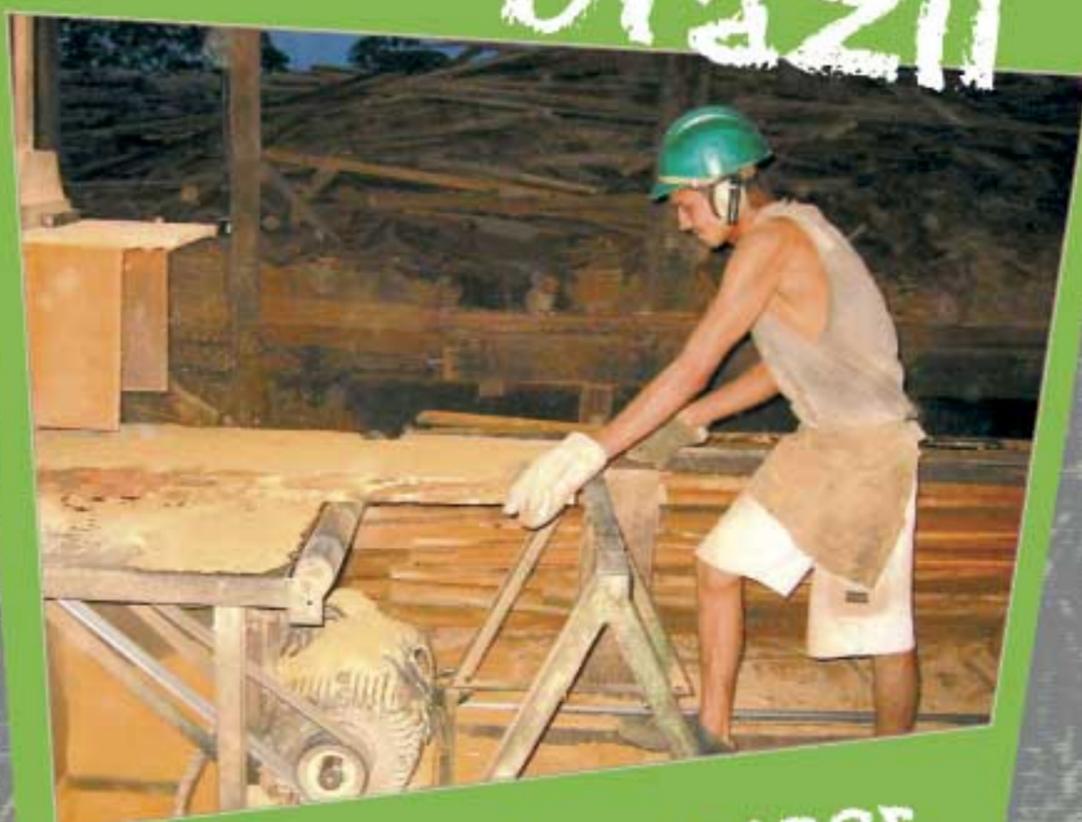


Small and medium forest enterprise

Brazil



A discussion paper

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Discussion paper

Small and Medium Forest Enterprise in Brazil

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Small-medium forestry enterprises for poverty reduction and sustainability

This study is part of a cross-country initiative coordinated by the International Institute for Environment and Development (IIED) with the above title.

Most international attention in forestry has been given to improving the conditions for large-scale or micro-scale forestry, and much less to the 'messy middle' - which produces a high proportion of forest product and involves huge numbers of people. Ways need to be found by which small and medium-scale forestry enterprises can better contribute to reducing poverty and improving the prospects for sustainability.

IIED, with partners in Uganda, South Africa, India, Brazil, Guyana and China have been investigating these issues. Country diagnostics show that the small and medium forestry enterprise "sector" is of major significance for livelihoods in these countries – the net effect of myriad small players represents a substantial part of local economies. Yet, these are largely "invisible" economies, and the SME sector is almost completely ignored in most policy and programme developments. Raising the sector's visibility such that its impacts can be better assessed, and then going on to explore how the positive links to sustainability, livelihoods and poverty-reduction can be enhanced, is a major challenge to which this initiative seeks to rise.

Reports in the series available from IIED on request, and downloadable from www.iied.org/forestry, include initial analyses of small-medium forestry enterprise issues in:

- Brazil
- China
- Guyana
- India
- South Africa
- Uganda

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Executive summary

SMFEs make an important contribution to production and employment - In common with other sectors in Brazil, Small and Medium Forest Enterprises (SMFEs) comprise a significant percentage of the total number of forest enterprises - for example, taking 99 employees as the cut off point, SMFEs comprise 98.2% of the total number of forest-harvesting operations, 98.9% of wood processing enterprises, and 98.9% of furniture manufacturers. While the contribution is less to total employment (e.g. 49.5%, 70.4% and 69.9% respectively) and to total production (~75%), owing to the smaller capacity and number of employees per enterprise, the environmental, social and economic impact of these enterprises is clearly enormous.

Dynamic growth in the SMFE sector can be harnessed - With annual growth of 2.8 and 4.7% respectively, micro and small enterprises have grown numerically much faster than medium and large enterprises since 1995, despite the high mortality rates associated with SMEs as a whole (39% failing in their first year). There is some geographical differentiation in numerical growth based on the type of SMFEs, with growth in forest harvesting enterprises at the Amazon frontier and growth in furniture manufacturers in the South. Larger and often plantation-based forest harvesting operations tend to be restricted to Southern Brazil.

Associations can compensate for lack of scale - Association is one of the more obvious means by which to counter disadvantages of scale and we might expect SMFEs to be incorporated in many different types of association. While there are 142 associations of different types in the forest sector, the major national associations are primarily the preserve of larger enterprises who wield political leverage within the sector. We recommend a full review of the nature and utility of different types of association to the SMFE sector in order to identify successful models from which to build.

Marginalisation from decision-making can be overcome - Despite their importance to the national economy of Brazil, SMFEs have traditionally been marginalized in policy and decision-making. Under the new Lula administration, there are signs that this is about to change with an emphasis on income distribution and equilibration. We explore the possibilities for constructive change. In terms of direct access to governance SMFEs in Brazil have benefited from some specific legislation designed to ease the administrative and managerial burdens associated with forest management. Yet in terms of process there appear to be few channels through which their views are regularly canvassed and their views are rarely heard in the development of major new forest and land use planning exercises, such as the allocation of concession in National Forests. We recommend the development of an information centre and help service for SMFEs which spans different sectors and further reductions in the bureaucracy associated with business registration and approval.

Precarious finances can be targeted - Finance is another major concern for SMFEs and while there are a number of specific credit provisions available, many of the enterprises within the sector either do not know about these sources of credit, feel they do not cater to their needs, or are unable to use them due to the level of interest rates and the difficulty in getting guarantees. The result is that many of these enterprises use outdated and inefficient processing equipment. Quality standards are difficult to meet which further compounds financial difficulties. We recommend particular attention to the resolution of tenurial security in support of guarantees for credit.

Better labour standards will reap longer-term rewards - In comparison with larger firms, SMFEs display much greater informality in terms of staffing, with much lower average salary rates. Health and safety concerns are alleged to be much more severe in such enterprises. Unionisation is low and much of the labour is seasonal and on a short-term contract basis only. We recommend a programme of support and training directed specifically at smaller

producers to increase the quality of poor livelihoods and the efficiency and profitability of business.

A concerted programme of action learning -These major gaps and exciting opportunities provide a powerful justification for a new initiative that focuses more directly on overcoming the barriers faced by the SMFE sector in Brazil. The objective of this initiative would be to reorientate forest and land use decision making towards the solution of problems faced by the majority of Brazilian forest enterprises, namely small and medium forest enterprises (SMFEs), through a programme of collaborative action learning which engages directly with all interest groups affecting the sector.

List of Acronyms

ABIMCI	Associação Brasileira da Indústria de Madeira Processada Mecanicamente, Brazil
ABIMOVEL	Associação Brasileira das Indústrias do Mobiliário, Brazil
ABIPA	Associação Brasileira da Indústria de Painéis de Madeira, Brazil
ABRACAVE	Associação Brasileira de Florestas Renováveis, Brazil
BACEN	Banco Central, Brazil
BASA	Banco da Amazônia, Brazil
BNDES	Banco Nacional de Desenvolvimento Econômico e Social, Brazil
BRACELPA	Associação Brasileira de Celulose e Papel, Brazil
CONAMA	Conselho Nacional do Meio Ambiente, Brazil
CRE\$OL	Sistema de Cooperativas de Crédito Rural de Interação Solidária, Brazil
FAMPE	Fundo de Aval às Micro e Pequenas Empresas, Brazil
FASE	Federação de Órgãos para Assistência Social e Educacional, Brazil
FETAGRI	Federação dos Trabalhadores na Agricultura do Estado do Pará, Brazil
FFT	Fundação Floresta Tropical, Belem, Brazil
FGPC	Fundo de Garantia para a Promoção da Competitividade, Brazil
FIEMT	Federação das Indústrias do Estado de Mato Grosso, Brazil
FLONA	Floresta Nacional, Brazil
FNMA	Fundo Nacional do Meio Ambiente, Brazil
FUNCEX	Fundação Centro de Estudos de Comércio Exterior, Brazil
GDP	Gross Domestic Profit
GEM	Global Entrepreneurship Monitor
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, Brazil
IBGE	Instituto Brasileiro de Geografia e Estatística, Brazil
IBQP	Instituto Brasileiro da Qualidade e Produtividade, Brazil
IIED	International Institute for Environment and Development, UK
IPAM	Instituto de Pesquisa Ambiental da Amazônia, Brazil
IPEF	Instituto de Pesquisas e Estudos Florestais, São Paulo, Brazil
MDIC	Ministry of Development, Industry and Commerce, Brazil
MDA	Ministério do Desenvolvimento Agrário, Brazil
MDF	Medium Density Fibreboard
MMA	Ministério do Meio Ambiente, Brazil
MSE	Micro and Small Enterprise
MSME	Micro, Small and Medium Enterprises
MTE	Ministério do Trabalho e Emprego, Brazil
NGO	Non Governmental Organisation
PNAD	Pesquisa Nacional por Amostra de Domicílios, Brazil
PNF	Programa Nacional de Florestas, Brazil
PPG7	Programa Piloto para a Proteção das Florestas Tropicais do Brasil

RAIS	Relação Anual das Informações Sociais, Brazil
SBS	Sociedade Brasileira de Silvicultura, Brazil
SEBRAE	Serviço de Apoio às Micro e Pequenas Empresas, Brazil
SECEX	Secretaria de Comércio Exterior, Brazil
SENAI	Serviço Nacional de Aprendizagem Industrial, Brazil
SIF	Sociedade de Investigações Florestais, Brazil
SIMOV	Sindicato da Indústria do Mobiliário e Marcenaria do Estado do Paraná, Brazil
SINDIMAD	Sindicato das Indústrias de Transformação de Madeiras e seus Derivados da Região Central do Estado de Rondônia, Brazil
SINDIMOV	Sindicato da Indústria do Mobiliário de São Paulo, Brazil
SME	Small and Medium Enterprise
SMFE	Small and Medium Forest Enterprise

1. Introduction

1.1 Background to this study

The scale of Brazil's forest resources is impressive. In 2000 forests covered 543 million ha (64.3%) of Brazil's total land area of 845 million ha (FAO, 2001). Brazil's forests contain more biomass than any other country and its tropical forests exceed those of any other country threefold. These forests are home to more species than any other country, some 10-20% of the 1.5 million catalogued to date. They comprise one of the richest centers of cultural diversity with more than 170 different indigenous peoples (Capobianco, 2001). They support an industry which generates 6.9% of Brazil's Gross Domestic Product, with an annual revenue between 1993 and 1995 of US\$ 53 billion (Lele et al., 2000) Almost half of these revenues are generated by production from natural forests, the rest coming from rapidly expanding, largely Southern plantations.

While many of the plantation-based activities are managed by large companies, operations stemming from the natural forest remain largely the domain of SMFEs. Harvesting and to a lesser extent processing activities for SMFEs are therefore largely located in the Amazon region of Brazil, but the added value processing associated with furniture production occurs primarily in South and Southeast Brazil.

This report assesses the opportunities and constraints facing the Small and Medium Forest Enterprises (SMFEs) in Brazil. Precise definition of what constitutes an SMFE in the forest sector is difficult because of the many different types of enterprise in the sector. For simplicity we restrict our analysis to the three categories listed below (aware that there are major overlaps with many extraction enterprises also engaged in some form of sawmilling):

- Forest harvesting and primary processing
- Intermediate wood processing
- Furniture manufacture

Definition is further complicated by the number of standard ways in which enterprises are categorised on the basis of incomes generated, workers employed or production volumes and the lack of data surrounding these criteria (see 1.3).

This report attempts to gather available data on the largely "invisible" economies associated with the SMFE sector in order to address the fact that – in the past – such enterprises had been almost completely ignored in most policy and programme developments. Raising the sector's visibility such that its impacts can be better assessed, and then going on to explore how the positive links to sustainability, livelihoods and poverty-reduction can be enhanced, consistent with the current government's stated objectives, is a major challenge to which this report seeks to raise.

We start with an introduction to the general status of Micro, Small and Medium Enterprises (MSMEs) in the Brazilian economy (Chapter 1) before looking in more detail at the forest sector as a whole (Chapter 2). Following on from this overview, we examine the specifics of forestry in each of our three main categories described above (Chapters 3-5).

