outdated machinery, limit much production to low quality sawnwood.

For example, Veríssimo *et al.* (2002) estimate that in the estuarine areas of the Amazonas and Pará rivers in 1998, there were 458 sawnmills equipped with circular saws. The direct employment was of 2,800 workers (all in the informal labour market), and the output was 128,000 m^3 of sawnwood (from 357,000 m3 of logs). There was no further processing beyond basic sawing and the industry was undergoing both rapid turnover and rapid decline. Almost half (49%) of the firms had been established in the preceding three years since 1995. The number of sawnmills was considerably lower than the estimate made five years earlier

by Barros and Uhl (1995) for the same region (at which time there were 1195 firms consuming 2,1 million m^3 of logs for a production of 780,000 m^3 of processed wood). The causes of declining production were identified to be the accelerated depletion of natural reserves (the sawnmills were processing only low quality timber, indicating the exhaustion of more valuable species), more rigid control by the authorities and competition from low quality timber from other parts of the Amazon (Veríssimo *et al.*, 2002).

This myriad of small scale suppliers are competing mainly on price rather than quality or other non-price characteristics and given their large number do not have much market power to influence the price they receive. The role intermediaries play an important role and it is believed that they capture much of the forest rent, especially for the export market which is oligopsonistic (many producers but few buyers). This creates a vicious cycle: with low rents and difficulties to get access to credit, these firms have strong limitations to invest and, therefore, have to remain attached to the frontier process.

FDI within such a system might be expected to change little. If foreign investors only engage with the "upper" parts of the timber chain, they strengthen the role of the dealer, usually without much impact on how the woods were harvested. Such investment might be focused only on the most valuable species, with a high dependence on a few number of them, particularly mahogany. Since foreign companies are usually linked to international markets, they would capture most of the rents involved (buying cheap raw material and selling the processed product at much higher prices). There would be no need to invest in costly capital costs associated with forest management. There are certainly examples of this type of behaviour (see 3.7).

Contrasting trends can also be found, however, and FDI in the Brazilian timber sector can also be shown to have strong links with stability of tenure and investment in management. Data is scarce, and we base our findings on previous studies on the issue - Greenpeace (2001), Cotton and Romine (1999) and Viana (1998) - complemented with information provided by 15 companies in their web sites.

As shown in Table 4, the total stock of foreign capital in forest exploration and related activities (inclusive of planted forests) was US$ 87.7 Million. This number is only 0.1% if compared to the total stock of foreign capital in the Brazilian economy. This means that the impact of foreign investment in native forest activities has been more of a qualitative character than a quantitative one. Nevertheless, foreign owned firms are comparatively large and operate relatively more in downstream activities. So despite only comprising 1% of all firms in the forest products sector according to Cotton and Romine (1999), it was estimated that firms with foreign investment are responsible for 3% of the volume of timber extracted, between 8% and 12% of the volume of semi-processed wood (sawnwood and wood based panels) and 25% of wood exports.

There is no prevailing country in terms of the origin of FDI. European, North American and Japanese companies were established in the region for some time. In the mid 1990s, after the collapse in Southeast Asian reserves, there were expectations of a massive wave of Asian companies migrating to the Amazon. Even though some companies did invest, mainly

Malaysian and Chinese, the volume of FDI was much lower than originally expected. The destination of the exports of foreign owned firms is quite varied, with a distribution similar to the destination of the industry as whole (Table 17).

Table 17. Characteristics of the Brazilian subsidiaries of international timber firms: export destination and origin of investment

Brazilian Subsidiaries	State	Matrix/origin of the investment	Estimated Capacity (logs/year/m^3)	Exports - 1997 (US$)	Main destination markets	Extraction in own land/estimated capacity (%)	Certified (if yes, Certification Program and type)
Amacol	Pará	Larson Wood Products (USA)	90.000-144.000	12.000.000	USA	n.a.	No
Amaplac and WTK Florestal	Amazonas	WTK Group (Malasya)	36.000-51.408	6.351.950	UK; Belgium; USA; Denmark; Germany	64% - 91%	No
Braspor	Amazonas	Portuguese Group	n.a.	n.a.	n.a.	n.a.	Yes (FSC, chain of custody)
Cifec (China International Forestry Corporation)	Amazonas	China State Enterprise	n.a.	n.a.	USA	n.a.	No
Compensa	Amazonas	Tianjin Fortune Timber (Chinese Group)	30.000	8.005.878 / 1.598.000 (2000)	USA	n.a.	No
Eidai	Amazonas and Pará	Eidai Inds Inc USA (Eidai) (Japan)	225.000-321.300	31.683.771	USA, Japan & UK	63% - 90%	No
Eldorado	Pará	French Group	42.000	17.495.806	France, Haiti, Ireland, Spain, USA	n.a.	Yes (FSC, chain of custody)
Gethal	Amazonas	Westag & Getalit AG (Germany)	120.000-171.360	14.752.484	Germany; USA	45%	Yes (FSC, chain of custody and forest management)
Janus Brasil	Pará	Janus International Inc (Sara Hallitex) (USA)	48.000-76.800	3.840.000	n.a.	n.a.	No

Jaya Tiasa Carolina Maginco Selvaplac	Amazonas and Pará	Rimbunan Hijau (Malasya)	621.006-886.797	27.022.532	USA, Europe, South Korea	6% - 9%	No
Lawton	Pará	Lawton Lumber Company (USA)	37.500 - 60.000	3.205.575 (1996) / 2.500.000 (1998)	USA	n.a.	No
Mil Madeireira	Amazonas	Precious Woods (Swiss Group)	60.000-70.000	83.717 (1996)	Netherlands	63% - 56%	Yes (FSC, forest managem ent)
Nordisk	Pará	Dahlhoff, Larsen & Horneman AS (Denmark)	n.a.	20.401.105	Argentina, Belgium, Caribbean, Denmark, France, Netherlands, Portugal, UK, USA	n.a.	Yes (FSC, chain of custody)
Robco	Pará	Robinson Lumber Co Inc (USA)	n.a.	7.733.753	USA, Philippines & UK	n.a.	No
Terra Resources (or Equatorial Resources)	Pará	Grupo Nevada Manhattan Inc (USA)	144.000	n.a.	USA, Southl Europe, Australia and the Caribbean	n.a.	No

Sources: Cotton and Romine (1999); www.endgame.org/gtt-timberland.html , 03/26/2003; www.lvrj.com, 03/26/2003; Viana (1998); Greenpeace (2001)

Even though the foreign owned companies tend to be larger than the domestic ones, the level of concentration is not high if compared to other industrial sectors in Brazil. Using data from the Inventory of Companies of the Brazilian Institute of Geography and Statistics (IBGE), Herfindahl indexes of industrial concentration were estimated for the wood based sectors and the economy as a whole. Table 18 shows that the concentration in the forestry sector is only slightly higher than the Brazilian average, but considerably smaller than in the pulp and paper sector.

Table 18. Herfindahl Indexes for the Main Forest Activities in Brazil, 2000

Economic activities	Herfindahl index
Forestry operations	1849,0
Processing industries (minus pulp and paper)	1688,1
Pulp production, paper and paper products	2562,8
Furniture production and diverse industries	1643,1
Brazil (all activities)	1813,0

Source: Cadastro de Empresas research, IBGE

A considerable part of extraction is made in the companies' own land, indicating that investment in land purchasing is an important cost element. This is a way to assure long term supply and, for those interested in certification, to guarantee that the chain of custody is carried out without environmental problems – a very difficult thing with third part suppliers. In that sense, there is no expectation of a "race to the bottom" fuelled by foreign capital.

Most of the FDI in the sector comes through acquisition of already existing companies. Greenfield investment usually came through joint-ventures, in many cases including Brazilian owned companies. Table 19 presents a short description of the history of FDI in a selected number of companies.

Table 19. FDI history for selected companies

Amaplac and WTK Florestal	The Malasyan group WTK is the oldest of the "big five" Sarawak timber giants. Its operation in Brazil began in 1997, when it bought the Brazilian firm Amaplac for US $7 million. A large area of 300 thousand hectares in eastern Amazonia was also purchased by WTK for the approximate price of US $2.4 million.
Cifec	In the beginning of the 1990s, the China state enterprise China International Forestry Corporation acquired a traditional Brazilian logger company named Cifec Compensados da Amazonia Ltda. Afterwards, in 1994, they also bought another Brazilian firm (Compensados Manasa).
Compensa	Compensa was founded in 1958 by a Brazilian entrepreneur and in 1996 it was acquired by the Chinese group Tiajin Fortune Timber, which controls 90% of its shares.
Eidai	Founded in 1972 as a joint venture between the Japanese firms Mitsubishi Corporation and Eidai Corporation. The later acquired total control of Eidai in 1997.
Eldorado	Founded in 1985 as an Brazilian firm and acquired in 1990 by the French group of construction materials Menuiseries Lapeyre SA
Gethal Amazonas	Gethal Amazonas was founded in 1948 in the South of Brazil. It moved its operations to the Amazon region in 1972, as wood had become scarce in the South region. In 1996, a German group bought a 25% participation in the shares of Gethal Amazonas S/A. After other changes, an American fund, GMO Renewable Resources, bought the majority of the shares (85%). The remaining shares are property of the Nilorey Group.
Janus Brasil	Janus Brasil SA is the result of a joint venture between the group Janus International and Jonasa Navegação do Brasil, the largest navigation company in the Amazon. It was founded in 1998.
Jaya Tiasa	Jaya Tiasa, a subsidiary of the group Rimbunan Hijau (another of the Sarawak timber giants) bought two Brazilian timber companies, Maginco Compensados S.A and Selvaplac Indústria Madereira do Pará Ltda. These companies were reorganized and renamed respectively as Maginco Verde S.A. and Selvaplac Verde S.A. Jaya Tiasa also bought the Brazilian timber company Carolina Indústria Ltda.
Mil Madeireira	Precious Woods Group, a private Swiss firm, acquired in 1994 the timber company Mil Madeireira Itacoatiara Ltda, which has been operating since the 1970s.
Nordisk	The Nordisk Group from Denmark began operation in Brazil through its Brazilian affiliate in 1982.
Robco	This very traditional American timber company was founded in the end of the XIX century. It operates in Brazil through two affiliates in the Amazon area and other large firm in the South region of Brazil
Terra Resources	Equatorial Resources was a joint venture among the American groups Nevada Manhattan Mining Inc and Equatorial Resources, and the Brazilian groups Jonasa, Ignatius Theodorou Madeiras and UAR. It was founded in 1997. After that, the Nevada Manhattan Mining Inc. group acquired all the shares of the company, and the name of the affiliate was changed to Terra Resources.

The feared “Asian invasion” did not materialise in the Amazon because of very different ecological, institutional and economic conditions compared with those in South East Asia. The most important distinctions include:

- Technical issues including the diversity of species in the Amazon and low densities of high value trees.
- Visibility issues to do with the international media attention on the Amazon.
- Political issues, in that despite problems of illegality, the democratisation process in Brazil has created stronger mechanisms for investigating abuses and avoiding corruption.

There is no evidence for the relative impact of these regional differences. Economic issues relating to the South East Asian financial crisis are also likely to have played a significant role.

4.7. Barriers to FDI in Brazil

We have noted in Chapter 3 that current legislation requires a lot of red tape in the approval and operation of forest management plans but is less strict in the case of logging through land conversion. Since multinational enterprises are relatively more interested in the former than the latter, the legislation indirectly restricts FDI in the logging sector. The easiest way to surpass these problems is through land acquisition, a practice that is widespread among firms with international interests. This helps in the achievement of legal and certification requirements for the management plans, but at the cost of increasing land property concentration. There are problems associated with this strategy:

- Buying land diverts resources from the modernisation of production which may reduce final productivity and the capacity to invest in sustainable management and the well being of workforces
- Costs associated with land ownership (protecting boundaries, planning extraction, administration etc.) put companies at a disadvantage with smaller more mobile competitors
- Social tensions can be created by concentrated land ownership and large land-owners or “latifúndios” are a usual target for invasions

Specific public policies might be considered to avoid these problems, including a more active role of the development agencies in terms of credit allocation for the additional costs associated with the forest management sector, the cessation of the establishment of settlements in forest areas, the establishment of a system of long term logging concessions in the state-owned forests (FLONAs), and better enforcement of the Forest Code in the agricultural frontier. Incentives for sedentary forestry might also prove constructive, such as the removal of the log export ban for certified companies.

4.8. Conclusions

This paper has shown that both international trade and FDI are expanding in the Brazilian Amazon but they constitute as yet only a tiny potion of the total investment - and certainly could not be equated with a 'foreign takeover' of the Amazon region. Most of the wood-

based industries are small and medium scale Brazilian-owned enterprises. By way of contrast, FDI is associated with larger firms and while some negative examples remain, the general impression is that FDI is connected to the consolidation of a "modern" logging sector in the region, which could be more sensitive to environmental concerns mostly expressed in foreign markets.

Another reason for expecting a different behaviour from larger companies in the Brazilian logging industry – including exporters and multinationals – is related to higher fix costs, which prevent them from migrating towards new frontier areas, as more traditional, small companies do. This encourages forest management practices, in order to maintain forest reserves to continue their activities in the future.

A good indication of this is the very low degree of deforestation in Amazonas, the state where FDI, timber trade and industrial concentration are among the highest in the region. In contrast, in the states with the lowest ratios of exports/output and FDI (Mato Grosso and Rondônia), deforestation trends are much larger. The state of Pará, the biggest producer, is in an intermediate situation in terms of FDI and export/output ratio, but has the smallest degree of export concentration. One cannot, therefore, reliably associate exports flows or FDI with deforestation trends or unsustainable management. If there is a connection, it is certainly much more complex and much less significant than the domestic oriented industry as the main driver of unsustainable logging.

The picture is of course heterogeneous. The fact that certification is more common among foreign owned companies that export most of their output does not mean that the expansion in FDI and timber exports will necessarily respect good environmental practices. In the group of multinational companies analysed, there remains a large number of non certified firms. The expansion of exports from Rondônia and Mato Grosso – states where forest management remains incipient – show that there remain consumers willing to buy timber without much questioning of its origin.

Key message:
The limited data on FDI within Brazil indicates that foreign ownership has been concentrated in non-tradable commodities rather than tradables such as timber. The limited FDI within the forest sector is associated with larger firms. While some notorious counterexamples exist, FDI seems to be associated with environmental awareness and more sustainable forest management practices. Policy support for sedentary forestry (rather than migratory frontier practices) would help to encourage constructive FDI.

5. Views of Brazilian producers - increasing and sustaining exports

Eirivelthon Lima and Frank Merry

5.1 Introduction

The Amazon forests encompasses the largest stand of tropical timber in the world and Brazilian producers between them extract more tropical timber than any other nation (Verissimo and Lima 1999). The perspectives of Brazilian producers are therefore critical in developing strategies for efficient and sustainable use.

The existing forests in the region make up a stock of 60 billion cubic metres of commercial timber (Kauffman and Uhl, 1990). The exploitation of this stock by Brazilian producers has been growing quickly in recent years. Within three decades, the production of logs in Amazônia went from 4.5 million cubic metres to 28 million (Scholz, 2001). This quantity accounts for 80% of the quantity of logs produced by Brazilian native forests. Although the region has potential for exporting tropical timber, its global market share of tropical forest products is still small. During 2001, the global market for tropical timber products saw a turnover of US$ 114 billion (Bellotto, 2002). Brazil's contribution was US$ 500 million - four percent of the world total (Smeraldi and Verissimo, 1999). This share of the tropical timber trade does not reflect the natural capacity of the region.

There is no good reason to assume that the abundance of the forest resource in the region should be directly correlated with proportional exports. Abundance of forest resources is rarely the main requirement for increasing exports (Wilson, 2002). A number of recent studies have described some of the main factors affecting exports: the study carried out on Brazilian policies supporting export between 1980 and 1984 (Browder, 1987); the comparative study of the economic trends and investments of the timber producing centres of Tailândia, Breves and Paragominas during a five-year period (Stone, 1997); and of the efficiency of the timber industry in converting logs into processed wood (Gerwing, 1997). More recently, there have been studies of the development of timber activities in the State of Pará (Scholz, 2001) concerning the problems faced by Brazilian exporting companies (CNI, 2002) and priority measures to overcome the barriers affecting sustainable forest management in Brazil (ITTO, 2002). Finally, STCP Engenharia carried out a series of studies with the aim of classifying and analysing the costs and benefits for improving the timber industry in the Legal Amazon (STCP, 2002). These studies provide a useful background to the multiple issues which affect Brazilian timber exports.

This chapter seeks to complement this existing knowledge base by identifying the key constraints to tropical timber exports from the perspective of Brazilian producers. It also seeks to catalyse a debate among the government, civil society and the private sector as to how to increase Brazil's international market share while also increasing the production area under sustainable management. The surveys are based on discussions with representatives of the industry itself, and it will be noted that their understanding of sustainable management (and sometimes even management itself) is far from comprehensive. Where there is

understanding of the concept of sustainable management it tends to be based on environmental sustainability rather than social sustainability.

5.2 How the perspectives of Brazilian producers were surveyed

5.2.1 Sampling basis

According to studies carried out by IMAZON (Smeraldi and Verissimo, 1999), there are 2,500 timber companies contained within 75 Amazônian logging centres which are defined as is an aglomeration of timber industry that together produces at least 100 thousand cubic meters of roundwood per year. These centres are found along the southern arc of the Amazon, which starts from the east of the State of Pará and passes through the northern end of Mato Grosso, Rondônia and Acre. The Legal Amazon exports the equivalent of 4.2 million cubic metres in logs. 3.2 million cubic metres of this exported amount come from the states of Pará and Mato Grosso. The main timber exporting centres of these States are: Pará (Breves, Paragominas Portel, Santarém and Tailândia) and Mato Grosso (Sinop and Santa Carmem). Together, these three logging centres account for more than 600 companies.

Figure 30 - Map showing the logging centres visited

5.2.2 Target population

The aim of this study was to interview at least 90 companies - 16% of the

companies of the largest exporting centres of Amazônia. In total, 93 companies were interviewed at the logging centres in Mato Grosso and Pará. Apart from these, 7 interviews were conducted with individuals and companies specialising in export agency work in Belém.

Table 20 - Characteristics of the logging centres interviewed

Centres Visited	Number of companies	Volume of logs (m^3 year)	Number of interviews	Sampling intensity
Terra Firma Pará	308	4,970	48	16%
Paragominas	155	2,300	25	16%
Tailândia	44	900	6	14%
Jacundá	50	750	8	16%
Dom Eliseu	25	570	4	16%
Goianésia	34	450	5	15%
Terra Firma, Mato Grosso	155	2,155	25	16%
Sinop	130	1.930	20	15%
Santa Carmem	25	225	5	20%
Estuário (Amazonas e Tapajós)	110	940	20	18%
Breves	85	510	15	18%
Santarém	25	430	5	20%
Grand Total	**565**	**8.065**	**93**	**16%**

5.2.3 Preparation of the questionnaire

An initial questionnaire was prepared by a group of researchers from IIED. A pilot test of the questionnaire was carried out in two logging centres, Paragominas and Açailândia. Using the results of the pilot test, the questionnaire was revised and the necessary modifications made in collaboration with local businessmen and researchers in the region.

5.2.4 Structure of the questionnaire and ranking of priorities

The questionnaire was divided up into five parts: industrial profile, raw materials, processing, marketing and financing. The aim of the questionnaire was to identify, qualify and rank the degree of difficulty that the various companies experience in working with the international market. Throughout the descriptions of export barriers which follow the text draws upon a questionnaire subjective ranking given by the interviewees where 1 indicates little difficulty and 5 indicates major difficulty.

5.3 Introduction to the timber export situation

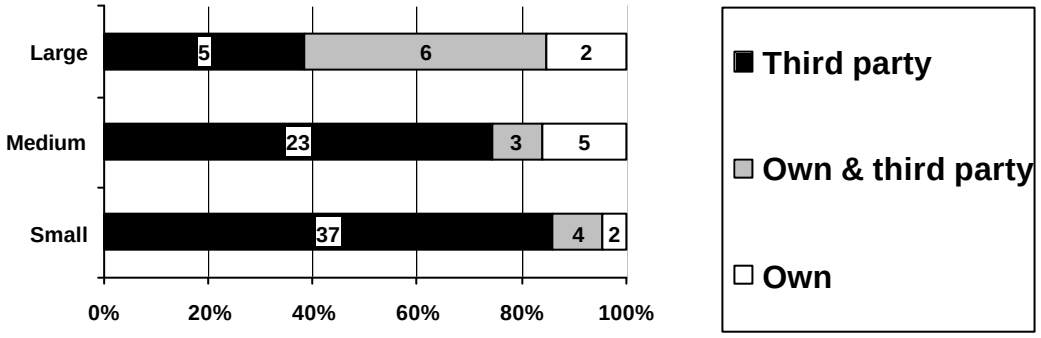
The interviews conducted provided considerable background on the context of the exporting timber industry. We describe in particular, the origin of raw materials, the out-

sourcing of forest operations and the geographical distribution of the operations. These three items are important because they show how the production base of the timber industry of Amazônia is organized, which has implications for the main difficulties in exporting sustainably.

5.3.1 Ownership of the forests from which timber is sourced

The timber companies in the regions covered by the interviews work mainly with forest owned by third-parties[3] (settlement areas and farms). More than 80% of the small companies, 70% of the medium-sized ones and 40% of the large ones depend on third-party forests for their supply (Figure 31). Those numbers show that the timber companies are not the holders of the areas undergoing forest exploitation. The loggers' explanations of this tendency indicate the high transaction costs to acquire, manage, protect and exploit forests.

