

Tropical Timber Market Report since 1990

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Snapshot

In this edition of the *Tropical Timber Market Report (TTMR)*, our market correspondents from tropical consumer and producer regions have focused almost exclusively on plantation forests. Over the past few months, ITTO has received a number of questions on plantation forests and plantation investment from our *TTMR* readers. While this report may not address all of the questions posed by our readers, it aims to offer an overview of the topical issues on plantations from our market correspondents' perspectives and recent price trends where available.

We note the increased reforestation efforts in the tropics, including those launched as countries anticipate benefits from greater carbon offsetting from forests in a post-Kyoto Protocol regime and to boost local supplies of raw materials. In addition, given the ongoing economic downturn, international and local investors have been using plantation forests as one of the mechanisms to diversify their investment portfolios. Despite the benefits of investing in plantations, the reports also indicate that such investments come with their share of risks.

While ITTO continues to promote sustainable forest management in the world's tropical natural forests, it realizes that plantations play an important role in contributing to sustainable land use and land-use change. As such, it is hoped that the following report provides some useful insights and that items of particular interest to you can be pursued in future reports and studies sponsored by ITTO and other organizations.

In our next issue, we will return to our normal reporting format and provide readers with an update on the tropical timber market.

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West and Central Africa show some progress on plantation investment

West and Central Africa have seen an upturn in plantation investment in recent years, although attracting finance initiatives in this region remains largely underdeveloped compared to other tropical timber producer and consumer regions. From an investor's perspective, the West and Central African regions have higher risks, with less possibility for quick returns from plantation growth. From a government perspective, plantations are an attractive investment, not only for reforestation initiatives, but also for drawing benefits from emerging issues such as reducing emissions from deforestation and degradation (REDD).

With the exception of Ghana and Cote d'Ivoire, most efforts in the Central and West African forest sector have aimed to reduce log extraction and to certify forest areas. There is regular harvesting of plantations in Cote d'Ivoire; however, the competition for export from low cost lumber in South America has made the country's plantation resources not financially viable at the present time. Nigeria also has some extensive areas of plantation teak and a very regular log export business, much of it reportedly being regular shipments for Indian buyers at prices that remain very stable over long periods.

GHANA

Greening Ghana

Ghana was once one of Africa's largest timber exporting countries south of the Sahara. However, illegal logging has eliminated about 85% of the country's forest cover, while forest fires have caused an estimated annual loss of about three percent of the country's Gross Domestic Product (GDP) during the last 15 years. Illegal logging and wildfires particularly in the transitional and savannah zones have been the most significant cause of deforestation and forest degradation.

To address the continued deterioration of the forest, the government has implemented various large scale commercial plantation programmes throughout the country. At various forums on forestation and reforestation, Ghanaian private individuals, members of academic institutions, civil servants and key forestry stakeholder groups have been informed about forest policy formulation, implementation and decision-making to restore degraded forests in the country.

In 2001, the government officially launched the National Forest Plantation Programme under the Forestry Commission, in support of the government's massive forest plantation initiative aimed at creating 20,000 hectares of degraded forest every year throughout the country. To achieve this objective, the programme was supported by the Forest Plantation Fund set up by the government. The plantation programme was unique in that it involved communities in almost every aspect, especially the modified Taungya scheme, which offered 40% of the proceeds to the participating rural farmers (see also *TTMR* 14:11). The modified 'taungya' system allowed degraded

forest reserves to be reforested with selected tree species inter-cropped with food crops. Degraded forests have been re-afforested annually with mixed species of cedrella, emire, ofram, mahogany, teak and mangonia, all endangered timber species. It is hoped efforts to restore the forests would improve efficiency of the sector, protect the forest resource to reduce the current shortage of raw materials in the country and reduce poverty among rural communities. It is also expected that about 80,000 new jobs would be created annually at the community level.

The Minister of Lands and Natural Resources, Alhaji Collins Dauda, launched this year's 'Greening Ghana Day' at Yefri near Nkoranza North District in the Brong Ahafo Region. Greening Ghana Day is an annual event aimed at creating awareness about environmental issues and also encouraging the public to embark on tree planting initiatives, especially during the rainy season. The initiatives have been well received by communities, schools and various institutions. During this year's event, the Minister made a passionate appeal to youth and key institutions to engage in a massive tree planting exercise throughout the country to help restore depleted and degraded forest resources. It is estimated that if the 5,170,916 school children from primary and senior high schools plant at least one tree per quarter per year under the Greening Ghana programme, about 20,683,664 trees would be planted every year.

In a recent development, the Minister of Lands and Natural Resources has hinted it plans to promote the development of plantations in the transitional zones of the country to help boost agricultural production. Minister Dauda announced commercial plantations would be promoted in the country's transitional zones to help keep the country's economy on track. He appealed to both chiefs and land owners to support the government to achieve its goal of making the country self-sufficient in its raw material supply. The devastating effects of forest degradation, especially during the past two decades, were beginning to be seen in the deterioration of primary timber species such as odum, mahogany, sapele and many others, resulting in the drastic reduction in the raw material base of the timber industry, a loss of biodiversity and the drying up of water bodies including in tourist areas, all of which are all important sources of national revenue.

Sunshine Technology to invest in plantation timber

According to *OTAL*, Sunshine Technology, a commercial forestry plantation company, recently visited Ghanaian officials to discuss possible investment opportunities in the timber industry. A delegation from the company, led by Sunshine's Chief Executive Officer, held a closed door meeting with Ghana's President Mills. It is reported the company is assessing sites in Ghana and Cote d'Ivoire covering approximately 50,000 hectares.