1.2 The general importance of micro, small and medium enterprises in Brazil

Despite low levels of sectoral organisation and direct policy support, the Micro, Small and Medium enterprise (MSME) segment in Brazil is very dynamic, both within and outside the forest sector. A number of indicators point to a significant overall contribution of MSMEs and particularly Micro and Small enterprises (MSEs; see definitions in section 1.2, below) to the Brazilian economy. For example, the national household surveys of the Brazilian Institute of Geography and Statistics (IBGE 1994 onwards) reveal that:

- MSEs accounted for 20% of national GDP in the year 2000
- MSEs accounted for 96.04% of all enterprises (broken down sub-sectorally: industry – 91.86%, commercial – 96.76% and services – 97.26%)
- MSEs contributed 28% to the total value of corporate product of the national economy (industrial – 17.24%, commercial - 45.34%, services 28.40%), and this proportion remained stable throughout the 1990s (PNAD – IBGE, 1994);
- Firms with up to 99 employees (MSEs, by most definitions – see sec. 1.1, below) represent around 52.8% of the overall workforce;
- MSEs made an important regional contribution with 81% of exporting MSEs having their greatest commercial exchanges with the Mercosul countries, followed by the European Community (10%) and by the USA (4.3%) between 1995 and 1997;
- 30% of federal public service contracts were signed with MSEs (9% were micro and 21% small firms) in 2000;

Additional sources of information

- Brazil took seventh place in the rank order of nations with the highest degree of entrepreneurship in a list of 37 countries in 2002. In the overall population, the Brazilian rate of entrepreneurship from 18 to 64 years of age was 13.5%, accounting for around 14 million national entrepreneurs. Of these, 42% were women.¹
- From a total of 16,016 exporters in 2000, 63.7% were MSEs, whose exports were valued at 12.4% of total exports.² (Export destinations included 42% to Mercosul and 12% to the USA.)

Table 1. Exporting MSEs and export value as a proportion of all exports: 2000.

	Number of Exporters	Value of Exports
Microenterprises	5,474 (34.2%)	US\$ 2.969 billion (5.4%)
Small Businesses	4,718 (29.5%)	US\$ 3.865 billion (7.0%)

Source: FUNCEX (2000).

MSMEs are particularly prone to cash flow problems and it is not surprising to find that the sector gained momentum with the economic stability achieved through the Real Plan in 1994. Paradoxically, this occurred simultaneous with the new levels of competition imposed by growing liberalisation of trade and external capital flows, demanding greater professionalism and productivity from domestic firms. MSMEs, despite their limited resources and market access, were able to occupy an important place in this new competitive climate, in part due to

¹ SEBRAE. *A micro e pequena empresa no comércio exterior*. Métodos Consultoria, Agosto de 2000.

² FUNCEX-Exportações de micro, pequenas e médias empresas no período de 1990 – 2000. 2002.

their lesser exposure to labour and tributary law peculiar to Brazil's socialist past. They also benefited from the floods of thousands of unemployed workers who had been laid off by uncompetitive large corporations and the slimming down of the public sector.

By 2000, micro enterprises (up to 19 employees) had become the largest contributor to the increase in the level of employment in Brazil as a whole, although medium and large firms were still responsible for 55% of all jobs offered (despite representing less than 2% of the total number of companies).³

The contribution to employment growth within Brazil, has often come out of necessity. Brazilian entrepreneurship has one of the world's highest ranking indexes of 'entrepreneurship by necessity', accounting for 7.5% of the total (the global average in this category has usually been on the order of only 2%). Of those that opened their own businesses in 2002, 55.4% did so due to difficulties in finding employment.⁴

In 2000, the 2,161,783 MSEs in Brazil were distributed according to the sectoral breakdown shown in Table 2, below.

Table 2. Sectoral distribution of Micro and Small Enterprises in Brazil: 2000.

Category	Percentage
Commerce	37.60%
Services	35.00%
Agriculture and Livestock	11.50%
Manufacturing	10.66%
Construction	4.31%
Public Administration	0.38%
Mineral Extraction	0.29%
Public Utilities and Services	0.26%
Total	100.00%

Source: SEBRAE.

These data illustrate the diversity, vitality and potential of the micro and small enterprise segment in Brazil today. Recognition of their importance to the economy emerged in the 1980s and particularly in the second half of the 1990s in the wake of intentional institutional changes, chiefly those related to the transformation of SEBRAE as a principal source of enterprise support, dedicated toward technical and financial assistance exclusively to MSEs.

Nevertheless, it should be noted that the mortality rate of MSEs is very high, as many as 39% of the total number of enterprises fail in their first year in activity. Reasons for failure include poor access and spread of incentives, restrictive legislation, overly bureaucratic public support infrastructure and a precarious credit system.

For all such data, the deficiencies and contradictions of available sources of information, along with the tendency to aggregate data regarding micro and small enterprises, make the segment very difficult to analyse. In most of the literature, so-called micro and small enterprises are grouped together, and medium-sized firms are not even considered whether individually or in aggregate statistics that purport to treat the segment in a more rigorous and detailed fashion. Furthermore, no policies are directed specifically toward medium-sized

³ BNDES (2002) based on data in the RAIS.

⁴ GEM - Global Entrepreneurship Monitor. A London Business School (GB) and Babson School (EUA) project, coordinated in Brazil by IBQP/PR in partnership with Sebrae.

enterprises, even in the realm of the Ministry of Development, Industry and Commerce (MDIC), responsible for formulating industrial policy.

1.3 The variety of official definitions of micro, small and medium enterprises

The Statute of Micro- and Small Enterprises (Law no. 9841, October 1999) defines the Brazilian micro-enterprise (firm or individual) as one with annual gross revenues < R\$ 244,000, and the small enterprise as one with annual gross revenues between R\$ 244,000 and 1,200,000.

Three years prior, Law no. 9317 of December 1996, had defined the criteria for special credit lines and taxation.⁵ But the conventional classification, most often applied, is that which distinguishes enterprise scale by the number of workers employed. On this variable, the values are as follows:

- ◆ micro-enterprise – industrial: up to 19 workers; services and commercial: up to 9 workers;
- ◆ small business – industrial: 20 to 99 workers; services and commercial: 10 to 49 workers.

In accordance with the parameters of Mercosul, micro, small and medium enterprises are differentiated by sector as follows for export credit purposes:

Table 3. Mercosul criteria for differentiation among enterprises by scale

	Microenterprise		Small Business		Medium-sized Company	
	Industry	Commercial and Services	Industry	Commercial and Services	Industry	Commercial and Services
Nº of Employees	1 – 10	1 – 5	11 – 40	6 – 30	41 – 200	31 – 80
Annual Revenues (US\$)	\$400,000	\$200,000	\$3.5 million	\$1.5 million	\$20 million	\$7 million

Sources: Mercosul/GMC/Res no 90/93 and Mercosul/GMC/Res n° 59/98 - apud Ministério do Desenvolvimento Industria e Comércio Exterior.

The law prescribes that no micro, small or medium enterprise should be controlled by another firm or be a part of an economic group whose overall size exceeds the above parameters. They automatically lose their status if they exceed these parameters for more than two consecutive years.⁶

Brazilian classification schemes for micro, small and medium enterprises differ according to the institution responsible, and the purpose of such classification. The following summary shows the range among applicable definitions (which include both general MSME definitions and those specific to the forest sector SMFEs):

⁵ At the time, micro-enterprises were defined as follows: annual gross revenues up to R\$ 120,000; small enterprises – annual gross revenues from R\$ 120,000 to R\$ 720,000.

⁶ MERCOSUL/GMC/RES n° 90/93 e MERCOSUL/GMC/RES n° 59/98

Table 4. Classification of micro, small and medium sized enterprises in Brazil, by source.

Criteria	Microenterprise	Small Business	Medium-sized Company
STATUTORY MSEs Annual gross revenues	< R\$ 244,000	< R\$ 1,200,000	n.a.
BNDES Annual gross revenues	< R\$ 1,200,000	< R\$ 10,500,000	< R\$ 60,000,000
SIMPLES Annual gross revenues	< R\$ 120,000	< R\$ 1,200,000	n.a.
RAIS/MTE Number of employees	0 – 19	20 - 99	100 – 499
SEBRAE Employees - Industry	0 – 19	20 – 99	100 – 499
SEBRAE Employees – Commercial / Services	0 – 9	10 - 49	50 – 99
IMAZON – (Amazon) annual roundwood consumption	< 4,000 m ³	4 to 10,000 m ³	10 to 20,000 m ³

Sources: *Microenterprise and Small Enterprise Statute (Law nº 9.841/99)*; *BNDES: http://www.bndes.gov.br/produtos/consulta/perfil/empresa_privada_porte.asp*. *SIMPLES (Law nº 9.317/96)*; *RAIS/MTE, Law nº 9.317/96, in Sect. Receita Federal 034/01 and Law nº 9.841/99 - apud Ministério do Desenvolvimento, Indústria e Comércio Exterior*; *SEBRAE: <http://www.sebrae.com.br/> - Microempresas. Roundwood consumption: Veríssimo (2002).*

1.4 General characteristics and representation of MSMEs in Brazil

As previously noted, 96.04% of all Brazilian enterprises are MSEs encompassing 52.8% of all workers. The MSEs are however responsible for only 17.4% of the total wage bill, representing about R\$ 36 billion/yr. (IBGE-SIDRA, 2000). In other words, the average salary in MSEs is comparatively lower than for larger enterprises.

The sectoral breakdown of MSEs along these indicators is shown in Table 5, below, indicating that the majority of MSE firms and workers are in the commercial and services sectors (86% of firms and 84% of workers), but that these sector pay proportionately less than similar MSEs in the industrial sector.

Table 5. Sectoral breakdown of total complement of MSEs in Brazil: 2000.

Sector	Firms	Workers	Wages
Commercial	51%	40%	26%
Services	35%	34%	38%
Industry	14%	26%	36%
Total	100%	100%	100%

Source: MTE/RAIS (2002).

In addition to lower average salaries the MSE sector is also characterised by informal labour relations. These enterprises declare a much lower proportion of formal employees (*carteira assinada* according to the Consolidated Labour Laws-CLT). This distinction is particularly prevalent in the wood products industry.

Formal representation of MSMEs is a relatively recent phenomenon, instituted by Law nº 9841, of October 5, 1999, and regulated by Decree nº 3.474, of May 19 2000. The resulting *Permanent Forum of Microenterprises and Small Businesses* responds to concern on the part of microenterprises and small businesses to establish a legitimate space for debates regarding segmented credit, differential legal treatment, entrepreneurial development, training, foreign trade, and other relevant themes.

2. Specific characteristics of the forest sector

2.1 Background statistics on SMFEs in Brazil

According to the data presented in Table 6, below, the forest and wood products industry in Brazil is overwhelmingly composed of micro enterprises. SMFEs comprise 98.2% of the total number of forest-harvesting operations, 98.9% of wood processing enterprises, and 98.9% of furniture manufacturers in 2000.

The sector exhibits a clear differentiation between large and small enterprises in terms of employment conditions and salaries. For example, in micro enterprises with less than four employees only approximately 20% of the employment positions available were salaried, compared with the largest enterprises which offer salaries to nearly all their employees, figures that underline their informal character. The 98.2% of firms with less than 100 employees provide jobs to slightly fewer than 50% of workers in this segment, but these employees only receive about 40% of total wages paid. Though this relationship is better than that mentioned above regarding all enterprises in Brazil, it is no less indicative of a wage disparity.

This overall structure is paralleled in both the wood processing and furniture industries, which are also overwhelmingly dominated by micro and small enterprises, equally informal in character.

Table 6. Firms, employees, and salaries in wood products industries, by group of number of employees, Brazil – 2000

Division of Classification of Activities by groups of total number of employees	Number of firms		Personnel occupied on Dec. 31, 2000				Salaries and Other Remuneration (R\$ 1000)		Remuneration per employee (R\$/mo.) *
	Number	%	Total		Salaried		Value	%	
			Number	%	Number	%			
Forest harvesting and primary processing	4.653	100%	63.571	100%	57.006	89,7%	222.345	100%	269
0 to 4	3.301	70,9%	5.120	8,1%	982	19,2%	6.424	2,9%	97
5 to 9	474	10,2%	3.147	5,0%	2.176	69,1%	8.367	3,8%	205
10 to 29	510	11,0%	8.552	13,5%	7.698	90,0%	24.320	10,9%	219
30 to 49	162	3,5%	6.237	9,8%	5.957	95,5%	19.199	8,6%	237
50 to 99	122	2,6%	8.398	13,2%	8.188	97,5%	30.494	13,7%	279
100 to 499	70	1,5%	13.682	21,5%	13.575	99,2%	60.990	27,4%	343
500 and over	14	0,3%	18.435	29,0%	18.430	100,0%	72.551	32,6%	303
Intermediate wood processing	28.069	100%	255.849	100%	214.226	83,7%	962.654	100%	289
0 to 4	19.058	67,9%	31.923	12,5%	7.294	22,8%	36.846	3,8%	89
5 to 9	3.772	13,4%	24.949	9,8%	18.131	72,7%	63.871	6,6%	197
10 to 29	3.664	13,1%	58.926	23,0%	52.010	88,3%	183.033	19,0%	239
30 to 49	748	2,7%	28.029	11,0%	26.584	94,8%	99.646	10,4%	273
50 to 99	533	1,9%	36.254	14,2%	35.135	96,9%	139.563	14,5%	296
100 to 499	270	1,0%	52.795	20,6%	52.142	98,8%	278.973	29,0%	406
500 and over	24	0,1%	22.973	9,0%	22.930	99,8%	160.722	16,7%	538
Furniture manufacture	27.656	100%	242.574	100%	200.877	82,8%	1.128.999	100%	358
0 to 4	19.015	68,8%	33.405	13,8%	8.018	24,0%	42.891	3,8%	99
5 to 9	3.958	14,3%	25.925	10,7%	18.821	72,6%	70.566	6,3%	209
10 to 29	3.252	11,8%	52.830	21,8%	46.676	88,4%	191.312	16,9%	279
30 to 49	685	2,5%	26.073	10,7%	24.730	94,8%	110.870	9,8%	327
50 to 99	452	1,6%	31.122	12,8%	30.173	97,0%	153.787	13,6%	380
100 to 499	270	1,0%	52.966	21,8%	52.271	98,7%	361.378	32,0%	525
500 and over	24	0,1%	20.253	8,3%	20.188	99,7%	198.195	17,6%	753

Source: IBGE, on-line SIDRA database, 2003.