Figure 31. Property type of areas exploited by size of business and percentage origin of raw material



5.3.2 Out-sourcing of forest operations

Forest exploitation is usually carried out by sub-contractors. The timber companies buy the rights to exploit areas of third parties and then hire companies or individuals who specialize in forest exploitation. More than 80% of the small ones, 50% of the medium-sized and 25% of the large companies are out-sourcing from 80% to 100% of the volume needed to meet their demands (Figure 31). The industry's indifference to acquiring forest areas is due to the maintenance costs, risks of invasion and, mainly, the lack of capital[4]. The interviewees commented that there is an enormous volume of timber available in the legal reservations of rural properties (in which 80% of the total area must be maintained as forest). Moreover, in

[3] At the logging centres visited, 100% of the exploitation takes place in privately owned areas (settlements and/or farms). However, in discussions with local leaders, it was revealed that there is forest exploitation in public areas (conservation units and other protected areas). So, we believe that the percentage exploited on private property is 85%-90% while on public lands it is 10%-15% depending on the area (See also Veríssimo et al 2002).

[4] A small company consuming 5 thousand cubic metres of sawn timber needs at least 14 thousand cubic metres of logs – allowing for a utilization of 34%. That is, 700 hectares a year of forest to operate in a felling cycle of 30 years as recommended by the scientific studies and Ibama regulations. In total, a company of this size requires 21 thousand hectares of forest – allowing for a volume of 20 m^3/ha.

the areas of recent demarcation, the deforestation permits for the remaining 20% of the total area furnish timber which is more attractive economically than timber arising from forest management. Deforestation permits are issued for 3ha per property per year in such areas, and this ensures a regular supply of inexpensive timber. The sub-contracting of third parties has arisen because of the dispersed nature of the areas which can be legally felled - 60% of the companies depend on up to five suppliers of standing trees or logs (Figure 32). If the businessmen had a single block of forest it would be easy to organize and transport machines and people from the company to the logging sites. But since the logging is done in several locations it is cheaper to hire local logging teams to carry out the operations. According to the interviewees, this reduces the transaction costs.

Figure 32. Volume of timber exploited by third parties

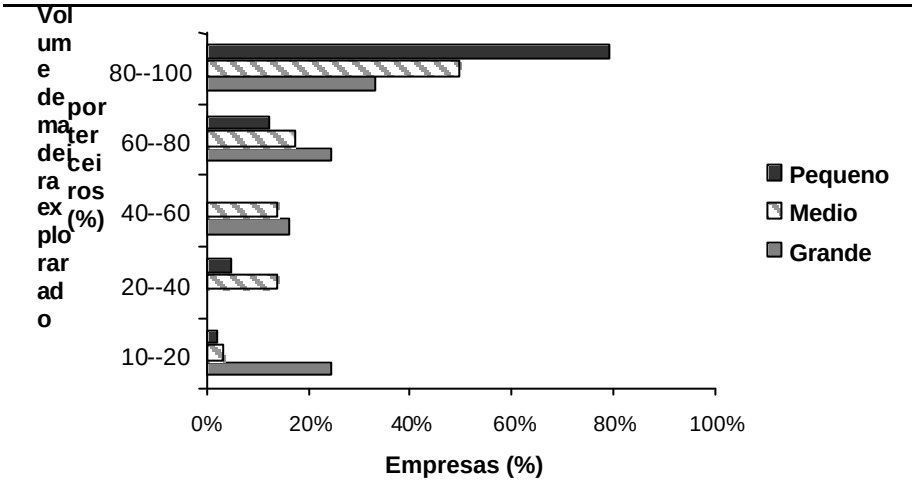
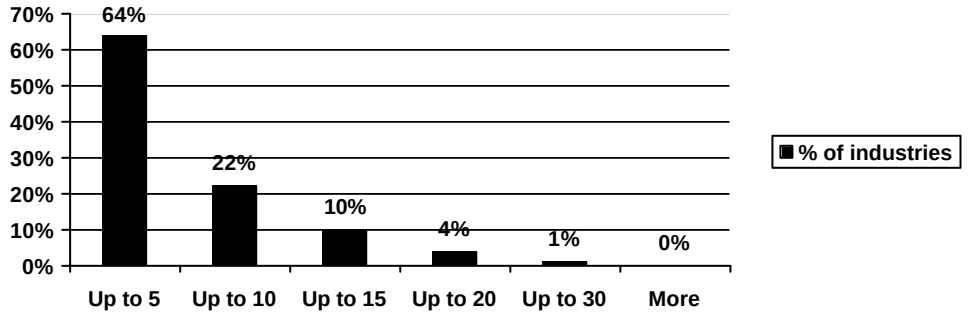


Figure 33. Number of suppliers of raw materials



5.3.3 The geography of the operations

The location of the operations plays an important role in exports. In the region of the Paraense Estuary (*varzea*), 71% of companies export up to 80% of their annual production. In the *terra firma* area of Pará no companies export more than 80% of their annual production. In the *terra firma* area of Mato Grosso only 5% of companies export 80% of

their production (Table 21).

The *terra firma* production areas have easy access to the South-central region of Brazil, while the companies along the estuary have developed access to the international market. Another important factor is the exporting culture, since right from the outset the companies in the estuary were set up with the intention of exporting. On the other hand, the companies in Mato Grosso, Rondônia and the East of Pará were established with the aim of meeting the demands of the domestic market.

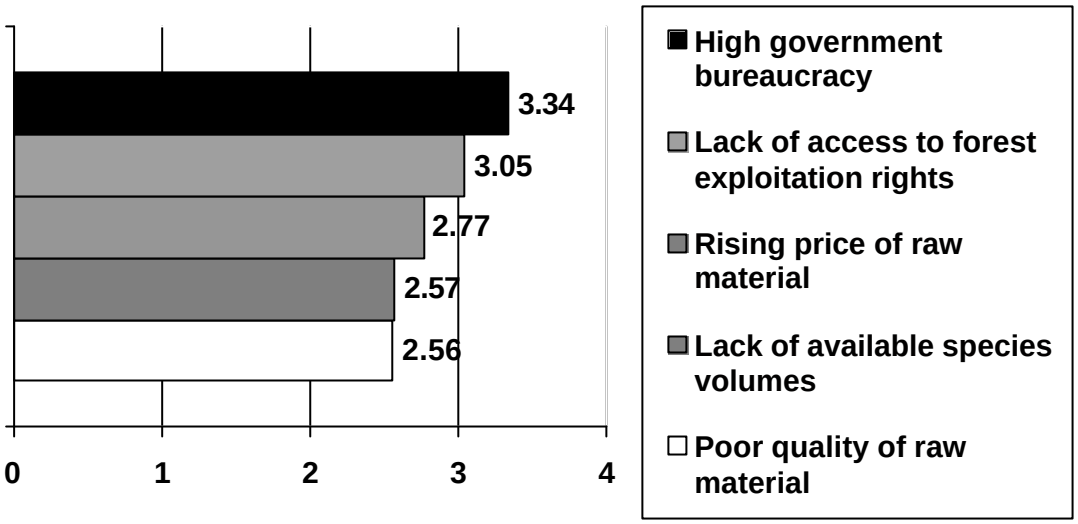
Table 21. Volume of timber exported by companies according to location of producing region

Proportion of volume exported	**Proportion of companies**		
	Estuary	**Terra Firma**	
	Pará	Pará	Mato Grosso
80-100%	71%	0%	5%
60-80%	7%	3%	4%
40-60%	15%	3%	0%
20-40%	0%	12%	4%
10-20%	7%	17%	17%
5-10%	0%	0%	70%
Not exporting	0%	65%	0%
Total	**100%**	**100%**	**100%**

5.4 Barriers to exports by forestry operations

Companies identified several problems in accessing raw materials and in forest exploitation. Interviewees were asked to rank such barriers to the exportation of tropical timber in descending order of importance. The prioritised list of barriers is reflected in the sub-sections below.

Figure 34. Importance of barriers in forestry to timber exports *(units are averages of interviewee rankings of the severity of barriers where 1 = of little importance and 5 = very important)*



5.4.1 Government bureaucracy

Government bureaucracy takes first place in the timber industries' ranking of problems in forestry operations (Figure 34). There is no shortage of regulations applying to forest exploitation in Amazônia. Controlling forest activities usually involves six stages: management plan submission, technical analysis, legal analysis, prior inspection, exploitation authorization and registration. Harvesting is authorised through the submission of an annual exploitation plan for the region accompanied by a report of the exploitation that took place during the preceding year. This complex system, which aims to inhibit illegal harvesting ends up hindering legal production activities. For example, many industries claim that there is an inspection logjam through government bureaucracy that causes delays in the production process and raises transaction costs.

The interviewees pointed out that constantly amending the laws does not create a favourable atmosphere for long-term investments, and adds to confusion about how to comply with them. For example, Instrução Normativa –IN (Regulation) No 15, of 31 August 2001 was revoked less than one year after its enactment. Soon thereafter, IN No 04 of March 2002 went into effect. At the present time, IBAMA has submitted a proposal to change IN No 04, alleging difficulties in implementation. This string of regulations illustrates how the production sector has to adapt in a short space of time to the ongoing modification of the main regulation that governs the procedures for utilization of forest resources in Amazônia. Industries believe that simple laws for regulation and control would make the timber industry more competitive and transparent. This would provide the necessary basis for increased exports.

The effect of excessive regulation is well known to the companies interviewed. Under this system, profitability is not always achieved through economic efficiency. Instead, companies compete either with niche quality products or by accessing forest stocks as cheaply as possible. One strategy of accessing forest stocks at the lowest possible production costs is to engage in corruption, political manipulation and intimidation. In such a competitive environment benefits from logging activities are captured by companies that

wield power and influence, which operate with the logic that the efficient utilization of the forest resource is less important than defrauding the system. For example, deforestation permits are often used to provide cover for illegal selective logging elsewhere. Under this scam, the volume of timber that is produced by legal deforestation under deforestation permits is inflated in documents to generate credits in the Authorization for Transporting Forest Products - ATPFs (the required timber transport permit). These ATPFs are then used to transport legal and illegal wood by the sawmills. The only major risk to the illegal operators occurs during the transportation of the illegal wood to the processing facilities due to the inspection outposts at city limits.

5.4.2 Purchasing forest exploitation rights

The second ranked priority barrier in forestry operations is the difficulty of purchasing rights to forest exploitation. The interviewees in areas with an abundance of natural forests claim that the legalization of areas for forest exploitation is necessary but is very expensive. The legalization costs include not only the costs of obtaining the deed of land ownership, but also the costs of protecting these rights against invasion, timber theft and accidental fire. Interviewees located in remote areas with an abundance of forests, in many examples, claim that the net value of forest exploitation would be negative if they legalized the forests and implemented the plans for forest management considering current market prices and the documents required for forest management[5]).

The interviewees in areas with a shortage of forests (n = 25) claim that legalization is difficult, but that it does not present a problem. The real problem for the companies located in these areas is finding forested areas that have quality wood remaining. Companies which are located in old logging centres do not tend to suffer from land disputes as these have often been settled. Government agencies in these areas are also more reliable and help in resolving land disputes, providing needed assurance for industrial investments. The role played by government agencies reduces the transaction costs involved in establishing property rights. However, there are cases of industries in old logging centres which have suffered from changes in the laws that govern private property (n = 22). For example, landowners (farmers, cattle farmers and loggers) who are in the region with the best potential for agricultural production along BR-163, in Mato Grosso, do not accept the requirement that they declare 80% of their rural property as a legal forest reserve. According to them, the legal reserve of 80% works against the best economic option for using the land. They feel that such areas have huge agricultural potential and should be devoted to such use. They worry that the zoning policies of the State are still not definite and that the law on the legal reserve of 80% can change at any time. With such uncertainty, they have not invested in

[5] Documents for legitimate forest management include: title deed of the property, ownership document issued by the competent agency, or proof of control over the area issued by the producers association or any other document specified by the executive board of Ibama, or by the agency contracted by the State; b) document of commitment to maintain a managed forest; c) sketch of the access to the property, starting from the office in the municipality where it is located; d) revenue collection document DR; e) drawing of the property showing its present land cover, the area marked for forest management (AMF) and their respective subdivisions in Annual Production units (UPA); f) Copy of CPF and identity document.

management plans, nor been able to purchase forest exploitation rights because the declaration of the 80% legal reserve is one of the stages for preparing the forest management plan and a precondition of forest exploitation.

5.4.3 Prices of raw materials

The increasing price of timber ranks third on the list of the forestry operation barriers to export (Figure 34). According to the interviewees, the cost of logs delivered at the sawmill has increased significantly since the end of the nineties. However, specialists believe that the price of unfelled/uncut timber has only kept pace with inflation. What has really increased price is the local shortages of those species that are in greatest demand from the international market. In other words, the transport costs between the sawmill and the forest have increased due to the longer distance travelled and the increasing price of diesel oil. This has reduced the profitability of the companies.

Thus, although the companies believe that the price of raw materials has made exporting difficult, in fact, what has really altered the costs of inputs are the practices of predatory forest exploitation that have given no assurance concerning the viability of the desired species close to the logging centres.

5.4.4 Available volume of commercial species

Perhaps surprisingly, the volume of each species needed to meet international demands was not regarded as a high priority problem by the industries (Figure 34). The industries did acknowledge, however, that they would not be able to supply large orders for the 15 species most exported at present. These species are usually rare and are of low density per hectare. The advent of the intermediaries for exporting these wood species has redressed this constraint among the timber companies. In such circumstances, the intermediaries negotiate with buyers and assemble the required volumes of each species from multiple sawmills. The timber companies regard these intermediaries as important players in the production chain for exporting fine woods because they mobilize financial resources, facilitate negotiations and reduce the risk to smaller companies that are inexperienced in international negotiations. For example, the Robinson group (ROBCO) in Brazil comprises two exporters located in Curitiba and Belém, and a wood processing company in Breves with an annual consumption of 120 thousand cubic metres of sawn timber. Eighty percent (80%) of this company's volume is concentrated on 10 species. To operate on this scale, the company organises its timber procurement around eight logging centres. At these centres, they negotiate deals with 20 medium and 10 small sawmills. According to the general manager, the geographical diversity of these sawmills makes it possible for ROBCO's annual timber throughput of the 10 most exported species to remain stable.

At the same time, the timber industries think that the lack of interest on the part of the intermediaries in trading the less known species on the international markets is a major issue. The timber companies believe that the intermediaries have no interest in increasing the volume or the number of less traditional species on the international market. Addressing this would require high investments by the intermediaries but small returns due to the low value

of the less known species in any initial market development.

5.4.5 Quality of the raw materials

The quality of logs obtained by the timber industry has not been regarded as a constraint to the increase of exports (Figure 34). Industries situated along the old forest frontier recognize that poor log quality in impoverished forests reduces the yield of first class wood for export. Since most of the companies are small to medium-sized and have little fixed investment, however, they do not think that wood quality is a serious problem because this industry is highly mobile and forest stocks are abundant at many other forest frontiers.

5.4.6 The impact of company[6] size on barriers to export by forestry operations

There are differences in the survey findings according to company size. Table 22 shows that medium-sized companies are in the worst situation in all categories of difficulties for exporting. Medium-sized companies that had progressed to becoming large companies (n=10), claim that there are economies of scale when tackling bureaucracy and other barriers. Medium-sized companies cannot make use of these economies of scale, nor are they small enough to work flexibly and efficiently at the fringes of legality in order to compete. The economy of scale that exists in the timber industries causes the medium-sized companies to experience various difficulties in all of the items shown in the table below. Whereas, the small companies operating at the fringes of the law, do not fully bear all of the costs caused by illegality.

Table 22. Difficulties in exporting according to company size *(units are averages of interviewee rankings of the severity of barriers where 1 = of little importance and 5 = very important)*

Problems	Rankings given by companies of different size		
	Large	Medium	Small
Lack of available species volumes	1.91	2.79	2.57
Rising price of raw materials	2.40	2.91	2.77
Poor quality of raw materials	2.45	2.65	2.56
Lack of access to forest exploitation rights	2.67	3.43	3.05
High government Bureaucracy	3.00	3.64	3.34

5.5 Barriers to export in processing operations

Successful exporting companies, in addition to having raw materials readily available, also have good processing, trained employees and knowledge of the logistics involved in marketing the end product. Those were the requirements that were mentioned constantly by

[6] The companies were classified according to the volume of logs they consumed as small, medium and large. Small companies consumed up to 10 thousand cubic metres of logs a year. Medium-sized companies consumed more than 10 thousand and less than 20 thousand cubic metres of logs. Large companies consumed more than 20 thousand cubic metres of logs a year.

the timber companies that export more than 80% of their production. We therefore asked the businessmen to list these items in order of importance.

5.5.1 Processing technology and efficiency

Table 23 shows that low processing technology and efficiency is the biggest concern for companies during the processing stage. The low efficiency of cutting equipment in the timber industry in the region of the study is directly related to the age of the industries. The age of the machinery in use varied from 5 to 30 years (Figure 35). In the big companies, 76% of the machinery had up to 10 years of use. In the small and medium-sized logging companies, 60% of the machinery had 10 years of use and the remaining 40% had more than 20 years of use.

Table 23. Barriers to exports in the processing of raw materials *(units include the number of times an issue was mentioned and averages interviewee rankings of the severity of barriers where 1 = of little importance and 5 = very important)*

Barrier to export at processing stage	**Number of Observations**	**Average rank**
Low processing technology to meet export demand efficiently	62	2.98
Professional capacity inadequate to achieve export quality	58	2.98
Geography and inadequate transport logistics impede exports	57	2.77
Lack of uniform industrial standards and quality variability	72	2.65
Difficulty in agreeing suitable sales contracts	53	2.45

The wastage caused by use of outdated equipment is only one facet of the problem. Gerwing (1997) states that simple techniques for log storage could increase the yields of companies from 5% to 8%. Another way of increasing the yield is by means of secondary processing of pieces with up to a metre in length. Those new products could increase the levels of current use from 5% to 8%, while the gains made in acquiring high-precision equipment would only increase the efficiency of the timber companies from 2% to 4% (see Table 24).

A useful way to understand these small percentage gains is by looking at the export figures. For example, the Amazônia timber industry annually exports about 1.5 million cubic metres of processed wood. This is equivalent to 4.2 million cubic metres of wood in log form. Assuming that this amount is all sawn timber and that the sawmills accepted some of the measures for increasing efficiency, we would have the following results: (i) better log storage would mean these companies would increase their efficiency from 35% to 40% - that represents an gain of US$ 84 million; (ii) with better storage and the development of new products we would have a gain of 5%, conversion efficiency would go up to 45% - that would mean a gain of US$ 168 million and; (iii) by carrying out the previous options and acquiring high-precision equipment the companies would gain another 2%, moving up to

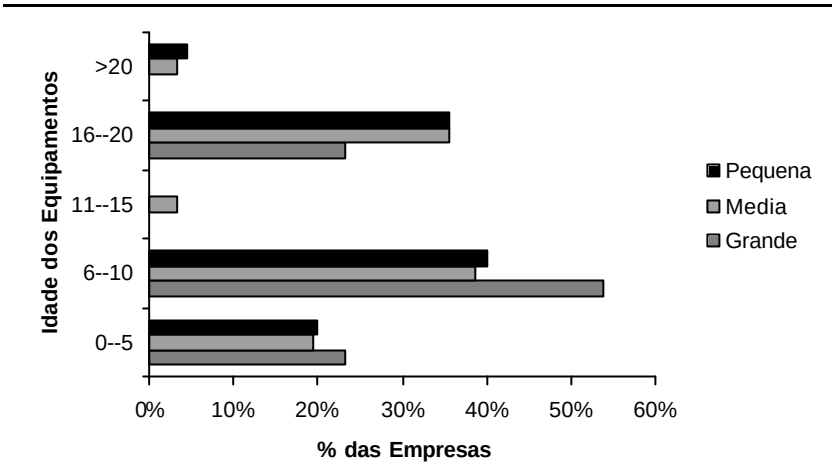
47% - this yield would result in US$ 202 million in comparison with the base case of 35% utilization (Table 24).

The above numbers show the options available for increasing the efficiency of the timber industry. The first option is simple and could generate significant benefits and with low implementation costs. The second option is very promising but requires special care. For example, the production of items shorter than one metre, such as high quality garden furniture, furniture components, tools and wooden flooring have a high added value, but they demand pin-point precision in processing the wood. Such precision is only achieved using high technology equipment. Such equipment, in turn, is expensive and the industry would possibly be trapped with a shortage of skilled workers. The option of investing in instruments for primary high precision suffers from the same problem of skilled labour shortages and the gains are less than other potential options.

Table 24. Potential gains in processing at the sawmills

Item	**Sawmilling**
Current conversion efficiency	**35%**
Opportunities for greater efficiency	
Storage of logs	5%
New Products	5%
New Equipment	2%
Total increase	12%
Possible conversion efficiency	**47%**
Volume Currently Exported (millions of m^3 /year)	1.5
Average value of timber exported (US$/$m^3$)	400
a) Gross income from Exports @ 35% (US$ million)	588
b) Gross income from Exports @ 40% (US$ million)	672
c) Gross income from Exports @ 45% (US$ million)	756
d) Gross income from Exports @ 47% (US$ million)	790
Losses:	
B – A (US$ million)	84
C – A (US$ million)	168
D – A (US$ million)	202

Figure 35. Age breakdown of machinery by company size



Idade dos equipamentos	Age of equipment
Pequena	Small
Média	Medium
Grande	Large
% das Empresas	% of Companies

5.5.2 Professional capacity of workforce

The professional training of the labour force was considered to be the second biggest problem in timber processing, one that has serious consequences for the business of exporting (Table 23). The ability of workers to operate machines efficiently, starting with correct usage through to carrying out periodic maintenance, is directly linked to the end efficiency of the company as a whole. According to many of the interviewees, high technology machinery for secondary processing of wood is difficult to incorporate in the production process because this would require the recruitment of workers from the South and Southeast of Brazil.

