

The Expansion of Logging in the Brazilian Amazon

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Logging and industrial processing of timber are among the main economic activities in the Brazilian Amazon – in addition to mining, ranching and agriculture. In 2004, the timber sector harvested 24.5 million m³ of roundwood, the equivalent of about 6.2 million trees. This raw material generated 10.4 million m³ of processed wood (boards, sawnwood, finished products, veneer, plywood, etc.). The processing of wood occurred in 82 logging centers situated mostly in the states of Pará, Mato Grosso and Rondônia. After processing, the Amazonian timber entered both national (64%) and international (36%) markets. In particular, exports had an extremely significant increase, from US\$ 381 million in 1998 to US\$ 943 million in 2004.

In this issue of *State of the Amazon*,¹ we present a comparative analysis of timber sector production and markets in the Brazilian Amazon² between 1998 and 2004. In 2004, Imazon researchers surveyed 680 mills (27% of all the companies in operation) distributed in 82 logging centers in all states of the Brazilian Amazon (except the state of Tocantins, which does not have logging centers). Imazon had carried out a similar survey in 1998, with a sample intensity of 44%. These two surveys represent the most complete and accurate diagnosis of the timber sector in the region.

Reduction of Raw Material Consumption

The consumption of raw material (roundwood) decreased from 28.3 million m³ in 1998 to 24.5 million m³ in 2004.³ This reduction of 3.8 million m³ of roundwood seems to be associated with three main factors. First, there was increased enforcement against illegal logging by Brazil's environmental agency, IBAMA (Institute of the Environment and Renewable Natural Resources). At the same time, the land tenure crises in the Amazon worsened, culminating with the cancellation of hundreds of forest management permits beginning in 2003. Finally, between 1998 and 2004 there was improved efficiency in the conversion of roundwood into

processed wood – such as sawnwood, veneer, plywood and finished products.⁴

Despite this decrease, the Brazilian Amazon is still the world's second largest producer of tropical wood and is only behind Indonesia, which has an annual wood consumption greater than 30 million m³. The other countries of the Amazon watershed (Bolivia, Peru, Colombia, Ecuador, Venezuela, Guiana, French Guiana and Suriname) produce a combined total of 13 million m³ of roundwood.⁵

Stable Production and Increased Yield

The production of processed wood remained practically stable. In 1998, 10.8 million m³ of processed wood were produced, while in 2004 there was a slight decrease to 10.4 million m³. Between 1998 and 2004 the efficiency of wood processing improved. In 1998 the average timber yield was 38%, while in 2004 it reached 42%. This increased efficiency resulted in significant savings on raw material. In fact, in 2004, 3.8 million m³ of roundwood were saved – equivalent to 950,000 trees.

Stable Employment Level

The number of jobs generated (both direct and indirect⁶) remained stable, with 353,000 jobs in 1998 compared to 344,000 jobs in 2004. We estimate that, currently, at least 5% of the economic active population in the Brazilian Amazon works either directly or indirectly in the logging activity (Table 1).

Item	1998	2004
Consumption of Roundwood (million m ³ /year)	28.3	24.5
Processed Wood (million m ³ /year)	10.8	10.4
Average Yield of Processing	38%	42%
Number of Logging Centers	72	82
Number of Companies	2,570	3,132
Jobs Generated	353,04	344,247

Geographic Expansion of the Timber Production

The number of logging centers increased from 72 (in 1998) to 82 (in 2004). This was probably caused by a migration of logging activity toward new forest frontiers in the west of Pará, southeast of Amazonas, and the extreme northwest of Mato Grosso (Table 1).

The number of companies also increased from 2,570 (in 1998) to 3,132 (in 2004). Most of these companies (> 80%) were sawmills, and the rest consisted of veneer and plywood mills. The proliferation of companies occurred mainly in the most recent logging centers (< 10 years-old) such as Novo Progresso and Castelo de Sonho in western Pará, and Colniza and Aripuanã in northwest Mato Grosso (Figure 1).

Participation of the States in Timber Production

The state of Pará is the main producer of Amazonian wood, representing 45% of the total produced. Pará also has 51% of the timber companies and generates 48% of the jobs in the wood industry in the Brazilian Amazon. The state of Mato Grosso comes next with 33% of production, while Rondônia is in third place with 15%. The remaining 7% is distributed among the six other states. Despite its immense territory (1.6 million km² – equivalent to 18% of Brazil), the state of Amazonas contributes only 2% of the regional production (Table 2).