*Sub-sectoral remuneration divided by total number of employees in sub-sectoral employment group, divided by 12 monthly wages. In 2000, the minimum wage was R\$180

Salaries paid by the forest harvesting segment are generally significantly lower across most enterprise scales than those found in the wood processing and furniture segments, except in the micro-enterprise group, which is strikingly similar across all three segments. Micro-enterprises tend to pay less than the minimum wage, if they pay formal salaries at all, since workers may be family members or self-employed.

2.2 Trends in forest enterprises in Brazil

Based on the data obtained through annual industry surveys carried out by the Ministry of Labour and Employment (MTE/RAIS) since 1995, it is possible to assess the pace of change in the structure of the industry, and how the industry has fared in terms of its regional distribution within Brazil (see Figures 1-2 and Annex 2).

In terms of the number of firms in the industry, micro and small enterprises have grown at annual rates of 2.8% and 4.7%, respectively, together growing from a total of 25,500 to over 30,000 enterprises in 2001. Thus, despite what has been characterised above as a highly volatile segment, net growth has prevailed throughout this six-year period, part of which may have been derived from informal enterprises going “formal”, to access governmental resources medium firms have not grown appreciably in number during this period, and large firms suffered a decline, in line with the mergers, acquisitions and restructuring that have occurred among larger players in the sector, reflecting the dynamics of globalisation.

Figure 1. Patterns of growth in numbers of enterprises by size in the forest sector in Brazil. Source: MTE/RAIS (2003). See Annex, table 2 for source data.

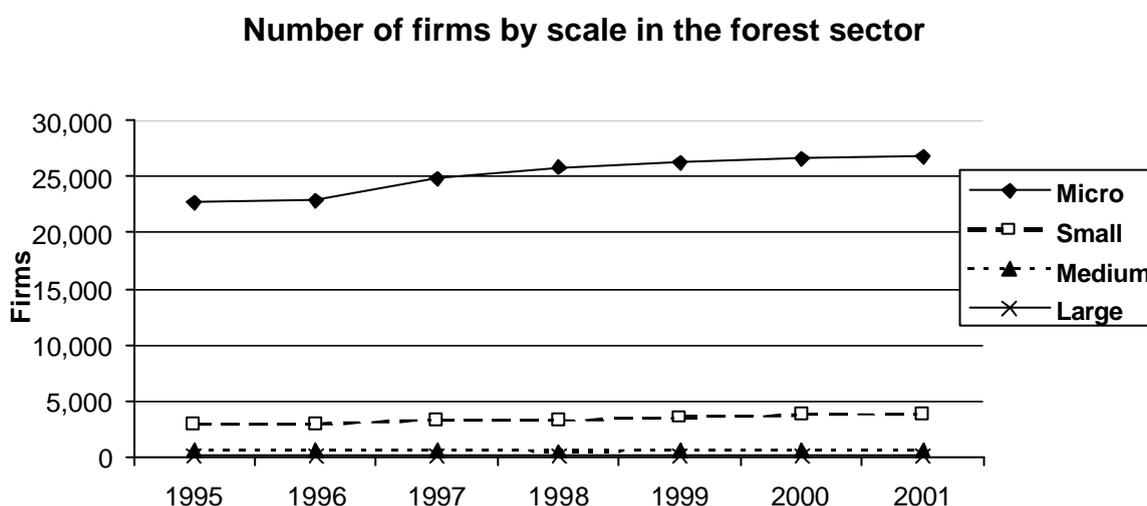
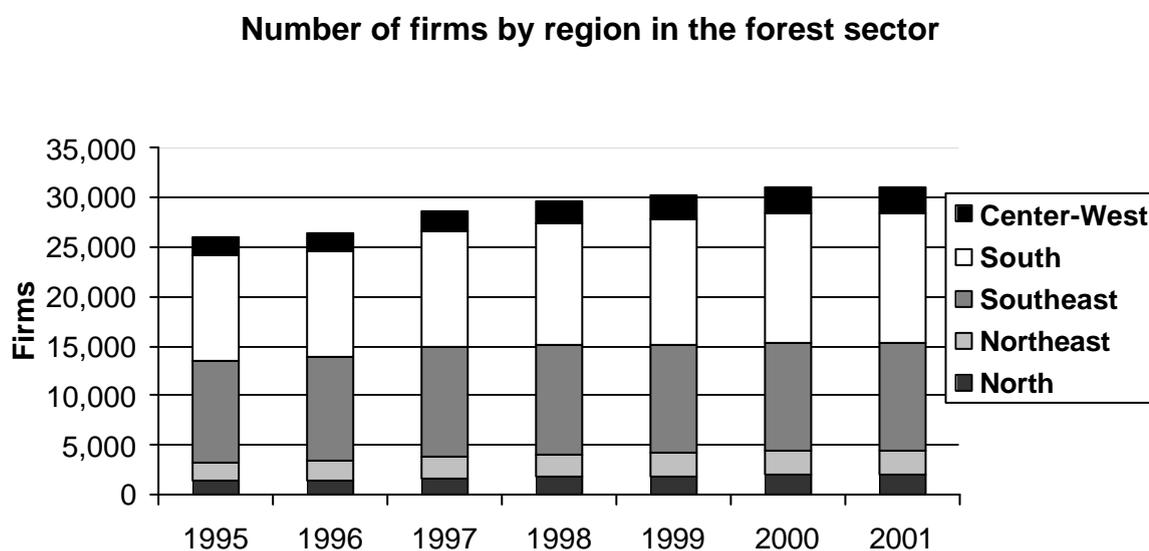


Figure 2. Patterns of growth in numbers of enterprises by region in the forest sector in Brazil. Source: MTE/RAIS (2003). See Annex, table 2 for source data.



In regard to regional distribution, most regions maintained their relative importance, but there was a notable increase in the number of firms operating in Southern Brazil, which grew from around 10,500 to nearly 13,200 in this short period primarily in the wood processing and furniture manufacture sectors, while the Southeast region stagnated. Other substantial growth is evident in the Centre-West, primarily among micro-enterprises, usually small sawmills at the Amazon frontier.

2.3 The nature of forest sector associations and their relevance to SMFEs

According to data from MDIC/Secretary of Development of Production, there currently exist 142 corporate associations and syndicates in the wood products sector⁷, as well as some national groups. The most politically active associations and syndicates include, for example:

National Associations

- *Associação Brasileira de Celulose e Papel (BRACELPA)*
- *Sociedade Brasileira de Silvicultura (SBS)*
- *Associação Brasileira de Florestas Renováveis (ABRACAVE)*
- *Fórum Nacional de Indústrias de Base Florestal*
- *Associação Brasileira da Indústria de Madeira Processada Mecanicamente (ABIMCI)*
- *Associação Brasileira da Indústria de Painéis de Madeira (ABIPA)*
- *Associação Brasileira das Industrias do Mobiliário (ABIMÓVEL)*

State Syndicates, Export Promotion and Regional Poles (examples for purposes of illustration)

- *Sindicato da Indústria do Mobiliário de São Paulo (SINDIMOV)*
- *Sindicato da Indústria do Mobiliário e Marcenaria do Estado do Paraná (SIMOV-PR)*
- *Associação de Indústrias Exportadoras de Madeira do Pará (AIMEX)*
- *Sindicato das Indústrias Madeireiras do Baixo e Médio Xingu (Pará)*
- *Sindicato da Indústria de Marcenaria de Manaus (Amazonas)*
- *Sindicato das Indústrias de Transformação de Madeiras e seus Derivados da Região Central do Estado de Rondônia (SINDIMAD)*

At the national level, through these organisations, the sector channels its specific demands to federal government representatives, leading to creation of policies and programmes. While there are some smaller enterprises within these large national associations, the transaction costs of participation tend to favour involvement by larger firms. This does not necessarily mean that initiatives of these associations exclude SMFEs as our examples below demonstrate.

Organisations such as ABIMCI (107 firms) and ABIMÓVEL (about 440 firms in 15 states) have been active in the development of quality control and product certification programmes, seeking to better qualify the furniture industry for export markets. Such programmes are often developed in close collaboration with government, and with parastatal industrial training and design institutes managed by the National Service for Industrial Training-SENAI. A case in point is the Promóvel programme managed by ABIMÓVEL (see section 5). Their clientele tend to be medium and large enterprises, although some of the services they provide may benefit the entire industry (norms, training, publications, trade fairs, etc.). Thus, although their representation and services may be directed toward medium and large operations, their activities may be beneficial to broader sectoral development in the wood products segments they represent.

⁷ MDIC-Secretaria de Desenvolvimento da Produção. Cadastro.

Another example of the primary focus on medium and large enterprises, but where opportunities exist for SMFEs is the case of BRACELPA. This association represents the nine major pulp and paper corporations (and a number of smaller enterprises), but also stimulates reforestation for cellulose both by the industry itself and by third-party suppliers, many of which are small and medium enterprises grouped in state forest replanting associations or rural landowners engaged in tree farming activities.

The same applies to both SBS and ABRACAVE, both of whose members are strongly linked to the eucalyptus-based reforestation segment. The latter is almost solely dedicated to the interests of the charcoal-based steel industry in Minas Gerais, but has changed its name and emphasis recently to give greater attention to the potential of the carbon market to stimulate new reforestation in Brazil.⁸ Concerns of industries based both on forest plantations and native timbers have been unified through the action of the National Forum of Forest-based Industries that remains a loosely organised coalition concerned chiefly with legislation affecting the industry.

Since the Lula administration took office, for example, representatives of the wood products industry have sought to remove the regulation of industrial forest plantations from the realm of the Ministry of Environment and IBAMA, to place this responsibility in the Ministry of Agriculture – perceived as more amenable to sectoral expansion – arguing that forest plantations should constitute a segment of Brazilian agriculture and not of renewable natural resources.

At the state level, firms are organised in syndicates that represent their interests to state government and national organisations. In some cases, where dynamic wood processing and furniture industries thrive, or in the longer surviving fronts for tropical timber extraction, they have grouped themselves at the level of regional industrial poles or “clusters”. Though difficult to generalise, these syndicates are often less successful than their national counterparts in mobilising resources, attracting investment or channelling demands to higher spheres. Since they are more representative of the SMFE segment than are the national level organisations, efforts to fortify their effectiveness could be valid to strengthen SMFE production capacity and competitiveness and to increase incomes among such firms and their employees.

3. Forest harvesting and primary processing

3.1 The national context

In addition to its extensive natural forests, Brazil is also one of the major plantation growers of the world. Nearly five million hectares of forest are in plantations, of which 95% are exotic eucalyptus and pines (FAO, 2000). These eucalyptus and pine trees planted for pulpwood and paper add to fuelwood plantations destined for the charcoal-based steel industry, and for ceramics industries, cement factories and bakeries throughout the country. These industries benefit from decades of technology development in partnership between industry and academic research institutes, leading to Brazil's now having the world's highest productivity eucalyptus plantations, based on constant improvement in clonal reproduction.

Exotic species are primarily planted and extracted by large enterprises, though these increasingly hire-in third party plantation firms to manage nursery production and planting. The charcoal-based steel industry is alleged to employ over 100,000 workers in the forest and charcoal enterprise alone (ABRACAVE, 2002). Exceptions to the latter are found among

⁸ ABRACAVE was originally named the Brazilian Association for Charcoal Manufacture.

outgrowers in the pulp and paper and charcoal-based steel industries, primarily in Espírito Santo, Minas Gerais and Paraná, where so-called *fomento florestal* has been fairly successful in building partnerships between landowners and companies to furnish trees under contract (Bacha, 2000).