The Paragominas trade union for timber industry workers agrees that the low levels of qualification in the timber industry are a serious problem. However, it claims that the root of this problem is linked to: (i) the lack of opportunities for training geared to the timber business, (ii) the low wages offered by the companies, (iii) the risk of occupational accidents and (iv) the lack of basic schooling among the workers. According to the trade union, these factors work in concert. For example, the lack of schools offering vocational training for the timber business in Amazônia limits the opportunities for workers to be trained professionally to practice their profession. Additionally, the low wages offered along with the high risk of occupational accidents conspire to dissuade qualified professionals - they migrate to areas that offer equal or better remuneration but without any such high risks. At present, the minimum wage for a worker in the timber industry is 63 US$/month, that is, about US$ 0.30 per hour.

With regard to the qualifications of the workers, there are some promising initiatives around, such as the “Serviço Nacional de Aprendizagem Industrial” – SENAI (National Service for

Industrial Apprenticeship) in the Sinop timber centre. This centre has been training workers in sharpening, laminating and setting band saws, plane operation and maintenance and sharpening of circular saws. There is also a pilot project supported by Pro-Manejo[7] (Pro-management) that teaches lower impact exploitation techniques.

5.5.3 Industrial logistics

Logistical issues are ranked third (Table 23). Logistical problems in the harvesting season include the lack of boats and the lack of trucks, depending on the area of operation. While not a major priority for many companies, there are specific problems. For example, timber transportation in some regions is in direct competition with agricultural transport. During the harvest period, the timber industries have difficulty in getting trucks to deliver their products to the ports because the trucks are busy transporting agricultural produce.

5.5.4 Industrial standards

The timber companies in Amazônia, even while using outdated machinery, believe that they manage to process wood in keeping with the demands of the international market. But it is important to note that these companies carry out this processing at high costs. For example, the buyers require 6 - 15 mm of wood extra on each face of pieces produced in order to offset the variations in the sawing. This practice, called "abono" [over-measure], is an established practice in the exporting timber companies. The establishment of standards by institutions such as ABIMCI for plywood has the aim of improving quality and therefore the returns from a given quantity of product.

5.5.5 Sales contracts

Contracts are also mentioned as a problem, although not of the highest priority among the timber companies (Table 23). In reality, many of the interviewees prefer short-term contracts or deals because the constantly changing exchange rates and interest rates increases the risks of long-term contracts. Although they do not think that formal contracts are the solution, the industries believe that good business practices by both the buyers and producers aid in the forging of lasting and flexible relationships.

5.5.6 The impact of company size on processing operations

At the processing stage the priorities vary with the size of the company for a number of reasons. First, the small companies use low production capacity equipment, usually diesel-powered circular saws, for primary processing (wood for construction). With this type of technology, efficiency is a major issue because circular saws are notoriously less efficient. For example, five cubic metres of log are needed for producing one sawn cubic metre using a circular saw, whereas a typical band saw would only require 3 cubic metres of logs. At the same time, the use of circular saws makes it difficult to meet the saw milling standards

[7] Programa de Apoio ao Manejo Florestal (Forest Management Support Programme) of the PPG7 and Brazilian government.

needed for export, thus the small companies that use this type of equipment find it difficult to cut timber according to export type standards (Table 25). The use of circular saws is a practice that persists in Amazônia because they are simpler to use and this negates the requirement for skilled workers.

For medium-sized companies, the professional capacity of the workforce continues to be the prime concern, but transport logistics (by boat and truck) follow immediately after this. In the case of small companies, logistics are not a problem because they sell their production within the logging centre, either to a large or medium-sized company. The medium-sized companies are already having to compete directly with the large companies for transport (Table 25).

Table 25. Obstacles to processing according to company size *(Units are average interviewee rankings of the severity of barriers where 1 = of little importance and 5 = very important)*

Category	Rankings given by companies of different size		
	Large	Medium	Small
Professional capacity inadequate to achieve export quality	2.75	3.22	2.93
Geography and inadequate transport logistics impede exports	2.67	3.00	2.67
Lack of uniform industrial standards and quality variability	2.58	2.56	2.76
Low processing technology to meet export demand efficiently	2.50	2.65	3.48
Difficulty in agreeing suitable sales contracts	2.00	2.26	2.38

5.6 Barriers to export faced in marketing operations

5.6.1 Information about exporting

Lack of information on how to export was ranked by interviewees as the most important barrier in marketing operations (Table 26). This situation may be set to change as the Brazilian government has been working at informing Brazilian businesses about exporting, using the internet, with an “exporter's portal”. This provides information such as: a step-by-step guide to exporting, description of commercial opportunities, foreign trade legislation, exhibitions and events. For those who do not have access to the internet, there is interactive software available and a manual with useful information on foreign trade. This material is also available in printed form.

Table 26. Problems identified as hindrances to marketing *(units include the number of times an issue was mentioned and averages interviewee rankings of the severity of barriers where 1 = of little importance and 5 = very important)*

Barriers	Number of Observations	Average
Lack of information on markets	52	2.90
Poor public image of the sector	52	3.40
Lack of information about exporting	67	3.58

The sector also has the help of the "Agência de Promoção de Exportações" – APEX (Export Promotion Agency) whose mission is to encourage Brazilian exports especially by small companies. But APEX does not work with companies on an individual basis. Rather, it works with non-profit business associations and institutions through sales promotion activities. These promotion activities include exhibitions, missions and catalogues. APEX also works in adapting products and preparing companies for exporting by means of seminars and workshops. This Agency is rather different from the timber trade councils of Southeast Asia. These councils are much more specific – geared solely to promoting timber products and based in the consumer centres of Europe and North America.

While the government has endeavoured to disseminate information about timber exporting, the disorganised nature primarily of small and medium-sized companies in that sector has frustrated such efforts.

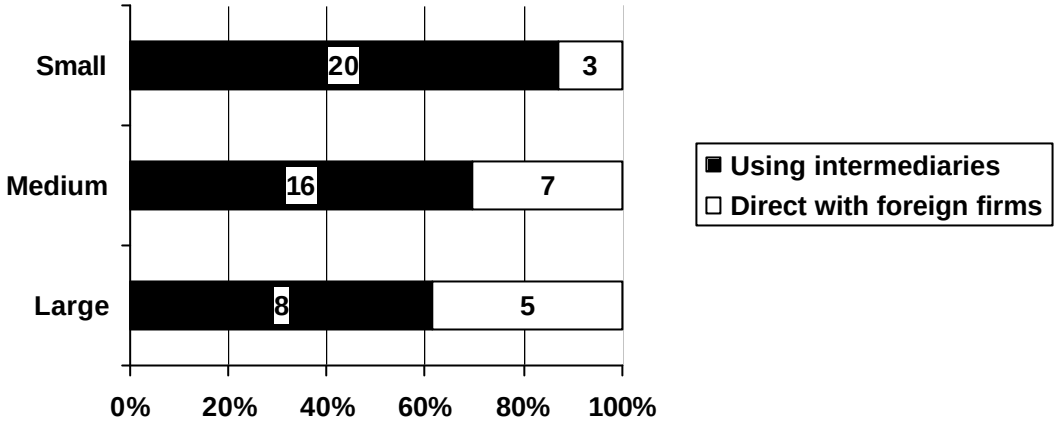
5.6.2 The sector's public image

Stories of illegal and predatory forest exploitation and environmental crimes have regularly appeared in the national and international media over the last 50 years, creating a terrible public image on both domestic and foreign fronts. Damage has been done both to the formation of new trading relationships and the maintenance of old ones. Loggers therefore consider the image of the sector as the second most important item on the list of problems affecting exports (Table 26). The industry claims that international and national campaigns showing illegal forest operations have been affecting sales to the foreign market. According to the interviewees, some trading relationships have been kept intact only by the promise of future forestry certification.

5.6.3 Market information

Lack of information on market trends is put in last place among the difficulties of exporting (Table 26). Interviewees claim producers and buyers still lack an effective communications channel. But most of the companies depend on the intermediaries located in Belém, Paranaguá and Curitiba for access to international markets and so manage to circumvent the problem. Figure 36 is specific to Belem and shows that 90% of the business done by small companies, 70% of that done by medium-sized and 60% of the business of large companies are done through intermediaries.

Figure 36. Timber export business in Belem conducted through intermediaries or conducted directly with foreign firms



5.6.4 The impact of company size on marketing operations.

The small and large companies regard the public image of the sector as the biggest problem. The medium-sized companies find mere engagement with the external market to be more problematic than how they are perceived within it. They regard the poor adaptation of government support programmes to the exporting process as the main problem (Table 27). The consensus on this issue by small and large companies is based on slightly different underlying reasons. Large companies have a significant profile or visibility and have faced difficulties in developing and maintaining lasting trading relationships with buyers in markets characterised by increasing environmental awareness. The sector's terrible public image has also stimulated an increase in the official inspection campaigns (see Chapter 3) to which large companies are vulnerable precisely because they are so visible. By way of contrast, small companies that are often financially vulnerable already operate on the margins of the law, but find it increasingly costly to circumvent the intensive official inspections, a fact which can lead to bankruptcy.

Table 27. Barriers to exports faced in marketing by different sizes of company
(units are average interviewee rankings of the severity of barriers where 1 = of little importance and 5 = very important)

Categories	Company Size		
	Large	Medium	Small
Lack of information on markets	2.64	2.80	3.08
Poor public image of the sector	3.82	3.48	3.61
Lack of information about exporting	3.81	3.47	3.6
Inadequacy of government support programmes	3.45	3.76	3.51

5.6.5 Marketing strategies

In Figure 36 we noted the high proportion of business done in Brazil through intermediaries. These numbers show that the intermediaries play an important role in exporting tropical

timber from Amazônia. But it has not always been that way. In bygone years there were no middlemen and the companies did their exporting directly. With the expansion of the timber business in Amazônia and the appearance of a large number of small and medium-sized companies on the scene, there was a need for intermediary agents in trade negotiations. The intermediaries came on the scene with the aim of reducing transaction costs and facilitating the relationships between producers of various sizes and the international market. The variety of players in the sector and their dispersed geographic distribution throughout Amazônia had introduced significant transaction costs as well as complicated logistics. In order to solve these problems, the intermediaries set up a network of suppliers in all of the logging centres of Amazônia.

Current practice is that intermediaries receive the international orders and have a period within which to ship the goods. During this period, the intermediaries get in touch with various suppliers and distribute the orders among various companies that accept the terms of the contract. The suppliers usually do not have the timber ready for delivery and receive financial advances that vary from 30% - 50% in order to undertake the work. The rest of the payment is made upon delivery of the goods. The intermediaries bring both market knowledge and financial resources to these complex arrangements. This combination of services has reduced the risks to companies that want to work with the international market but lack experience.

At present, due to the low number of intermediaries set against a large number of producers, we suspect that the competition in the timber industry of the Legal Amazon is not perfect. In a market facing the problem of oligopsony (having only a small number of influential buyers), the producers end up being paid for their products at a price that is lower than the market price. This has significant implications both for the profitability of Amazonian timber industries and the extent to which they can afford to undertake sustainable management.

5.7 Barriers to export faced in the financing of timber industries

The timber companies interviewed use different methods to secure finance. The most reliable method is the simple recycling of profits from the sale of various timber products. Another common means is the use of owners savings or borrowing from credit agencies. Financial resources for the timber business and the difficulties in obtaining financing are described below.

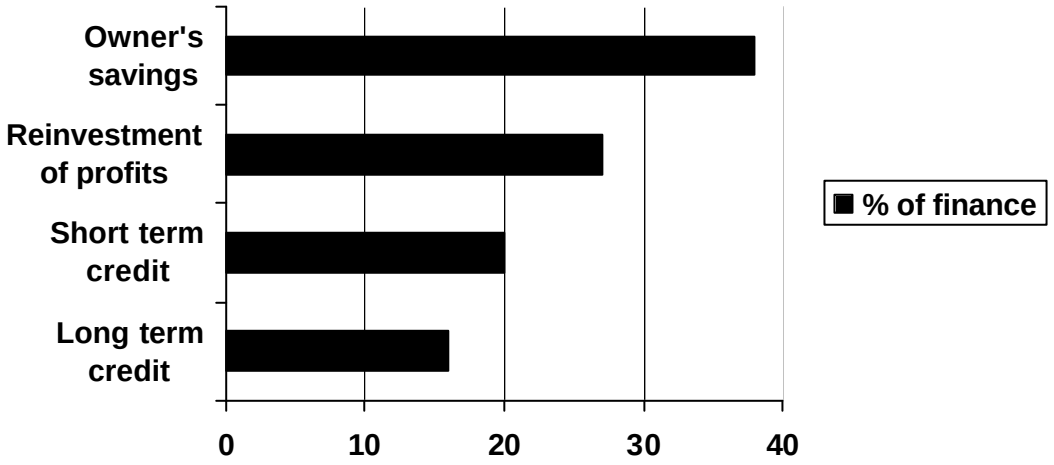
5.7.1 Company capitalization

Most of the financial resources needed for setting up timber industries in the Brazilian forest sector are obtained from the owners. The second largest source of finance has been reinvestment of profits generated from sales of their products. These profits have typically been used for purchasing new equipment, acquiring raw materials and for other activities. In

third place are loans from the short-term and long-term credit agencies[8]. These agencies supply financial resources to companies with the expectation of repayment at varying interest rates. Access to credit is low on the list for good reasons. Firstly, the timber business operates in outlying areas where there is instability regarding land rights – poorly determined property rights. Secondly, illegal activities are rampant. And lastly, there is a huge risk of forest fires. Given these circumstances, government and private banks prefer not to take the risk of lending funds, or they seek economic activities offering the same financial returns but with fewer risks than timber.

Obtaining credit from financial institutions appears to be a last resort used by the companies. Short-term credit is the most commonly accessed by companies, but the interests charged are high. For example, businesses pay a monthly interest rate of 3.97% on a working capital operation; on discounting credit bills the same businesses pay 4.21% on average, on discounting pre-dated cheques they pay up to 3.94%. Use of special cheques incurs a hefty 6.85% a month. Annually, these companies pay between 47% and 82% in interest. Such high interest means a reduction in demand for credit (and the corollary of an increase in defaults). This is the main reason why only a few small and medium-sized companies are using short-term credit operations. The long-term credit offered by government financial institutions offers the lowest interest rates and easier instalments, thus making this means of credit more attractive to small companies.

Figure 37. Sources of finance used by the timber industry

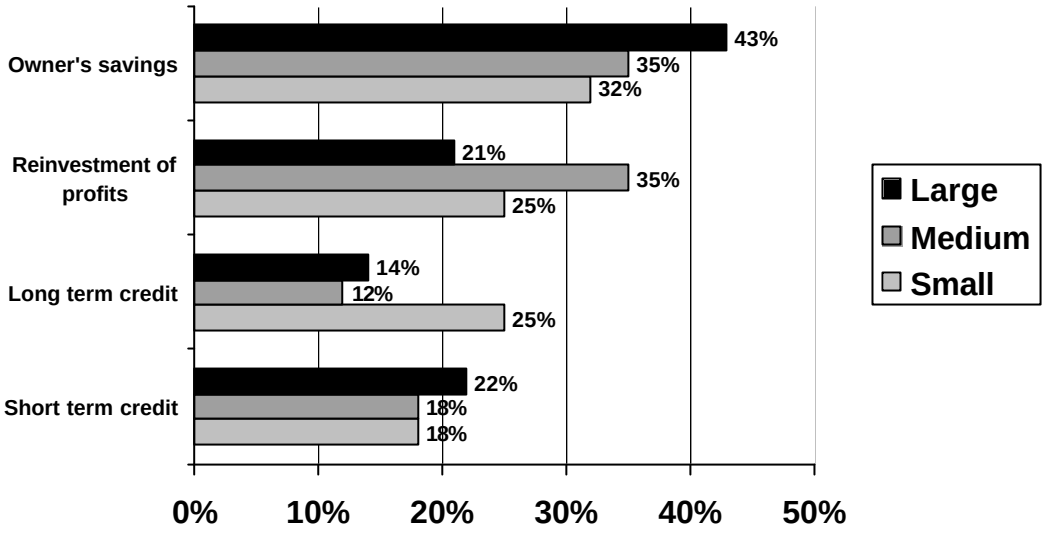


The companies determine the proportions of the funds they intend to obtain from the various sources according to market restrictions and their debt capacity. Figure 38 shows that 43%

[8] Long-term credits include loans from private banks and regional development agencies with maturity periods longer than 5 years. Short-term credits include promissory notes, pre-dated cheques and credit cards with periods shorter than 3-4 months.

of small companies, 36% of large ones and 30% of the medium-sized companies depend on a combination of long-term and short-term credits for their operations.

Figure 38. Sources of finance used by different sizes of timber company



5.7.2Foreign Direct Investment

The share of foreign direct investment (FDI) in the companies was minimal. Due to the perceived importance of FDI a fuller account has been prepared and included in Chapter 4.

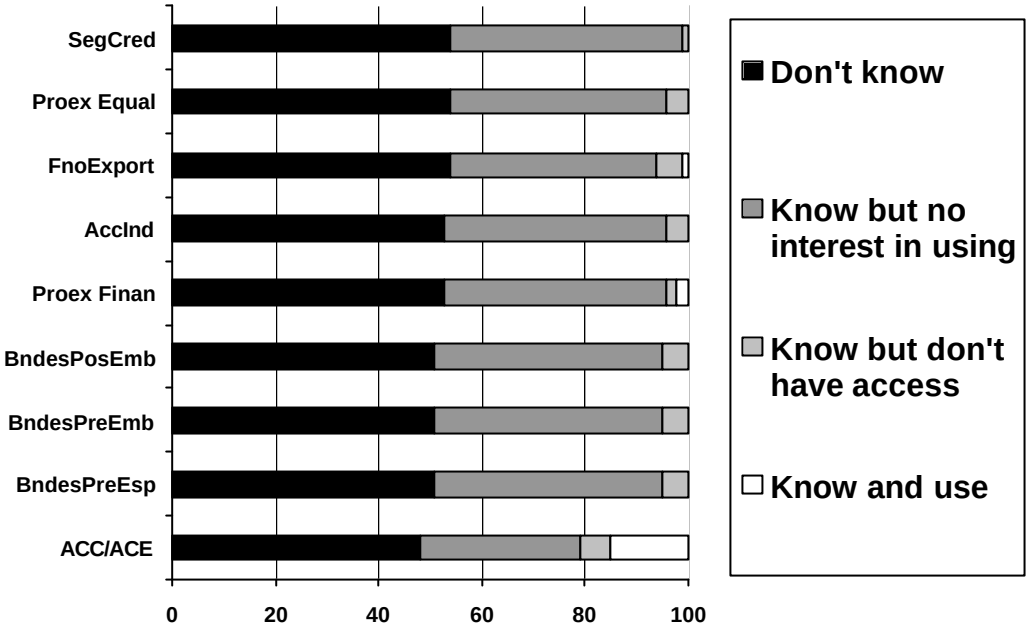
5.7.3 Financial instruments for supporting exports

The Brazilian government has six lines of financing for exports in the timber sector, which are divided into three groups. The first group is formed by PROEX with equilibration and financing lines; the second group is formed by BNDES-exim with post-shipment, pre-shipment and special pre-shipment lines; the third is formed by FNO with a special line for exporting. There are also private credit programmes that operate by advancing exchange contracts, on the exchange given and on other indirect exchange mechanisms.

5.7.4 Access to credit

Although the government has geared its recent efforts towards facilitating exports, access to credit continues to be unaffordable to timber companies. In the timber sector, the main reason for the poor take up of the existing credit lines is the lack of knowledge about the instruments for public and private credit. This lack of knowledge varies from 48% to 54% across the credit instruments. Between 30% and 45% of the companies know of the existing credit lines, but have no interest in using them. Only the credit lines of ACC/CE, Proex Financiamento and FNO/Exportação, are being used by the timber industry. ACC/CE is the most popular, with 15% of the interviewed companies claiming that they use it (Figure 39).

Figure 39. Level of Knowledge and Use of the Existing Lines of Credit



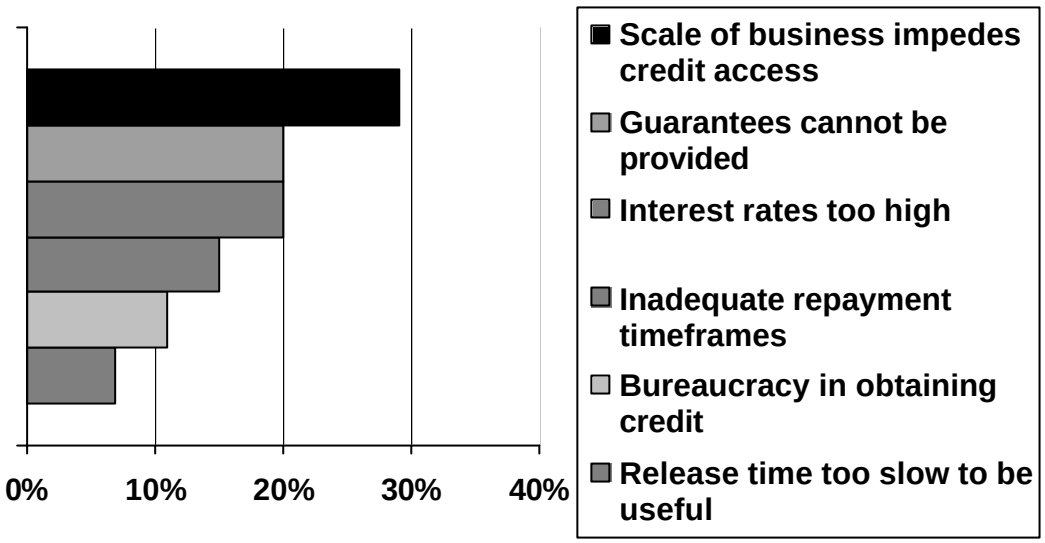
5.7.5 Obstacles to accessing credit

Businesses who are aware of the existing lines of credit say that the main difficulties in using these lines relate to the size of the company, the nature of guarantees and the interest rates. The small and medium-sized companies consider the methods for evaluating risks and the bureaucratic process itself for evaluating proposals are unsuitable for small and medium-sized companies. Guarantees became a huge problem, mainly because the banks do not accept forests as security for financing. The interest rates, for obvious reasons in a country trying to control inflation, constitute a strong obstacle to financing (Figure 40).

