

Brazil welcomes international visitors and new investment partners*

I. COUNTRY REVIEW

Significant resource wealth — This South American country, which is nearly as large as continental U.S., is very rich in natural resources. There are large mineral deposits in iron and bauxite. It has competitive advantages in many agricultural areas, including coffee, soybeans, oranges, sugar, tobacco and coca. In addition, there are large livestock herds and a growing development of wood products — pulp & paper, lumber, plywood/ veneer and composite panels. It has great biological growth rates and, due to implemented-research, some of the highest plantation forestry productivity in the world.

Economy: - Brazil's economy contains large and well-developed agricultural, forestry, mining, manufacturing and services sectors. The economy overshadows all the other South American countries with an expanding presence in world markets. Brazil has taken steps to create structural reform and fiscal adjustment with positive results since the late 1990's. The Brazilian currency was un-pegged from the US\$ in 1999 and the subsequent devaluation helped boost economic growth. There was positive economic growth in 2000 of 4.5 per cent, which diminished in 2001-2003 as the Central Bank raised interest rates to combat inflation and a slowdown in major export markets.

Today, the economy is in better condition than outward appearances indicate. Government policy has given priority to reforming complex tax codes, to cutting back an expensive civil service pension system, and continuing to fight inflation. The new President, Luiz Inacio Lula da Silva, started with a year of austerity to restore investor confidence and in 2003 there was some relaxing of interest rates and higher growth. The Brazilian real (R\$) has been very stable, increasing in value from 2.96 in early 2003 to 2.71 currently. This exchange level is hurting most export industries. Most Brazilian economists anticipate a growth of 3-4 per cent in 2004, initiated by booming exports and as a consequence domestic consumption and investment increases. Brazil requires more direct foreign investment.

* Extracts from *Brazil Plantation Forest Study Tour Notes*, April 18 – 25 2004 organized and conducted by RH Donnelly & Associates, Mark Willhite, and Robert Flynn. (a second Tour is currently being organized, for more details visit: <http://www.worldforestinvestment.com>)

II FOREST SECTOR IN BRAZIL

Overview

The forestry sector is of growing importance in Brazil. It accounts for US \$4.6 billion annually and some 4.5 per cent of national GDP. In 2002, it contributed 7 per cent of the exports almost evenly divided between paper and paper (4 per cent) and wood products (3 per cent). It employed 6.5 million individuals or 9 per cent of the Brazilian labor force.

The wood sources in 2002 were 100 million cubic metres of plantation supply and 200 million cubic metres of tropical native forest supply. The end use was principally energy with 15 per cent converted into manufactured products:

Brazil's Plantation Forest Base - 2003

Softwood (31 per cent)	hectares
Southern / tropical pine	1.9 million
Parana pine	<u>0.1 million</u>
Total softwood	2.0 million

Hardwood (63 per cent)

Eucalyptus	3.0 million
Acacia/other	<u>0.1 million</u>
Total hardwood	<u>3.1 million</u>

Total plantations **5.1 million**

Source: ABIMCI and other industry groups, 2003

History of Plantation Forestry

In 1966, the Brazilian federal government created a fiscal incentive program for plantation establishment. The law encouraged reforestation in the southern part of the country, which would provide a reliable source of raw material for forest industry development. This incentive program lasted until 1987, and helped Brazil become the world leader in plantation forestry for fast-growing Southern pine and Eucalyptus species.

The early years of the program involved pine plantations but by 1971 Eucalyptus had become the dominant species. Although approved applications for the incentive program were higher, the plantations actually implemented were in the neighborhood of 3.6 million hectares during this period (1967 - 1986). The actual size of the plantation-base, even today, is under dispute and is understated for various reasons (see graph P3).