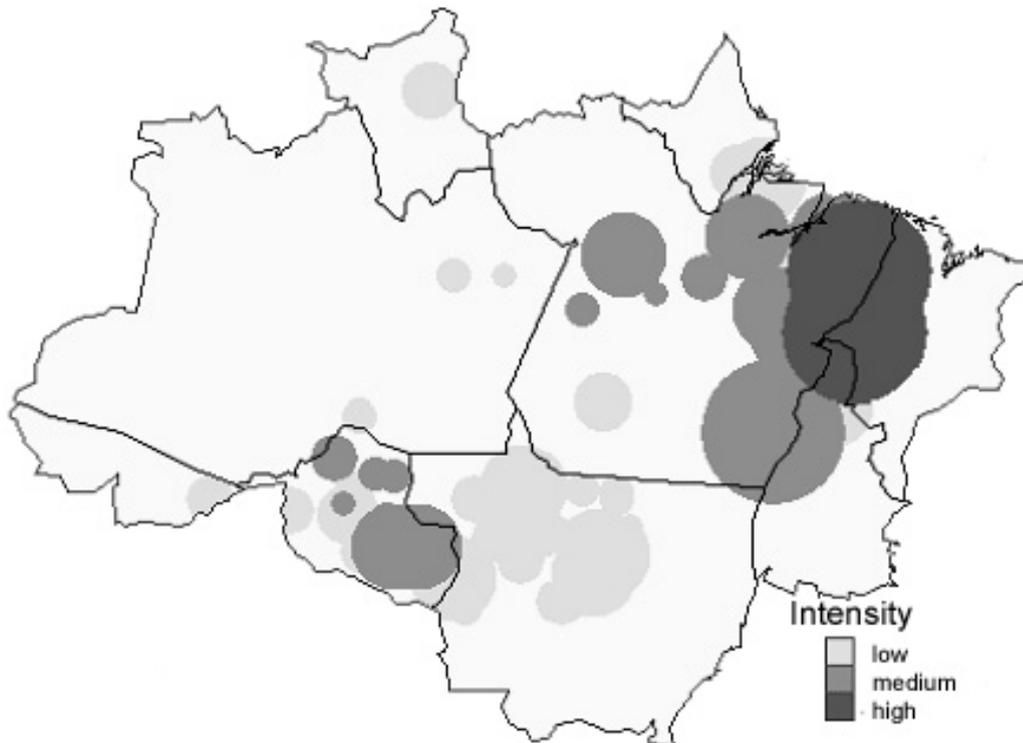
In contrast with the predominance of large firms in planted forests, SMFEs predominate in Brazil's natural forests. Brazil is simultaneously the world's largest producer and consumer of tropical timber. In fact, 86% of the 26.5 million m³ of diverse timbers harvested annually from the Amazon is consumed internally (Smeraldi & Verissimo, 1999). Most domestic demand is in the construction sector, rather than the high value niche markets for tropical hardwoods typical of the international market. This leaning towards construction timber requires little emphasis on quality or sustainable supply.

Much of Brazil's tropical timber originates from deforestation resulting from agricultural settlement. Indeed, 80% of timber extracted by small firms, 70% of timber from medium enterprises and 40% of timber from large enterprises comes from third parties, although not all of these were necessarily agricultural settlements (Macqueen et al., 2003). The ready availability of legal timber from settlement areas combines with low consumer specifications to drive down prices and any incentive to manage the forest. There are also significant problems associated with law enforcement over extensive land areas (Hirakuri, 2003).

The majority (80%) of extraction and processing of this wood occurs within the so-called Arc of Deforestation (see map below). In this region, 76 wood industry clusters are responsible for more than 95% of all native tropical timber extracted in the Brazilian Amazon. Industrial roundwood originating from Amazonia grew significantly over the past two decades, from 4.5 million m³ in 1976 to 28 million m³ in 1997. Forest enterprise in the Amazon is concentrated in the states of Pará, Mato Grosso and Rondônia as illustrated in Figure 3 (Smeraldi & Verissimo, 1999).

Figure 3. Tropical timber extraction poles in the Brazilian Amazon

Source: IPAM, based on data from surveys by IMAZON. Obs: The deeper colours represent increasing intensity of wood extraction, averaging: Low ($20\text{m}^3/\text{ha}$), Medium ($30\text{m}^3/\text{ha}$) and High ($40\text{m}^3/\text{ha}$).



The wood products industries of the region, totalling about 2,500 firms of the 4,653 firms nation-wide, produce approximately 9,7 million m^3 of final products annually, of which 63% is destined to the construction industry. The remainder is composed of laminates (18%), plywood (10%); flooring, doors, dividers and other products (9%). Most of the wood produced in the Amazon (86%) is destined for the domestic market, particularly to Brazil's southeast region (Ibid.).

In a study of how to improve the processing capacity in the Brazilian timber industry a table of the main differences between small and large-scale industry was advanced (STCP, 2001).

Table 7. Qualitative characterisation of timber industry in Brazil (based on interviews with industry informants)

Variable	Micro and Small Companies <10,000m ³ /year	Medium and large companies >10,000m ³ /yr
Timber supply	Deficient	Reasonable
Products	Diverse - not standardised	Set criteria and standardised
Production	Low volumes, intermittent operation and idle capacity	Large volume, low level of idle capacity
Equipment	Obsolete and inadequate	Better than necessary
Layout	Many improvements possible	Few deficiencies
Technological investment	Obsolete with little new investment	Investing with difficulty
Age of equipment	Ancient - recuperated	Depreciating quickly
Productivity	Extremely low	Varies between companies
Mechanisation	Absent	Incipient
Maintenance	Corrective measures only	Preventative measures introduced
Workforce	Deficient - untrained	Trained as needed
Quality	Quality restricted to product	Quality viewed more broadly in terms of service
Markets	Concentrated on sale and heavy reliance on agents	More diverse, with some exports but still quite narrow
Management	Poorly defined and reactive	Proactive and aimed at improvements
Critical issues	Many - but poorly identified	Several but being addressed
Sustainability	Not considered	Growing concern

Source: STCP, Curitiba, Brazil, 2001. Note: Number of respondents not indicated.

3.2 Concentration of activities in the states of Pará and Mato Grosso

The situation in Pará is a good baseline to analyse the expansion of the wood industry throughout the Amazon basin, since Pará alone is responsible for over half of all wood produced in the region and has until recently exceeded all other States in terms of deforestation. The proximity to the source of raw materials and the logistic facilities of the Port of Belém, besides land links with southern Brazil via the Belém-Brasília highway, were decisive in expansion of timber extraction in Pará during the 1980s and 90s. The number of wood products enterprises officially registered in Pará increased at an average rate of 9.4%/yr; from slightly over 100 firms in 1979, it grew to more than 1,500 in the 1990s (not including the numerous clandestine operations in more remote areas at the frontier of occupation) (Stone, 1998).

Pará remains the largest wood producing state in Brazil. Of the 28 million m³ of timber originating in Amazonia in 1998, Pará produced 40%, or 11.3 million m³ in roundwood equivalent (4.25 million m³ of processed sawnwood), generating US\$ 1.068 billion in gross revenues (Veríssimo et al., 2002). As few as six years ago, the state had no managed forests. Today, more than 200,000 ha are under FSC-certified forest management (although only by larger firms).

“Despite all the forest economy’s precariousness, today it generates a greater gross product than that based on agriculture. Pará today has about 15% of the Amazon’s

*GDP based on the forest economy, and only 10% is based on agropastoral activities. So keeping the forest doesn't imply backwardness, it also means development.*⁹

Mato Grosso represents a contrasting but also significant forest State. About half of the state is situated north of the 13th parallel, considered representative of the Amazon forest biome. This region has a remaining merchantable timber potential estimated on the order of 400 million m³ (Prodeflora, 2000). A combination of deforestation to establish farms and ranches, and the conventional selective extraction of wood has resulted in a rapid depletion of this remaining stock. Mato Grosso surpassed Pará as the “champion of deforestation” in the Brazilian Amazon in 1999-2000, responsible for 35% of area deforested in the entire region (INPE, 2002). Nevertheless, a state program of GIS monitoring of licensed land use has reduced the pace of deforestation by applying fines to those who deforest beyond the legally established limits (FEMA, 2001). In new frontier areas, deforestation rates declined in 2001 (Fearnside, 2002).¹⁰

The forest-based industry in Mato Grosso is responsible for the generation of 39,000 direct jobs, representing 26% of all industrial sector employment in the state, while generating 35% of the state's value-added taxes derived from industry. The sector's gross product represented 6.4% of total state GDP at about R\$500 million. Wood products are second only to soybeans as the state's primary exports. (FIEMT, 2000).

3.3 Forest ownership - a critical issue for the sustainability of harvesting and primary processing SMFEs

It is clear that the lack of sustainability in current SMFE forestry operations has its roots in a number of issues. ITTO (2002) simplifies the lack of landscape-level sustainability into four main sub-problems:

- abundant availability of low cost timber from deforestation in the agricultural frontier.
- extensive degraded forests and lack of management of these forests
- weak competitiveness of sustainable forest management (SFM)
- weak competitiveness of tropical timber industry in general.

These four elements boil down to the uncompetitive nature of SFM in the face of land use alternatives which either involve harvesting without management or planting of more profitable crops. The insecurity of tenure exacerbates the disadvantage of SFM.

From the perspective of some analysts the competitiveness of SFM could be enhanced by securing tenure for forests management on carefully monitored concessions in public forests (FLONAs). According to recent studies nearly one-third of the area of the state of Pará has potential for establishment of public production forests under concession to private enterprises. This potential is defined by the following preconditions: forests with wood exploitation potential, economic accessibility, few human occupants and are not legally protected (Veríssimo et al., 2000).

According to Veríssimo (in interview cited above), the need to establish public forest concessions arises from several barriers to sustainable forest management on private lands: 1) tenure related – lacking land title, a landowner cannot register his management plan, a prerequisite for certification, 2) the scarce supply of services to the industry, such as technical assistance, training and forestry extension and 3) the lack of forest zoning.

⁹ Interview with Adalberto Veríssimo. *Revista Agroamazônia*. Translation by the authors.

¹⁰ As a result of permissiveness during the 2002 elections, and the lack of environmental enforcement during the transition to new government administration, it is probable that the decline in deforestation observed in the period up to 2001 would not be maintained in subsequent years.

Furthermore, it is now easier to get a deforestation permit than an approved management plan. The transaction costs associated with bidding for public concessions might not favour SMFEs. The solution according to Verissimo is that communities and small enterprises should associate themselves in cooperatives so as to be able to compete in public offerings for access to public forestlands, soon to be put out for bids under concession by IBAMA.

In a study opposing the creation of publicly administered forest concessions, IPAM (Lima et al., 2003) suggests that opening up such areas to wood production would depress prices obtainable by family forest managers and other SMFEs. They propose instead to regularize property rights over community and family forests, thus fortifying bargaining power of these groups with the timber extraction industry, leading to new production alliances for certified natural forest management in occupied areas of the Amazon. One such alliance that recently emerged in Santarém, Pará, is called “Maflops” – *Manejo Florestal e Prestação de Serviços* – Forest Management and Services.

Both sides of this debate recognise that the experience with forest concessions applied in S.E. Asia and Africa, and its history in North America have not been satisfactory whether from an environmental or social perspective. The application of a concession model in Brazil will require considerably testing before it can be widely applied. Nevertheless, the current government is considering a proposal to extend National Forests to cover 10% of the Amazon region, up from 2% today (MMA, 2002).

3.4 The deficit in technical capacity

Were SFM to become economically attractive, there would still be a major problem in improving the technical capacity of SMFE operations. Hummel (2001) laments the lack of government attention to forest extension activities - noting that the main technical training activities to date have been in the domain of NGOs and external donors (e.g. PPG7, Funbio, the work of WWF in Rondonia, the work of FASE in Gurupá and the work of the Fundação Floresta Tropical (FFT) and EMBRAPA in Acre). At present the poor prospects for adoption of improved technologies, and consequent lack of willingness to pay, hampers progress. Nevertheless, NGOs such as the FFT continue to offer a wide range of courses in tree identification, pre-harvest activities and reduced impact logging and to spell out the financial costs and benefits at stake (De Homes et al., 2002). Any concerted effort to improve SMFE sustainability will need to engage with and develop these centres of training and expertise.

Poor technical practice is not restricted to logging activities for many SMFEs. The efficiency of extraction and processing of these firms is also notoriously low, resulting in final product volume between 32 and 40% of roundwood extraction. The low productivity is blamed on obsolete equipment, inadequate roundwood storage (generally in open-air patios) as well as the absence of activities aimed at utilising wood residues (Arima, et al., 1999). The high volume of industrial residues at the same time offers a potential opportunity for SMFEs to generate renewable energy for wood or food processing, and the fabrication of tools and articles of wood that otherwise would be wasted.

4. Intermediate wood processing

We focus here on the intermediate raw material segment in Brazil's wood products industry, producing panels, sawnwood and plywood for domestic and overseas markets. Sectoral analysis by ABIMCI (2001) contributes to the following profile.

4.1. Raw materials for domestic industry

Although Brazil is a major producer and consumer of tropical sawnwood and timber products (see section 3), the principal raw materials used in the domestic furniture industry are now processed / reconstituted pressboards and MDF panels, combined with plantation-produced lumber from eucalyptus and pine. The use of sawnwood from native forests is on the decline, being used primarily in products on special order. The trend of substitution of tropical timbers (largely from SMFE producers) with plantation based products (from large-scale forest companies) indicates a future pattern of industrial development which should not be ignored if there is a desire to improve the viability and sustainability of SMFE producers.