Timber companies experience difficulties in accessing existing lines of credit because of the difficulty that the banks have in assessing risks in the timber business. The credit risk depends on, among other factors, quantifying the value and cost of the operation, the borrower's accounting capabilities, his/her reputation, the economic situation in general (growth prospects, stability, etc.), the securities/guarantees offered and the legal structure in force (prospects for receiving debits through legal recourse). The timber business makes use of significant amounts of credit. The borrower's accounting capability is not very well known because there are very few studies that show the financial returns from the timber business (Lele, 2000)[9].

[9] The existing studies are about the costs and benefits of low impact exploitation (Barreto et al., 1998; Holmes et al. 1999). The two studies were conducted in Paragominas. The first was done in 100 hectares of forest. In that study, the production cost using low-impact exploitation techniques was US$ 12.89 per cubic metre. The second was done in 500 hectares. The production costs using low-impact exploitation techniques ascertained during this study was US$ 13.84 per cubic metre. Although, those studies are important, they are hardly a true representation of the scale in Amazônia. For example, they neither take into account the variation in profitability according to the scale of the operations, nor the difference in productivity among the different types of forests. Given this situation, the private and state-owned banks cannot carry out any concrete evaluation of the risks involved in financing the timber business.

Figure 40. Problems in the timber industries' use of existing credit lines



5.8 Conclusions

This chapter has highlighted some important characteristics and the main problems facing the timber industry in Amazônia. These will need to be addressed if an increase in timber exports from sustainable sources is to become a reality.

5.8.1 Barriers in forestry

The obstacles in the way of exports that have been found in Brazilian forestry operations are associated with the complexity of the timber industry value chain, legal bureaucracy and the failure of the government in regulating the sector. The diversity of players shows that the timber industries work only indirectly in the forest. In fact, they negotiate the exploitation rights with the owners of the forests - settlers, farmers, Indians, extractors and loggers - and they hire extractors to exploit and transport the wood in log form to the lumberyard of the company. All of these actors should be familiar with the concepts of sustainable management, but this is not the case in practice. The government comes into this sector with the aim of facilitating the relationships between the various players and improving the sustainability of forest use. With an advanced legal framework, but little in the way of financial and human resources, the result is an official inspections and monitoring system that is deficient.

The government, therefore, is poorly equipped to detect illegal activities in the forestry sector or to implement legislation impartially. That gives rise to a vicious cycle that is similar to the “prisoner's dilemma.” Timber companies know that the laws would bring benefits to all businesses in the sector. But, every company knows that it would enjoy even greater benefits if it can circumvent the law without being caught. Such a company also knows that if

it were the only one to obey the law it would be ruined because it would not be able to compete with the others due to the fact that, by their non-compliance with the law, they enjoy lower operational costs. The result is that everyone operates with minimal profits and little sustainability. The high incidence of timber industries operating partially or totally on the fringes of the law has led to the shutting down of important markets in Europe and North America.

Although the situation in the forest seems chaotic, there are many opportunities to increase the efficiency of operations at this stage of the production chain. First, we need to recognize that the efficiency of the local players determines the cost of inputs, the impact on the environment and the end quality of the product for the timber companies. Secondly, the government should facilitate exploitation under a regime of forest management on small and medium-sized private properties.

The first step would be to facilitate the registration of title deeds for the areas of small and medium producers. The second step would be to make forest management as attractive as deforestation/land clearance on small properties. Hence, the small producers would have no incentive do clear land so as to sell wood, but rather, to do so only for the agricultural use of their lands. If the small producer wished to sell timber, he/she would practice forest management. The third step would be to teach the owners of the forest to negotiate the sale of timber in a coordinated manner and to begin to monitor environmental impacts. The government could also be of help by combating illegal activities with a better system for control and enforcement. Fourthly, forest certification of independent extractors in low-impact exploitation techniques along the timber producing belts could be pursued.

5.8.2 Barriers in processing

The difficulties associated with exporting at this stage are related to the use of old and badly maintained machinery, the lack of skilled labour and the lack of techniques for handling the raw materials in the factory yard. As demonstrated by Gerwing (1997) efficiency in processing the raw materials can be improved by means of simple log storage techniques, secondary processing of pieces shorter than one metre in length and the acquiring of machinery with a higher cutting precision

The unskilled nature of the local labour force is linked to the lack of opportunities for training geared to the timber business, the low wages offered by the companies, the risks of the job and the workers' lack of basic education. There are almost no vocational training schools for the timber business in Amazônia. So, there are few opportunities for the worker to be professionally trained to practice his profession. Additionally, there are indications that the timber business, due to the low wages offered and the risks of accidents on the job, finds itself not attracting qualified professionals.

It should be emphasised that there are major opportunities to increase the efficiency of the timber industry at the wood processing stage both through training and improved industrial processes.

5.8.3 Barriers in marketing

Several problems are found at the marketing stage. First, at the exporting timber centres, the small and medium-sized timber companies specialize in timber production for the intermediaries. So, these companies develope the ability to process timber for the international market, but they have not learned how to negotiate with international buyers. Secondly, three decades of forest exploitation in Amazônia – for the most part illegal and predatory – has created a very negative international environmental image. Thirdly, there is no information system to provide information about the demands of the markets, the tendencies or opportunities for international business.

Businesses are constantly saying that all they know is that the timber stocks of Asia are dwindling, but that they do not know exactly what this means. The questions most frequently asked are: (i) will there be an increase in demand for wood for construction in Asia? (ii) What are the opportunities for capturing the markets that they are dominating at present? (iii) Will our species [of woods] be able to easily take the place of theirs? This lack of knowledge of the export process and the disinformation about the international market as well as the negative environmental image are impediments that limit exports. Whilst the government provides information on the procedures for becoming an exporter, businesses experience difficulties in converting this information into knowledge that can be put into practice.

The timber sector's terrible public image in Amazônia can, in part, be combated by means of forest certification. There are timber companies that have pursued this course. They have certified their production, tripling the volume of exported wood, and are opening up new and promising markets both in Brazil and overseas. Finally, the setting up of an agency that is more pro-active in promoting tropical timbers, with offices in commercially strategic consumer countries could open up many opportunities for business.

5.8.4 Barriers in financing

Obstacles to financing in the timber industry are linked to several factors. First, the timber industry operates in outlying/border areas where government and private banks run high risks with financing due to illegal activities, the instability regarding land rights and the chances of damage (accidents with fire and theft of wood). Under these circumstances, the only real option is self-financing. Secondly, the high interest rates used in Brazil and the short grace periods hinder the small and medium-sized timber companies' access to credit. Annually the companies pay between 47% and 82% interest. High interest rates reduce the demand for credit and increases default by companies that get credit. This is the main reason for a reduced number of small and medium-sized companies working with short-term credit operations. The long-term credit that is available with lower interest rates, however, is difficult to access because the timber companies cannot comply with the securities. For example, the banks do not accept the forest areas where the forest management will be carried out as security for the financing. Thirdly, the lack of information on the sector also makes access to credit difficult.

Significant opportunities exist to increase the efficiency of the credit system for timber exports. For example, the government, by means of registering title deeds for rural properties, information campaigns and official inspection of accidental fires and the combating of illegal timber exploitation, can reduce the investment risks in the border areas. More specifically, measures can be taken to facilitate credit for small and medium-sized companies, for example, a forest guarantee fund. Such a guarantee fund could reduce the demands by official banks for guarantees and thereby facilitate access to credit for companies that need it most. Finally, the lack of information on the profitability of the timber industry can be lessened by means of partnerships, such as timber industry trade unions, non-governmental organizations and the private sector. This type of partnership would also make it possible for more research to be done so as to understand the profitability of the timber business.

Key message:
Aims to promote the economic, environmental and social sustainability of forest management and to expand exports can be mutually reinforcing. But from the perspective of Brazilian producers it will be necessary to break the downward spiral of competition on cost based on non-sustainable practice. This will require partnerships between government, civil society and the private sector which eliminate bureaucracy and improve the security of forest tenure, the accessibility of credit, and the quality of training and information to meet market demands

6. What are consumer perceptions of the main barriers involved in sourcing timber products from Brazil?

James MacGregor and Duncan Macqueen

6.1 Introduction to the consumers of Brazilian wood products

Brazil's current trade is small relative to international trade flows in all wood categories. The most significant and fastest expanding category is pulp, with Brazil reporting 7.73% of global exports. Of products with a large tropical export component, sawn wood and panels are significant, constituting 2.24% and 2.52% of global exports in 2000.

Until the early 1970s, Brazilian trade was dominated by hardwood sawn wood, including furniture timber (primarily mahogany) and railway sleepers for the USA and Europe. With the gradual maturation of softwood plantations in the South of Brazil, exports of pulp and paper soon dwarfed traditional tropical sawn wood exports. In the early 1990s there was a new resurgence of highly processed sawn wood products and panels as technological restructuring gathered pace due to the reduction on import tariffs for foreign-built processing machinery.

Since the 1970s the geographical extent of exports has risen sharply. As noted in Table 5 and Figures 22-24, current Brazilian exports reach destinations in almost every part of the world. Consumption of Brazilian exports is still highest in North America and Europe for all products except paper (where South American neighbours are major consumers). Outside these major blocks, Japan and to a lesser extent China are increasingly significant importers of pulp, round wood and some sawn hardwood. Asia, Sub-Saharan Africa, Oceania, Central America and the Caribbean are still relatively insignificant importers.

6.2 Methodology

This current chapter surveys the importer perspectives on Brazilian timber. The survey is focused on the trade in tropical timber and not the sawn wood, pulp and paper originating in the Southern plantations. The aim was to evaluate whether there are similarities or divergences between Brazilian producers and foreign importers in relation to the barriers they perceive to increasing exports of tropical timber from Brazil. In order to conduct such an assessment it was necessary to select a representative sample of importer countries for Brazilian timber that spanned the major current and future markets. Given the importance of transport times and costs in the timber trade, it was necessary to select importing regions that had significantly different transport times and costs

The USA was an obvious candidate because of its long history of imports and current leading position in imports of Brazilian veneer and sawn wood. The proximity of the USA to Brazil makes it a natural export market. Mean shipping times of approximately 1.5 weeks give Brazil a significant cost advantage when compared with the approximate mean 6 week shipping times for African competitors or more than 7 weeks from South East Asia. Recent pressure from environmental NGOs such as the 2001 Greenpeace expose on the Mahogany

trade (leading to a Mahogany export ban) also make the USA an interesting survey choice.

The UK was chosen as a representative European country that is a major market for sawn hardwood and soft and hardwood plywood (since the late 1980s). Like other European States, the UK represents a market that faces similar transport obstacles for imports from South America and Africa, but with significant cost advantages over South East Asia (for example, mean approximate shipping times are 3 weeks from Brazil but 10 weeks from South East Asia).

Japan was chosen as an example of the far distant East Asian market which has been importing increasing quantities of softwood round wood and sawn hardwoods from Brazil. Japan maintains close ties with Brazil and is the ninth largest investor in Brazil, although down from third largest in 1990. There are also almost 250,000 Brazilians living in Japan. Japan is only 20% self sufficient in timber products and naturally sources much of its timber imports from South East Asian partner countries due to their close proximity. Approximate mean shipping times are less than a week from Malaysia and Indonesia, but 5-6 weeks from Brazil. Japan prefers to import round wood and concentrate on added value processing. This context presents a formidable challenge to the expansion of trade with Brazil. Yet, excepting trade between the USA and Canada, Japan is the world's largest importer of forest products and especially of industrial round wood, which makes its opinion of Brazilian timber imports particularly relevant. Japan's timber industry has been subject to rapid change in recent times with the Asian crisis and the dramatic increase in competition from China (Maruya, 2002). Concern over the environmental footprint of Japan's timber import activities and new domestic legislation on construction standards has further unsettled the situation in Japan.

Within each country, approaches were made through wood products associations to some of the major importing companies for Brazilian wood products. Due to concerns over environmental sensitivities in importing timber from Brazil, all dealings with importers were made on a confidential basis. Site visits were made to a total of 25 companies and one trade associations. This is not large enough to be a representative sample for statistical purposes so findings need to be treated with some caution. Companies ranged from large corporations to small family-run firms. Some were engaged in wood processing, while others were agents or merchants. For each importing company, a semi-structured interview was conducted with the employee responsible for sourcing wood products from Brazil, often the manager of the wood import division. Table 28 categorises the participants in the survey by wood product and country.

Table 28. Categories of informant for consumer survey of timber originating in Brazil.

Category	USA	UK	Japan
Sawn wood	5	4	4
Veneer	2	1	1
Plywood	1	4	3
Association			1

The structure of the semi-structured interview involved four major sections. The first dealt with the identity and business profile of the informant. The second section dealt with the history of importing from Brazil (dates, types and quantities by species, and patterns of change over time). The third section dealt with perceptions about some major potential areas of opportunity / constraint for importing wood products from Brazil, namely: issues of demand and consumer concerns; informational issues; product cost, specifications, and delivery; and tariff and non-tariff barriers. Respondents were presented with a simple scale ranging from 'significant' to 'insignificant' and asked to evaluate short statements on salient issues surrounding the trade in wood products and the industry in Brazil. While survey numbers were small, the use of this scale does allow some sort of quantitative prioritisation between different issues.

1	**2**	**3**	**4**	**5**
¬ **More Insignificant**		«		**More Significant** ®

The final section of the interview assessed what it would take for importers to increase the volume of timber they sourced from Brazil.

6.3 General perceptions

The general perception of timber importers interviewed is that the Brazilian timber industry produces a lower quality product than competitors (especially those in South East Asia). Despite this, Brazilian timber industries have managed to compete on cost, or by virtue of the properties and diversity of the main timber species. There was general frustration at the low degree to which Brazilian producers were aware of or sought to accommodate consumer preferences. Inappropriate product specifications, unreliable supply, variable quality and poor information support are general comments. For example, the Japanese importers interviewed listed the main perceptions of the Brazilian timber industry as complacent and with low capacity for quality craftsmanship.

6.4 Issues of demand and consumer social and environmental concerns

The main timber species imported from Brazil had been luxury hardwoods such as Mahogany (until recent export bans). With the advent of new technology and changing consumer tastes, veneers, plywood, and other added-value products are increasingly traded, making use of more of the diversity of Brazilian tropical timbers. Yet this process of diversification has been slow with species such as *Hymenaea courbaril* (jatoba) taking almost a quarter of a century to achieve significant market presence.

There are some key similarities and differences between the three countries in relation to perceptions of demand for, and consumer concerns about, Brazilian tropical timber imports. Informants in all three countries indicated that consumer demand for or against Brazilian timber was not an issue of great concern (range 1.5-2.5). The barriers imposed on the

mahogany trade had to some extent been circumvented by sourcing from other countries or switching to alternatives. The demand for other timbers originating in Brazil was not generally felt to have exceeded the capacity to supply the same.

Informants also expressed only moderate, though slightly higher concern about consumer environmental preferences, especially relating to the availability of certified timber from Brazil (rank = 2.0-3.0). The reason for this is that, despite some recent high profile NGO campaigns relating to illegal or undesirable exports of the timber trade in Brazil (Amigos da Terra, 1994; 1995; 1997; Greenpeace, 2001), consumers generally display little understanding of or inclination towards timber products that originate from certified sustainable production systems. Parallel campaigns targeting the timber trade in Africa and South East Asia (WRM/FM, 1998; GFW, 2000; FWI/GFW, 2002; SAMFU, 2002) to the extent that they are visible have perhaps balanced environmental concerns about the Amazon, and if anything tipped the balance against wood products as a whole, rather than against wood products from any specific region. Nevertheless, the consumer qualms which equate 'timber from the Amazon' with 'destruction of the Amazon' are widely acknowledged, even if it is the generic and misguided rejection of wood products en masse which is of greater concern to timber importers.

In the USA, because of the recent economic downturn in the international wood products industry, there has been some over-supply of timber from Brazil, but in general the companies interviewed showed little concern over the ability to match demand with supply (rank = 2.5). USA informants dealt primarily with individual producers but also made use of agents who would source extra volume or unavailable products. The products of the respondent companies are sold on to a wide variety of consumers - sawn wood being sold mostly to distributors, but also to factories and sawmills for further processing. The twoe veneer importers sell directly to furniture manufacturers. There has been a gradual diversification of hardwood imports away from Mahogany (as a result of trade restrictions, consumer concerns about Mahogany and changing tastes) towards a range of other hardwoods. But the two veneer importers have continued their heavy reliance on Mahogany for hardwood veneers, sourcing from other regions when necessary. In contrast, for softwood veneers they have diversified away from the dominant softwood *Ceiba pentandra* (sumauma) towards a range of more than twenty other light coloured tropical timbers. The plywood importing company has seen a shift towards *Virola surinamensis* (virola branca) since the 1970s with more recent diversification, including substitution by softwood plywoods from Southern Brazilian plantations. Historic links with particular companies or agents are cultivated and seen as an advantage over supply from other regions. The flexibility of agents in meeting USA demand is seen as an asset.

Despite pressure from environmental NGOs, USA importers have in general based decisions on consumer preference that have remained relatively unaffected by such NGO pressures on illegality and certification (hence a rank = 2.0). Only two informants stated that they had lost some business (less than 5%) due to their inability to supply certified products. Nevertheless, the general perception is that there will be a gradual shift in consumer preference towards certified products. Certification of sustainable forest management in Brazil through approval of forest management plans by the Government Environmental

Agency (IBAMA) is not regarded as credible. This is a threat because certified Brazilian products occupy a high-quality niche market in the USA and there is currently already little available supply to the quality required. Sourcing from brokers who themselves source from multiple small-producers further complicates the possibility of easy certification. More worrying is that certain large retailers may drop product lines in order to avoid direct-action type campaigns. There is a general perception among the companies interviewed that Brazil must organise some broad-based strategy / certification scheme towards sustainable forest management rather as European countries have done under PEFC in order to avert future problems. Two informants also noted that there was a need for much greater clarity on and implementation of the delimitation and laws governing indigenous territories in Brazil to avoid perceptions of misconduct and set out clear ground rules.

The UK importers interviewed deal primarily through agents in Brazil but sometimes with individual producers - only one had a subsidiary in Brazil. They supply chiefly either the trade/merchants or the DIY chains (consumer warehouses). Meeting the consumer demand for particular products from Brazilian imports was not regarded as particularly problematic (rank = 2.5), although it is necessary to supplement supplies from preferred mills with wood from a range of other producers. A recent shift in consumer preferences back towards darker woods favours some Brazilian species. Moreover, in the plywood markets the capacity of Brazilian producers to cope with the falling world price has enabled them to grab market share from North America, South East Asia and Scandinavia. The most important issue for trade/merchants is cost, and Brazil is regarded as a cheap producer, albeit often derided by the same customers for inconsistent quality. By way of contrast, DIY chains prioritise regularity of supply, consistent quality and the correct specifications. The vagaries of supply from Brazil received some unfavourable comment. Unpredictability was not just linked to species-specific issues such as the 2001 Mahogany ban, but is commonplace for all products due to season, transport difficulties, bureaucracy, labour disputes etc. It was hoped that particular companies with above average reputations might drag others into improving practice. The need to tackle the problem of unreliable supply is one reason why all UK informants operated through agents in Brazil.

The UK importers regard the increasing consumer scrutiny of sustainable timber origin as inevitable and rank this as an important obstacle to supply from Brazil (rank = 3.0). As a result, they have welcomed the increasing availability of certified products from Brazil. They note though that their profit margins on certified products are being squeezed and that for products like plywood the world price is too low for producers to consider certification worthwhile. While Brazilian suppliers are keen to assure UK importers of the environmental credentials of their wood products, the UK remains sceptical about these claims. This is because of the lack of any independent verification, apart from FSC. Importers express concern that Brazil has failed to win the public relations battle on the environment and that timber products from Brazil are increasingly viewed with suspicion. The media attention from recent Greenpeace report on Mahogany has compounded the already tarnished image of Brazilian products.

Japanese informants felt the Brazilian timber industry to be almost invisible within Japan and that meeting consumer preference within Japan was an issue of little importance (rank =

1.5). Japanese importers expressed a preference for direct contact with producers (often via some form of joint venture) but most are forced to work reluctantly with brokers. Japan lacks a developed DIY retail market but has a strong wooden construction industry in which houses account for 77.4% of all wood for construction. Japan has traditionally had a policy of 'scrap and rebuild' in the housing sector although this is gradual changing in favour of more durable materials, rooted perhaps in the economic despair of the 1990s, changing age structures in urban areas, increased costs of building a new house and the availability of better materials. A campaign by Friends of the Earth in 1999 also took issue with 'Japan's wasteful use of timber in housing construction'. Local government prefectures are the biggest consumers of wood. There appear to be two main sub-markets in Japan: one based on the premise of 'the-cheaper-the-better' which is highly price sensitive, and the other based on 'fine-quality-cost-no-object'. Despite consolidation in the timber importing industry, Japan lost market share to countries with cheaper labour, including China, which now supplies much of Japanese furniture. Only one of the informants interviewed had been approached directly by a Brazilian producer. One firm had established its own subsidiary in Brazil and the remaining six companies operated through brokers dealing in Brazilian timber (but not always based in Brazil). However there was a strong preference for the greater reliability that might be possible through joint visits, site visits and strong personal relationships (certainty and service being important business ethics in Japan). Despite this, no major problems were expressed in terms of matching demand in Japan with supply from Brazil - but cost was a major issue by virtue of the geographical distances involved.