Logging Axes

Logging occurs along the principal transportation axes in the Brazilian Amazon (Figure 2). From 1998 to 2004, there was a displacement of timber production from eastern to western Pará and from north-central to northwest Mato Grosso. In 2004, industries situated along BR-163 highway (Santarém-Cuiabá) and the BR-364 highway (Cuiabá-Porto Velho-Rio Branco) generated 28% and 16% of the region's processed wood, respectively. Along the Amazon river (from Manaus to the estuary), the corresponding figure was 14%. Each of the highways axes in eastern Pará (PA-150 and BR-010) corresponded to

12% of production. The Transamazon highway (extending from Marabá to Humaitá) contributed only 5% of the processed wood. Finally, the remaining 13% of regional production was dispersed in the northwest of Mato Grosso, and in the south of Rondônia and Roraima.

Table 2. Timber Production in the Brazilian Amazon, 2004.

State	Number of Logging Centers	Number of Mills	Roundwood Consumption (million m ³ /year)	Processed Production (million m ³ /year)
Acre	1	52	0.42	0.17
Amapá	1	73	0.13	0.04
Amazonas	3	48	0.49	0.19
Maranhão	1	45	0.43	0.19
Mato Grosso	26	872	8.01	3.48
Pará	33	1,592	11.15	4.63
Rondônia	16	422	3.70	1.62
Roraima	1	28	0.13	0.05
Total	82	3,132	24.46	10.37

Figure 1. Expansion of the Logging Frontier in the Brazilian Amazon, 2004.