Overall, the proportion of wood production from plantation forests, chiefly pine, increased from 25% in 1990 to about 34% in 2000, a proportion that appears on the rise (ABIMCI, 2001). It is estimated that 60% of all solid wood raw materials used in the furniture industry now come from plantations, with increasing use of eucalyptus – used in dining tables and beds – since establishment of a large-scale sawmill by Aracruz (BNDES, 2002b). These changes have come about in part due to problems with reliable supply from the native forest base, and in part due to concern with quality and uniformity of raw materials from SMFEs.

The competitiveness of native timbers is intimately related to the management system, methods of cutting and transport, technology used in primary processing and to training of the workforce. The low efficiency of Amazon timber processing, indicates a great degree of wastage, with negative environmental impacts owing to residuals generated in the process. As mentioned above, a more efficient reuse of these residues for heat and energy generation in the value chain would be beneficial both to primary processing and local furniture manufacture.

The Brazilian sawmill industry is composed of approximately 10,000 out of the total of 28,000 wood processing firms, of which 60% are located in the North and Centre-West regions. The vast majority (approx. 98%) of these have less than 99 employees and are classed as SMFEs. The growth in wood consumption has been on the order of 3.2%/yr., closely followed by production levels. The furniture industry only consumes 15% of wood produced. The remainder is destined primarily for the construction industry. According to Gorini (1998) competition with “informal” enterprises, using obsolete sawmills with high levels of wastage, represents a factor limiting greater investment in planting and processing of wood derived from reforestation by the furniture industry. Conversion to certified sustainable forest management is beginning, but domestic demand still greatly outstrips supply, and most certified enterprises are still aimed primarily at the overseas market.

In the reconstituted panel segment, there is a growing demand for agglomerates and MDF fibreboard, while demand for hardboard panels has stabilised. These raw materials are produced primarily by large enterprises, of which there are currently only nine major producers in Brazil.

With regard to plywood, small and medium enterprises predominate, mostly in southern Brazil, with a particular concentration in Paraná. One of the principal characteristics of the sector is the absence of barriers to entry, due to the low volume of investment required. This results in a very heterogeneous supply, derived from production units using different technologies. Raw material for the plywood industry is about 60% derived from native forests, and the remainder from planted pine in southern Brazil. Substantial output growth in plywood production of about 8%/year since 1990 has been achieved principally by successful entry into international markets, particularly in the UK, USA and Germany, which absorbed over

half of exports in 2000. The domestic market is primarily absorbed by the furniture and construction industries (45% and 34%, respectively). (ABIMCI, 2001)

4.2. Wood processing in Pará and Mato Grosso

Of the 1,210 wood processing firms operating in Pará in 1998 (see Table 7, below), 89% were sawmills equipped with bandsaws, 6% produced laminates and 5% plywood. Of total volume extracted in 1998, 56% was exploited by the processors themselves, and the remaining 44% by third parties; 10% originated from public lands, and the remainder from private properties.

Mato Grosso in comparison, possesses an active wood industry of around 740 companies, whose installed capacity is sufficient to process approximately 4.5 million m³/year of roundwood. This demand would require availability of timber from about 360,000 ha of natural forest annually, but the industry seldom operates at full capacity, and little timber is stocked for processing during the rainy season.

According to studies by Imazon (Veríssimo et al., 2002 and pers. comm.), the industrial scale of wood processing enterprises in both Pará and Mato Grosso show a predominance of micro, small and medium enterprises, totalling nearly 90% of all such firms in each state. Reviewing the breakdown in industry structure, there exists a marked bimodal distribution with a predominance of micro and medium-sized enterprises in both Pará and Mato Grosso (see Table 7, below). This distribution derives from the use of distinct technologies at different scale levels. At the micro end of the scale there is generalised use of circular sawmills – often in informal arrangements on rural properties rather than in urban facilities. At the other end of the scale, medium-sized firms have graduated to band-saw usage. Small-scale firms are on the borderline in terms of financial viability.

It is also notable from these data that Mato Grosso has a larger relative number of firms of medium scale than does Pará, where the industry is more widely scattered among seasonally flooded *varzeas* and in agrarian reform settlements. Nevertheless, micro sawmills are plentiful in the Nortão region of Mato Grosso, at the expanding Amazon frontier, particularly along the Cuiabá-Santarém highway. It is reasonable to conclude that mobility is an important factor in primary resource harvesting at the inaccessible forest frontier - suiting the smaller scale of micro-enterprises.

Table 7. Number of wood processing enterprises in Pará and Mato Grosso, 1998, by scale

Enterprise Scale	Roundwood consumption m ³ /yr	Firms operating in Pará		Firms operating in Mato Grosso	
		Number	%	Number	%
Micro	< 4,000 m ³	540	44.6	198	26.7
Small	4 to 10,000 m ³	190	15.7	95	12.8
Medium	10 to 20,000 m ³	330	27.3	309	41.8
Large	> 20,000 m ³	150	12.4	138	18.6
Total		1,210	100.0	740	100.0

Source: Veríssimo et al., 2002

Each of Pará's small-scale wood industries generates between 20 and 30 direct jobs, or a total of about 54,000 posts in 1,210 wood products industries operating in 24 wood poles throughout the state (Veríssimo et al., 2002). Considering that each direct job generates an additional two indirect jobs in cabinetry, wood transport and handling this segment provides around 150,000 jobs, most of which are in the informal sector.

The vast majority of wood processed in Pará (78%) is destined to the Brazilian market and a relatively small part (22%) is exported (although this proportion is significantly higher than that for Amazon timbers as a whole, of which only about 15% are exported). Of the wood that remains in the Brazilian market most goes to the Northeast (39%) and the Southeast (35%) including São Paulo (14% goes to that state alone), southern Brazil (10%) and the state of Pará itself (10%), while the remaining 6% go elsewhere.

BOX 1: Sub-state segmentation of the Pará primary wood processing industry

This sector experiences the boom and bust cycle typical of predatory extractive activities. Some regions are facing a collapse of wood products activity, represented principally by Paragominas, located in the eastern part of the state. In 1990, 124 wood products enterprises were operating in the city, consuming about 2 million m³ of roundwood per year. At the end of 2001, there were only 60 such companies, consuming less than half of this volume. On the other hand, timber poles such as Novo Progresso, located in the west of the state, that in 1990 had no firms, today register a growing number of firms and volume of extraction. SMFEs in eastern Pará, and particularly of circular sawmills have been extremely important in absorbing informal labour, but the longevity of such employment has been short lived.

Pará is divided into six wood product zones: central, estuarine, eastern, western, southern and northern. Although the greater area of remaining forests (94%) occupies the northern zone, whose municipalities lie on the left bank of the Amazon River, it is the eastern zone, possessing the least area in forest remnants (39%), that holds the largest number of enterprises. In 1998, of 676 companies (including sawmills, lamination and plywood manufacturers), 464 were located in this area. Paragominas alone had 155, or 33%. This zone also includes the important wood products industrial poles of Tomé-Açu, Tailândia, Goianésia, Dom Eliseu and Rondon.

Most of the state's small businesses and medium-sized enterprises operate in the eastern zone, which also houses the majority of large businesses. Consequently, this zone concentrated 62% of the state's wood industry employment in 1998 (34.029 of 54.594 total employees), as well as over half of the state's gross income from forest products (US\$ 596 million).

At the same time, this zone is not the principal exporter of wood and wood products from Pará. More than half of exports have their origin in the estuarine zone, of whose output 77% is destined overseas, and most of the remainder (19%) remains in Pará rather than being shipped out of state. In contrast, the eastern zone only exports 11% of its output, and most is consumed outside the state (42% going to the Northeast and 30% to the South-East). Since few firms are subject to the environmental pressures that face exporters, most are not interested in forest certification.

Source: Veríssimo et al. (2002)

5. Furniture manufacture¹¹

The furniture industry may be divided based on the type of wood processing the type of production process. The principal types of processes are rectilinear and lathing. The two principal uses of furniture are for residences and offices. The SMFE furniture industry is primarily focused on production of residential furnishings using native lumber manually turned on a lathe, while the larger firms focus their attention on the office segment, using automated production lines and manufactured panels (pressboard, MDF, etc.) as primary raw materials. This is not a rigid categorisation, but is widely applicable. The table below characterises the principal components of the residential wood-based furniture industry.

Table 8. Principal characteristics of the wood-based residential furniture segment

Type of Furniture	Production	Predominant Raw Material	Enterprise Scale	Principal Consumer Market	Technological Sophistication
Lathed	Serial production	Wood from reforestation, especially pine	Medium and large	Exports	High
	On special order	Tropical hardwoods	Micro and small	Domestic medium and high-income groups	Low, nearly artisanal
Rectilinear	Serial production	Agglomerates	Medium and large	Domestic medium and low-income groups	High
	On special order	Plywood and agglomerates	Micro and small	Domestic medium and low-income groups	Medium

Source: BNDES Competitiveness Study

5.1. Regional characteristics of furniture manufacture

The Brazilian furniture industry is located basically in Southern and Southeast Brazil States: Rio Grande do Sul, Santa Catarina, Paraná, São Paulo, Minas Gerais, and Rio de Janeiro contain 82% of the furniture-producing firms in the country. The table below lists the principal current and potential furniture poles in these states, according to BNDES (2002).

The state of São Paulo is responsible for 80% of the office furniture segment, most of which is concentrated in the metropolitan region. In North-eastern São Paulo, the region of Votuporanga and Mirassol houses approximately 700 SMFEs dedicated to residential furniture manufacture. The majority of these firms use pre-cut panels and native wood pieces to fabricate standardised furnishings for the mass domestic market. There are few if any exports, and firms are not vertically integrated with suppliers or markets.

¹¹ This section is largely based on recent sectoral analyses in UNICAMP-IE-NEIT (2002) and BNDES Setorial (2002).

Table 9. Current and potential furniture production poles in Brazil

State	Municipality
Amazonas	Manaus ^a
Bahia	Salvador ^a
Ceará	Fortaleza ^a
Espírito Santo	Linhares Colatina Vitória
Maranhão	Imperatriz ^a
Minas Gerais	Ubá Bom Despacho Martinho Campos Uberaba Uberlândia Governador Valadares ^a Vale do Jequitinhonha ^a Carmo do Cajuru
Paraná	Arapongas Curitiba Londrina Cascavel Francisco Beltrão
Pernambuco	Recife ^a
Rio de Janeiro	Nova Iguaçu ^a Duque de Caixas ^a
Rio Grande do Sul	Bento Gonçalves Caixas do Sul Restinga Seca Santa Maria Erechim Lagoa Vermelha Passo Fundo Canela Flores da Cunha Gramado
Santa Catarina	São Bento do Sul Rio Negrinho Coronel Freitas Pinhalzinho São Lourenço do Oeste
São Paulo	Votuporanga Mirassol São Paulo Bálsamo Jaci Neves Paulista

Source: BNDES Setorial, Rio de Janeiro, n. 15, p. 83-96, mar. 2002

a- Not currently considered a furniture pole.

Rio Grande do Sul is the second largest producer of furniture in Brazil, responsible for 20% of domestic production. Despite being located at the gateway to Mercosul, only 10% of the

state's production is exported. The vast majority (70%) of the state's 3,200 furniture producers are based in the region around Bento Gonçalves, producing rectilinear pieces from composite panels and MDF. The region also produces pine furniture chiefly for export.

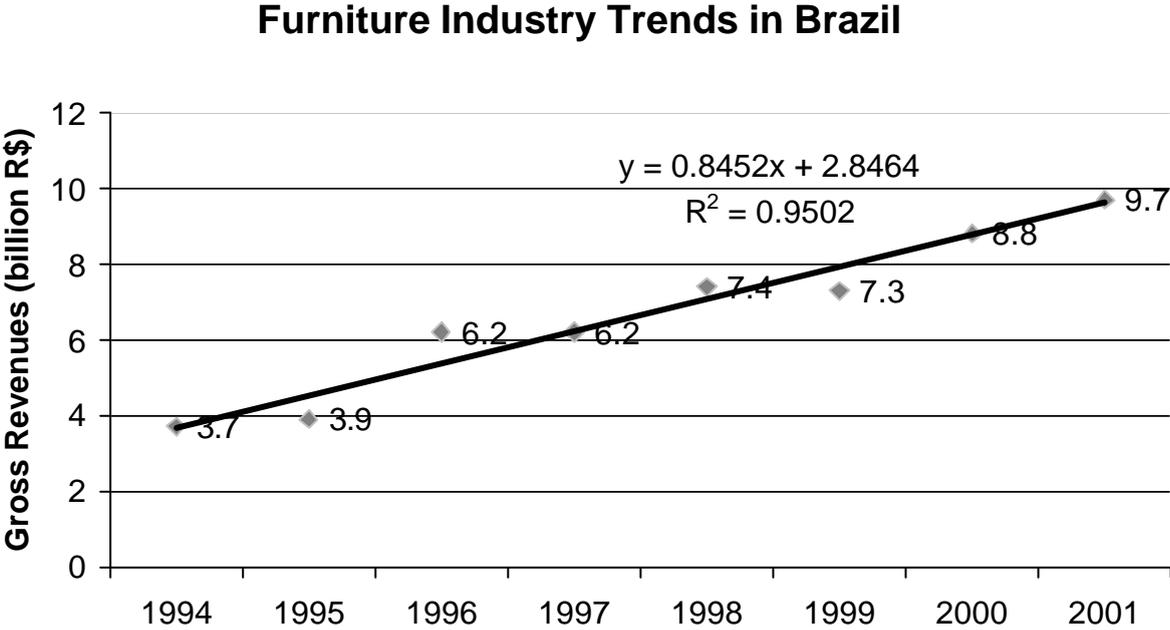
Santa Catarina is the third largest furniture producer, and largest exporter, being responsible for 50% of national exports. São Bento do Sul is the largest regional centre, together with neighbouring Campo Alegre and Rio Negrinho, the region houses a total of 400 firms employing 10,000 workers. This pole is specialised in lathe-turned pine furnishings, 80% of which are for the residential market.