None of the Japanese informants reported a high demand for certified products or a high degree of consumer environmental awareness. This may be set to change with a recent survey showing that 57% of Japanese companies are willing to promote using certified wood and domestic wood to support tropical conservation (JATAN, 2002). There are concerns that the 'reputation' of Brazilian timber could be easily marred by news coverage of the Amazon which might lead to widespread avoidance of those products in retail outlets (rank = 3). But for the moment the market penetration of certified products is low and the companies interviewed are looking to Brazil to supply other types of products. Where certified materials are required, they are readily available from Australia and New Zealand that also provide ISO14001 guarantees. Sourcing from Brazil is carried out to obtain niche products, often valuable decorative hardwoods for which sustainable management is not an important selection criterion.

6.5 Informational issues

The perceptions about whether there was sufficient information relating to Brazilian products and trading procedures and institutions varied both with proximity and with the type of corporate links which importers had with Brazil. Unsurprisingly, the weight given to informational issues varied substantially (rank = 1.5- 4.5). It would be fair to say that while some importers have solved the information gap through close links with particular Brazilian producers, the general perception is of a lack of available relevant information on Brazilian timber products, trading procedures and institutions. For companies based in Japan and the UK this was the number one priority problem.

The market least affected by informational barriers were importers from the USA (rank = 1.5). This may in part have been due to the long experience of trade with Brazil of the chosen informants (13 years on average for the companies) Indeed two informants stated that personal relationships and loyalty were what singled Brazilian producers out over and above other competing countries. Importers acknowledged that importing from Brazil was virtually a closed shop on account of these longstanding relationships. Niche hardwood markets were one way of avoiding the fierce competition from the huge multinational firms specialising in basic softwood products. Nevertheless four informants noted that information did provide a substantial entry barrier for new trading partners, requiring up to half a year to become familiar with mills, procedures and the government bureaucracy. Two informants observed that Brazilian producers or brokers rarely attended or hosted international trade shows (unlike competitors from Ghana, Indonesia and Malaysia) and that they were losing significant business and information that comes about through such events.

The UK importers who were interviewed also had relative long trading relationships with Brazil (some for over 20 years). Nevertheless they regarded the lack of information as a major impediment to trade with Brazil (rank = 4.5) noting that DIY chains and merchants were increasingly seeking certainty over the sources of wood products that they wished to buy. The lack of even simple grey literature from Brazilian producers creates the impression of lack of reliability / transparency for traders and discourages some importers. When compared with countries such as Malaysia which has a permanent promotion agency, the Malaysian Timber Council, based in London, it is clear that Brazil is lagging behind in promotional materials. At the same time, all the UK informants mentioned receiving regular contacts from previously unknown producers or brokers in Brazil. It was evident that sometimes producers are seeking to eliminate brokers from the supply chain, and that sometimes both producers and brokers tried to bypass British importers with direct deals to DIY chains and merchants. The lack of stability in this regard gives the impression of a cut-throat environment, where deals might not be honoured and within which it is hazardous to do business.

UK producers noted that strides were being made to introduce standards and background information on those standards into products such as plywood (by institutions such as ABIMCI). Nevertheless, the importers felt that such standards were not yet known widely enough or applied across the board (inclusiveness). The need to shore up the reputation of Brazilian timber across all product categories through such measures was mentioned. UK importers stressed the need for some form of industrial association that could improve interactions with Brazilian producers. This was needed not only to foster the type of technological advance necessary to meet European consumer preferences, but also to foster customer relations (the experience to date have been that each request for new product specifications is met by protest rather than service). Such an association could produce basic guidelines on Brazilian timber species, procedures and institutions in order to offset current negative perceptions. The benefits of timber production for the environment need to be stressed. Informants noted that the intense competition between Brazilian producers will continue to be exploited by buyers and reflected in prices paid. They suggested that the approach of Indonesia to management of prices (through Apkindo, the plywood trade association) could be a model to follow. This could introduce some stability into a chaotic

environment and provide margins necessary for sustainable management and reinvestment.

Japanese informants also expressed serious concerns over the availability of information on Brazilian products, procedures and institutions (rank = 4.5). They highlighted the fact that Japanese industrial structures operate by keiretsu - vertical groupings of companies with close links, bound together by habits of cooperation and mutual trust. Trading with Brazil lacked such characteristics and was further complicated by the lack of information on firms, species (strength, moisture content, etc.), delivery times, seasonal disturbances to supply etc. Without clear information, the properties of Brazilian timbers are determined largely by hearsay and rumour. For example, one informant described how eight racehorses had allegedly died in Nagano from eating sawdust of the Brazilian timber *Simarouba amara* (marupa) and that this had greatly affected the market for that species. With recent changes in Japanese construction legislation there are demands for tropical species with particular properties (e.g. not requiring chemical insecticide treatment), but information on such aspects is not readily available. Some importers complain that Brazilian information is so poor that they end up shouldering the marketing burden for Brazil. None of the informants in this sample had ever been invited to any Brazilian timber marketing event. Japanese importers felt that the Brazilian government was not doing enough to promote and develop good quality information on Brazilian timber exports (e.g. through media such as the internet).

6.6 Product cost, specifications, and delivery

When asked whether there were any Brazilian supply problems in meeting orders for cost, quality, quantity and reliability the informants tended to divide their comments into observations of cost (of low concern except in Japan - rank = 1.5-3.5) and issues of quality and reliable delivery (rank = 3.0-5.0). In short, Brazil is regarded as supplying almost the cheapest wood on the market (except to far-distant Japan) but with very low quality and low reliability. This was true for informants in all three countries.

The USA importers made several observations about the cost and specifications of timber products from Brazil (rank = 2.5). The USA had historically been an importer of lower grades of Brazilian hardwoods (with higher grades reserved for Europe). But the sensitivities surrounding logging in the Amazon were preying on this low-cost market and driving a slow shift towards high value hardwood products from certified origin. Informants expressed divergent views as to whether the import prices for Brazilian timbers were more or less than those from other countries (these obviously depend on the species and product being shipped). Shipping costs from Brazil were naturally less than from other tropical competitors. On the other hand, the variable quality of Brazilian timber grades had raised monitoring costs and safety margins on product dimensions, which had consequently increased costs. At least four importers drew attention for the need for much greater quality assurance in Brazil (removing the need for importers to employ expensive quality checking procedures).

In terms of delivery the USA informants also made a number of observations (rank = 3). They stated that the system of payment up front had led to them incurring bad debts,

although not more significant than importing from several other tropical countries. They remarked on the disruptions to supply that they regarded as commonplace owing to seasonality, public holidays and strikes. There were general complaints about the fluidity of quality grades in all timber products and noted that between 15-20% of all shipments were substandard. However, this was not considered exorbitant in comparison with competing nations. They noted that lack of adequate financing within Brazil leads to under-investment in new technology that reduces Brazil's ability to satisfy consumer preferences. This was a recurring theme in interviews with importers complaining that the Brazilian industry needs to be more professional and develop the flexibility to produce to the demands of the market (e.g. capable of producing thin veneers). They remarked on the difference between the constant innovation in highly processed products from China and the slow evolution in the same from Brazil. Six separate informants drew attention to uncertainty as a major barrier when dealing with Brazil. Uncertainty was found in the lackadaisical and informal approach to contracts, the necessity to pay up front and in political, legislative and exchange rate instability. They also remarked on the inability to settle claims over inadequate timber grades quickly, but stated that it was relatively easy to work these losses into subsequent trade costings.

The UK importers had little negative to say regarding the cost of Brazilian timber products (rank = 1.5). Brazil is currently supplying the cheapest wood on the market and even quite considerable changes to cost would not alter this. Some of this price difference however is lost through poor product quality. Moreover, importers feel that they have little power to bring claims of negligence against Brazilian producers and therefore have to pay higher insurance costs to offset this risk that again decreases the competitiveness of Brazilian products.

For UK importers, issues to do with product quality and delivery were regarded as more problematic (rank = 3.5). UK importers had become increasingly reluctant to pay upfront on account of bad debts and variable quality from Brazil. Instead UK importers now tended to sign contracts - which brokers or producers then used to obtain finance to meet the order. Informants reported that the proportion of shipments with major problems ranged from 5-50% and it was universally reported that the problem with Brazilian delivery far exceeded those from other competitors (e.g. Indonesia and Malaysia). The problems were attributed to Brazilian producers pushing the margins of tolerance on aspects such as timber dimensions, quality grades and punctual delivery. A common observation was that in comparison with competitors Brazilian producers often skimped on the quality or quantity of glues in plywood. For example, while 12mm plywood has a standard margin of variation to as thin as 11.2mm, the product from Brazil always tended to be somewhat thinner, converging on 11mm. There was felt to be little excuse for this - British standards for plywood were developed 20 years ago. The use of or quality of machining was often poor. Shipments were not presented as neatly as those from other countries (i.e. poor packaging). Moreover the attitude of Brazilian businessmen was remarked upon as being "less decorous" than those from other countries. All informants commented on the iterative process that they went through to sift out the good from the bad suppliers (a situation which has not altered in 20 years). This process is onerous since individual mills can rarely supply the demand for particular products, thus requiring relationships with multiple suppliers. The UK importers

regularly hold back payment until adequate quantities and qualities are supplied.

The view of UK importers was not all negative, however. Some informants remarked on the considerable progress being made on investment in improved technology in Brazil resulting in better product quality. Others commented that the habitual problems of seasonality (where production stopped in the rainy season) were now better managed through adequate stocking of log ponds to ensure constant supply during the rainy season.

Japanese importers were conscious that Brazilian products were difficult to place with respect to cost and quality (rank = 3.5). On the one hand the distance to Brazil made competition on cost difficult. On the other hand, Brazilian technology was not felt to be able to compete with South East Asian producers on quality. The Japanese perception is that Brazil's export strategy is focused towards Europe and America with little interest in developing strong links with Japan. For example, the Japanese market uses 3x6 boards but Brazilian producers insist on supplying 3x8. In the cheaper market segments, several factors inflate Brazilian costs in addition to transport costs. The main addition costs are high transaction costs with mills and or brokers (who are often reluctant to meet the banking, product, delivery and reference guarantees required by Japanese business). Within the high value sector Brazilian producers are felt not to have the capacity to produce the required craftsmanship, nor the flexibility to delivery small-volume specification (e.g. for multiple different door sizes required in Japan), nor the capacity to deal with complicated specifications.

In terms of product delivery the Japanese importers also expressed significant concern (rank = 3). Some Japanese informants were attempting to overcome problems of quality and unreliable delivery through targeted investment with joint venture Brazilian firms (e.g. investing in mobile kilns to improve timber drying). Those firms which were forced to source through agents (against the traditional model of business in Japan) were less positive about the quality and delivery of products. Complaints varied but there was some commonality to do with issues such as: long times to compile and deliver orders, failure to meet delivery times, poor packaging, large ranges in timber quality and dimensions, lack of professionalism in the administration of orders and small stock availability. Brazilian timber industries have a very poor reputation in Japan where quality and attention to detail are highly valued. It was observed that for a foreign firm to displace a domestic firm, the foreign firm must offer not only lower prices but also honoured guarantees, flexible stock and specifications, high levels of service and communication and through personal contact, the development of trust.

6.7: Tariff and non-tariff barriers

The barriers to trade arising from direct tariffs or other trade measures and bureaucracy were of moderate concern to the importers (rank = 1.5-3.0). The basic export and import duties are not regarded as a major impediment to trade. The less obvious transaction costs associated with government bureaucracy may be more of a problem as may certain non-tariff barriers such as health and safety regulations for housing (in Japan) and government procurement policies for sustainably managed timber (e.g. the UK).

Among the USA informants there was the general statement that were the trade process easier, it would increase their demand for products from Brazil - but at the same time it was a problem of little significance (rank = 2.0). In terms of direct tariffs, these were not seen as problematic if shipped direct from Brazil. If shipped via Mexico, Brazilian timber incurred a heavy import duty (18%) in comparison with say Peru (3%) because of differential trading agreements between those nations. In terms of non-tariff barriers such as government bureaucracy USA informants felt that Brazil did not present more serious barriers than other tropical nations, but that the transaction costs did raise overall prices by some 15%. There was a stark split between informants who sourced directly from producers (and encountered serious difficulties) and those who used agents (whose services include the facilitation of easy shipment). The level of Brazilian commercial bureaucracy is certainly a serious impediment to US firms investing directly in Brazil. The costs of overcoming such transaction costs would be prohibitive for all except high volume firms and the imports of Brazilian hardwoods did not fall into this category.

The UK informants felt tariff and non-tariff barriers to be of little overall importance for their competitiveness (rank = 3.0). Tariffs were low and the prevalence of sourcing through brokers means that many of the transaction costs of Brazilian bureaucracy are avoided.

None of the Japanese importers had found there to be any problem with basic tariffs (rank = 1.5). Export and import taxes are low and would have to be significantly higher before businesses would change their practices. There are some non-tariff barriers that are of concern to Japanese importers. As an example there is some concern over the conditionalities associated with loans for housing which require certain health and safety standards (with limited applications of certain chemicals). These might influence the choice of timber in the future.

6.8 Conclusions - how to encourage increased imports from Brazil

In the final section of the questionnaire survey informants were invited to state what changes would be most likely to encourage them to increase their imports from Brazil. The following list gives an indication of the major concerns in rough order of priority:

- *Better customer relations with greater flexibility and consistency
- *The need for better information systems about Brazilian producers and products that could be marketed
- More competitive prices for the quality offered or more quality
- *A proactive export association to develop and monitor standards of quality for different product types and reduce risk
- The need to improve the environmental image of the sector
- The need to address high transaction costs posed by bureaucracy
- The need to find ways of encouraging long term business planning, investment in the latest technology and staff able to utilise it
- The need for greater awareness of customer preferences
- Secure property rights to encourage investment

The overwhelming view of the informants was that Brazil had not realised its full potential in

terms of timber exports, particularly for closer markets such as the USA. Brazil had certain natural advantages relating to the scale of the remaining resources and the diversity of commercial species available. Many of the perceptions of Brazilian producers as addressed in the previous chapter and international importers are almost identical. Nevertheless there are a number of issues that are keenly felt by importers but not adequately realised by Brazilian producers (marked with an asterisk).

A typical industrial view of export shortcomings might be that the principal problems are institutional and mainly lie with government. While there is certainly a need for reduced bureaucracy and greater political will to control environmental abuses in the sector that damage Brazil's reputation, not all of the perceived problems are within the mandate of government. Many of the problems stem from a basic lack of good business practice, insufficient respect for the customer (including treating customers as long-term patrons and not single trades), a lack of cooperation between clusters of likeminded industries, insufficient investment in market research etc. Many of these issues are soluble by industries themselves.

It is clear that the competitive position of Brazil is somewhat fragile and requires a concerted effort from both industry and government if export growth is to be achieved. At the current time there is growing pressure from consumers for sustainably managed forests, but this pressure has not yet registered as a major impediment to Brazilian exports. Nevertheless, in the long term the risks associated with negative consumer perceptions of Brazilian products may damage Brazilian exports by reducing the price that importers are willing to pay.

Key message:
Although there are perceived problems with the quality and reliability of Brazilian timber products, the main barriers identified by importers have to do with customer relations and the availability of reliable information. Industry associations will need to work together with Government to improve the availability of information on Brazilian companies and products. Short-term profiteering will need to give way to long-term relationships built on quality and trust.

7. Lessons from a major competitor: The case of Indonesia

Neil Scotland

7.1 Introduction

In assessing how Brazil might increase its exports without destroying its forest resource base, a logical step would be to look at how one of Brazil's chief competitors in tropical timber had achieved massive export expansion, and to learn lessons from the positive and negative impacts on sustainable forest management. Indonesia is a natural candidate being among the only nations with tropical forest resources comparable in size to those of Brazil.

Indonesia is an archipelagic nation with over 13,000 islands and a total land surface area of just over 1.9 million square kilometres. The country has the third largest area of tropical forest in the world after Brazil and the Democratic Republic of the Congo. Commercial exploitation of the forest sector began in the late 1960s. Since then, government policy has succeeded in generating forest sector employment, export earnings, and revenues for the state budget. These benefits are not proving sustainable, however, and the country has suffered from rapid and widespread deforestation in recent years.

The causes of this deforestation are many and various, running from population growth and political turbulence to climatic factors. However, it is also the case that much of this deforestation has been encouraged by an incentive structure and government development policy which have encouraged waste, inefficiency, and unsustainable use of a once vast and rich resource.

From this experience there are many important lessons for Brazil, even though the two countries face rather different circumstances. This chapter will attempt to briefly draw out these lessons. A brief overview is first presented of forest exploitation, the development of wood-processing industries and the expansion of trade and markets. This is then set against the impact – positive and negative – which this has had on the country, and lessons for Brazil are drawn out.

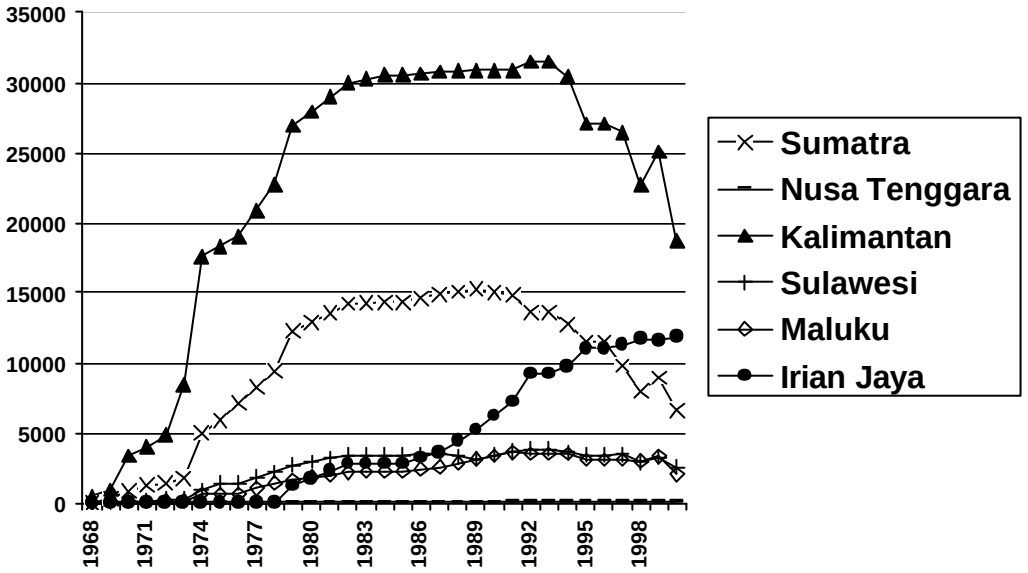
7.2 The historic pattern of FDI and national company development which has led to expanding international trade originating from Indonesia

7.2.1 Expansion of forest concessions

Until the late 1960s, forest exploitation in Indonesia was largely restricted to teak plantations laid out by the Dutch colonial authorities on the island of Java. Mr Soeharto first came to power in 1966 at a time of great economic distress and instability in Indonesia. He established the New Order government, set about imposing and enforcing stability through the use of a powerful and authoritarian military, and drew on Indonesia's vast natural wealth to generate economic growth. He also made use of Indonesia's natural resources, forests included, to secure support from the military and the country's disparate political factions. Thus began the division of Indonesia's forests into industrial concession blocks.

Initially concessions were given out in the west of the country – the islands of Sumatra and Kalimantan (Indonesian Borneo). Later, attention turned to the islands of Sulawesi and the Moluccas, and latterly Irian Jaya (now renamed Papua), which was incorporated into Indonesia in 1969. Concessions were issued for initial 20-year periods, extendable for a further 15 years. Concessions issued in the late 1960s and early 1970s are thus close to the end of their lifetime. Although this 35-year period was meant only to mark the end of the first cutting cycles, most concessions which have been active for this length of time are commercially exhausted with little to offer for a second cutting cycle. Concessions in Indonesia were exhausted because cutting cycle prescriptions were ignored, and because degraded and logged-over forest was has often subsequently been converted into plantations, transmigration sites and other
land uses. The number of concessions active in all islands except Papua, where substantial forest still remains, has fallen very sharply in recent years as a result.

Figure 41. Areas of forest under concession in Indonesia 1968-2000 (in thousands of hectares)

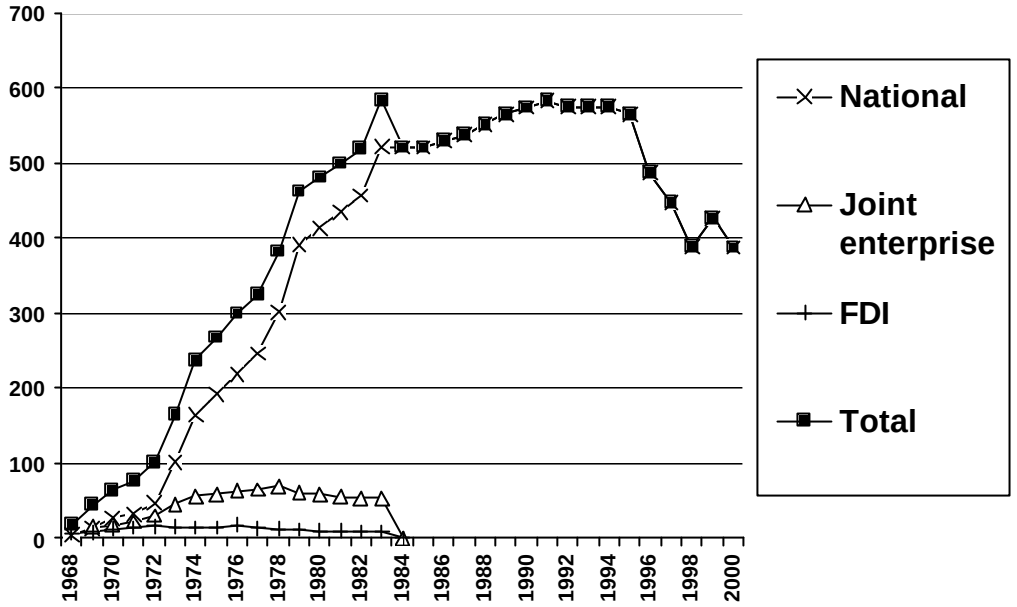


Source: Ministry of Forestry

7.2.2 Foreign and Domestic investment

Initially the sector was open to foreign investment, which was actively encouraged through both wholly-owned projects and joint ventures. In the early 1980s restrictions were imposed on foreign investment and thereafter the sector was closed, with some limited exceptions made for Irian Jaya. Domestic investment financed expansion of the forest concession industry, with only a minor role played by foreign investment. The minimal capital costs of starting up a forest concession, and the quick returns generated, meant there was little need for foreign capital or expertise to raise production from the sector, unlike other resource-based industries such as mining or oil and gas, where foreign investment was (and continues to be) of the utmost importance.