West Africa Log Prices

West Africa logs, FOB	€ per m ³		
Asian market	LM	B	BC/C
Acajou/ Khaya/N'Gollon	205	205	153
Ayous/Obéché/Wawa	190	190	145
Azobe & Ekki	200	200	122
Belli	215	215	-
Bibolo/Dibétou	150	135	-
Bubinga	533	457	381
Iroko	257	250	200
Okoume (60% CI, 40% CE, 20% CS) (China only)	160	-	-
Moabi	270	270	206
Movingui	170	140	137
Niove	130	130	-
Okan	180	180	122
Padouk	300	290	235
Sapele	225	220	150
Sipo/Utile	260	240	215
Tali	220	220	114

West Africa Sawnwood Prices

West Africa sawnwood, FOB	€ per m ³	
Ayous FAS GMS	300	
Fixed sizes	360	
Okoumé FAS GMS	290	
Sel. & Bet. GMS Italy	215	
Sel. & Bet. fixed sizes	-	
Sipo FAS GMS	486	
FAS fixed sizes	-	
FAS scantlings	500	
Padouk FAS GMS	540	
FAS scantlings	555	
Strips	390	
Sapele FAS Spanish sizes	390	
FAS scantlings	460	
Iroko FAS GMS	455	
Scantlings	455	
Strips	350	
Khaya FAS GMS	380	
FAS fixed	420	
Moabi FAS GMS	480	
Scantlings	490	
Movingui FAS GMS	300-320	

Ghana Log Prices

Ghana logs, domestic	US\$ per m ³	
	Up to 80cm	80cm+
Wawa	110-120	125-155
Odum Grade A	160-170	175-185
Ceiba	90-100	105-120
Chenchen	70-95	100-120
Khaya/Mahogany (Veneer Qual.)	80-100↓	110-135
Sapele Grade A	135-150	155-175
Makore (Veneer Qual.) Grade A	125-135	140-166

Ghana Sawnwood Prices

Ghana Sawnwood, FOB	€ per m ³	
FAS 25-100mm x 150mm up x 2.4m up	Air-dried	Kiln-dried
Afrormosia	855	-
Asanfina	500	555
Ceiba	195	260
Dahoma	300	390
Edinam (mixed redwood)	420	430
Emeri	330	400
African mahogany (Ivorenensis)	595	665
Makore	520	610
Niangon	495	640
Odum	645	720
Sapele	540	590
Wawa 1C & Select	260	285

Ghana sawnwood, domestic	US\$ per m ³	
Wawa 25x300x4.2m	242	
Emeri 25x300x4.2m	325	
Ceiba 25x300x4.2m	215	
Dahoma 50x150x4.2m	280	
Redwood 50x75x4.2m	290	
Ofram 25x225x4.2m	330	

Ghana Veneer Prices

Rotary Veneer, FOB	€ per m ³	
	CORE (1-1.9mm)	FACE (<2mm)
Bombax	320	350
Ofram, Ogea & Otie	315	350
Chenchen	315	350
Ceiba	325	345
Mahogany	400↓	450

The above prices are for full sized panels, smaller sizes minus 15%. Thickness below 1mm would attract a 5% premium.

Rotary Veneer, FOB Core Grade 2mm & up	€ per m ³	
Ceiba	245	
Chenchen & Ogea	295	
Essa	285	
Ofram	312	

Sliced Veneer, FOB	€ per m ²	
	Face	Backing
Afrormosia	1.19	1.00
Asanfina	1.50	0.88
Avodire	1.20	0.80
Chenchen	1.00	0.55
Mahogany	1.40	0.85
Makore	1.45	0.85
Odum	1.80	1.40

Ghana Plywood Prices

Plywood, FOB	€ per m ³			
B/BB, Thickness	Redwoods		Light Woods	
	WBP	MR	WBP	MR
4mm	560	475	500	370
6mm	340	325	335	285
9mm	365	305	290	270
12mm	300	295	270	265
15mm	310	300	280	275
18mm	300	290	285	255

Grade AB/BB would attract a premium of 5%. BB/BB would be 5% less, C/CC 10% less and CC/CC 15% less.

Ghana Added Value Product Prices

Parquet flooring 1st	FOB € per m ²		
	10x60x300mm	10x65-75mm	14x70mm
Apa	12.00	14.47	17.00
Odum	7.80	10.18	11.00
Hyedua	13.67	13.93	17.82
Afrormosia	13.72	18.22	17.82

Grade 2 less 5%, Grade 3 less 10%.

Report from Southeast Asia

Plantations in Southeast Asia show dominance by oil palm and rubber trees

Government officials in South East Asia have shown strong commitment to plantation development mostly for agricultural purposes. While there has been some controversy over the growing of these species in Malaysia, Indonesia and Myanmar, government and private sector investment has continued to be focused on the development of palm oil, rubber and acacia plantation resources particularly in recent years.

MALAYSIA

Minister seeks to raise plantation productivity

The Malaysian Minister of Plantation Industries and Commodities, Mr. Bernard Dompok, said Malaysia needs to maximize major plantation crop yields. Oil palms, rubber trees and cocoa trees accounting for the bulk of the crops, which the Minister is seeking to raise yields without expanding Malaysia's existing planted land area. According to *Bernama*, he said the Ministry would encourage 'better planting materials, good agricultural practices (GAP) and enhanced research and development (R&D)'.

Currently, more than 70% of available agricultural land is already planted with oil palms. The national crude palm oil (CPO) yield stands at 4 tons per hectare annually. However, some plantations are able to obtain a yield of 6 to 7 tons per ha. A study conducted by the Malaysian standard organization, SIRIM Bhd, revealed that 2.65 million hectares of oil palm trees could yield up to 7 million tons of oil palm trunks and 26.2 million tons of oil palm fronds annually. Oil palm fronds are a rich source of fiber for the manufacture of MDF and other panel products. The Minister continues to be hopeful that the national CPO yield can be raised to 6 tons per hectare, thus obviating the need to plant another 2 million hectares of oil palms.

Rubber trees have historically been a popular plantation species in Malaysia. The current yield of natural rubber latex in Malaysia is 1.4 tons per hectare annually, compared to Thailand, which has shown higher yields at 1.8 tons per hectare per annum. Currently, there are 1.24 million hectares of rubber trees in Malaysia. However, the Malaysian Rubber Board (MRB) has launched the latest high-yield clone, RRIM 3001, that could yield 2 tons of natural rubber latex per hectare per year. The MRB is also working on creating future rubber clones that could yield at least 2.0 m³ of rubberwood per tree to meet the demands of the Malaysian furniture industry.

For timber under the country's forest plantation programme, the Ministry is looking to produce 75 million m³ of timber by 2020 to meet the raw material requirements of the Malaysian timber industry. Soft commodities accounted for RM112.43 billion of the country's exports in year 2008, or 17 % of Malaysia's total exports.

INDONESIA

Report explores investments in plantations for raw material supply to pulp and paper industry

Researchers recently analyzed and questioned the extent to which Indonesian plantations are used in the Indonesian pulp and paper industry. A working paper by Romain Pirard (CERDI, France) and Christian Cossalter (CIFOR), explored the resources of five major plantations across the Indonesian island of Kalimantan, which are expected to have a total standing volume of 1,013,707 m³ to 1,705,027 m³ of pulpwood in 2009 and 1,087,109 m³ to 2,063,189 m³ in 2010. The five plantations are associated with the following companies: ITCI Hutani Manunggal; Surya Hutani Jaya; Finnantara Intiga; Korintiga Hutani; and Hutan Rindang Banua, which has remained a dormant company. The following provides an overview of each company's resources.