In Paraná, the Araçongas region is a centre for low-cost residential furniture, chiefly upholsterers of which 40 are located in the area. Minas Gerais hosts 300 SMFE firms in the area of Ubá nearly exclusively focused on the production of residential furnishings of wood and steel for the domestic market.

5.2. Industrial trends in the furniture sector

The furniture industry has shown favourable dynamics over the past several years, with annual growth since 1994 on the order of nearly 15% per year (BNDES, 2002; see figure 4). Between 1994 and 1999 the total number of employees in the product chain of wood and furniture increased from about 312,500 to about 344,600, an increase of 10.3%.

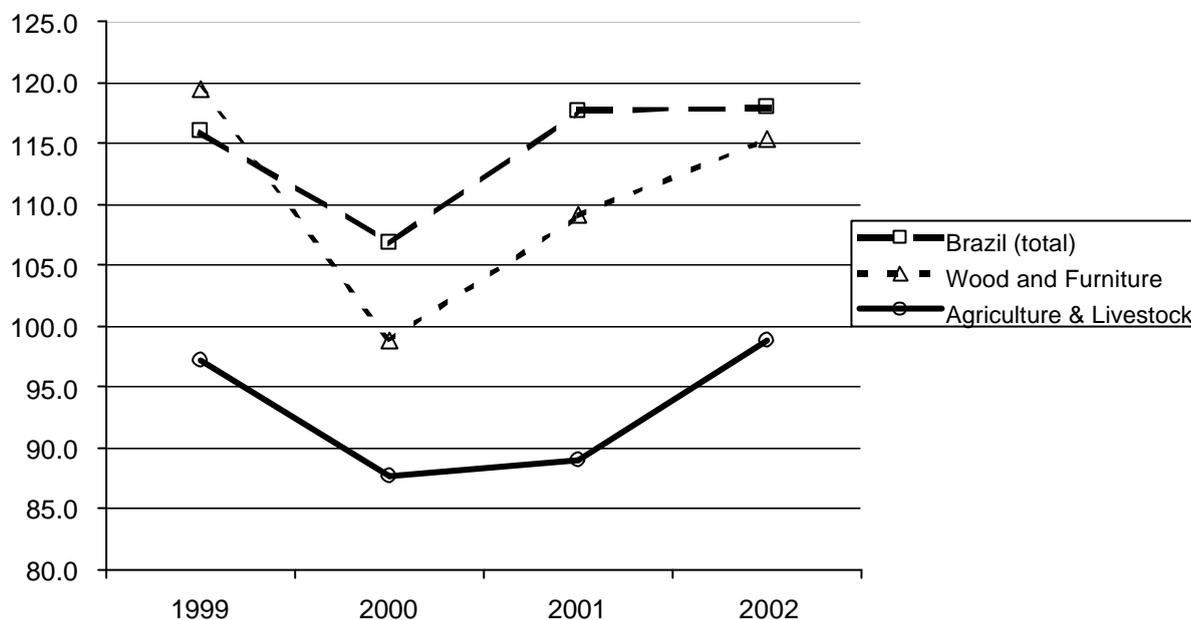
Figure 4. Growth in gross revenues in the Brazilian furniture industry: 1994-2001
 Source: BNDES (2002). Trend line and regression equation fitted by authors.



The industry is generally competitive in the international market, having maintained a positive ratio of offshore value to domestic factor cost (index of export profitability) during three out of the past four years (see Figure 5, below), accompanying the overall trend in Brazilian exports. Its performance in these terms has been considerably better than that of the agriculture and livestock segment, the principal mainstay of Brazil's export platform.

Figure 5. Export profitability, selected Brazilian production sectors: 1999-2002.
 Source: FUNCEX, based on data from SECEX. 2003.

Indices of Export Profitability



5.3. Employment characteristics in the furniture sector

Annex 2 shows that 84% of wood processing enterprises employ less than 20 workers. In contrast, 80% of the laminate, plywood and pressboard industries employ up to 50 workers. In the furniture industry, Table 10 shows that most firms have less than 20 employees. This is most accentuated among firms producing wood furniture, of which 88% of establishments may be classified as micro enterprises, according to most definitions.

Employment in all activities in the wood processing and furniture segments was on the order of 341,000 workers, of which about half are employed in wood-based furniture manufacture. (MTB-RAIS, 2000). Of the 188,721 employees in overall furniture manufacturing, 77% work in the wood-based segment.

Table 10. Number of employees by selected activities - Brazil 2000

Industrial activity	Number of employees
Wood processing destined directly for furniture parts	95,847
Manufacture of laminates, pressboards and plywood for furniture	56,368
Manufacture of furniture based predominantly of wood	145,726
Manufacture of furniture made predominantly of metal	20,630
Furniture manufacture using other materials	12,662
Mattress construction	9,703
Subtotal of furniture construction	188,721
TOTAL	340,936

Source: See Annex 1

Although the furniture industry is labour-intensive, technological innovations aimed at increasing worker productivity require greater investment in on-the-job training and skill development. The principal labour training facilities and centres for technological development in the furniture industry are located in furniture production poles, managed by SENAI. These centres are responsible for industrial apprenticeships and professional courses, specific operational training, formal technical colleges, technical assistance and technological agreements with companies for joint development of products using new materials. There is therefore adequate provision for training of SMFEs in the furniture manufacturing sector.

It is also essential that health and safety concerns be adequately introduced into the workplace, since there are problems associated with the very high incidence of work-related accidents and illness in the industry. This requires an increase in use of protective equipment and clothing, and efforts to reduce informal labour relations. The significant degree of informality in the furniture industry makes it difficult to introduce technical norms that would aid in standardisation, as well as in production of pieces and intermediate components.

5.4. Furniture design in the SMFE sector

For the most part, SMFE furniture enterprises do not invest in their own designs. Their strategy is to copy and adapt designs used by larger firms. Smaller firms have considerable difficulty in adopting new designs.

Some public/private initiatives have been undertaken in an effort to overcome the lack of furniture designs. Such initiatives involve the creation of nuclei of design development, in which CNPq has provided scholarships to specialists with computer assisted design skills, who aid furniture companies, seeking to disseminate a culture of design and to apply cutting-edge methods for new product development.¹²

5.5. Potential for expansion in furniture exports from SMFEs

Gorini (1998) has the following comments, regarding Brazilian furniture competitiveness:

- Substantial potential exists for increasing exports to other nations in Latin America due to proximity and comparative technological advantages of Brazil;

¹² One of 16 projects of Promóvel (see description below) is the creation of 12 design development nuclei, of which two have already been established.

- An increase in furniture exports to Europe would be restricted to wood products derived from reforestation and to other types of furniture (metal, agglomerated wood, bamboo, rattans and upholstered goods), responding to environmental trade barriers;
- With respect to the US market, the large internal market, low relative volume of Brazilian exports, geographic proximity and lower environmental restrictions vis à vis Europe, offer favourable export prospects;
- Japan and Southeast Asia do not represent attractive trade prospects due to the geographical proximity of furniture manufactures from Taiwan, Thailand, Singapore and China.

5.6. Recommendations for enhanced competitiveness

A document emanating from a “Competitiveness Forum” organised by the Ministry of Development, Industry and Foreign Commerce (2001), details the principal barriers to improvement in the wood products and furniture sector, presenting goals and policy priorities to overcome these. Some suggestions originating in this report are being implemented by the government and the private sector.

Recommendations of the Forum addressed the raw material supply chain and the furniture industry separately. Considering Brazil’s great competitive differential in relation to other countries, it is possible to segment utilization of wood originating from distinct sources: wood from plantations (primarily for large-scale serial manufacture and exports to Europe with importer-specified design), and certified native timbers, that can be used in the creation of furniture with a typically national design. It is perceived as being undesirable to place emphasis on one or the other, and valid to promote their coexistence.

Although furniture with a specific design adds more value to the product, those nations that have experienced greater growth in exports such as China and Mexico have done so through expansion in scale of production of standard lines not through distinctive design. Growth of exports based on national designs is considered more difficult to achieve, and participants in the forum opted to attract transnational companies in joint ventures rather than focusing on development of niche markets by small enterprises. However, it was also recognized that improving designs by small enterprises, with their greater need for specialized personnel to adapt to scale and scope demands, could be ensured through the creation of condominiums or associations of enterprises. Given the Lula government’s predilection for support to SMEs, it would seem that public/private partnerships could be forged in this direction.

6. Policies and programs affecting the forest-based sector

6.1 Introduction to the spectrum of support programmes with relevance to SMFEs

The federal government has launched a series of initiatives aiming to increase the productivity and sustainability of enterprises in the forest sector. For example, as recently as 2002, the federal government launched two credit lines for forest production: Propflora and Pronaf Florestal. Nevertheless, these new lines of credit have had little impact to date on the growing timber supply deficit due to unsustainable harvesting. This reflects a general neglect of the sector by financial institutions such as the Banco do Brasil and others, which have given little attention to the demands and enormous potential of this market segment. Some instruments of credit and support to production and marketing of wood products are available through the following programmes (see Table 11).

Box 2 Examples of some loan guarantee funds

Credit Guarantee Fund to Promote Competitiveness - FGPC -

This fund aims to share the credit risk faced by financial institutions in operations aimed at MSMEs, and particularly serves as a guarantor of export credits to medium-sized firms that access other BNDES financing lines. Guarantees provided by the fund may cover up to 80% of export product value.

PROEX Banco do Brasil -

Programme of export financing for Brazilian goods and services, with the following characteristics:

- Repayment terms – up to 10 years, defined on the basis of value-added of merchandise.
- Share – credit limited to 85% of export value in financing over 2 years.
- Interest – international market rates.
- Guarantees – endorsement, surety or letter of credit.

Fund for Guarantee to Micro and Small Enterprises - FAMPE

Permits micro and small enterprises to secure guarantee from SEBRAE, so as to complement other guarantees for loans for development of new undertakings or improvement of existing firms.

BNDES-Exim –

Program of export finance for goods and services financed by the National Development Bank (BNDES-exim) through accredited financial institutions, for pre- and post-embarkation credit. Site: www.portaldosexportador.gov.br

Table 11. Summary of main credit and support services to forest sector in Brazil.

Programme	Objectives	Activities to date
Programa Nacional de Florestas (PNF) established by decree 3420 in 2000.	Ten thematic lines dealing with such items as plantation establishment, concession in national forests, improved sustainable management, increased productivity of SMFEs and increasing exports	The PNF operates through subsidiary programmes, some of which are described beneath
Propflora - Programme for commercial forest plantations established by resolution 2992 of 2002 in Brazil's central bank BACEN	Aims to reduce timber supply deficit, increase production in rural areas, leverage technological development, ensure viability of SMFEs to stop urban migration and help to conserve forests	10 projects approved to total of R\$920,000 out of total BNDES funds of R\$60 million -lack of information and uptake and use by banks at local level - interest rates fixed, semi-fixed and variable at roughly 8.75% /yr including 3% spread.
Pronaf florestal - initiated by MDA and MMA jointly in 2002	Line of credit for small scale reforestation and agroforestry on farms - with potential to support SMFEs indirectly in processing and furniture sector	In design, through Banco do Brasil with targets of 20,000 farmers per year over four year period and loans of R\$6000 per farm - interest at 4% over 12 year period.
Promanejo –support to pilot sustainably managed logging in the Amazon	Four lines include, strategic analysis of public policy, support for promising initiatives, development of pilot law enforcement scheme and collaborative management in a National Forest	Training and pilot activities have featured strongly. Research is demonstrating economic viability of different options. Up to 2001, 40% of US\$ 4 million had been spent, 37.9% on SMFEs in partnership with research organisations (MMA, 2001)
Profloresta – credit to forestry, agroforestry and wood products enterprises in Amazonia administered by BASA	Aims to provide incentives for appropriate technology and reduced ecological impact with lines of support for SFM linked to processing, reforestation, agroforestry, industrialisation and marketing	Financing can be requested by individual or associations of SMFEs - no information was found on uptake to date
Proambiente – credit mechanism for smallholder agroforestry and environmental services remuneration in the Amazon	Agroextractivist groups through their representative organisation FETAGRI (together with IPAM and FASE) aimed to try longer time horizons to build sustainable agroforestry systems	Nine clusters have been chosen to test the approach lending up to R\$25,000 per household at an interest rate of 1.15% over 10 years (FETAGRI, 2002). The initiative looks promising (Faleiro & Oliveira, in press)
Promóvel – furniture export promotion programme supported by government and sectoral organisations	An initiative of ABIMOVEL which aims to help furniture companies restructure for export and increase exports to USA with sub-projects on certification, standards, management, marketing and design and forming consortia	Programme is expected to reorientate 300 firms towards exports having reached 13,500 firms in total - following the competitive strategy seen as ideal for Brazil (BNDES, 2002; UNICAMP-IE-NEIT, 2002)

Loan Guarantee Programmes – FGPC, FAMPE, Segcred, Proex-equal, Fnoexport, Accind, Proex Finan, BNDES Posend, BNDES Preend, BNDES Preesp, ACC/ACC	A variety of schemes to guarantee credit and finance exports	To date, almost 50% of SMFEs do not know of these credit lines, 35-40% know of but have no interest, 0-10% know of but cannot gain access and 0-10% use these credit support facilities (Macqueen et al. 2003)
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Besides these federal enterprise support programmes and loan guarantees, a number of state-led programmes exist aimed at production forest plantation and promotion of improvements in wood industry management, notably in Minas Gerais (MG), São Paulo (SP) and southern Brazil. Reforestation policies aimed at small and medium properties in MG, SP and Paraná (PR) are reviewed in depth by Bacha (2000) on behalf of IIED.