Figure 42. Numbers of forest investment projects in Indonesia by type of investor, 1968-2000.



Source: Ministry of Forestry

Foreign investment in the sector, such as it was, reflected later patterns in the trade in wood and wood products from Indonesia. In 1975, the mid-point of the period when foreign investment was permitted and close to the peak of foreign investor involvement, most investment was from other East Asian countries, with some minimal involvement of American and European companies.

Table 29. Foreign investment by country of origin, 1975

	Joint enterprise	Foreign direct investment (100% foreign ownership)	Area (000 ha)
South Korea	4	2	775
Singapore	6	-	420
Malaysia	17	2	2,119
Philippines	11	3	2,550
Hong Kong	16	3	1,674
Japan	12	1	1,356
United States	2	2	1,082
Panama	1	-	85
Italy	3	-	249
France	-	1	260

Source: Ministry of Forestry, Statistik Kehutanan 1975

Later policy, discussed below, encouraged investment in processing mills, particularly

plymills. With restrictions on foreign investment in the sector, most of this expansion was financed by domestic investors, using domestic finance. Only in the 1990s, with the emergence of the pulp and paper industry, has foreign investment come to play a more important role in the sector. Pulp mills requires huge capital investments, and foreign banks, institutional investors and export credit agencies have played a major financing role.

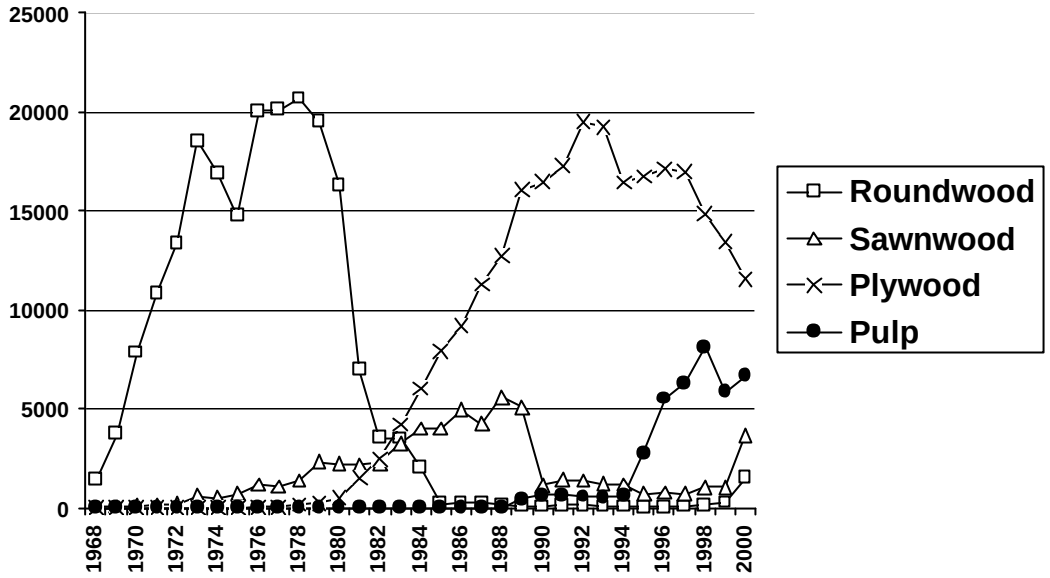
7.3 Major issues that have enabled this historic expansion in international trade with Indonesia

7.3.1 Industrial policy promotes plywood investment

Initially earnings in the sector were generated through the export of unprocessed roundwood to Northeast Asia, America and Europe, and domestic wood processing capacity was minimal. As the New Order government matured, industrial policy, as set out in the five-year *Repelita* development plans, encouraged industrialisation by setting development priorities and specific growth targets. In the forest sector this meant a drive to become a large exporter of processed wood products and investment in the necessary domestic processing capacity.

Government policy to promote this change in the early 1980s introduced severe market distortions. The legacy of these distortions continues to plague the sector to this day. To encourage investment in wood-processing mills the government first introduced a ban on the export of unprocessed roundwood in 1981, phased in over a five-year period, and replaced in 1991 with a 200% export tax. Exports of rough sawnwood rose sharply in response to the initial ban, until in 1989 this trade was also brought to an abrupt halt with the imposition of a 200% export tax. Concessionaires were instead encouraged to invest heavily in plymill capacity and by 1982 the country had become the largest exporter of plywood. More recently, as large ply logs have become scarce and the plywood industry has moved into a phase of decline, new investment has moved into the pulp and paper sector.

Figure 43. Indonesian forest product exports (RWE in cubic metres), 1968-2000



Source: FAO

Distortions introduced by government intervention were made worse by the stamp of crony capitalism, which played such a prominent role in the New Order administration. By corralling timber harvests into plywood, and by then creating the Indonesian Association of Plywood Exporters (Apkindo), Soeharto and a close friend and business associate, Mohamad (Bob) Hasan, who chaired Apkindo, came to control the greater part of the timber trade. Apkindo was granted monopoly powers to export plywood, and through subsidiaries, to import plywood into key overseas markets including Japan, Taiwan and Hong Kong. Shipping and insurance for plywood exports were also arranged through a monopoly passed to companies owned by Mr Hasan (Barr, 1998). It was only in 1998, after the IMF began providing emergency support to a failing economy, that the distortionary industrial policy which so favoured plywood, and the trade monopoly which sat atop, were dismantled (e.g. through the reduction in export tax).

Corruption and nepotism aside, protectionist policies introduced by the government in the 1980s depressed domestic timber prices and ensured that plywood manufacturers were guaranteed a cheap and secure supply of timber. From 1981-1998 domestic timber prices for prime ply logs were approximately 48% below the price of similar logs traded out of Sarawak and Sabah in Malaysia, the nearest proxy for a world market price. This protectionist stance encouraged heavy investment in plywood, and made it possible for companies to compete internationally, while using old, inefficient machinery. Over-investment was also encouraged by licensing procedures which failed to link installed processing capacity with a source of raw materials, both in aggregate and in the case of individual mills. This led to the development of an installed processing capacity which vastly exceeds the sustainable supply of timber. This has ruined the sustainable potential of the industry and has created a structural legacy which Indonesia is still struggling to come to terms with today.

7.3.2 The Asian financial crisis provokes change

The forest sector has faced very uncertain times since the Asian financial crisis of 1997-98 and the political upheavals which that provoked in Indonesia. Plywood exports have continued to decline, partly in response to lower demand in the Asian region and partly in response to a growing shortage of raw materials which is slowly pushing the industry into a sunset phase. Apkindo has recently announced plans to form a joint marketing board to boost prices.

In contrast to plywood, recent exports of industrial roundwood and sawnwood have risen sharply, however it is unclear whether this is linked to a reduction in the relevant exports taxes (which was among measures requested by the IMF to dismantle Apkindo's monopoly), or as the result of growing lawlessness in the sector which has helped to nurture a thriving illegal trade in timber. Timber smuggling occurred throughout the years when log exports were banned or heavily taxed, but has risen sharply as the rule of law weakened in the flux of political change in recent years. Wood from illegal sources now accounts for anything between 50-70% of output from the sector although this does not necessarily equate to smuggled timber exports – it could be illegal for other reasons (Scotland et al., 2000). In October 2001 a ban was re-imposed on the export of industrial roundwood – ostensibly to combat illegal exports of roundwood, but also after heavy lobbying by the plywood association anxious to recover its former favoured status and easy supply of raw materials.

Indonesia has also recently embarked upon a rapid and far-reaching programme of decentralisation, partly in response to post-crisis political upheavals. This process of decentralisation has confused the concession system which regulates forest management. Local administrations now have authority to issue small concessions of up to 100 hectares in size. Substantial numbers of these concessions are being issued in some provinces, overlapping with large concessions issued by the central government and leading to rapid forest destruction. Some of the wood produced by these small concessions is sold back to large processing operations, and the rest is crudely processed and sold domestically or exported. It is difficult to be any more precise, since the collection of data has been undermined by the rapid and chaotic change of the recent years, and there is now a lack of accurate empirical information about developments in the sector.

7.3.3 Wood for the East Asian miracle

The rapid growth in Indonesian timber exports was in a large part fuelled by rapid East Asian economic growth throughout the 1970s, 1980s and 1990s trade. Data from the mid-1980s shows key markets for timber products largely within Asia, with a small amount of higher-value products exported to Europe and the United States of America.

Table 30. Trade by region in selected wood products as a percentage of total trade, 1984

Importing region	Industrial roundwood (nc)	Sawnwood and sleepers (nc)	Plywood	Wood pulp
East Asia and Pacific	94.5	62.5	49.9	na
North America and Caribbean	0.6	3.6	21.0	na
Europe	0.1	26.3	11.6	na
Total (incl. others)	100	100	100	na

Source: FAO (1989), quoting Central Bureau of Statistics (BPS)

Fifteen years later, in 1999, a similar pattern of trade can be seen – heavy bias to intra-Asian trade, with secondary markets in Europe and North America.

Table 31. Trade by region in selected wood products, 1999 as a percentage of total trade

Importing region	Industrial roundwood (nc)	Sawnwood (nc)	Plywood	Wood pulp
East Asia and Pacific	214.5[1]	86.1	61.6	83.1
North America and Caribbean	0.8	5.4	11.6	0.6
Europe	0.8	6.5	9.9	11.6
Total (incl. others)	100	100	100	100

[1] Exceeds total trade due to reported imports exceeding reported exports
Source: FAO (2002)

Within these particular regions, a handful of countries dominate the trade. In East Asia China, Japan, Malaysia and Korea accounted for large volumes of trade in major wood products in 1999. The emergence of China as a world economic power, coupled with the effects of a logging ban imposed in the same country in 1998, has created a huge new market for Indonesian wood products. The United States was the main non-Asian market, with European countries notably absent from the largest trading partners (except for wood pulp exports to the Netherlands).

It is interesting to note that 1999 imports of industrial roundwood to China exceeded total reported exports from Indonesia, while imports to Japan accounted for nearly 95% of total reported exports. This may point to illegal timber exports from Indonesia, although it may also reflect misreporting of exports channelled via Hong Kong to Japan or statistical or reporting errors.

Table 32. Declared imports of industrial roundwood to selected countries from Indonesia as a percentage of total declared exports from Indonesia (non-

coniferous), 1999

Importing country	Imports (m3)[1]	As % of total
China	60,281	100.5
Japan	56,165	93.6
Malaysia	10,662	17.8
Thailand	1,176	2.0
United States of America	343	0.6
Total	60,000	100

[1] Figures do not add – reported imports exceed total reported exports.
Source: FAO (2002)

Table 33. Declared imports of sawnwood to selected countries as a percentage of total declared exports from Indonesia (non-coniferous), 1999

Importing country	Imports (m3)	As % of total
Malaysia	262,858	45.7
Korea, Republic of	122,378	21.3
Japan	55,269	9.6
United States of America	30,525	5.3
China	27,045	4.7
Total	575,000	100

Source: FAO (2002)

Table 34. Declared imports of plywood to selected countries as a percentage of total declared exports from Indonesia (non-coniferous), 1999

Importing country	Imports (m3)	As % of total
Japan	2,789,058	35.9
China	973,443	12.5
United States of America	820,696	10.6
Korea, Republic of	402,724	5.2
Korea, Dem People's Rep	385,769	5.0
Total	7,768,000	100

Source: FAO (2002)

Table 35. Declared imports of pulp to selected countries as a percentage of total declared exports from Indonesia (non-coniferous), 1999

Importing country	Imports (mt)	As % of total
China	457,890	38.3
Korea, Republic of	314,304	26.3
Japan	59,217	4.9
Australia	58,486	4.9

Netherlands	55,949	4.7
Total	1,196,900	100

Source: FAO (2002)

7.4 The main barriers in the way of increasing international trade and how Indonesia has overcome them

7.4.1 Few barriers to expanding intra-Asian trade

Wood products from Indonesia are mainly low grade and industrial products – such as plywood for the construction sector – which are exported to destinations within Asia. There have been very few barriers to increased intra-Asian trade. Many of the main Asian markets, particularly Japan, relied heavily on Indonesian roundwood for their own domestic processing industries prior to introduction of the export ban. The ban encouraged consumption of wood products manufactured from within Indonesia instead. The East Asian region is split very sharply between the forest-rich and the forest-poor. Only Indonesia, Malaysia and Cambodia have substantial forest resources and wood product exports, thus there was little competition from elsewhere in the region. Furthermore, since the main markets in Northeast Asia are forest-poor, the need for reliable supplies of wood products outweighed any political imperative to protect domestic wood-processing industries by restricting market access for Indonesian products. In any case, in the rapidly growing East Asian market, where the construction sector was booming, there was capacity enough to absorb new sources of supply.

Costs also presented no serious obstacle to an expansion of trade. The cheap supply of raw materials guaranteed by the ban on roundwood exports, plus low domestic wage rates, gave Indonesian manufacturers a huge cost advantage over potential competitors.

The emphasis on low grade and industrial products left the trade immune to changing tastes and concerns about the environmental impact of harvesting, certification and the finer aspects of quality and uniformity. Plywood and wood pulp are subject to the risks associated with volatile commodities prices – a slump in the price of plywood following the Asian crisis in 1997 initially hurt plywood manufacturers, although after the initial economic shock exporters came to enjoy the boost to exports associated with a sharp currency devaluation. More recently, pulp exporters have been cast into crisis by a sharp fall in wood pulp prices.

Information about trade and markets was certainly a problem for individual plymill operations, since they were prevented from entering into their own trade arrangements by the monopolistic Apkindo trade association. However, Apkindo had subsidiary offices in the main export markets, so a lack of information and contacts presented no serious barrier to an aggregate expansion of trade.

7.4.2 Luxury exports are more temperamental

Some high value mouldings and furniture are also exported to markets for luxury products,

such as Japan, Europe and the United States, and these face a very different set of issues. The luxury market, including furniture and mouldings, is very vulnerable to concerns over the social and environmental impact of timber harvesting. It is also subject to the vagaries of changing fashions and consumer tastes, requiring constant innovation to maintain a market share. Recently the Indonesian Association of Furniture and Handicraft Manufacturers (Asmindo) has found rattan furniture falling out of taste in the main markets, and is looking at how best to provide a design support service for manufacturers. Manufacturers must keep up to date with tastes, regularly revise designs, and be well informed about a rapidly changing and highly temperamental market.

Uniformity and product quality can also be a problem for furniture manufacturers, who often employ artesan labour rather than the homogenous, mass-production techniques demanded by western retailers. Individually made items, with small differences, are often not acceptable to large retailers. Different standards for treating and drying wood also cause problems from time to time. This high end consumer market is extremely vulnerable to publicity over concerns about the environmental impact of harvesting – which are considerable in Indonesia – and has a growing demand for certified timber, which has yet to take off among the country's remaining forest concessionaires.

7.5 The impacts of increasing forest trade in Indonesia

7.5.1 Forestry has supported economic development

Once opened up to investment, the forest sector very quickly grew to become an important source of export revenues, employment and tax revenues in the formal economy. Although forestry contributes only a small part of total gross domestic product (GDP), Indonesia relies heavily on export-earning sectors such as the wood-processing industries. Exports of plywood, paper and sawnwood were all among the highest export earners in the 1990s. The sector also generates large numbers of jobs in harvesting, primary processing and secondary processing enterprises. The latest available official government data shows that approximately 52,000 people were employed in the country's licensed sawmills and 208,000 in plymills in 1995. Unlicensed sawmills employed an estimated 30,000-40,000 people (NRM, 2000). The pulp industry employs and estimated 100,000 people, according to the Minister of Industry and Trade.

Revenue from timber royalties and other fees paid by concessionaires is an important source of government revenue. Despite this, roundwood levies have been extremely low, allowing concessionaires to earn large excess profits from their harvesting operations and depriving the government of billions of dollars in potential revenues. Recent improvements have been documented in rent capture. According to Ross 2001, government timber taxes and royalties rose from Rupiah 3,520 (US$2.74) per m^3 in 1986 to Rupiah 53,550 (US$25.50) in 1995. Despite these improvements, the capture of large excess profits by the private sector, and the development of a cash-rich industry regulated by poorly paid civil servants, created conditions in which graft and corruption have thrived. Private sector concessionaires and the forest service have been drawn into a complicit embrace – the former dependent on the latter for favours to navigate a highly complex and bureaucratic regulatory environment,

sold in exchange for illegal payments to supplement meagre public sector wages.

Concessionaires have also helped to develop rural infrastructure in remote areas.

Table 36. GDP by industrial origin (% distribution, 1993 constant prices)

Industrial origin	1996	1997	1998	1999	2000	2001
Agriculture, livestock, forestry and fisheries	15.4	14.9	17.0	17.3	16.6	16.2
of which						
Forestry	1.6	1.7	1.8	1.6	1.6	1.6
Manufacturing industry	24.7	24.8	25.3	25.9	26.4	26.7
of which						
Wood and wood products	1.4	1.3	1.1	1.0	1.0	n/a
Paper and paper products	0.9	0.9	1.0	1.0	1.1	n/a
Memorandum item						
GDP (Rp trillion)	413.8	433.2	376.9	378.1	397.9	411.1

Source: BPS

Table 37. Key non-oil and gas exports (US$m)

Item	1997	1998	1999	2000	2001	Rank in 2001
Clothing	2,876	2,588	3,818	4,703	4,477	1
Textiles	3,658	4,740	3,418	3,634	3,199	2
Paper & paper products	939	1,426	1,966	2,291	2,034	4
Plywood	3,411	2,078	2,256	1,989	1,838	5
Processed rubber	1,988	1,548	1,236	1,320	1,208	9
Other wood products	1,512	2,182	1,244	1,241	1,126	10
Palm oil	1,446	745	1,114	1,087	1,081	11
Sawn wood	380	164	296	331	301	15
Total exports (including others)	53,444	48,847	48,665	62,124	56,321	n/a

Source: BPS

7.5.2 The forest industry is unsustainable

The rapid expansion in wood-processing capacity took place without reference to the supply of timber available to processing mills on a sustained basis. This led to to overcapacity in relation to supply, encouraging excessively heavy exploitation of the resource and rapid deforestation. As a result, the industry is now facing a serious shortage of raw materials.

The latest estimates of forest loss show that the annual rate of deforestation increased to an

average of 1.7 million ha for the 1985-97 period. At the end of this period forest loss is likely to have been even higher, and estimates suggest that about 2 million ha has been lost annually since 1997. From 1985-97 Sumatra lost 6.7m hectares of forest, Kalimantan 8.5m ha, and Sulawesi 2.3m ha. While the latest estimates suggest there are still about 57m ha of forest on these islands, only 15% of this area is on non-swampy lowland plains, where the forests of greatest commercial (and biological) value are found. At present rates of loss, forests will vanish from the dryland lowland plains of Sumatra by 2005, and in Kalimantan soon after 2010 (Holmes 1999).

Table 38. Summary of forest loss, 1985-97

	1985		1997		Deforestation		
	Forest (million ha)	% of total land area	Forest (million ha)	% of total land area	Decrease 1985-97 (million ha)	% loss	ha/year
Sumatra	23.3	49%	16.6	35%	6.7	29%	558,000
Kalimantan	40.0	75%	31.5	60%	8.5	21%	706,000
Sulawesi	11.3	61%	9.0	49%	2.3	20%	189,000
Maluku[1]	6.4	81%	>5.5	?	>0.8	13%	>67,000
Papua	35.0	84%	33.2	81%	1.8	5%	150,000
TOTAL	115.9	68.5%	c. 95.9	57%	20.5	17%	1,709,000

[1] Data for Maluku are preliminary.

Source: Holmes (1999).

7.5.3 The rural economy has been damaged

While forestry in Indonesia makes only a small contribution to GDP, it is of great importance to smallholder livelihoods and the informal economy. Estimates of the number of people in the informal sector who depend on forests for their living vary from a conservative 14 million thought to live in forest concession areas, to 70 million who in some way rely on either direct benefits such as agroforestry and the harvest of timber or non-timber forest products, and indirect benefits, such as protection from flooding.

This importance has never been reflected in government policy. New Order industrial development policy exclusively promoted large-scale investments and excluded local communities from forest management. This was achieved through the 1967 Basic Law on Forests, which undermined local management of natural resources by claiming all forest land as state land – an area equivalent to nearly 75% of Indonesia's land surface area – and setting out provisions to issue management rights only to large private sector entities. Over a period of more than 30 years this served to degrade local resource management regimes, curtail rural development, and has created widespread resentment. This resentment is now spilling over into open conflict between large-scale concessionaires and local people, forcing many concessions to cease operations. The inequity present within the sector is thus a constraint on output and sustainability. Only now, perhaps too late, is the government

starting to realise the importance of involving local communities in forest management, and striking a balance between smallholder management and large-scale industrial concessions.

7.5.4 Corruption is undermining the rule of law

Corruption has been allowed to flourish to an extent that it is now very deeply entrenched and very difficult to eradicate. This corruption is a threat to industry sustainability, and contributes to undermining the rule of law in many parts of the country – a very serious (and recently-identified) institutional impact of unregulated forest exploitation. Corruption allows illegal exploitation to flourish which is highly unsustainable and threatens the future of both the legitimate wood-processing industry and forest-dependent peoples. Yet despite the threat this presents to national welfare and economic growth, the government's efforts to tackle illegal logging have been thwarted by vested interests and corruption within the police, the military, the judiciary, and the Ministry of Forestry (among others) who are colluding with illegal harvesting ventures.