ITCI Hutani Manunggal's plantation consists mainly of *Acacia mangium*. The concession also includes an additional 3,000 hectares of sengon. At least 4,000 hectares of acacia planted are for the furniture market in Surabaya. The yield of the concession is estimated at about 80 air-dried tonnes (ADT) per hectare of pulpwood.

Surya Hutani Jaya was last known as a PT Arara Abadi under the Sinar Mas group. Since 2004, the company has harvested for 2,878 hectares of plantation harvested at an average age of 6.7 years. The company had 49,000 hectares of very degraded natural forests in its concession area. *Acacia mangium* was the main species planted and *Gmelina arborea* was planted on a much smaller scale in high pH soil areas.

For Finnantara Intiga, initially 157,000 hectares of a total concession area of 299,000 hectares were not permitted to be replanted or converted. Three species were planted by the company for pulpwood. They are *Acacia mangium*, (85% to 90% of the total area), *Acacia crassicaarpa* and *Eucalyptus pellita*.

The Korintiga Hutani nursery produced sufficient rooted cuttings and seeds for a yearly planting programme of 7,000-8,000 hectares. Eucalypts may be planted on larger areas in the future as their wood is considered better for plywood and as mass production of clones seems to give satisfactory results. However, *Acacia mangium* and *Eucalyptus pellita* will remain the main species and are harvested at an average age of seven years for pulpwood production.

MYANMAR

Myanmar promotes plantation establishment

Plantations for commercial use, local supply, industrial use and watershed management have been established in Myanmar. Myanmar's Statistical Year Book (2007) shows 525,785 acres of plantations were established from 2000 to 2007. Plantation type, area composition and species composition can be seen in the table below.

Plantation type	Area Composition	Species Composition
Commercial	270652 ac (52%)	Teak 221659 ac (82%)
		Pyinkado 25068 ac (9%)
		Padauk 1985 ac (1%)
		Others 21940 ac (8%)
Local Supply	70276 ac (13%)	Fuelwood 65776 ac (93%)
		Mangrove 5100 ac (7%)
Industrial	52985 ac (10%)	Eucalyptus 40680 ac (77%)
		Tung Oil tree 12355 ac (23%)
Watershed	187845 ac (25%)	Unclassified 15985 ac
Total	525758 ac (100%)	

Table 1: Overview of forest plantations in Myanmar (FY2000 to 2007), (Note: figures above in acres where 1 acre= 0.40468 ha), Source: Statistical Year Book 2007, Central Statistical Organization.

Plantations in Myanmar were established for various objectives. Commercial plantations are mainly designated for domestic timber supply and exports. Plantations designated to supply the local market cover 70,276 acres (28,440 ha) for fuel wood, posts and poles. Industrial type-plantations of 52,985 acres (21,442 ha) are for paper mill supply. Plantations for watershed management (catchment protection) cover 187,845 acres (53,356 ha) to prevent erosion. Teak accounts for the largest plantation area of 221,659 acres (89,702 ha). The objective of these plantations is to help increase production while reducing pressure on natural forests.

Establishing systematic teak plantations began in 1856 using the Taungya method, an afforestation method where crops are interspersed with trees on cleared land. However, the extent of plantations at that time was very limited to small scale compensatory plantings to enrich and supplement the growing stock. The post-World War II population boom resulted in an increased use of timber products. Changes in land-use patterns and the deterioration of natural forests further exacerbated pressure on forests. To address the situation, plantations were established to expand the modest compensatory plantings into large scale block plantations since 1962.

From 1896, plantation establishments were systematically organized by the Forest Department (FD). Since 1984, FD had been establishing 30,000 hectares of plantations annually. The total teak plantation area from 1896 to 2007 was 384,123 hectares. Other species planted during the

same period were: pyinkado (61,899 hectares); padauk (17,426 hectares); pine (21,685 hectares); and others (421,376 hectares). The teak plantation area is about 18% of the global teak plantation resources.

It is not clear how much plantation timber has been harvested and traded in Myanmar. Most people from the timber trade tend to connect plantations with natural forests. This perception is due to the observation that teak and other valuable species are planted to compensate for the natural forests. Sales of poles and posts are the only way to trace teak from plantations in the timber trade. In other cases, it is necessary to devise a statistical system by respective departments to differentiate which trees are from plantations and which are from natural forests.

The Ministry of Forestry formulated a Special Teak Plantation Programme (STPP) in 1988, designed to establish 8,100 hectares of plantations every year for 40 years, with a view to creating 324,000 hectares of teak plantations. The Forest Department estimated that, after the year 2038, annual sustainable teak production could be as high as 1.8 million m³.

In the past, establishment of teak plantations and harvesting of teak has been conducted solely by the State. According to Myanmar Forest Law of 1992, 'A standing teak tree wherever situated in the State is owned by the State'. However, in 2005, the Myanmar government granted permission to local investors to establish teak plantations. This has been a great opportunity for local entrepreneurs. Under this scheme, the government leases forest land to local investors to plant teak. The investment returns from teak plantations are shared between the government and the investor on a 20:80 basis. Increasing demand for teakwood, coupled with technical advances in processing led to greater participation from the private sector in establishing plantations. It is reported that many private investors are now involved in plantation investment in Myanmar.

There are also a number of challenges facing investors in the country. Long-term investments require proper planning, appropriate agro-forestry practices mixed with short-term tree planting. To combat illegal activities, law enforcement, patrolling and income generation in the community is required. To reduce the monoculture effect, a buffer zone in the plantation area needs to be established and mixed species need to be planted. It is suggested that investors should proceed with caution before investing in teak plantations, as improvement of teak quality and maintenance and further research on utilization of small diameter logs is required.

Malaysia Log Prices

Sarawak log, FOB	US\$ per m ³
Meranti SQ up	226-250↓
Small	210-241↓
Super small	200-224
Keruing SQ up	216-228
Small	190-220↑
Super small	166-196↑
Kapur SQ up	206-231
Selangan Batu SQ up	178-215
Pen. Malaysia logs, domestic (SQ) US\$ per m ³	
DR Meranti	231-250
Balau	297-326
Merbau	319-352
Rubberwood	47-81↑
Keruing	214-230

Peninsular Malaysian meranti logs are top grade and are used for scantlings for the EU. Their prices are higher than Sarawak's.