The major measurement problem is that there is no recent or comprehensive national inventory of the plantations in Brazil. Some figures would be relatively easy to update, for example the state of Sao Paulo has recently published an inventory of plantation area. The current eucalyptus plantation area in that state is 676,000 hectares, or

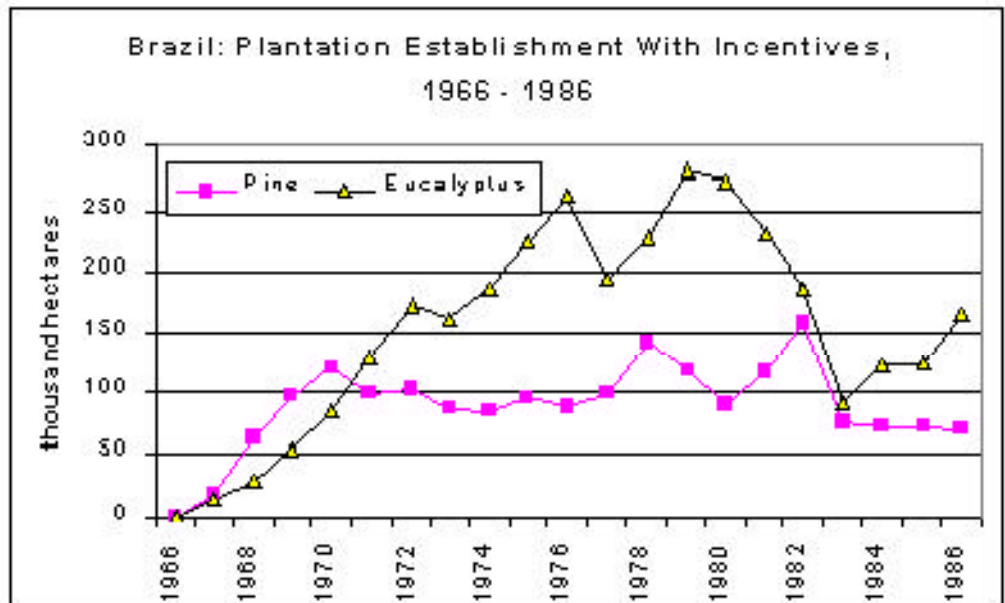
100,000 hectares higher than the figure cited in the table below for 2000. A pine inventory in Santa Catarina State three years ago indicated similar results with an additional 100,000 hectares over and above the stated figures in the table below. In other states it is much more difficult to get reliable estimates of planted areas. This is especially true in regions where small landowners are planting trees in "landowner-assistance" programs ("fomentos" tree farming). It is estimated that the total area of eucalyptus plantations in Brazil has likely increased from the 2.9 million hectares shown in the following table to about 3.4 million hectares and pine in the range of 2.2 million hectares in early 2004

**Plantation Location by State
Softwood Plantations**

The softwood plantations in Brazil include about 1.4 million hectares of Southern pine species in the southern part of the country, and 400,000 hectares of tropical pines largely from Sao Paulo state northwards. Also, there are perhaps 100,000 hectares of Parana pine (*Araucaria angustifolia*) planted in Santa Catarina and Parana states, which contribute very little to the region's current wood supply. All of these softwood plantations are privately owned.

In the south (Parana, Santa Catarina and Rio Grande do Sul States), the original pine plantations were approximately 70 per cent loblolly (*Pinus taeda*) and 30 per cent slash pine (*P.elliottii*). Today these plantations are being replaced, in most instances, with 100 per cent loblolly pine. There is no *Radiata* pine in Brazil, as it proved unsuited to available forestation sites.

Almost all of the mature pine plantations in Brazil were planted between the years 1966 - 1986, under the government tax incentive program. While the major companies planted large commercial pine forests to supply particular mills, certain other landowners planted to gain the tax benefits. These



Brazil: Eucalyptus and Pine Plantation by State in 2000

State	Pine		Eucalyptus	
	'000 ha	Per cent	'000 ha	Per cent
Amapa	80.4	4.4%	12.5	0.4%
Bahia	238.4	12.9%	213.4	7.2%
Espirito Santo	0.1	0%	152.3	5.1%
Mato Grosso do Sul	63.7	3.4%	80.0	2.7%
Minas Gerais	143.4	7.8%	1,535.3	51.8%
Para	14.3	0.8%	45.7	1.5%
Parana	605.1	32.9%	45.7	1.5%
Rio Grande do Sul	136.8	8.3%	115.9	3.9%
Santa Catarina	320.0	17.4%	41.6	1.4%
Sao Paulo	202.2	11.0%	574.1	19.4%
Other	37.8	2.0%	128.1	4.3%
Total	1,841.9	100%	2,965.9	100%

latter individuals and small companies typically used the least expensive seed available, and planted either where they already had land, or where it could be obtained cheaply. Typically these lower "intensity forests" lacked adequate management, particularly intermediate thinnings. This observation needs to be considered in viewing/evaluating Brazilian plantation forests.