7.6 The main similarities and differences between the Brazilian context and the Indonesian context

There are many differences and many similarities between Brazil and Indonesia. Both countries are richly endowed with forest resources, both countries are among the world's newly emerging economies and have investment potential and a desire to promote economic development. Both countries also have a rich endowment of indigenous cultures which depend upon forest resources.

Indonesia's forests are well-stocked with commercial species, particularly on the islands of Sumatra and Borneo. This helped to generate very quick returns on investment for concessionaires. In Brazil, with stocking less rich, concessionaires may have more difficulties in being competitive internationally and may require a longer period of time to realise a profit. Depending on the availability of domestic credit, this may mean that foreign investment is required to develop the sector.

The two countries, both of which are among the world's major emerging market economies, present a similar profile to foreign investors. Emerging markets present the possibility of high returns, with an attendant high risk. This risk has grown less palatable for western investors since the global economy fell into recession in 2001. But it is not only global economic factors which influence investor sentiment. In the case of Brazil, mistrust provoked by Argentina's crisis may limit the availability of credit.

In Indonesia, the credit-worthiness of companies was cast in doubt by the 1997/98 economic crisis and the country's subsequent political problems. Very little overseas credit is now available to Indonesian companies, and foreign direct investment has fallen sharply. Investments in the Indonesian forest sector by western companies and financial institutions have also come under intense scrutiny in recent months. Many such companies stand accused of financing forest destruction. As a result they have reconsidered their lending and

investment policies and are more reluctant to become involved in projects associated with the forest sector.

Likely markets for wood products from the two countries differ substantially. Indonesia is close to the large economies of Northeast Asia, which are its main export markets. The proximity of Brazil to North America means that greatest potential for expansion of trade lies in this direction. These two markets are very different – the United States and Canada are both large producers of wood products, and the markets in these countries are more influenced by changes in fashion and are also more responsive to environmental concerns than markets in Northeast Asia.

But despite these differences, Indonesia, which has a mature forest industry, offers many insights for Brazil, where the forest concession system is only now starting to evolve and where the country is only now looking to develop a large-scale export industry.

7.7 Relevant lessons about economic, environmental and social risks associated with an expansion in international trade

Indonesia highlights many of the risks associated with an expansion of trade in wood products.

- **Inequity.** The exclusion of local people from forest management, and the favouritism shown towards industrial-scale operators, has had an adverse environmental and social impact and fuelled (sometimes violent) conflict in the forest estate.

- **Institutional capacity**. Indonesia has since early 2001 embarked on a rapid process of decentralisation which is in part designed to appease anger at the strong control which central government has held on the exploitation of natural resources. However, without adequate checks and balances on the misuse of natural resource revenues by local elite groups, the process could serve only to decentralise the more unsavoury aspects of the central governments management of natural resources during the New Order era.

- **Industry capacity.** Indonesia's experience with licensing industry capacity offers many stern lessons. Once processing capacity exists, there are strong pressures to keep it supplied with raw material. Thus the mistake of allowing industry expansion to occur without linking this to an estimate of sustainable yield from the forest has cost Indonesia dearly, fuelling deforestation to an extent that jeopardises the future of the forest industry.

- **Domestic demand.** In Indonesia domestic demand was never officially acknowledged by government planners as they encouraged expansion of an export-oriented timber industry. No reliable data is available for domestic timber consumption, yet estimates suggest that it is likely to be as much again as the timber which is exported from the country. This oversight in a large part contributed to the supply and demand imbalance which Indonesia faces today, since a large unlicensed processing industry evolved to meet this demand, particularly in the sawmill sub-sector. Domestic demand in Brazil is enormous, and

it is important that government planners acknowledge and quantify this demand and take it into account when promoting export-oriented business.

- **Monitoring and supervision.** Illegal logging has grown to be a serious problem in Indonesia, as suggested by the 1999 trade statistics which show reported imports in China and Japan exceeding total reported exports. A system to monitor concessionaire performance and encroachment into the forest estate must be an essential element of any forest management framework. Recent experience suggests that systems which draw on a combination of distant reconnaissance and regular and unannounced field inspections, with independent third-party involvement, provide the main elements of a robust system for inspection and monitoring.

- **Land ownership.** The government officially owns all land classified as forest land – an area equivalent to 120m hectares, or over 60% of Indonesia's land surface area. It is infeasible for the government to exert effective control over an area this size, meaning that forest land lapses into open access land, and lacks effective and enforceable property rights, with all the consequences for land encroachment and plunder which that entails. In Indonesia the government claims ownership of forest land and leases concessions to the private sector. Incentives under this type of model are often not conducive to sustainable management – private sector operators are required to apply long-term principles of forest management with contractual security (and a guaranteed return) over a very much shorter period of time. However, granting ownership of forest to private investors gives rise to the risk that forest will be cleared and the land put to different use. The matter of land tenure therefore deserves careful thought, including consideration of new systems, such as private ownership accompanied by legal obligations to maintain forest cover.

- **Unsustainable supplies.** There is a risk of growing dependent on unsustainable supplies recovered from land clearing operations. This has occurred in Indonesia in recent years as supplies of timber from managed forests have dwindled. Taxes to make timber from land clearance less competitive may help to fend off this risk in Brazil.

Table 39. Roundwood recoveries from land clearance, 1994-99 (000m³)

	1994/95	1995/96	1996/97	1997/98	1998/99
Natural production forest	17,309	16,944	15,268	15,598	10,179
Conversion forest	4,709	5,398	8,021	10,038	6,056
Total production (incl. other sources)	24,027	24,850	26,069	29,149	19,027
Conversion forest as % of total	19.6	21.7	30.8	34.4	31.8

Source: Ministry of Forestry and Estate Crops, Forest Utilisation Statistics 1997/98 and 1998/99

- **Investment in value-added.** Government policy has failed to encourage continuous investment in additional value-added production, with most output from the sector concentrated in industrial grade plywood.

- **Low timber royalties.** Levies on roundwood have failed to reflect the value of the resource, allowing the private sector to earn large excess profits from timber harvesting operations. These profits were disguised through the use of transfer pricing in transactions with processing mills, but despite widespread knowledge of this practice the government was unable to act in the face of opposition from the timber industry lobby. The government has lost billions of U.S. dollars in potential state revenues as a result. Furthermore, the capture of large excess profits by the private sector, and the development of a cash-rich industry regulated by poorly paid civil servants, created conditions in which graft and corruption have thrived.

- **Corruption.** Corruption is very deeply entrenched in the forest sector, allowing illegality to flourish. This illegal exploitation is highly unsustainable and threatens the future of both the legitimate wood-processing industry and forest-dependent peoples.

- **Government interventions.** Government policy to encourage investment in plywood has distorted the sector and created an inefficient and excessively large plywood industry. This has encouraged substantial waste and inefficiency in the plywood sub-sector. Policy was undoubtedly controlled by the powerful interests in the plywood lobby. A different approach to industrial policy, created impartially, based on rational analysis, and promoting more balanced development might have avoided many of the problems this has caused.

- **Foreign investment.** There have been some recent steps to reopen the sector to foreign investment, and some interest has been shown from East Asian companies, particularly Malaysia and Korea. These companies often operate through local subsidiaries and are not always recorded as foreign investment. Many of these companies have an atrocious environmental record. There is also reported to be a lot of foreign capital invested in illegal harvesting operations in parts of the country, almost all of which comes from the East Asian region. There are both advantages and disadvantages to f encouraging foreign investment , and the performance and values of foreign investors will vary sharply according to country of origin and individual company policy.

7.8 Particular opportunities for Brazil to increase its international market share sustainably based on the comparison with Indonesia

In the light of Indonesia's experience, Brazil's attempt to boost wood product earnings should be approached with caution. There are, however, opportunities to expand sustainable trade, and for this Indonesia provides many lessons. Particular attention should be paid to the following:

- **Secure land tenure.** Government planners must give very serious consideration to the design of a robust concession system which creates incentives for long-term, sustainable forest management. Consideration must also be given to the equity of this system, local community involvement in forest management, and arrangements for land tenure both for local communities and the private sector. There is particular need to weigh up the relative merits of private and public ownership. An inadequate leasing system and concentration of

land ownership in the public sector is one of the fundamental failings of the Indonesian model. However, private ownership may also not provide incentives for long term management, and a system of private ownership with incentives and obligations to retain forest cover may offer the greatest potential.

- **Concession allocation.** Allocation of concessions must be competitive, transparent and based on clear rules and criteria. This will prevent the allocation of concessions for reasons of politics, friendship or family ties. Nepotism and cronyism stained the forest sector in Indonesia from its earliest days, and has had a very damaging impact on forests and the forest-based industries.

- **Monitoring and inspection.** A robust, independent and impartial regulatory regime is needed, with the capacity to monitor the performance of concessionaires and the wood-processing industry in a way which maintains a strong degree of independence. In Indonesia over-regulation has distracted the system from its intended outcome – sustainable forest management – and offers numerous opportunity for graft, since many of the existing requirements are costly, unnecessary and impossible to comply with. Efficient, outcome-based systems of regulation offer greater potential to encourage sustainable forest management.

- **Improved rural livelihoods.** Forest sector investments must be accompanied by measures to improve rural livelihoods. In Indonesia, resentment and conflict has been created as the result of the damage which industrial forestry has caused to rural livelihoods living in forest areas. Rural livelihoods have been damaged through, for example, appropriatioin of areas of forest under traditional management, felling of fruit trees, the silting of rivers and the disruption of water supplies and fishing grounds. This conflict has on many occasions forced concessionaires to abandon operations, and approach to development which recognises the needs of local communities is in the long-term a much more prudent strategy.

- A second dimension of the livelihoods and equity issue is the resentment which industrial forest management facilitated by the central government has caused in the provincial and district towns in forest-rich provinces. Employment generation in these areas has been minimal, with many jobs going to migrant labour from Jakarta and other parts of Java, where the large timber companies are headquartered. Ensuring equity in matters such as job creation, access to harvesting permits, and local investment, growth and diversification is an important aspect of a sustainable expansion of forest sector output.

- **Policy coherence.** In Indonesia, efforts to sustainably manage forests have often been undermined by other government departments, such as transmigration (which relocated hundreds of thousands of people into forest areas), agriculture (which promotes forest conversion for cash crops), and mining. In Brazil similar effects can be seen in the land settlement programme sponsored by the Ministry of Rural Development. Creating a mechanism to balance the competing activities of government departments, and the effects each has on the objectives of the other, is an important step towards sustainability.

- **Increasing revenues to government.** Roundwood taxes and levies should be linked to the economic rent generated by timber extraction. Economic rent is the standing value of the timber resource in economic terms, and is calculated by subtracting production costs and normal profit from the total product value. In Indonesia, the strength and political connections of the timber industry lobby prevented the government from raising taxes to a level which reflected the economic rent generated by harvesting timber. It is important to set and regularly revise taxes based on this principle of maximising state revenues.

- **Transfer pricing** helped to disguise the true extent of profits being made by the forest industry in Indonesia. This problem can be addressed by ensuring timber is sold through an open market, for example by regulations to ensure separation between forest concessions and wood-processing mills, by regular independent audit and the imposition of strict and clear accounting guidelines, or by setting roundwood levies on the basis of a proxy world market price rather than reported domestic prices. This latter measure means that taxes are paid based on world market prices regardless of the price concessionaires and mills report for wood purchases and sales.

- **Targeting high-value markets** Proximity to the North American market suggests that the obvious way for Brazil to expand exports from the forest sector is through targeting high-value wood products for the North American (and European) market. Entry into this market would require a steady and secure supply of certified timber, since consumption is sensitive to reports of the damaging effects of timber extraction on the environment.

- Indonesia has focused production on low-end products, such as plywood, industrial roundwood and rough sawnwood. Market information is supplied through industry associations. For these types of product there is little need to provide design services to boost market share. However, the luxury market, including furniture and mouldings, is very vulnerable to concerns over the social and environmental impact of timber harvesting and the vagaries of changing fashions and consumer tastes. Recently the Indonesian Association of Furniture and Handicraft Manufacturers (Asmindo) has found rattan furniture falling out of taste in the main markets, and is looking at how best to provide a design support service for manufacturers. Manufacturers must keep up to date with tastes, regularly revise designs, and be well informed about a rapidly changing and highly temperamental market. Design services, market forecasting services, marketing campaigns, and regular updates on changing fashions and tastes would be important services to support a strategy to support expansion on Brazil based on the production of high-value products.

- Uniformity and product quality can also be a problem for high-end products, such as furniture, which are produced using artesian labour rather than the homogenous, mass-production techniques demanded by western retailers. Individually made items, with small differences, are often not acceptable to large retailers. Different standards for treating and drying wood also cause problems from time to time. Advice and guidance on quality control would also be an important service required by Brazilian manufacturers who lack experience of dealing with western markets.

- Special consideration is also needed for small producers in this context. Small producers

have only limited resources and capacity at their disposal, and may require special help to make use of market information and design services, and with the costs and technical demands of producing certified timber.

- **Maintaining the resource base.** A range of measures can be taken at an early stage to maintain the resource base. Taxes to raise the cost of land clearance logs may be a useful instrument to consider. Investment can also be encouraged in plantation development, although incentives must not promote the replacement of natural forest with monoculture tree crops. Private financing of plantation development may be difficult to obtain due to the relatively long lapse between investment and return, and limited supplementary state support may also be required. Other models of plantation development will offer valuable lessons for the necessary balance between private and public funding. In Indonesia a Reforestation Fund did not succeed with its intended purpose for plantation development. It was managed separately from the state budget, under the direct control of the state executive authority and was in an opaque and corrupt manner. Well-connected businessmen received grants and concessional loans from the fund to develop plantations on land which was often already tree-covered, so the funds provided a perverse incentive to replace natural forest with plantation monocultures. In addition, the fund was frequently used to finance favoured business projects, such as the development of aeroplanes by the state-owned company PT IPTN.

- **Avoiding over-development.** Indonesia allowed the wood-processing industry to expand without reference to the sustainable supply of timber. To avoid this, it is important that in Brazil any expansion of the wood-processing industry is linked to long-term (multiple cutting cycle) estimates of the available supply of timber.

There are undoubtedly opportunities for Brazil to boost earnings from the export of wood products, but there are attendant dangers. Indonesia sadly now highlights the costs of unfettered industrial wood production – any country wishing to play a bigger role in the global timber should take good note.

Key message:
There are both positive and negative lessons to be learned from Indonesia's capture of export markets. The need to use tax mechanisms judiciously to control undesirable activity while fostering efficient value-added production is one such lesson. The attendant danger of stimulating excessive processing capacity based on unsustainable development is another. In view of its forest composition and market location, Brazil might best compete in low-volume, high-value niche markets for tropical hardwoods where better market intelligence systems, quality standards and a sound environmental profile will all be indispensable.

8. How to expand Brazilian timber exports sustainably

Duncan Macqueen

Preceding chapters have introduced the context within which the vision of the PNF is to expand timber exports and increase sustainable forest management. Perspectives of exporters and importers have helped to identify the key impediments to the realisation of that vision. Comparisons with one of Brazil's major competitors have highlighted some pitfalls to avoid. This chapter draws on those findings to assess what contribution existing interest groups might make to expand exports sustainably. It recommends that consideration be given to some new institutional structures. It highlights the need for new areas of practical investigation, learning and action.

8.1 The role of major stakeholders who influence the timber trade in Brazil

8.1.1 Introduction

The sheer magnitude of Brazil's forest resources has engendered all manner of proprietary claims on their use, however legitimate or illegitimate those claims are. Almost all of the stakeholders making such claims have some influence over the fate of the Brazilian forest industries, however small and indirect that influence might be. Achieving the government aims of increased Brazilian timber exports without prejudicing sustainable forest management will need to take account of these stakeholders who determine to different degrees what happens in the Brazilian forests.

The consultation which underpinned the National Forest Programme (PNF) was an important step in defining a shared vision for Brazil's forest resources. Yet it will be the ongoing governance of multiple and often competing aims which will ultimately determine the trajectory of Brazilian timber exports and their impact on the forest resource. Indeed the relevance of the PNF will be determined by the degree to which it maps out ongoing processes to govern competing aims. We turn our attention, therefore, to the cast of characters who have some influence over this trajectory and examine what risks and opportunities exist and how these might be managed.

We examine risks and opportunities in relation to the major barriers to exports encountered in the preceding chapters, each of which may also have an effect on forest management. Nine areas of concern have been drawn from the body and conclusions of preceding chapters and each requires urgent attention:

(i) Better business practice and customer relations
(ii) Improved market intelligence and promotion
(iii) Financing and investment in new technology for greater efficiency
(iv) Technical and administrative capacity development
(v) Enhanced social and environmental reputation
(vi) Streamlining of regulation
(vii) Incentives to offset short-termism

(viii) Secure property rights
(ix) Harmonisation of policies across different Ministries

8.1.2 Brazilian Government Ministries

Forestry is rarely considered an important sector in national governments and Brazil is no exception. Elements of government wishing to expand Brazilian timber exports while maintaining sustainable forest management will have to take on the challenge to ensure that this agenda is understood in all its complexity and reflected in the policies and programmes of multiple other Ministries. Harmonisation of policies across different Ministries (priority xi) is a particular priority for the MMA, MDA, MDIC, MPOG and MRE.

Three important considerations are likely to influence other Ministries' outlook on the expansion of timber exports: (1) the comparative advantage of trade in forest products relative to other alternatives, particularly agricultural land use and trade; (2) the degree to which the export of forest products needs to be nurtured or the sector is considered able to compete internationally; and (3) the extent to which other non-commodity societal benefits of forests are jeopardised by forest products trade. This book has argued that the Brazilian forest sector is a major and competitive industrial sector with export potential. Standing forests represent a barrier to social development while also providing social and environmental services to adjacent and far-distant communities. Because of this broad social paradox, the fate of the forests and the role of timber exports in that fate are best decided by all elements of Brazilian government.

This book argues that the social pressure for conversion of forest to agriculture, and the supply of low cost timber that this entails, is a threat to the long-term sustainability of the industry and the forest on which that industry is based. Poorly targeted agricultural incentives and revenue collection mechanisms exacerbate this threat. Liaison is needed between the MMA and MDA to ensure a reversal of this situation with forestry incentives to offset short-termism and promote sustainable management (priority vii). For example, the uncertainties over the policy of requiring settlers to maintain a legal forest reserve of 80%, might be better replaced by policies in the MDA which give settlers smaller amounts of land but allow them to clear all of it, shifting the onus for forest management onto those equipped to carry it out. Taxation on timber from land clearance might be set so as to decrease dumping at prices well below the market rate from sustainable management. There is also an urgent need for a streamlining of regulation (priority vi) so that the bureaucracy associated with sustainable management is greatly reduced. Such initiatives must be underpinned by a coherent plan within the PPA to promote secure property rights (priority viii) in the sector. In order to provide incentives for companies engaged in securing tenure for sustainable management the government might consider reducing taxes for certified products or dropping the ban in log exports for companies which have been certified.

While much of the onus for simplifying legislation, improving law enforcement and ensuring adequate capacity building within the sector lies within the MMA, there is a need for much greater coordination between the MMA, MDIC and MRE. Specific interministerial support is needed for improved market intelligence (priority ii) and activities to promote an enhanced

social and environmental reputation (priority v). MDIC must work together with the MMA to create an environment in which foreign investment is linked to local entrepreneurial activity to ensure an increasingly stable future for the industry in the high-value niche markets appropriate to tropical hardwood timbers. These needs for coordination might best be addressed through an inter-ministerial forest working group (see 8.2.2).

8.1.3 Federal and State environmental authorities

The mandates and spheres of operation of Federal and State authorities are often overlapping and can add to the bureaucracy in securing land or permission to harvest and transport timber. In each State, a review is needed of the steps required for timber production from sustainable management - the object being to reduce to the absolute mimimum the administrative steps required - shifting available resources away from paperwork towards effective enforcement activities in the field. The fewer the steps and the greater the resources to enforce those steps the better. Federal and State agencies need to take responsibility for the streamlining of regulation (priority vi), and the facilitating of secure property rights (priority viii) in forested land. They should also work with banks at a federal and state level to improve access to financing and investment in new technology for greater efficiency (priority iii) thereby promoting long term planning and investment in the forest industry. A major issue which needs to be addressed is the dumping of timber from land clearance at prices below those which are possible from sustainable management. Taxation levels need to be revisited in this instance. Ensuring that the PNF is owned and incorporated into State level policies and practices will be a priority in the drive to increase timber exports from sustainable forest management.

The State level authorities have perhaps the greatest control over undesirable activities on the ground which affects the reputation, marketability and therefore the price of Brazil's timber exports. The new environmental control system developed by FEMA (2001) is an excellent example of how political will can transform the forest landscape. Such systems need to be replicated across Brazil to ensure that the poor image of Brazilian timber is in time replaced by confidence in land use planning that is rational and under control. An inter-ministerial working group will be fundamental to the co-ordination of such initiatives across different states (see 8.2.2).

8.1.4 Industry representatives and associations

Timber associations such as ABIMCI or AIMEX have a critical role to play in promoting better business practice and customer relations (priority i) through the development of standards of production. The recent development of a National Program for Wood Quality (Programa Nacional de Qualidade da Madeira (PNQM)) is one example of constructive engagement to build customer relations and improve marketing and promotion. Another important role for the private sector will be in the development of improved market intelligence and promotion systems (priority ii) such as web-based materials on the main producers and products available within Brazil and the main export markets. Technical and administrative capacity development (priority iv) through associations such as these will continue to be relevant. Undertaking negotiations to improve financing and investment in new

technology for greater efficiency (priority iii) is also a critical area for the private sector, requiring active associations.