Malaysia Sawnwood Prices

Malaysia Sawnwood, FOB	US\$ per m ³
White Meranti A & up	280-311
Seraya Scantlings (75x125 KD)	437-450↓
Sepetir Boards	249-271
Sesendok 25,50mm	346-364
Kembang Semangkok	294-317
Malaysian Sawnwood, domestic	
Balau (25&50mm, 100mm+)	325-345
Merbau	570-509↓
Kempas 50mmx(75, 100 & 125mm)	260-300
Rubberwood 25x75x660mm up	197-247↑
50-75mm Sq.	238-270↑
>75mm Sq.	260-289↑

Malaysia Plywood Prices

Malaysia ply MR BB/CC, FOB	US\$ per m ³
2.7mm	408-470↓
3mm	386-416↓
9mm & up	332-404↓
Meranti ply BB/CC, domestic	
3mm	381-422↓
12-18mm	315-344↓

Other Malaysia Panel Prices

Malaysia, Other Panels, FOB	US\$ per m ³
<i>Particleboard</i> Export 12mm & up	226-249↓
Domestic 12mm & up	211-228↓
<i>MDF</i> Export 15-19mm	281-313↓
Domestic 12-18mm	270-288↓

Malaysia Added Value Product Prices

Malaysia, Mouldings, FOB	US\$ per m ³
Selagan Batu Decking	531-541
Red Meranti Mouldings 11x68/92mm x 7ft up	
Grade A	546-559
Grade B	499-508

Malaysia Furniture and Parts Prices

Malaysia, Rubberwood, FOB	US\$ per piece
Semi-finished dining table	
solid laminated top 2.5'x4', extension leaf	58-74
As above, Oak Veneer	65-79
Windsor Chair	57-59
Colonial Chair	55-60
Queen Anne Chair (soft seat) without arm	55-63
with arm	55-64
Chair Seat 27x430x500mm	43-48
Rubberwood Tabletop	US\$ per m ³
22x760x1220mm sanded & edge profiled	
Top Grade	551-583
Standard	536-554

Indonesia Log Prices (domestic)

Indonesia logs, domestic prices	US\$ per m ³
Plywood logs	
Face Logs	187-230↑
Core logs	169-202
Sawlogs (Meranti)	174-235
Falcata logs	142-176
Rubberwood	39-65↑
Pine	157-196
Mahoni (plantation mahogany)	468-494

Indonesia Sawnwood Prices

Indonesia, construction material, domestic	US\$ per m ³
Kampar (Ex-mill) AD 3x12-15x400cm	171-1890↑
KD	194-228↑
AD 3x20x400cm	217-240
KD	221-248
Keruing (Ex-mill) AD 3x12-15x400cm	233-247
AD 2x20x400cm	219-237
AD 3x30x400cm	200-219↑

Indonesia Plywood Prices

Indonesia ply MR BB/CC, FOB	US\$ per m ³
2.7mm	397-454↓
3mm	353-395↓
6mm	312-376↓
MR Plywood (Jakarta), domestic	
9mm	251-262↓
12mm	243-253↓
15mm	232-246↓

Other Indonesia Panel Prices

Indonesia, Other Panels, FOB	US\$ per m ³
<i>Particleboard</i> Export 9-18mm	216-225
Domestic 9mm	191-203↓
12-15mm	183-194
18mm	173-185
<i>MDF</i> Export 12-18mm	249-262↓
Domestic 12-18mm	231-242↓

Indonesia Added Value Product Prices

Indonesia, Mouldings, FOB	US\$ per m ³
Laminated Boards Falcata wood	297-309↓
Red Meranti Mouldings 11x68/92mm x 7ft up	
Grade A	487-521
Grade B	442-463

Myanmar Log Prices (natural forests)

Teak Logs, FOB	€ Avg per Hoppus Ton (traded volume)	
<i>Veneer Quality</i>	<u>Jul</u>	<u>Aug</u>
2nd Quality	-	-
3rd Quality	-	4,550 (4 tons)
4th Quality	3,385 (21 tons)	3,509 (10 tons)
<i>Sawing Quality</i>	<u>Jul</u>	<u>Aug</u>
Grade 1 (SG-1)	2,307 (55 tons)	2,381 (40 tons)
Grade 2 (SG-2)	1,842 (59 tons)	1,895 (56 tons)
Grade 3 (SG-3)	-	-
Grade 4 (SG-4)	1,915 (178 tons)	1,652 (196 tons)
Grade 5 (SG-5) Assorted	1,498 (152 tons)	1,678 (146 tons)
Grade 6 (SG-6) Domestic	1,260 (94 tons)	1,310 (80 tons)
Grade 7 (ER-1)	1,072 (57 tons)	982 (76 tons)
Grade 8 (ER-2)	-	-

Hoppus ton=1.8m³. All grades, except SG-3/5/6, are length 8' x girth 5' & up. SG-3/4/6 are girth 4' & up. SG-3 grade is higher than SG-4 but with lower girth and price.

Prices differ due to quality or girth at the time of the transaction.

Logs, FOB	€ Avg per Hoppus Ton (traded volume)
Pyinkado (export)	377 (381 tons)
Gurjan (keruing-exp)	204 (389 tons)
Tamalan	338 (20 tons)
Taukkyant	212 (17 tons)

Report from South Asia

INDIA

Plantation areas expand in India

During the 'Van Mahotsav Festival' or 'Festival of Forests', a large number of trees are planted in every state of the country. The forest department also helps local communities and village-level panchayats to plant millions of saplings, which are mostly distributed free of cost. For planting in urban areas, the saplings are distributed at nominal charge of about Rp. 1 per sapling (TTMR 13:15).

In conjunction with the event, the Karnataka Forest Department decided to promote sandalwood cultivation in the district of Chitradurg by distributing 50,000 saplings of sandalwood. This was achieved as a result of an amendment to the Karnataka Forest Rules of 1969, enabling certain norms relating to sandalwood cultivation by private parties to be changed. Previously, those cultivating sandalwood saplings had to sell harvested trees only to the state forest department, thus reducing the incentive for people to cultivate sandalwood. The amendment allows the sale of sandalwood directly to semi-government agencies, making it much easier and faster to sell products in the market. To avoid smuggling and illegal trade, the department is involved in the sale of the wood and keeps records of timber sold. The government is generating incentives for farmers to cultivate this species by offering a 75% subsidy to establish these plantations. Similar programmes are being carried out in other districts of Karnataka.