Seedling nursery in Brazil (photo by K. Hutton).

Pine Plantation Ownership

The pine ownership is moderately concentrated. Klabin is the largest pine plantation owner with 186,000 hectares. With the next largest Global Forest Partners (formerly UBS a forest investment group) second holding roughly 33 per cent of the Klabin area. The distribution of pine plantations in Brazil is much less concentrated than in Chile, where the top two companies own about 60 per cent of the conifer plantation resource. In Brazil, the top five pine plantation owners in total own about 20 per cent of the softwood area. This suggests that Brazil is more accessible for new forest products entrants.

Eucalyptus Plantations

The more than three million hectares of plantations - owned by Brazilian industry (pulp and paper, wood products and charcoal)-- represent the largest Eucalyptus plantation-base in the world. These plantations include some areas with the highest growth rates of any plantation-based industry. It is the result of many years of intensive genetic/silvicultural development work carried out by the pulp and paper companies initiated in the 1970's. Initial growth rates averaged 10-15 cubic metres/hectare/year in the 1960's and by the 1990's were greater than 40 cubic metres/hectare/year. Largely due to the success of growing Eucalyptus in Brazil, the industry is the world's low-cost producer of bleached hardwood kraft pulp - a leadership that is difficult to displace over the next decade or longer. During the same period, pine annual growth rates increased from 15-20 cubic metres to 25-30 cubic metres, following similar programs.

The principal Brazilian species are *E. grandis*, *E. urophylla*, and *E. saligna* plus hybrids, principally *E. urograndis*. Typically, the *E. urograndis* is located in the north and *E. grandis* in the south.



Sawmill operation in Brazil (photo by K. Hutton).

Eucalyptus Plantation Ownership

Virtually all of the eucalyptus plantations in Brazil are privately owned. More than 1.0 million hectares are owned by the pulp and paper industry, with another 1.2 million owned by steel companies or other companies for charcoal production. As indicated, the Brazilian pulp companies are rapidly establishing new plantations to support planned expansions in pulp production, so the future projections are "moving targets", as of late 2003.

Plantation Wood Supply in 2001 and Projection to 2010 and beyond - Pine and Eucalyptus

The consensus forecast of pine log availability for industrial uses now indicates an increase of 34 million cubic metres in 2001 to 45 million cubic metres in 2010 or a 3.2 per cent per annum increase. This increase appears to be overstated but is consistent with the revised forest area and the revised growth rates - allowing for the indicated utilization changes. Thus, some increases in wood product production will be feasible, and plywood will compete with lumber producers for raw materials. In practice, more pulp logs will be classified as sawlogs/plywood logs.

The "consensus" eucalyptus forecast increasing from 56 million to 101 million cubic metres in 2010 remains unchallenged and appears to be achievable overall. It might be optimistic but the improved genetics and forestry regimes have significantly improved eucalyptus yields. Largely, these increases will supply market pulp expansions.

In summary, the mature pine log supply is under pressure in various local markets, but there are still opportunities for confirmed export-oriented new developments. Although the supply situation is confining, new Brazilian opportunities will continue over the next five- ten years and more clearly in the years thereafter. For instance, some log markets have less competition, certain mill and some forests can be acquired, and some opportunities exist for improving utilization standards by recovering by-product chips in

exchange for a log supply. What is required is appropriate planning and research to search out the best most-cost-effective forest/industry options.

III FOREST INDUSTRY - related to wood products

Overview

Total Brazilian forest products exports in 2003 reached US\$ 5.2 billion of (excluding wooden furniture US\$ 0.5 billion) which pulp & paper accounted for US\$ 3.1 billion. This compares to US\$ 2.4 billion in exports for Chile. Some 40 per cent of the exports relate to wood products. By category, the major wood export were hardwood lumber 19 per cent, softwood plywood 17 per cent, softwood lumber 12 per cent and hardwood plywood 12 per cent. A detailed breakdown is shown in the table.