One of the problems with the timber industry in Brazil, typical of any country with abundant forest resources and pressure for land conversion is that there is a shifting agricultural-forest frontier. Faced with a dwindling supply of raw materials locally, companies have therefore had to remain small, mobile and opportunistic in order to move to the next forest frontier or else be large enough to achieve economies of scale in transport and processing or to assure supply through land acquisition and forest management (Stone 1997). They have faced the prisoner's dilemma of knowing that they would benefit from sustainable management of forests rather than conversion (e.g. in the legal reserve) if everyone else adopted it and nobody cheated. But since timber from forest conversion whether legal or illegal can out-compete products from sustainable management, many companies opt for that route - even though everyone loses as a result. The lack of cooperation is problematic, since it is association that might serve to improve market information, provide technical and administrative training, create conditions for sustainable management and thereby assure an enhanced social and environmental reputation (priority v) for Brazilian products.

Considerable scope exists for like-minded producers to associate within corporate responsibility initiatives (such as the voluntary membership association of Instituto Ethos in São Paulo) in order to distance themselves from less reputable companies in the sector. Best practice could become a means for differentiating responsible companies, with the ultimate aim of establishing a reputable market information or marketing body (see 8.2.3) leading to improved market intelligence and promotion (priority ii).

8.1.5 Investors in and lenders to the forest industries

As noted in Chapter 4, there has been comparatively little foreign direct investment in the Brazilian timber industry, most of the investment coming from the USA and Europe with substantial investments also from Japan, China and Malaysia. Investors can play a unique role in the financing and investment in new technology for greater efficiency (priority iii) within the Brazilian forest sector. Linking financing with independent audits of sustainable forest management would be a powerful driver towards the enhanced social and environmental reputation of Brazilian forestry (priority v). While socially and environmentally directed investment has not always been forthcoming, certain foreign investors have required or supported Brazilian subsidiaries' quest for certification. Gethal's investors from Germany and Mil Madeireiras investors from Switzerland have followed such a course. Investors can play a strategic role in supporting the best of Brazilian industry and creating a 'race for the top' in social and environmental standards. This could be beneficial for the long-term prospects of the industry in assuring supply of raw material and local community acceptance. Linking investment to the implementation of sustainable forest management on dedicated forest land is one way of encouraging sustainable management rather than the more normal supply of timber from land clearance.

At a national level there is a need for a agency for credit information and subsidy to the forest sector. The current lines of credit are simply unknown or irrelevant to the majority of

timber industries in the region. Making the provision of finance conditional on sustainable management might also help in the long term (see 8.2.4).

8.1.6 International trade and finance agencies

It is well known that sustainable forest management is much more expensive than sourcing timber from forest conversion. While the export market has played a minor role so far in Brazil in the process of forest clearance, expansion of such trade might increase pressure on producers to reduce costs (and hence behave unsustainably). Organisations such as the WTO and bilateral trade negotiators urgently need to incorporate thinking on how to protect the multiple other benefits and services of forests, many of which currently fall outside markets. Voluntary mechanisms such as certification should be supported. Legislative mechanisms that protect scarce resources in a variety of ways (e.g. export bans, differential taxes, subsidies etc.) should also be considered on a case by case basis. In essence, the WTO needs to act in support of incentives to offset short-termism (priority vii) rather than vice versa.

While multilateral finance agencies do not wield any direct power over forest-trade, they can (but do not always) impose significant conditionalities on their lending. These conditionalities tend to include the adoption of general measures to promote more liberal trade and to facilitate privatisation and foreign direct investment with reduced subsidies and tighter fiscal discipline. The 2003 negotiations towards a large World Bank loan to the Brazilian forestry sector are one example of pressure for reform being applied through the leverage given by the loan. Loans to the forest sector are normally problematic because of the long time frames and high interest rates. At their worst such loans can lead to permanent indebtedness or the liquidation of the forest resource to finance repayments rather than sustainable management. If well targeted, such loans can provide much needed low-interest support for financing and investment in new technology for greater efficiency (priority iii). They might also be a means of building improved market intelligence and promotion services (priority ii) and supporting technical and administrative capacity development through associations of timber industries (priority iv). The use of conditionalities to promote forest-orientated harmonisation of policies across Ministries (priority ix) is another possible option.

8.1.7 Consumers of Brazilian forest products

Historically, end-users have shown little concern for the way in which forest products are produced. Most consumers are quite ignorant of the diversity of species and timber properties available and select a limited number of 'named' timbers on the principle of 'better safe than sorry'.

The over-riding perspective of forest product consumers is that forestry must deliver products that they want at prices they are willing to pay. Since consumers are often distant from the forest and tend to be swayed by immediate financial savings rather than longer term environmental costs they tend to turn a blind eye to the consequences of driving down timber prices. Worse still, many environmentally conscious consumers boycott timber altogether in favour of substitute materials. Such boycotts almost eliminate the standing

commercial value of forests reducing any incentive to maintain or manage them. While there is some merit in boycott campaigns which seek to shock the market into more sustainable practice, this needs to be accompanied by more positive attempts to create stable markets for the beautiful high value hardwoods originating from sustainable sources. There is considerable scope to foster production which is responsible, ethical and certified.

Nevertheless, some consumers are experimenting with more exotic hardwoods and some are increasingly demanding independent certification of the production process to meet social and environmental standards (e.g. FSC). The Brazilian buyers group is a positive example of this trend. Consumers can play a role in promoting the production of timber from sustainable origin by: buying Brazilian timber, experimenting with some of the more striking and less common timbers and insisting on certified timber. By so doing they will provide incentives to offset the discounting and short-termism which plagues the sector (priority vii).

8.1.8 Consumers of forest services

Brazil is already a major beneficiary of the trade in recreational ecotourism and is experimenting with markets for biodiversity conservation, carbon and watershed protection. But it will be a long time before such markets serve to protect the resources on which they are based, and, equally importantly, the livelihoods of the people who are dependent on those resources. In some instance the growing power of markets for the environment may lead to the disempowerment of local people who lack the financial clout to express their needs through markets. As an antidote to this Landell-Mills and Porras (2002) recommend: steps to formalise property rights held by poor people, clearly define tradable 'services', devise cost-effective payment systems which include the poor, strengthen cooperative institutions which represent the poor, invest in training and education, establish a market support centre for each 'service' and improve access to finance. Consumers of environmental services should use their market power to insist on such measures thereby providing incentives to offset short-termism (priority vii) and secure land tenure (priority viii) for poor people.

From the point of view of sustainable timber exports, support for the development of these markets for environmental services may result in demand for higher management standards of forest resources (more cost) but offset those additional costs by increasing reputation of Brazilian timber exports (more profit). What is equally likely is that markets for environmental services will divert financial resources into alternative land-use systems (e.g. plantations for carbon sequestration, strict conservation areas for ecotourism). For example, the current provisions of the Clean Development Mechanism (CDM) support afforestation and reforestation, not sustainable management of natural forests (Aukland *et al.,* 2002). The tropical timber industries will need to establish partnerships with government and NGOs to demonstrate viable options for payments for environmental services within natural tropical production forests. The long-term aim is again to provide incentives to offset short-termism (priority vii).

8.1.9 Researchers, consultants and NGOs

In order to address the list of principal barriers to expanding exports from sustainably managed forests, three types of research and consultancy are high priorities. Firstly there is a need to consolidate information about what constitutes sustainable and efficient management of Brazil's forests, and to support technical and administrative capacity development (priority iv) from stand management to efficient processing and design. A second priority is research into the types of incentives to offset short-termism (priority vii) that would prove effective in Brazil. Such research might investigate the multiple ways in which a long term vision could be cultivated based on secure tenure, secure markets and coordinated systems to track and evolve in line with market trends. Thirdly, there is a need for social and policy research into how to facilitate harmonisation of policies across different Ministries (priority ix) and improve arrangements for decision making and enforcement, leading ultimately to secure land tenure (priority viii) and the long-termism which is so critical for the success of the Brazilian timber industry. Such research should strive to include the multiple networks of government, civil society and the private sector in part to promote this harmonisation.

NGOs can also continue to play a constructive role in supporting the working of certified buyers groups, providing training in sustainable forest management and publicising success stories and infractions. They can act to consolidate the association of industries and act as conduits of useful information on market trends. They can also assist in brokering sensitive negotiations on legislative and fiscal change. Should periodic consultations with the industry become routine, these could potentially be managed by a subcontracted NGO.

8.1.10 Farmers at the forest-agriculture interface

Since settlers in forest areas are required to maintain 80% of their land under forest, there are two important roles they can play in support of the forest industry. First, they can clear up to 3 ha per year and sell the timber to timber procurement agents at rates which are closer to timber from sustainable management. If timber is offloaded well below the market price this is to the detriment not only of the farmer, but also of those competing timber industry who are trying to engage in sustainable management. Second, farmers can invite timber industries to harvest timber from the obligatory 80% reserve, provided they have a management plan to do so.

Farmers would benefit from improved understanding of timber markets, basic inventory techniques and sustainable management in order to insist on sustainable practice by any timber extraction contractor. The rural outreach of MDA and INCRA need clear extension manuals on sustainable forest management, timber pricing and contractual negotiations. The ultimate aim would be the streamlining of regulation (priority vi) the gradual elimination of timber dumping from land clearance and strategic extension services to encourage rural land owners to manage their forest reserves sustainably. Communities might eventually cooperate in denouncing infractions which would reduce the enforcement burden faced by State environmental bodies and IBAMA. Cooperation within an inter-ministerial working group on forest would help to facilitate this as there are overlapping spheres of influence (see 8.2.2).

8.1.11 Indigenous peoples and other forest dwellers

The fate of the indigenous people's within the Amazon forests is an important concern for national and international campaign groups. Yet in their own right, Amerindian groups can contribute to timber production from sustainable management. A first step is to continue to work to resolve delays and disputes over land registration. This is essential in the fight for an enhanced social and environmental reputation (priority v) for Brazilian tropical timber exports. (There is a need for representatives of export associations such as AIMEX or industrial associations such as ABIMCI to campaign for rapid progress at the Fundação Nacional do Índio [National Indian Foundation] (FUNAI). One constructive opportunity might be for the industries to sponsor the work of ongoing indigenous registration processes such as the Projeto Integrado de Proteção às Populações e Terras Indígenas da Amazônia Legal [Integrated Project for the Protection of Indigenous Peoples and Land in the Amazon] (PPTAL)). Another important way in which indigenous peoples can contribute is through engagement with companies in the supply of timber. Indigenous peoples might help to develop supply agreements that reflect the best of corporate social responsibility and sustainability through mechanisms such as the Programa Demonstrativo dos Povos Indígenas [Indigenous People's Demonstration Projects] (PDPI). Such activities would serve to transform the international image of the Brazilian forest industries while empowering indigenous people's to deal with rapid change..

8.2 Appropriate policies and institutions

8.2.1 National drivers for change

There is nothing inherently contradictory about the PNF's stated ambition to expand exports while simultaneously increasing the volume of timber from sustainable forest management. A best case scenario might be that the export market actually expresses a preference for timber from sustainable management and backs that preference with willingness to pay. A worst case scenario might link increased exports with increasingly predatory practice. But no amount of external pressure for better or worse will have a defining role in determining practice on the ground in Brazil - the external market is simply too small to overcome the inertia associated with the routines of current practice (see Scholz, 2001). Instead it will be internal domestic drivers which will determine the rise or fall of exports and the sustainability of those exports. It will be Brazilian political will, Brazilian institutional capacity and Brazilian business practice which will determine whether Brazilian timber exports achieve a reputation and market share that is based on quality and sustainability rather than cut-price expediency and transience.

Brazilian policies and institutions have for some time been moving towards the former option of quality and sustainability. The government articulation of ten thematic lines in the PNF has provided an important context for this. The central PPA has provided funding for three of these themes: expansion of the managed and planted forest base; sustainable forest management; and prevention of deforestation and forest fires. In addition, donor support for pilot initiatives in sustainable management has been ongoing for over a decade under the PPG7 (MMA, 2002). The last decade also saw the emergence of timber brokers to meet some of the shortcomings in timber marketing. Associations have also played an important

role. One example has been the development of new standards by ABIMCI for plywood which seeks to drive up quality and market reputation. Another example is the domestic buyers group for FSC certified products or the establishment of an institute for corporate responsibility (Instituto Ethos). The analysis of policies and institutions in the preceding chapters has highlighted three important gaps, however:

- An inter-ministerial working group on forests
- A market information and / or marketing body
- An agency for credit provision or subsidy to the forest sector

8.2.2 An inter-ministerial working group on forests

It is clear from an analysis of the current model of forest exploitation (Chapter 3) the incentives for and controls of FDI (Chapter 4) the perceptions of the producers (Chapter 5) the perceptions of consumers (Chapter 6) and the comparative analysis of Indonesia (Chapter 7) that policy coherence is a major issue. The forest sector is unusual because of the long time frames involved, the geographical expanse which increases interactions with different interest groups and the number of different forest products and services which those groups have an interest in. Policy coherence is therefore particularly important for the forest sector. Efforts under the new administration to engage in inter-ministerial discussion are already proving useful and their continuation will be critical for policy coherence.

Nowhere is policy coherence more critical than in secure land tenure (priority viii), since few exporting companies will invest in long-term sustainable management if there is any threat to tenurial security. An inter-ministerial working group on forests led by MMA would need to harmonise land-use designation in forest areas at least between MMA, MDA/INCRA and FUNAI.

A second area of great concern is law enforcement. The overlapping jurisdictions of different Ministries at the Federal and State level has caused a proliferation of bureaucratic hurdles over which export companies have to jump. At the same time there is a lack of capacity to detect and process infractions. An inter-ministerial working group on forests might bring about a streamlining of regulation (priority vi) while developing incentives to offset short-termism (priority vii). A challenge for any working group led by MMA will be to ensure harmonisation with State level environmental institutions at least with the major tropical timber production States - the Secretaria Executiva de Ciência, Tecnologia e Meio Ambiente - SECTAM in the State of Pará, the Fundação Estadual do Meio Ambiente - FEMA in Mato Grosso and the Secretaria de Estado do Desenvolvimento Ambiental - SEDAM in Rondônia.

A third area of concern is the generation of an enhanced social and environmental reputation (priority v) for Brazilian timber products - which is fundamental to the pricing and marketing of Brazilian timber. Inter-ministerial understanding of the requirements for, and benefits of sustainable forest management are needed to underpin some form of advocacy that 'Brazilian wood is good'. While MMA might provide the information to underpin such a campaign, an inter-ministerial working group on forest would need to secure backing at least from MCT, MDIC and MRE which deal with different elements of the external perception

of Brazilian affairs.

Making such an inter-ministerial working group on forestry function will be a considerable challenge for the MMA, but its success will to a considerable extent influence the long-term prospects for timber exports from sustainable management.

8.2.3 A market information and/or marketing body

It is clear from a brief assessment of the literature and web-based resources on the Brazilian timber trade that access to data is a major problem (see Chapter 2). Not only is there patchy information about timber products and export statistics for consumers (Chapter 6), but Brazilian producers are put at a disadvantage through lack of information about the export market (Chapters 3 and 5). Competitors from Southeast Asia such as Malaysia are much more aggressive in marketing their products and have permanent timber councils in key markets such as the UK.

One immediate need is for a new initiative to be made to compile data on the trade in Brazilian species. This was captured for the state of Para by AIMEX until 1997 but has since been discontinued, with aggregate data only available from SECEX/DECEX. The forest information system contemplated under Promanejo Component 1 is one possible option for improved market intelligence and promotion (priority ii).

The difficulty in accessing data on the companies and products working in the Brazilian forests is a major problem for would be consumers and stifles the development of export relationships. This lack of transparency could be addressed through some form of industrial census linked to strengthened regional associations of timber producers. There needs to be some form of regular government liaison with the industry that underwrites such a census, but which is not overly onerous for the industries involved and which provides benefits in terms of increased market intelligence.

A related problem is that the availability of timber from non-managed forests (legal forest clearance and illegal sourcing) drives down prices in the Brazilian timber industry and makes sustainable management almost untenable. Intermediaries can play producers off against one another to further reduce the margins associated with forest extraction activities Without any form of marketing structure or co-ordination this situation is to the detriment of Brazilian timber producers, especially those wishing to engage in sustainable forest management.

There are various institutional and policy alternatives which could help to address the deficiencies described above. A co-ordinated marketing structure could help to stabilise prices (through some minimum price agreement), promote Brazilian timber species, and increase the flow of information to and from buyers. Since the private sector have most to gain from a service of this kind, industrial associations such as AIMEX or ABIMCI should logically take the initiative, with sponsorship perhaps from some of the main Brazilian development banks (BASA and BNDS) and with some temporary initial catalytic funding from government (MMA) or through donor funded programmes (e.g. PPG7). Any system would need to be introduced in phases with an ultimate aim of self-financing as the benefits

of such a system become self-evident. The option of opening timber marketing offices in key markets such as the USA and Europe should be considered.

While the initiative for a marketing structure rests most logically with the private sector, the government (MMA and State level environmental agencies) could support marketing initiatives by inverting the situation in which sustainable management is financially unviable in competition with timber from land clearance. Modifications to policies dealing with taxes such as the rural property tax (ITR) or tax on manufactured goods (IPI) could be used to favour timber production from sustainably managed forests and begin to enhance the reputation of Brazilian forest production at a national level.

8.2.4 A credit subsidy line for forestry overseen by a dedicated institution

Widespread ignorance about available credit lines and the general irrelevance of such lines to most timber industries is an ongoing problem for the timber industries (see Chapter 5). This study has shown that appropriate investment in technology will be an essential part of any strategy to expand exports of Brazilian timber products (See Chapter 6). The reduction of import duties on processing machinery had an enormous positive impact on the sector (Chapter 2) - but credit availability remains an issue. Key problems include the informality of many small-scale industries, the consequent difficulty in providing guarantees, and the high interest rates incurred.

Institutional support is needed for three key elements of forest financing: providing support for forestry guarantees (through improved tenurial security, a guarantee fund set against the forest resource and assistance with greatly simplified bureaucracy in industrial registration); providing accurate information about the sector and profitability / returns to inspire confidence in loan agencies; and direct financial support to reduce the interest rates and make viable the long timeframes over which forest investment works. It is also important that forest financing is linked to or conditional upon sustainable management. There is a need to educate finance agencies about what sustainable management entails and what indicators might prove acceptable to assure investors of that sustainability. The lead agency for such specific forestry support will again probably have to be the MMA but working in close collaboration with MDIC.

8.3 A process of review and continuous improvement of the timber industry

8.3.1 A programme of action learning on the particular challenges of small and medium enterprises

Most timber companies in Brazil are small, geographically isolated and poorly organised.. As a result, they tend to be poorly linked with government decision making. Policy events are regularly attended by a core of larger timber companies, but the vast majority of smaller timber industries operate in virtual isolation from government decision making. This creates a formidable challenge to the design of solutions which could be and implemented by these small and medium-scale enterprises. Since the prospects for increasing exports from sustainably managed forests hinge on the image of Brazilian forestry as a whole - renewed

efforts to engage with these companies are a priority.

A concerted effort is therefore needed to establish a coordinated programme of action learning on the particular challenges of small and medium enterprises. The action learning programme might address in particular:

- How to support the formation of associations and representation among such geographically dispersed entities - providing a conduit for information about policy reform and financing and allowing feed back on new mechanisms as they are developed;
- How to design policies and incentives that provide a stable governance context for investment by these companies in sustainable forest management;
- How to make finance more accessible for sustainable forest operations in such small and medium enterprises;
- How to ensure that the social dimension of sustainability receives an equivalent profile to economic and environmental sustainability (i.e. in terms of employment prospects and labour conditions and representation)

8.3.2 A cyclical process of governance review and reform

Both producers and buyers of forest products have furnished a list of priority problems and identified necessary shifts in policy and institutional mandates described above. What is now needed is for each of these shifts to receive more focused attention, through a series of practical initiatives backed by analytical research and revision. One useful approach might be to contemplate the establishment of a periodic review process steered by a facilitation body (either from within, or subcontracted by the MMA).

This facilitation body might be charged with the cyclical assessment of progress made to overcome barriers to timber exports from Brazil, involve at least the following steps:

- The establishment of an inter-ministerial working group on forests with a designated unit responsible for the promotion of timber exports based on sustainable management (see 8.2.2).
- Strengthening of regional timber associations and the development of an industry-led marketing body which would liaise with the inter-ministerial working group unit responsible for the promotion of forest exports (see 8.2.3).
- A participatory consultation process with individual industries or industry associations to collect trade data and identify and prioritise key issues to do with exports and sustainable forest management.
- The development of agreed data collection, processing and publication procedures for information on Brazilian producer companies and volumes and nature of products traded.
- The coordination of discussion between the government, timber industry representatives and major financial credit institutions to negotiate a functioning credit subsidy line (see 8.2.4).
- The development of indicators for monitoring progress in exports from sustainable forest management.
- Regular open sessions to discuss progress perhaps linked to the biennial

plywood and tropical timber International Congress.

The central conclusion is that no one set of actors will be able to resolve these issues in isolation. Negotiated solutions need to be found which are agreed and implemented across multiple institutions in government, civil society and the private sector. Each set of actors have a useful role to play (from international finance agencies to farmers at the forest frontier). Capitalising on these potential synergies will require a proactive and iterative approach of engagement by Government with the sector, and particular attention to reaching and including the multiple small and medium scale operators who comprise the majority of Brazilian timber production.

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Growing Exports describes the ambitions of the Brazilian government to more than double timber exports in less than a decade without decimating the remaining forests of the Amazon. Can it be done? Recent trade trends hint at useful options to explore. Extensive surveys of Brazilian timber producers and international buyers provide more practical information about the critical barriers to be overcome. A comparative study from South East Asia is used to draw lessons about what might make exports grow and at what cost to the forest. Will the free market take care of itself, or are major policy and institutional changes needed to provide a framework for the government's ambitions for export growth. Growing Exports offers some answers.

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