The establishment of plantations in India has had a mixed history. In 1956, the price of sandalwood was Rs.6 per kilo compared to the current value of up to Rs.6000+ per kilo. Based on the guidelines of the present government's import-export policy, sandalwood logs can only be imported under license. This is a big deterrent for sandalwood-based factories from getting raw materials and for thousands of handicraft workers who depend on income from sandalwood carvings. The present restriction on imports of this timber has created scarcity of raw material for the artisans. This shortage also encourages smuggling of sandalwood trees from government as well as private entities. All timber imports in India with the exception of sandalwood are under the Open General License (OGL), meaning these are sold without tax. Imports of sandalwood logs could be stimulated if these could be designated as eligible for OGL to bring down prices and stop illegal smuggling of the species. Given the current shortage of raw materials (if corrective measures are not taken), many experts believe the handicraft business will vanish.

One socio-religious institution, BAPS, has taken a bold decision to plant 100,000 saplings of *Santalum album* in the land attached to their temples and have already made strides to undertake planting activities. In India, temples

have a large use for sandalwood and the newly planted trees are expected to help meet these needs. Captive plantations by companies manufacturing mouth freshener – pan masalas – have also been established in Madhya Pradesh in and around Katni where over 200,000 saplings have been planted.

Santalum album has been planted in North Gujarat around Mehsana, South Gujarat around Valsad and in coastal areas of South Saurashtra. These areas are not natural areas for sandalwood. Experimental plantings are under study, although some eucalypt plantations in experimental areas have already shown success in the State of Gujarat. The state government and its Forest Department are fully supportive of encouraging plantations to boost local incomes, supply raw materials to wood working units and provide poles to the building industry.

On the contribution of plantations to combating climate change, *DNA India* says that the State of Haryana is committed to combat climate change and 'green' Haryana. The Chief Minister has announced a policy to promote forest cover in the state. The present tree cover in Haryana is 7.13%, and is envisaged to increase to 10% by 2010 and 20% by 2020. Apart from government efforts, other private entities are also establishing plantations of eucalypt, poplar and acacia to supply raw materials. Those establishing plantations also receive assistance and the state government has pre-identified 800 villages in the state for afforestation and poverty alleviation activities. Innovative initiatives in agro-forestry have been introduced for the benefit of small and marginal farmers while augmenting the supply of raw materials to the wood-based industries in the state.

Similarly, companies in other states also keep establishing timber plantations to meet their requirements for raw materials. ITC Ltd has by now almost 100,000 hectares of eucalypts, casuarinas and subabul in Andhra Pradesh for making paper pulp. Mangalam Timber Ltd, an old player in MDF manufacturing has initiated forestry activities as early as 2001 and has now some 50,000 acres under eucalypts in Orissa, Chhatisgarh and Andhra Pradesh. The emphasis is to be independent and to ensure steady supply of logs for MDF production. Many businesses are establishing plantations in order to be self sufficient in their raw material supply and to stimulate measures to combat climate change.

Reliance Industries also have approximately 7,500 acres of mango and teak plantations to improve the environment around their refineries near Jamnagar. Plywood factories in Haryana and Uttaranchal draw most of their requirements from poplar and eucalypt agro-forestry crops. A particleboard manufacturing plant of 300,000 m³ per year capacity is being established by the Associate Lumber group owned by the Agicha and Darvesh families in the State of Karnataka. The group is also planning to establish 25,000 hectares of plantations to meet their raw material requirements.

There have been many tree planting activities along canals, railway tracks, highways and the harvest from these plantings have significantly augmented timber supplies in the country. The antique furniture reproduction units in Rajasthan are getting most of their supplies from Canal bank Sissoo (*Dalbergia sissoo*) plants. *Acacia mangium* and *Melia dubia* plantations in Kerala and Karnataka are providing good timber for doors, windows and building joinery components. Bamboo and eucalyptus are meant for the paper and rayon pulp industry. Kerala has the largest share of teak plantations. Maharashtra, Madhya Pradesh, Gujarat Orissa and other states also keep expanding teak plantations and the harvested logs are sent to government forest depots for auction.

Since India has yet to reach its forest cover of 33% of the land area, state governments do not cut trees in natural forests. India's demand for teak is much more than what is available presently - it permits imports of teak and other timber freely without any license or permit requirements. Below are countries which export teak to India (from sources other than Myanmar) at current C&F prices for Indian ports.

Source of Logs	Price (C&F per m ³)
SUDAN (GREEN/DRY)	USD 585 to 535
COTE D'IVOIRE	USD450 to 500
THAILAND	USD400 to 450
PAPUA/ NEW GUINEA	USD400 to 425
GHANA	USD375 to 400
BENIN	USD360 to 375
TOGO	USD350 to 375
ECUADOR	USD325 to 350
COSTA RICA	USD300 to 325
PANAMA	USD275 to 300

Table 1: Prices of imported teak (per m³, C&F Indian ports)

Measurement systems for plantation teak are different, depending on the exporting country. Some countries allow a 10 cm deduction in girth to compensate for bark and sapwood, while others allow 6 cm or only 2 cm. Therefore, if the importers are not well versed in the matter, they suffer. Teaknet plans to take up the matter of uniform specifications, measurement systems and allowances for sapwood and bark and some guidelines on uniform price vis-à-vis classifications. The local practice in India is for the logs to be measured under the sap, whether it is teak or another timber. To protect buyers and consumers, the ideal system would be to measure logs under the sap so allowances for sapwood and bark will not arise. It is hoped that Teaknet will take up this matter in due course, possibly at the international seminar planned by them during the month of November 2009 (see *TTMR* 14:13).

India Sawnwood Prices (domestic)

Indian sawnwood (Ex-mill) Teak (AD)	Rs. per ft ³
Plantation Teak A grade	1800-3250
Plantation Teak B grade	1650-2800
Plantation Teak C grade	900-1350

India Sawnwood Prices

Sawnwood, (Ex-mill) (AD)	Rs. per ft ³
Merbau	1500
Balau	1250
Kapur	850
Red Meranti	700
Bilinga	650
Radiata Pine (AD)	350-450

Sawnwood, (Ex-warehouse) (KD)	Rs per ft ³
Beechwood	1200
Sycamore	1250
Oakwood	1300
American Walnut	2250
Hemlock clear grade	950
Hemlock AB grade	800
Western Red Cedar	1250

India Plywood Prices

Plywood, (Ex-warehouse) (MR Quality)	Rs per ft ²
4 mm	20
6 mm	29
12 mm	42
15 mm	51
18 mm	61

Report from Latin America and the Caribbean

Brazil benefits from greatest investor interest in plantations

Much investment in plantations has been centered on Latin America, given its attractive investment environment. Brazil, Peru, Mexico and Guyana have all experienced growth in their plantation areas in the last few years. In particular, institutional and individual investors are drawn to Brazil, as it has shown promise in generating attractive returns for investors' portfolios.