6.2 The general picture for technological support and finance for SMFEs

As noted in section 3, the technological status of SMFEs is poor. Recent studies of the industrial potential to expand into international markets from the Amazon region have shown a significant inverse correlation between the size of the industry and the average age of equipment it uses (Macqueen et al. 2003). Insufficient processing technology to meet export demand standards and low levels of workforce technical capacity were cited as the two most important impediments to adding value through exports. Lack of access to finance and lack of business acumen are important underlying causes for this situation.

Most of the finance for SMFEs comes from owners or reinvestment of profits. Obtaining credit seems to be a last resort for such companies. Short term credit is most often used due to the risk associated with longer term projects - but the interest rates are high. Interest rates on short term loans in 2002 varied from 47% to 82% (Macqueen et al. 2003). Counter-intuitively, the smaller firms were those which were most likely to take out short or longer term credit - perhaps due to the more restricted financial resources of owners and the marginal profits at that scale of operation.

The main impediment to accessing credit lines for SMFEs was the difficulty banks have in assessing risk for SMFEs (e.g. value and cost of operation, borrowers accounting capability, borrower's reputation, economic situation in the ephemeral timber frontiers, securities or guarantees offered, legal structure in case of non payment) (Macqueen et al. 2003). The difficulty in providing guarantees, and the high rate of interest were also regarded as important impediments.

6.3 Legislation affecting production forests

The considerable extent of government bureaucracy in Brazil dissuades businesses from operating within the confines of the law (Hummel 2001b). This has the unwanted side effect of reducing access to credit. Reducing the bureaucracy of government licensing procedures (and eligibility requirements for subsidised credit facilities) would be one means to ensure access by micro and small enterprises to these benefits. According to reforestation industry representatives,

“The multiplicity of requirements for process licensing along the forest production chain constitutes a barrier to full development of the sector. Sectoral representatives consider it an urgent necessity that the legal norms for licensing constitute a single and lasting instrument for the forest enterprise, incorporating prospects for its

modernisation or expansion, compatible with the period of maturation of these businesses. Productive activities are subject to restrictions from forestry legislation, environmental codes, and those dealing with water resources and agrarian policy, among others. Federal, state, municipal laws apply, along with CONAMA resolutions. Sometimes these are additive, but often they counteract each other, creating conditions unsupportable to enterprises no matter at what scale – small, medium or large. Decisions are compartmentalised and independent, resulting in agro-industrial enterprises being subject to unexpected restrictions.” (SBS, 2002; translation by the authors)

Similar to the discussion regarding FLONAs (see section 3.2), changes in the legislation that add value to timber products and make it easier to secure tenure could stimulate forest management by smallholders. Currently, wood extracting enterprises argue that the outstanding ban on roundwood exports results in prices for timber in the domestic market being maintained at a relatively low level. If such exports were permitted, it is argued, rural landowners could sell them to the international market at more attractive prices. Forest management could thereby become a more attractive option than slash and burn practices that destroy remaining forests. To avoid potential impacts of liberalised trade in unprocessed logs, studies propose that only certified forest management projects be permitted to export them. (Barreto et al., 1998).

It should be noted however that such a proposal could have significant negative consequences for the value-added small and medium wood products industry based on tropical timbers in the region. The argument for a log export ban here as everywhere in the world is that log bans cause domestic timber prices to fall such that value-added activities are promoted in the producer country. Selling whole logs directly to international buyers would negate this value-added income and employment in the regional economy.

6.4 Voluntary market mechanisms applicable to the SMFE sector

Forest certification is expanding rapidly in Brazil as a response to the quest for competitiveness in a global economy increasingly preoccupied by sustainability. The movement towards sustainability was catalysed by boycotts against tropical timbers (principally Mahogany) in the 1980s. This added impetus to the establishment in 1993 of the Forest Stewardship Council (FSC) which adopted ten principles and a rigorous set of subsidiary norms for sustainable forest management with significant impact on the Brazilian industry (Azevedo, 2002). An FSC working group in Brazil produced operating norms for plantations in 1997 and for natural forests in 2000.

The pace of certification in Brazil has been impressive. By October 2002, 18 plantation companies had had 822,000 hectares certified, representing 20% of the total estimated area of planted pine, eucalypt and teak (May, 2003). In the Amazon and Atlantic natural forests, 10 companies and community organisations have had 358,000 hectares of forest certified. In mid-2000 some 42 Brazilian companies and state governments (now 70) joined to form the Brazilian Certified Buyers Group.

While this progress is encouraging, the main companies to be certified have in general been the larger enterprises in the sector (e.g. Cikel Brazil Verde and Gethal Amazonas in the Amazon region). Of those community scale projects which have been certified, NGOs have had to step in to bear the costs associated with the certification process (e.g. WWF in the Chico Mendes Resex extractive reserve). The main barriers to community projects in becoming certified include: certification costs, the difficulty in marketing small volumes of certified wood, access to buyers and product quality issues (May, 2003). Progress has therefore been slow in certifying 15 other small schemes throughout the Amazon (Amaral

and Amaral Neto, 2001). For SMFEs outside the community sector where NGO support is prominent, certification remains largely off the radar screen.

7. Conclusions and recommendations

7.1 Alliances / Associations

While there is some basic data on the names, locations and membership of the many associations at national and state level, almost nothing is known of their mode of operation, decision making procedures and the extent to which they might assist SFMEs. This lack of data on the mechanisms by which associations form, their constitution, funding base, effectiveness of operational strategies etc is a major gap in making recommendations for the SMFE sector.

There are limited numbers of ways in which the SMFE sector in Brazil can overcome the numerous obstacles to a more profitable and sustainable existence. One of these ways, however, is through the strengthening of cooperative association which might lobby decision makers, improve access to credit, technology and training and achieve scales of production which improve marketing. A principal first step in the formation of an association is to establish legitimacy, overcoming problems associated with unsustainable and / or illegal activities. Representation before government policy makers has been dominated to date by a fairly small gathering of medium and large enterprises, whose interests do not coincide in many aspects with micro and small forest based enterprises. The issue is whether it would be best to expand the membership of such associations to include these much more fragmented and inarticulate firms, or whether it would not make more sense to build a separate set of associations and lobbies in direct support of the SMFE segment.

A widely heralded way of stimulating the integration of SMFEs into the market in Brazil has been through the forestry outsourcing activities of large plantation companies. Forestry outsourcing represents an alternative both for the small farmer and the large-scale wood processing enterprise. In this approach to enterprise alliance, financing is secured by a large firm that is then charged with passing on technology and seedlings to independent silviculturalists. The same kind of approach is being tested in alliances such as Maflops in the Amazon (Lima et al., 2003). Outsourcing programs can be transformed into vectors of technology and technical assistance, constituting new options for employment and income generation. They can also be unnecessarily inflexible and create undesirable dependency, limiting options for land management or marketing, and as such should not be seen as a panacea.

Forest outsourcing has been one of the few means to complement raw material supply to the forest industry. On the one hand, social pressures and regulatory restrictions constrain the area of planted forest. On the other, the projections of increased demand for wood surpass production.

The Ministry of the Environment of the Lula government has proposed that several of the most important industrial sectors such as pulp and paper and steel manufacture change their form of production of wood from reforestation, their principal raw material so as to enhance the proportion of such supplies that are obtained from SMFEs. This would require planning so that plantations of eucalyptus and pine do not occupy large contiguous areas and their supply can be met in part by family farmers.

However, forest outsourcing is unlikely to contribute to the formation of an entrepreneurial grouping of small and medium producers organised by nature of their common accords with larger industrial firms. They are thus likely to remain dependent on the demands of their

principal or only customer, which tend to have monopsony power in regional enclaves. Moreover, the recipient producer has little, or no freedom of action to decide what to produce, limiting their performance and returns in the formation of local wood markets.

Forest outsourcing is also unlikely to be of great relevance to the majority of SMFEs in the natural tropical forests of the Amazon. It is here where there is great need for a programme of work to address common issues facing SMFEs such as access to credit, training, marketing etc. Breaking down the inherent lack of trust which typifies provision of services to operations working on the margins of legality will be difficult, however. One potential mechanism might be to encourage association around a profitable venture which requires cooperation between different industries. Perhaps the most realistic option would be to stimulate associations based on the downstream use of wood residues. The high volume of industrial wood residues in native timber processing in the Amazon offers a potential opportunity for SMFEs to generate renewable energy for wood or food processing or manufacture tools and articles from wood pieces that might otherwise be wasted.

The fairly significant economies of scale involved in such new venture would suggest that associations among SMFEs in their establishment would be economically efficient, as well as offering the potential to propagate other collective organisational imperatives. However, the complexity of administering inter-firm collaborations may abrogate the potential advantages in reducing residue agglomeration, transport and processing costs.

To engage in these opportunities, enterprises need access to research and development (R&D) and to technical assistance. The structure of R&D in Brazil – typically undertaken by industry-sponsored research centres such as IPEF in São Paulo or SIF in Minas Gerais – is not geared to offer technical solutions specifically directed toward the SMFE segment. The focus of forest sector R&D has been on improved clonal propagation of exotic species, geographical information systems for forest management and timber tracking, and sophisticated processing techniques such as aggregated wood panel manufacture, not pertinent to SMFEs. The only expression of concern for SMFEs in a recent study sponsored by the Ministry of Science and Technology on R&D priorities in the forest sector in Brazil is that of SBS relative to the need to devise means to transfer technology to small and medium enterprises (IPEF, 2002).

7.2 Governance

There has been increasing recognition of the fact that many of the more promising policy options for improved sustainability are applicable to the larger industries, or community based enterprises, but not to the majority of the forest sector which falls somewhere in between.

To formulate policies to strengthen the SMFE segment it is necessary to assure availability of consistent and systematic information on the sector. This unfortunately is a major initial obstacle to be overcome, since the existing information base on such enterprises is limited to those firms that provide data to the Ministry of Labour and Employment and the national Institute of Geography and Statistics. These data, limited primarily to the formal sector, considerably understate the number of firms and workers in this sector, and probably overstate the average wage bill, since many firms operate outside the formal sector so as to avoid the considerable tax burden this represents.¹³ An information centre is required that accurately captures the trends in this sector.

There are several agencies housed within the Ministries of Industry and Commerce, Agrarian Development and Environment that provide technical support and incentives toward

¹³ Brazil's taxation on formal wages (*carteira assinada*, according to the Consolidated Labour Laws in existence since the populist Vargas administration) represents on the order of 100% of net salaries.

technological development, management and commercial information services oriented particularly to serve the demands of SMFEs. However, these programmes are limited in scope and capacity to serve the forest based sector, particularly to maintain communications open with firms located in areas isolated from telecommunications networks. (This problem may soon be partially overcome as telephone concessionaires have committed to provide digital access to the most remote regions of the country over the next year, but it does not preclude the digital divide.)

Transmission of market intelligence, worker training and managerial techniques are also serious gaps not easily affordable by or accessible to the SMFE segment, but more readily available to mainstream industries due to their contributions to the “S” system.¹⁴ Services of SEBRAE and some specialised NGOs have been a ray of light in this vacuum, deserving of additional support and targeting of SMFEs.

Excessive bureaucracy impedes the arousal of entrepreneurial leadership and the generation of social capital, two essential factors motivating group solidarity and community initiatives, prerequisites to democratisation of access to forest resources and poverty reduction. In the wood production industry, regulatory policies are of the command and control variety, being directed principally toward monitoring, repression and fines on extraction and transport of wood not obtained from sustainably managed forests. On the other hand, the bureaucracy, corruption and sheer frustration associated with obtaining approval for an Ibama-approved forest management plan make it much more desirable for enterprises to continue obtaining wood from legal or illegal deforestation. This situation must be reversed shifting government resources away from initial administrative hurdles towards effective field based monitoring.

7.3 Finance

This study has shown that policies and credit instruments specifically destined to leverage small and medium forest based enterprises are lacking in Brazil, despite the fact that these segments employ the vast majority of workers, and are those that would most benefit from investment in improved technology. Besides being rare and inadequate, producers are unaware of the lines of credit that do exist, and particularly of how to access them.