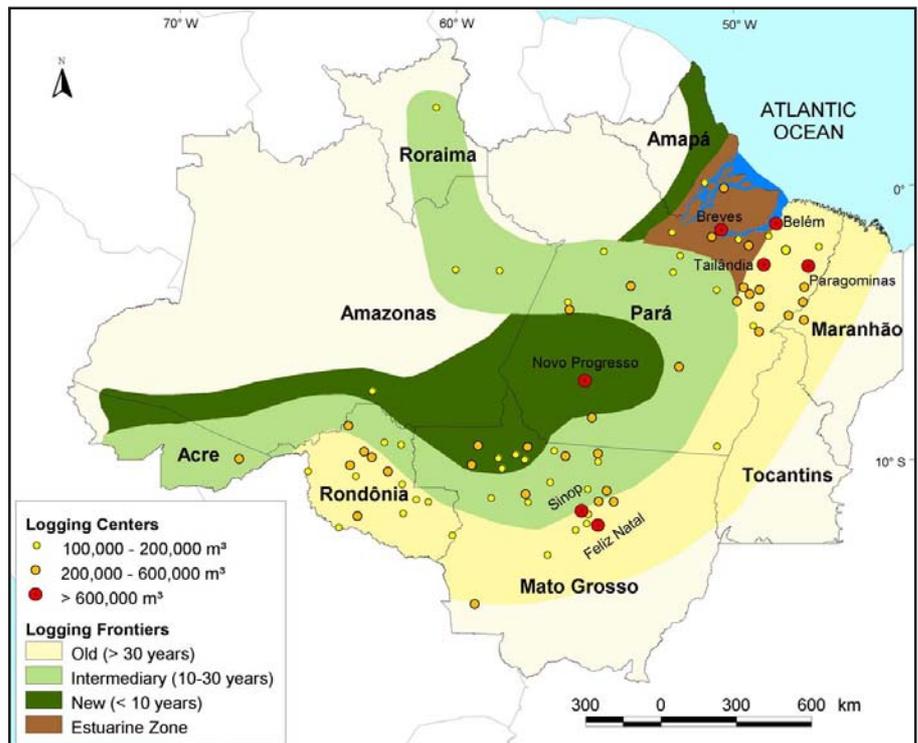
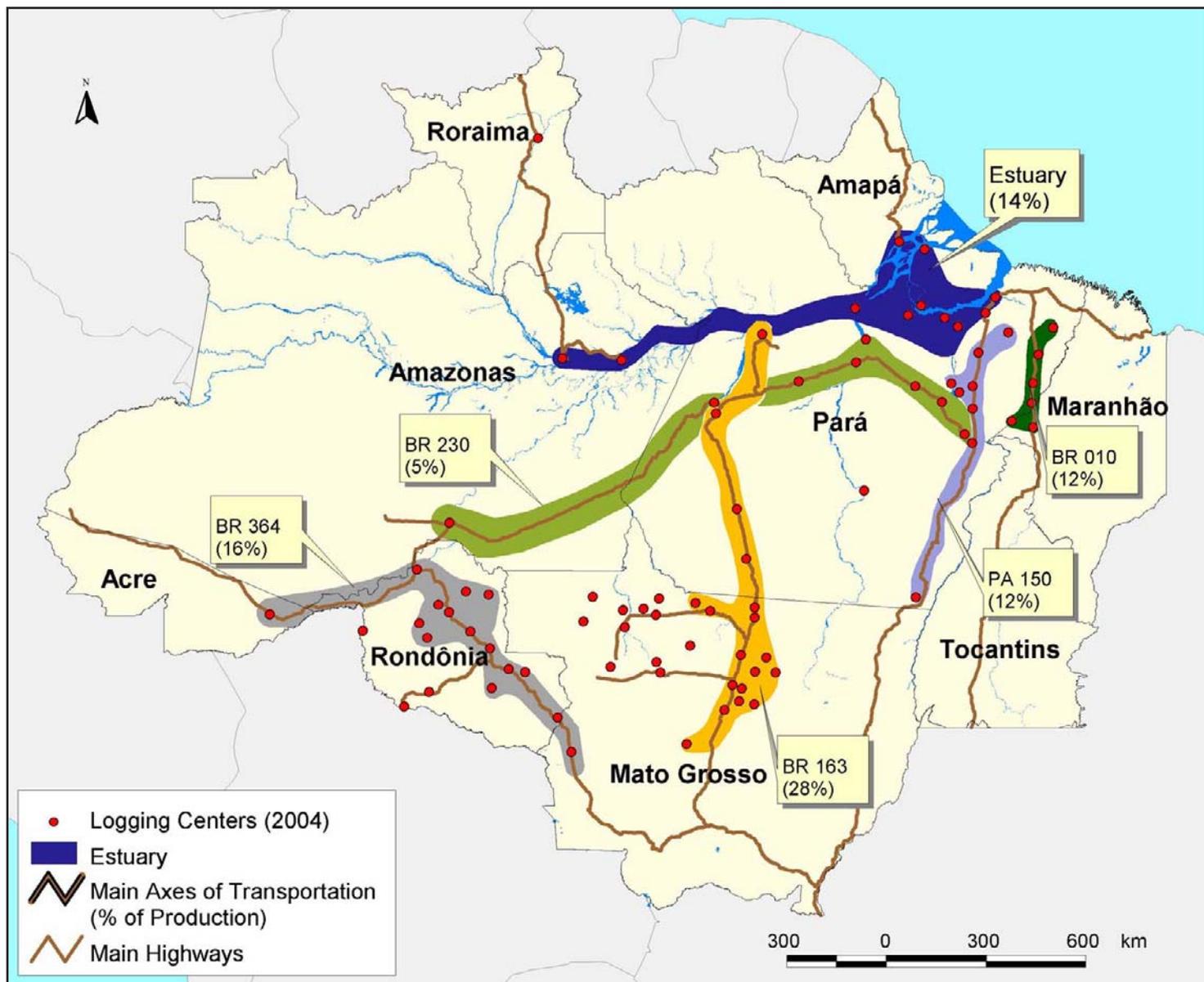


Figure 2. Logging Axes of Transportation in the Brazilian Amazon, 2004.



The Market for Amazonian Timber

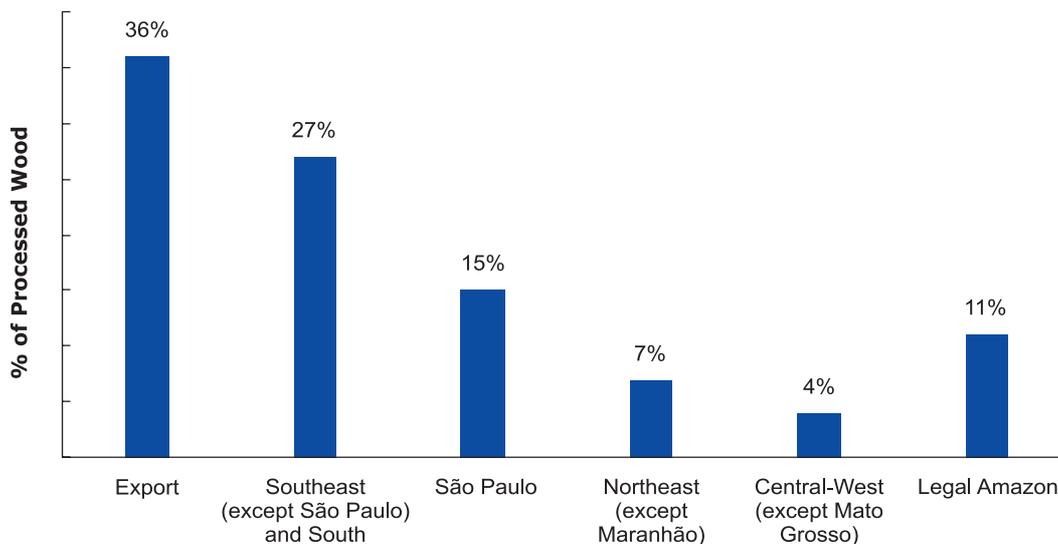
There was a profound change in the market for processed wood. In 1998 only 14% of the total volume produced was exported. In 2004 this proportion reached 36%. Two factors contributed to this change: a favorable foreign exchange rate and an increase in the demand for Amazonian timber in the markets of Europe, the United States and Asia.