BRAZIL

Eucalypts and pine dominate plantations in Brazil

Forest plantations play a fundamental role in the socio-economic development of the country, contributing to the production of goods and services, adding value to forest products and generating jobs, foreign exchange, taxes, and income. Yet, it is estimated that forest plantations account for about only 1.5% of the existing forests in Brazil, although they play a major role in forest products markets accounting for an estimated 70% of the total industrial roundwood production.

Total plantations in the country are estimated at 6,582,700 hectares in 2008, about 93% of which comprises eucalypt and pines, with the remaining 7% from other species (notably wattle, rubber tree, paricá, teak, Parana pine and poplar).

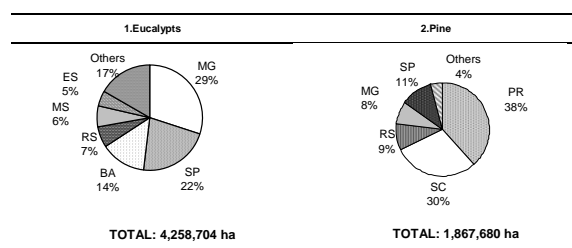
The main planted species in Brazil are mainly investments for profit; afforestation and reforestation programmes of forest companies are geared to supply industrial roundwood for the well-established and diversified forest products industry of the country (e.g., pulp and paper, pine lumber/sawnwood, reconstituted wood panels, pig-iron and steel industry, and energy wood).

Such plantations are oriented to supply the industrial roundwood needs in the country, for both the domestic and export markets. The high productivity of plantations, relatively low production costs, extensive land area and advanced technology in Brazil gives the country comparative and competitive advantages in establishing

plantation forests, making it an important producer of fast-growing plantation forest products.

While plantation sites set aside for pine and eucalypts range from those in degraded areas to those for agriculture purposes, the plantations are generally geared for production of industrial roundwood. It is worth mentioning that the growing importance of partnership forest plantation programmes between large corporations and small to medium-size landowners in the last few years.

Forest plantations with eucalypts and pine were estimated at 6,126,000 hectares in 2008. Eucalypts accounted for 4,259,000 hectares, while pines accounted for 1,867,000 hectares. Graph 1 below shows the distribution of eucalypt and pine planted forest in the main Brazilian states.



Graph 1: Distribution of eucalypt and pine planted forests by state in Brazil, 2008. Source: ABRAF and STCP, 2009.

Note: MG (Minas Gerais), SP (Sao Paulo), BA (Bahia), RS (Rio Grande do Sul), MS (Mato Grosso do Sul), PR (Paraná), SC (Santa Catarina), ES (Espírito Santo), PR (Paraná), SC (Santa Catarina).

A total of 1,439,276 ha of planted pines in Brazil in 2008 (77%) are concentrated in the South (states of RS, SC and PR). The Southeast region comprises 56% of eucalypt planted area in the country (ES, SP and MG). Minas Gerais has the largest combined eucalypt and pine planted area in Brazil (1,423,212 ha), followed by São Paulo (1,142,199 ha).

The largest Brazilian companies establishing forest plantations are associated to the ABRAF (Brazilian Association of Forest Plantation Producers). These companies together account for 55% of the total planted area in the country. As for planted forests by industrial segment among ABRAF members, the largest area belongs to companies in the pulp and paper segment (76% pine and 70% eucalypt). As for pine, the segments of reconstituted panels and iron and steel industry concentrate, respectively, account for 15% and 9% of the planted area. On the other hand, for eucalypts, 21% of the area belongs to the iron and steel industry, and 6% to reconstituted panel companies among ABRAF members.

Most companies of the forest sector were affected by the global economic crisis since the last quarter of 2008. As future investments in the planted forest sector depend on the recovery of the economy, investments in forest plantations for the next few years are expected to be reduced with planting in 2009 being possibly the most affected.

Although eucalypts and pine are the dominant planted species in Brazil, other species such as acacia/wattle, rubber trees, paricá and teak account for a significant part

of the so-called other species. They also deserve attention due to their economic importance and recent expansion of their plantation area. Table 1 presents forest plantations areas and relevant aspects of other species planted in Brazil.

Species	Scientific Name	Main States with Plantations	Area (ha)	Main Uses
Wattle	<i>Acacia mearnsii</i> and <i>Acacia mangium</i>	RS, RR	181,780	Wood: energy, charcoal, wood chips for pulp, wood panels Tannin: leather, adhesives, oil, rubber
Rubber tree	<i>Hevea brasiliensis</i>	Amazon region, SP, BA, MS	117,506	Wood: energy, pulp Sap: rubber
Paricá	<i>Schizolobium amazonicum</i>	PA, MA	80,177	Veneer and plywood, ceilings, toothpicks, paper, furniture, finishes and mouldings
Teak	<i>Tectona grandis</i>	MT, AM, AC	58,813	Civil construction (doors, windows, panels, ceilings), floorings and decks, furniture, ships and decorative veneers
Paraná pine	<i>Araucaria angustifolia</i>	PR, SC	12,525	Sawnwood, veneer, ceilings, mouldings, blat, boxes, furniture structure, matches, pencil and spoils
Poplar	<i>Populus spp.</i>	PR, SC	4,022	Matches, furniture parts, doors, interior woodwork, toys, kitchenware
Others ¹	-	-	1,867	-
TOTAL	-	-	456,689	-

¹ Table includes areas with forests, such as ipê-roxo (*Tabebuia* spp.), fava-arara, jatobá (*Hymenaea courbaril*), mahogany (*Swietenia macrophylla*), acapu (*Pericopsis elata*), among others.

Table 1: Main features of and planted forest areas of other plantation species in Brazil, 2008. Source: ABRAF Member Companies; São Paulo Association of Rubber Producers and Processing; Paricá Research Center; IBGE; Information from various companies and sources; STCP, 2009.

Note: SP (Sao Paulo), BA (Bahia), RS (Rio Grande do Sul), MS (Mato Grosso do Sul), PR (Paraná), SC (Santa Catarina), PA (Pará), MA (Maranhão), RR (Roraima), AC (Acre), AM (Amazonas)

Acacia/Wattle plantations in Brazil (*Acacia mearnsii* and *Acacia mangium*) are concentrated in Rio Grande do Sul (South) and Roraima (North). In Rio Grande do Sul, *A. mearnsii* (black wattle) is cultivated by thousands of small forest producers, which supply companies of the tannin segment (extracted from acacia bark). Acacia production is designed to meet both foreign and domestic demand, with consequent job and income generation in Brazil. Black wattle wood is used as fuelwood, for charcoal production and exported as wood chips for pulp, mainly to Japan. The tannin destined for the domestic market and supplies the tannery, adhesives, oil, and rubber sectors, among others. In addition, part of Brazil's tannin production is exported to over 50 countries.