Lumber Industry

Pine Production

Pine lumber production in Brazil started in the early 1980's, but at a very low level, as there were few plantations available and it was a new species for Brazil. Lumber production expanded to 2.1 million cubic metres in 1990, to 4.3 million cubic metres in 1993, and to an estimated 7.9 million cubic metres in 2002.

Major Pine Lumber Producers in Brazil

The table below lists the 10 major producers of pine lumber in Brazil. It should be noted that International Paper do Brasil is started up its sawmill in northern Parana State, (capacity 150,000 cubic metres/year). Most mid-sized mills increased capacity in 2004, including IBM/Braspine which now has a combined capacity of over 300,000 cubic metres a year. Lumber production is widely distributed in Brazil among many small and medium-sized companies, unlike Chile. One of the problems cited by external competitors is the lack of market discipline among Brazilian producers and their many export agents.

For most of the larger pine lumber producers, a significant portion of their production is utilized to produce appearance grade millwork products for export: clear blocks, finger-joint blanks, finished moulding, edge-glued panels and even furniture. Some producers, such as Braspine, IBM, Arapel, Wosgrau, and Linea Parana, have integrated forward with most of their lumber production directly converted into moulding products in their own

Brazil's Forest Products Exports Value, 2002 & 2003

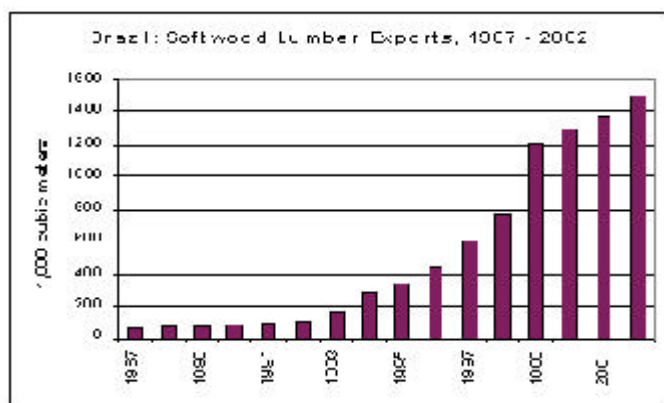
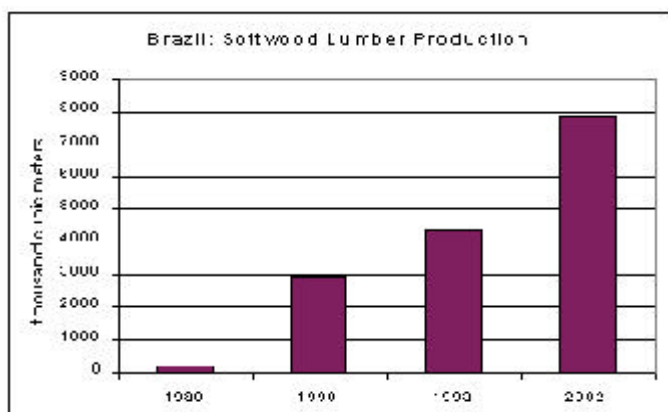
	2002	2003	% change	% of Total*
	Million US\$		Per cent	
Conifer Chips	12.3	10.1	-18%	0.5%
Non-conifer Chips	39.5	49.3	+25%	2.4%
Conifer Lumber	244.9	255.0	+4%	12.3%
Non-conifer Lumber	331.8	392.9	+18%	19.0%
Veneer	42.0	41.6	-1%	2.0%
Moulding/ Flooring	106.2	151.8	+43%	7.3%
OSB	4.0	10.6	+165%	0.5%
Particleboard	5.8	7.7	+33%	0.4%
Hardboard	64.3	69.9	+9%	3.4%
MDF	22.6	33.0	+46%	1.6%
Conifer Plywood	210.7	344.3	+63%	16.6%
Softwood plywood	228.1	245.7	+8%	11.9%
Doors	130.4	136.7	+5%	6.6%
Parquet Panels	34.9	55.0	+58%	2.7%
Other Products	262.4	266.9	+2%	12.9%
Total	1,739.9	2,070.5	+19%	100%
Pulp	1161	2,100	+81%	
Paper	895	1,000	+12%	
Total Pulp and Paper	2,056	3,100	+51%	

Source: Brazilian trade statistics, 2004

factories, principally for export to U.S. markets.