The Brazilian market absorbed 64% of the Amazon’s processed wood. The state of São Paulo is still one the main users of Amazon timber,

consuming 15% (compared to 20% in 1998). The other states in southern and southeast Brazil consumed a total of 27%. The northeast used only 7%, while the central-west consumed 4% of the wood. The remainder (11%) was consumed in the Brazilian Amazon (Figure 3).

According to data from the Ministry of Development, Industry and Foreign Trade (MDIC),⁷ there was a drastic increase in the value of Amazon timber exports. In 1998 the export of Amazonian timber products amounted to US\$ 381 million, while in 2004, the corresponding value was US\$ 943 million.

Figure 3. Market for Amazonian timber, 2004.



Suggestions for Public Policies

The timber sector in the Amazon is paradoxical. On the one hand, it is economically competitive and an important generator of job and income opportunities to a significant portion of the Amazon population. On the other hand, the migratory nature of the timber industry⁸ and the low adoption of forest management reveal some of the crucial problems plaguing this sector. The results presented in this paper lead to the following policy recommendations:

Zoning. To deter the migratory nature of the timber industry, it is essential to define appropriate areas where logging can occur, based on both economic and environmental criteria. In these areas, clarification of land tenure and establishment of national or state forests (or other protected areas designated for sustained use) is required to assure a legal and sustainable supply of forest products.

Supporting efficiency. An increase in the yield of industrial processing can significantly reduce the consumption of raw material, thereby reducing pressure on the forest. For example, if the processing yield increased today in 3% (from 42% to 45%), there would be a savings of 1.6 million m³ of roundwood, equivalent to 108,000 hectares of forest.⁹ Therefore, we recommend the adoption of economic measures such as the reduction of taxes on the acquisition of machinery that can improve processing yield.

Incentives to add value. Most (63%) of the processed wood produced in the Brazilian Amazon represents products with low value-added, which are sold as sawn wood primarily for civil construction.

Changing this situation requires economic measures to add value from timber production, such as reduced taxes on imports of machinery for wood processing.¹⁰ Additional investment in technical training of specialized personnel to operate this machinery will also be required.

References and Notes

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² The Brazilian Amazon covers 5 million km² (59% of the Brazilian territory). It encompasses nine states, including Mato Grosso, Tocantins, and part of Maranhão.

³ This estimate has a margin of error ± 0.78 million m³.

⁴ Finished products include higher value items such as flooring, ceiling, decks, doors, windows, furniture, etc.

⁵ FAO. Faostat Forestry Data 2004. <http://www.apps.fao.org/page/collections?subset=forestry>

⁶ For each direct job created by the timber sector, an estimated 1.8 indirect jobs are generated. More details are provided in *Fatos Florestais da Amazônia 2003* (www.imazon.org.br).

⁷ Data are available at <http://www.aliceweb.mdic.gov.br/>

⁸ See *Amazônia Sustentável* (Sustainable Amazon) for more details. This publication is available in PDF format on Imazon's webpage (www.imazon.org.br)

⁹ This calculation assumed an average logging intensity of 15 m³/hectare.

¹⁰ Some economic measures to add value are already underway in the region. In the case of Pará, State Decree 4.676/2001 exempts logging industries from paying a value-added tax (ICMS) on importation of machinery that is not manufactured domestically. At the federal level, there are MDIC regulations that also remove some taxes for the importation of machinery by timber industries.