Financing options newly available for small forest producers, through the recently instituted PROPFLOR and PRONAF Florestal credit lines, have the potential to better integrate rural producers into forest production. They should be expanded in terms of resources and complemented with technical assistance and simplified access mechanisms. Furthermore, these lines should be extended to all regions of the country and to all forestry activities, including management and marketing of non-timber forest products.

The expansion of the forest base is urgent in Brazil, where a combination of dwindling plantation stocks and growing environmental concern for the impacts of unfettered native timber extraction are alarming stakeholders. Although most efforts to augment forest area have focused on large plantations in the past, it is increasingly recognised that the needed expansion also requires the engagement of small enterprise in the process of formation and management of forests.

Financing for sustainable forest management in Amazonia was announced for the first time as a governmental priority in June 2003, and the regional development bank's (BASA) agents

¹⁴ The “S” system includes a series of worker training, welfare and social services that are financed by taxes levied totaling 4.3% of the wage bill of formal sector enterprises. Included in this amount is a 0.3% tax destined to support SEBRAE, the agency that supports micro and small enterprise development, enabling them through simplified procedures to go formal and thereby access official credit sources (Ministério da Fazenda, 2003).

are not predisposed to offer financing when information is scarce and risk is high. Therefore, studies to define sensible and adequate protocols for financing regional silviculture, to inform the finance sector is a high priority.

The participation of SMFEs is of fundamental importance for formation or consolidation of “forestry clusters”. Integrating forestry activities is an indispensable condition for socio-economic development of regional communities and of forest and industrial enterprise sustainability. The Lula government’s determination to focus attention on making micro financing available to informal sector enterprises at concessional terms through the National Development Bank, is an important first step. However, social lending to date in Brazil has focused micro credit mostly on the urban poor, leaving rural forest-reliant peoples completely unattended. Efforts are hence needed to describe enterprise investment opportunities for rural producers and their associations. This should be combined with development of regional markets for technical services and infrastructure, particularly renewable energy supplies.¹⁵

Among pioneering rural micro credit initiatives, *CRE\$OL* (the Solidarity Credit System - www.cresol.com.br), operating since 1988 in 202 municipalities throughout Brazil’s three southern states, composed of 71 credit cooperatives, and benefiting 30,000 members has captured considerable attention. This system of credit to small farmers and the landless could be adapted to attend to SMFEs, with greater regional control than would be assured by centralised schemes.

7.4 Labour / Workforce.

Very little is known about the different employment arrangements in different scales of forest enterprise. Nor is there much data on the extent of unionisation, health and safety and job security. There is some evidence to suggest that informal employment relations, low pay (particularly in the microenterprise segment) and lack of worker organisation are the key descriptive features of the SMFE segment. While these conditions help them to undercut formal sector enterprises, allowing them to survive an extremely competitive environment, it also keeps them from sustainable management technologies, greater operational efficiency and improved design and product quality that would allow them to enter into a broader range of markets, including the export trade. It also impedes their access to credit, worker and managerial training, which would be opportune for all involved.

Labour organisation is weak in informal sector enterprise, as there is no union structure through which to channel demands to management. Since many micro and small enterprises are not only informal, but actually extended family affairs, and often may involve child labour, fragile relations with employers may become vulnerable when exposed on intermediation, leading to job loss. Concern for adherence to appropriate labour practises must be combined with sensitivity.

8. The way forward - stakeholder engagement and collaborative action research

8.1 Justification and objectives

The brief survey of the SMFE sector within Brazil has highlighted several important issues. These provide a powerful justification for a new initiative that focuses more directly on

¹⁵ A useful model in this regard is the UN Foundation-funded Regional Market Managers for Sustainable Renewable Energy underway in several subregions of Mato Grosso, coordinated by the NGO Brasus.

overcoming the barriers faced by the SMFE sector in Brazil. Major findings have included the following:

- SMFEs comprise the vast numerical majority (>98%) of forest enterprises and more than 50% of forest employees in Brazil and are extremely important for poverty eradication
- SMFEs generate a significant component (~75%) of total forest production and revenues within Brazil but as yet do not feature highly in exports or the generation of foreign exchange.
- Data on the SMFE sector is poor - very little is known of the organisation within the sector, specific policy options, finance mechanisms and labour initiatives that might drive the sector towards greater profitability and sustainability.
- What data there is unequivocally shows that SMFEs struggle disproportionately with bureaucracy and management, technological investment, market access and workforce capacity and conditions.
- SMFE wood extracting enterprises are primarily located in the areas where environmental sensitivity and social poverty are highest, i.e. in the Northern Amazonian region of Brazil, though most wood using enterprises are located in the better-off South and Southeast regions, which are increasingly based on locally produced plantation lumber

As a result of these observations, we recommend that a new initiative be developed to deal specifically with SMFEs in order to redress the lack of emphasis which these enterprises have received in the past.

The **objective** of this initiative would be:

"To reorientate forest and land use decision making towards the solution of problems faced by the majority of Brazilian forest enterprises, namely small and medium forest enterprises (SMFEs), through a programme of collaborative action learning which engages directly with all interest groups affecting the sector."

8.2. Methodology

The first stage in this new initiative programme would involve the selection of two specific SMFE clusters in disparate regions, such as the timber extraction zone of eastern Pará and the furniture zones in southern Brazil. In each cluster, the following lines of collaborative action research will be carried out, as appropriate, with involvement of local research institutions and industry/labour organisations.

Detailed baseline surveys would be undertaken in identified clusters, to characterise the structure of local enterprises in terms of ownership, capital and access to credit, technology and design, raw materials sources, labour force and unionisation, pay scales and conditions, marketing strategies, backward and forward linkages, associations, governance, etc. These would be combined with semi-structured interviews with principal stakeholders to determine key concerns and perceptions regarding potential points of leverage.¹⁶

¹⁶ Collective techniques such as gaming and group dynamics may be useful to identify conflicts of interest regarding specific themes, as well as institutional relations not easily identified from individual approaches. However, these may lead to emergence of polemics, contradictions and conflicts that are difficult to be administered, inappropriate for the purposes of the studies at hand, given doubts regarding firms' permanency and their roles in local social contexts.

The following specific lines of inquiry would be pursued:

- ❑ Socio-economic diagnosis for two SMFE clusters including a survey and profile of producers
- ❑ Supply chain analysis
- ❑ An analysis of the existing initiatives working with the SMFE sector and the development of an information sharing forum (either physical meetings or virtual) to share views and generate consensus
- ❑ Multi-stakeholder action learning regarding the potential for change in the areas of industrial associations, governance, finance and investment strategies and capacity development among workforces - generating momentum for change
- ❑ Documentation of key lessons learned to do with the current profile and strategies of representative organisations in the segment
- ❑ The development of a concerted programme of work to address shortcomings in these strategies.

In each of the two SMFE clusters the intention would be to establish an independent and self-sustaining process of change backed by like-minded institutions.

8.3 Deliverables

The initiative would ultimately be evaluated on the extent to which SMFEs engaged with it and changed their practice for the better on account of it. Nevertheless, there are a number of interim products that will serve as proxies for a successful process:

- Two stakeholder maps - Identification, profile and characterization of SMFEs with their views, beliefs and expectations / hopes for each regional cluster.
- Matrix of institutional linkages - Describing prospects for cooperation, identification of affinities and divergences, potential and limitations to participation in collective endeavours.
- Functioning core initiatives - pilot action research for four areas of association, governance, finance and labour based on an assessment of constraints and opportunities
- Reports of interim monitoring and assessment - providing details of the progress made in each of the four areas.

8.4 Dissemination and impact

The research results would inform the preparation of a series of policy briefing notes and workshops focusing on critical concerns of the segment, and involving principal stakeholder groups in debate on appropriate lines of intervention to support sustainable enterprise development. These might include, but not be restricted to:

- ❑ Strategies of association which work for sustainable SMFE development in each cluster, with upscaling prospects at a national level - for example, pilot exercises with large enterprises to develop nuclei of sustainably produced wood products, “adopting” SMFE producer groups as their suppliers (such as Maflops in Santarém¹⁷); and

¹⁷ A partnership involving a private medium-sized wood products enterprise with markets in southeast Brazil, supplied by agrarian reform beneficiaries, along the lines of the IPAM proposal for family farm forestry described in Lima et al. (2003).

- ❑ Government support mechanisms appropriate for SMFEs, indicating necessary cross-sectoral initiatives and potential sources of international technical cooperation;
- ❑ New financing lines or credit guarantee programmes more appropriate to the SMFE sector with training in business planning and technological development.
- ❑ Codes of conduct for employment standards with agreed programmes of training based around a set of core components geared towards industrial efficiency

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Annex 1. Establishments by size and activity class.

Number of establishments by size and activity class		
Wood products manufacture		
N° of Employees	Wood processing	Fabrication of laminates and of plywood, pressed or agglomerate boards
0	678	106
Up to 4	2.722	328
from 5 to 9	1.502	163
from 10 to 19	1.401	207
from 20 to 49	839	252
from 50 to 99	248	151
from 100 to 249	77	91
from 250 to 499	18	31
from 500 to 999	1	8
1.000 or more	0	1

Number of establishments by size and activity class				
Furniture Manufacture				
N° of Employees	Furniture predominantly made of wood	Furniture predominantly made of metal	Furniture made of other materials	Fabrication of mattresses
0	1.345	93	81	19
Up to 4	6.168	408	399	117
from 5 to 9	2.504	186	173	66
from 10 to 19	1.610	230	125	41
from 20 to 49	1.017	156	95	39
from 50 to 99	294	45	23	33
from 100 to 249	151	21	15	21
from 250 to 499	31	10	4	5
from 500 to 999	13	1	1	19
1.000 or more	0	0	---	---

Source: MTb-Rais 2000 - apud UNICAMP-IE-NEIT & ECCIB.

**Annex 2. Establishments with employees by geographic area and scale
Wood and Furniture Industry: Brazil – 1995-2001**

(in Number of Establishments)

1995					
	Scale Range				
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	26.033	22.696	2.831	473	33
North	1.415	1.045	306	59	5
Northeast	1.858	1.659	169	29	1
Southeast	10.329	9.242	937	141	9
South	10.629	9.174	1.217	220	18
Center-West	1.791	1.565	202	24	0
Not informed	11	11	0	0	0

1996					
	Scale Range				
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	26.317	22.899	2.882	502	34
North	1.419	1.054	301	59	5
Northeast	1.965	1.752	180	32	1
Southeast	10.459	9.364	930	153	12
South	10.655	9.144	1.264	231	16
Center-West	1.818	1.584	207	27	0
Not informed	1	1	0	0	0

1997					
	Scale Range				
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	28.621	24.843	3.241	503	34
North	1.706	1.252	381	66	7
Northeast	2.123	1.883	214	25	1
Southeast	11.018	9.848	1005	154	11
South	11.685	10.106	1.341	223	15
Centre-West	2.087	1.752	300	35	0
Not informed	2	2	0	0	0

Continues...

1998					
Scale Range					
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	29.537	25.863	3.200	449	25
North	1.805	1.374	369	58	4
Northeast	2.262	2.026	218	17	1
Southeast	11.083	9.978	960	137	8
South	12.172	10.613	1.339	208	12
Center-West	2.215	1.872	314	29	0

1999					
Scale Range					
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	30.223	26.220	3.494	477	32
North	1.903	1.408	426	66	3
Northeast	2.357	2.109	232	15	1
Southeast	10.943	9.773	1032	127	11
South	12.593	10.886	1.455	235	17
Centre-West	2.427	2.044	349	34	0

2000					
Scale Range					
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	30.895	26.642	3.712	512	29
North	2.041	1.506	456	75	4
Northeast	2.427	2.178	230	17	2
Southeast	10.847	9.578	1126	136	7
South	13.041	11.251	1.521	253	16
Centre-West	2.539	2.129	379	31	0

2001					
Scale Range					
Region	Total	Up to 19 employees	From 20 to 99 employees	From 100 to 499 employees	Over 500 employees
BRAZIL	31.040	26.784	3.734	493	29
North	2.103	1.560	476	64	3
Northeast	2.419	2.184	221	13	1
Southeast	10.732	9.489	1103	132	8
South	13.195	11.367	1.555	256	17
Centre-West	2.591	2.184	379	28	0

Source: MTE/RAIS (2003).

Small and Medium Forest Enterprises (SMFEs) constitute more than 98% of the production units and 75% of the timber production in Brazil. With annual growth of 2.8 and 4.7% respectively, micro and small enterprises have grown numerically much faster than medium and large enterprises since 1995, notwithstanding their high mortality rates. Despite their importance to the national economy of Brazil, SMFEs have traditionally been marginalized in policy and decision-making. This study explores the possibilities for constructive change. The study recommends policy changes and new information and financial help services for SMFEs – complemented by further reductions in the bureaucracy associated with business registration and approval. It provides a powerful justification for a new initiative that would focus more directly on overcoming the barriers faced by the SMFE sector in Brazil.

This study was commissioned as part of a cross-country initiative coordinated by the International Institute for Environment and Development (IIED) on Small and Medium Forest Enterprise. Most international attention in forestry has been given to improving the conditions for large-scale or micro-scale forestry, and much less to the 'messy middle' – which produces a high proportion of forest product and involves huge numbers of people. The aim of these studies is to raise the visibility of SMFEs and assess ways by which they can better contribute to reducing poverty and improving the prospects for sustainability.

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