International Paper, Terranova, and Comfloresta (sawmills sold) are examples of foreign investment in the softwood lumber sector in Brazil. The Comfloresta parent is the Canadian company Brscan.

A recent sector study in 2002 estimated that 58 per cent of the pine lumber production was used in the domestic market in Brazil, and 43 per cent was exported. Most of the construction and pallet-type lumber (80 - 85 per cent) was consumed in the domestic market, while most of the pine lumber used in furniture and millwork (35 per cent) was exported.



Export Markets for Brazilian Pine Lumber

Exports were less than 200,000 cubic metres, or only about 4 per cent of production, in 1993 and then surged in 1999, exceeding 1.2 million cubic metres. By 2002, exports had increased to a record 1.5 million cubic metres, around 20 per cent of total production. These Brazilian figures include blocks, finger-joint blanks, and cut-stock, as well as lumber and fencing. The data on Brazil's lumber exports is believed to be more accurate than production data, as all exporters need to file export declarations. The Southern pine is technically competitive with radiata and is an equivalent substitute in terms of end-use applications, but is sold at a discount primarily due to the lack of Brazilian market discipline in the US.

Brazil's exports of softwood lumber are heavily concentrated on the US market. The export percentage in mid-2003 was 67 per cent to the US. Spain and Mexico were the next most important markets, with 6 per cent each, followed by Morocco with 5 per cent and then China at 3 per cent. For the US, the products are primarily clear blocks, finger-joint blanks, fencing, and appearance grade boards. There is very little shop or industrial lumber produced in Brazil, due to the lack of pruned logs and the predominance of 8-foot (2.4 metre) sawmills.

Since 1997, Brazil - the low cost producer -- has been the leading supplier of Southern Hemisphere pine lumber for the US market. Over the last 13 years, US imports of Brazilian pine lumber have moved steadily higher, with the single exception of 2001.

Wood-based Panel Industry

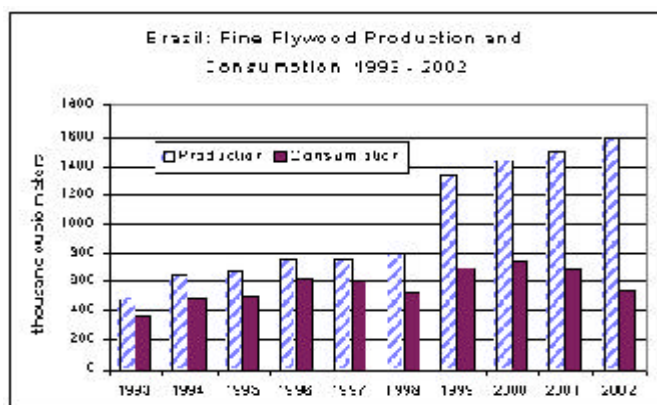
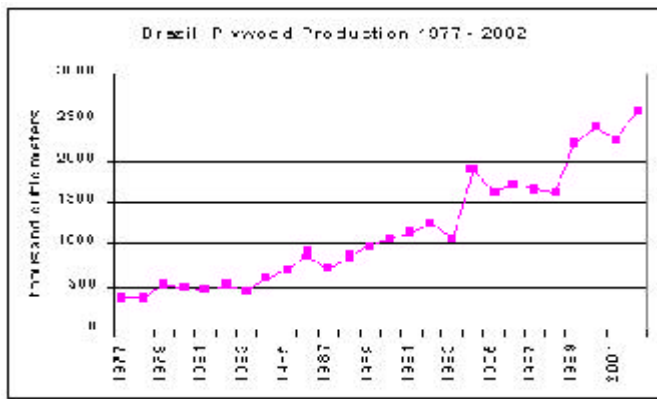
Production - all products