The rubber tree (*Hevea brasiliensis*) is cultivated for rubber latex tapping for the production of natural rubber, while the rubber wood can be used for fuelwood or for furniture production. The species is originally found in the Brazilian Amazon, but is planted in Northern states. Minas Gerais has natural conditions (soil, climate, topography and water availability) and favorable geographical locations to expand rubber tree plantations on a large-scale for agribusiness activities, according to EPAMIG (Agricultural and Livestock Research Institute of Minas Gerais). Thus, it is expected that rubber tree plantations would increase steadily in the state. Such competitive advantage has been explored for many years by states such as São Paulo, Mato Grosso, Bahia and Mato Grosso do Sul. EPAMIG (Corporation for Agricultural and Livestock Research of Minas Gerais) has undertaken studies based on the Brazilian strategy to avoid dependence on imported natural rubber, used as a raw material for various products.

Paricá (*Schizolobium amazonicum*) plantations are concentrated in the Northern states of Pará and Maranhão. This species is native to the Brazilian Amazon and is suitable for manufacturing veneer, plywood, ceiling, toothpicks, furniture, wood finishing, and mouldings.

Teak (*Tectona grandis*) plantations in Brazil are located mainly in Mato Grosso, Amazonas and Acre. It is considered one of the most valued timbers in the international market, which is the reason for its expansion in plantation areas in recent years. Its main uses are for civil construction (doors, windows, panels, ceilings, etc.), flooring and decks, furniture, shipbuilding (roofs, flooring, ceilings), decorative veneer, decoration and ornaments in general (sculpture and woodcarving). Teak was planted about 25-30 years ago in Brazil (with an area by that time quite small compared to the total current plantation of nearly 60,000 hectares – mainly in Mato Grosso). Thus, most plantations are still at a young age (not yet managed/thinned). Plantations are concentrated among 10 major companies and only few of them have mature forests producing high-value timber products for export. The remaining companies are about to start managing their young plantations (thinning at a low age of 8) and will therefore be producing small-diameter logs for low-end domestic product markets (fuelwood/residues).

Parana Pine/Araucaria (*Araucaria angustifolia*) forest plantations are located mainly in the Southern states of Paraná and Santa Catarina. The main wood utilization is for sawnwood and veneer, solid wood products, such as ceilings and mouldings, furniture, long-fiber pulp, among others. Despite its importance for certain regions, araucaria planted area in Brazil decreased over the last few years. This is mainly due to its substitution by other fast-growing species and laws restricting araucaria logging (including natural and planted forest). In addition, the IBAMA Administrative Ordinance (Instrução Normativa) 06/08 lists araucaria as a threatened native species; therefore, it is subject to legal restrictions on its harvesting, for any purposes, which can be done through a permit obtained from the competent environmental agency.

Poplar (*Populus spp*) forest plantations are also concentrated in Parana and Santa Catarina. This is a minor planted species, generally used in manufacturing of matches, furniture parts, doors, interior woodwork, and others.

Investors diversify portfolios with Brazilian plantations

Brazil has attracted significant direct investments in recent years. Such investments are a result of from the high competitiveness reached by the country in plantation forests. Brazil has integrated its competitive advantages in the forest sector through favorable natural conditions, scientific knowledge and entrepreneurial capacity, which results in a highly competitive potential growth.

Brazil ranks first in the Inter-American Development Bank (IDB) Forest Investment Attractiveness Index (IAIF) for the Americas. Such index measures the attractiveness of the forest sector of Latin American & the Caribbean (LAC) countries for direct investment to guide investors in selecting countries with high potential for successful

investments in the forest sector. Brazil leads with a score of 60 out of 100. It is followed by Chile, Uruguay and Argentina. Investors associated with forest investment have established and acquired forest assets, pointing to a continuous growth of Brazilian forest plantations.

The instruments with high growth in the country are investment funds in forest assets for pension funds and forest funds specifically established for this purpose. These funds have different sources, including domestic and foreign capital, and many other funds are still in the process of development, and are geared primarily to the establishment of fast-growing forests (planted forests) not necessarily linked to industrial projects.

Investment funds can be managed by TIMOs (Timberland Investment Management Organizations) or by companies specialized in forest management. TIMOs have been a way of organizing successful investors in Brazil, mainly in the Southern region, with planted pine forests. In some cases, TIMOs themselves have capital for investment in forests. Despite the global economic crisis, experts suggest TIMOs work will increase in Brazil in the coming years.

To purchase forests in Brazil and elsewhere, investment funds concentrate mostly on the acquisition of mature forests, which may include afforestation, buyback guarantee for timber, price setting and other mechanisms. However, there are variations in investment types and forms. In Brazil, due to the limited availability of forest assets, investment funds have been more diversified, with some focusing on niche markets of less value-added products such as pulpwood and charcoal.

Brazil has great competitive advantages for production forests compared to other countries such as high productivity in species such as eucalyptus (average of 35 m³ of wood/ha) and short rotation cycles of 6-7 years for a first harvesting. The volume of CO₂ sequestered by a forest depends on the species planted, clone type, soil and climate conditions, forest management and others. It is estimated that a eucalypt forest with such average productivity contributes to the sequestration of approximately 200 ton of CO₂ equivalent per hectare per year.

As an alternative to the scenario set by the Clean Development Mechanism (CDM) under the Kyoto Protocol, Brazilian forestry companies concentrated their efforts on climate change for the Chicago Climate Exchange, where more flexible rules allowed carbon credit generation and trading for forest projects in eligible under the current CDM rules. As a new undertaking, a number of companies have studied opportunities for the establishment of afforestation/reforestation and REDD projects associated with the carbon credit markets. Such projects are yet to be developed in the country.

Future outlook for plantation species in Brazil

In 2008, Brazil was upgraded from speculative grade to investment grade in the credit ratings index of Standard & Poors, which allows a country to capture external capital resources at lower interest rates (low risk premium of debt securities).

Besides this rating, Brazil offers attractive factors for foreign investors, including the possibility of access to a broad and growing consumer market and greater political stability. Given the current international economic crisis, a shortage of external credit and low investment, Brazil has become an alternative to business groups that have greater liquidity and are ready to invest. The comparative and competitive advantages of the country in the forest sector, especially with fast-growing plantations, almost guarantees high returns to investors.