Brazil is the major wood-based panel producer in South America, and plywood is the most important product, accounting for 44 per cent of Brazilian panel production in 2002. Particleboard has long been a major product, and accounted for 30 per cent of panel production in 2002. MDF was not produced in Brazil until 1997, but has grown quickly and represented 14 per cent of panel production in 2002. Hardboard is the oldest composite wood panel produced in Brazil, but production has been stagnant through the 1990's and in 2002 only accounted for 9 per cent of total panel production. Production of OSB, the newest

Top 10 Pine Lumber Producers in Brazil in 2003

	City and State	Annual Output ('000m ³)
Battistella	Rio Negrinho - SC	300
Terranova	Rio Negrinho - SC	180
Imaribo	Monte Carlo - PR	120
IBM-Giacomet	Telemaco Borba - PR	100
IP Brasil	Arapoti-PR	90
Arapel	Quedas do Iguacu - PR	85
Duratex (closed)	Agudos - SP	80
Linea do Parana	Senges - PR	80
Wosgrau	Ponta Grossa - PR	80
BrasPine - Giacomet	Jagauviaiva - PR	80
Total for Top 10		1,195

Source: Industry data, 2003



panel product, commenced in 2002.

Panel exports have been dominated by plywood, which in 2002 accounted for 80 per cent of the volume of wood-based panel exports from Brazil. Hardboard was the second with just over 13 per cent of the total. MDF and particleboard have been primarily used in the domestic market, and OSB production only began last year, although exports expanded in 2003.

Plywood Production

The chart above illustrates the growth of Brazil's plywood industry over the past 25 years, total panels for all species:

Some 1.0-1.2 million cubic metres of tropical plywood is produced in Brazil annually, production has been constant for the past three years. Approximately 60-70 per cent of tropical hardwood plywood production is exported. In 2002 exports of tropical plywood were over 700,000 cubic metres, up from only 500,000 cubic metres in 1999. Exports are primarily to the US (37 per cent in 2002), the UK (25 per cent), Belgium (5.7 per cent) and Puerto Rico (5.3 per cent).

Pine plywood production has increased rapidly over the past 5 years, as shown below. Domestic consumption of pine plywood in Brazil represented more than 80 per cent of production

in 1996, but this has reduced to a record low of only 34 per cent in 2002. Reportedly 66 per cent of pine plywood production in 2002 was exported, and that percentage will likely be even higher in 2003.

Outlook for Pine Plywood Production in Brazil

In a recent industry report, it was forecast that pine plywood production in Brazil would grow at an average annual rate of 2.7 per cent through 2010, to around 1.8-1.9 million cubic metres. This is an increase of about 300,000 cubic metres over 2001, or equivalent to a world-scale softwood plywood mill in the US. The reported industry capacity for pine plywood in Brazil totals more than 2.4 million cubic metres. Most likely, pine plywood production has already reached 2.0 million cubic metres in 2003, based on export data. Log supply may be a limiting factor, but success in the export markets may stimulate some upgrades to existing mills, to improve recovery, and at least in some cases plywood mills may prove to be competitive with sawmills in purchasing the available logs.

No new world-scale plywood mills are being built or announced for Brazil. The two major producers - Guararapes and Sudati - are investing in upgrades and incremental expansions, but seemingly with a "no debt philosophy". Most expansion and upgrades have been in incremental steps - with smaller-scale Brazilian equipment -- rather than in large units. The only foreign investment in veneer/plywood in Brazil has been by Boise (US\$19 million in 2002) although their main focus is eucalyptus veneer, not plywood. Other entries in Brazilian plywood from outside interests seem highly unlikely without Brazilian alliances.

IV SUMMARY

These notes provide an initial overview from the 7-day study tour that visited the major producing regions in Brazil, around the Curitiba region. There is much more to review and with more details to be provided. A new tour is being organized for 2005. Brazil is very interested in overseas visitors, the industry likes North Americans and fellow Southern Hemisphere plantation partners, and we believe Brazil will benefit by developing new business relationships. There are continuing investment opportunities as overseas investors enter the forestry sector. A large percentage of the Brazilian wood products exports go to the US and Asia, but largely through agents. There is an opportunity to develop new understandings and to establish direct business connections.

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