In Brazil, the forest sector has developed mainly based on domestic direct investments. However, foreign direct investments flows have also increased in recent years. In the short-term, the global financial crisis may only delay the previously announced investment plans in the forest sector; on the other hand, in the medium and long-term, the implementation of mega-investments is expected in planted forests and the forest-based industry. This perspective promises to increase production, in both forests and industrial processing, to levels never experienced in the past.

Investments in planted forests in traditional forest plantation states and in new forest frontiers represent a new phase of the planted forest sector's growth, to generate jobs and income, product diversification, social inclusion, and foreign exchange earnings for the states benefited with large-scale forest plantations.

The investment prospects (2009/2012) for the pulp and paper industry, based on a BNDES survey carried out in August 2008, was around BRL26.7 billion. This estimate has been reduced drastically to BRL9.0 billion in December 2008. This shows a significant decrease of 66% in the investment prospects of the Brazilian pulp and paper industry. According to the BNDES study, this re-evaluation is due to the lack of confirmation of investments and postponements of projects rather than cancellation.

The forest sector (mostly the plantation sector) currently generates more than 700 thousand direct jobs in Brazil. STCP consulting estimates that in 2030, the sector will be able to generate 1.6 million direct jobs, with one-third in the silviculture (plantation) area. This estimate shows the sector will be among the three biggest job generators in Brazil in the coming decades.

Recent estimates for the next decade have recognized the need to expand forest plantations from the current 6-7 million hectares to nearly 20 million hectares by the year 2050. This is to supply the growing demand for industrial roundwood of the highly-diversified and expanding forest products industry in the country and new direct investments expected by domestic and foreign investors.

PERU

Forest plantations in Peru show potential for growth

In Peru, the government invests a small amount of funds to implement reforestation or afforestation projects for industrial or commercial purposes. The reforested land for commercial purposes has been established by means of private investment. Experts note that little investment exists from the Peruvian government, even though

products consumed by Peruvians are derived from wood from neighboring countries. They have indicated a number of problems with plantation forests in Peru including lack of finance and capacity, weak institutions and underdeveloped markets for products. Technological innovation has not spread to the forest sector and many regions continue working with outdated technologies to harvest and process wood.

Nevertheless, according to the INRENA, there exists a great potential to develop plantation areas. The Fund to Promote Forest Development (Fondebosque), a government institution, is using two mechanisms to finance diverse projects in the Peruvian Amazon. The first mechanism is a fund that has finances business plans up to USD18,000 for machinery, equipment and tools through a short-term bank credit. The beneficiary uses the machinery and later pays back the credit in monthly installments. A second mechanism involves partial grant by FONDEBOSQUE and partial contribution from the beneficiary. It provides finance for associations, cooperatives and producers' networks up to USD65,000 for civil works, machinery, equipment, tools, inputs and training activities. Sound business plans are required to access both funds to demonstrate the technical, economic, environmental and social viability of the plan.

A number of geographical areas in Peru also have a great potential to be developed with plantations. In particular, the following are areas where plantations could be established: the Department of Pasco in Oxapampa; the Department of Junin in the Valley of the Mantaro, Satipo; the Department of San Martin in Tocahe, Tarapoto; the Department of Ucayali in Coronel Portillo; and the Department of Huanuco in the Code of the Pozuzo. The table below shows the type of plantation species that can be planted in Peru by regional ecosystem:

Coastal Regions	Highlands Regions	Tropical Forest Areas
<i>Eucalyptus camaldulensis</i>	<i>Eucalyptus globulus</i>	<i>Eucalyptus saligna</i>
	<i>Pinus radiata</i>	<i>Eucalyptus grandis</i>
<i>Prosopys pallida</i>	<i>Caesalpinia espinosa</i>	<i>Pinus tecunumanii</i>
	<i>Bujdellia sp</i>	<i>Pinus oocarpa</i>
	<i>Polylepys sp</i>	<i>Pinus caribaea</i>
		<i>Tectona grandis</i>
		<i>Bolaina crinita</i>
		<i>Calycophyllus</i>
		<i>spruceanun</i>
		<i>Cedrelinga</i>
		<i>catenaeformis</i>
		<i>Guarea sp</i>
		<i>Tetrorchidium</i>
		<i>rubrivenium</i>
		<i>Cordia alliodora</i>
		<i>Juglans neotropica</i>

Table 1: Viable plantation species by region in Peru

MEXICO PRODEPLAN sets pace for forest plantation development

The programme for the development of commercial forest plantations (PRODEPLAN) will be implemented in 32 states of the country and given special attention to targeted populations. The beneficiaries of the programme can be individuals or entities and are selected by a committee following the terms and conditions established in the Rules of Operation and Assembly, which are issued by the National Forest Agency CONAFOR. As part of the development of commercial plantation programmes, ProTree also has different programmes for this purpose, which include the programme for the establishment and maintenance of commercial forest plantations. As part of the programme, the following plantations will be established: non-timber plantations of both arid and tropical species; plantations of *Jatropha curcas*; agro-forestry plantations with timber species; and Christmas tree plantations.

The government is also granting financial support for the management, technical assistance and insurance of commercial forest plantations. The federal budget for supporting such programmes amounts to a total of 531,697,791 Mexican pesos. Of the total, 88% is dedicated to support the establishment and maintenance of commercial forest plantations, which is up 2.5% this year for operating expenses and project evaluation and nearly 10% for project supervision. The maximum amount of support to be granted for the establishment and maintenance of commercial forest plantations and developing management programs will depend on the maximum limits for each type of plantation included in the Rules of Operation.

To have access to ProTree resources, individuals should be Mexican nationals or entities incorporated under Mexican law to participate in the general selection procedure. The Rules of Operation for Commercial Forest Plantations state that eligible parties: are owners or holders of land, preferably of forest or temporary forest land; should provide a description of projects, preferably for forest land or temporary forest land; submit their applications and respective proposals in line within the appropriate deadlines, terms and conditions established in the Assembly and in accordance with these Rules; are not subject to any other support or subsidy from the Federal Government such as replacement from or overlap with the ProTree program in this category, based on the opinion given by the General Coordinator of Production and Productivity of CONAFOR.

Domestic and foreign companies established under Mexican law have excellent investment prospects from commercial plantations in the country. Mexico has 11 million hectares dedicated to forestry activities, although the area also has some agricultural uses with low-production farms. With further capacity building, private investment and federal support, it is anticipated that sustainable and productive commercial forest plantations can be developed.

Investment returns for commercial forest plantations in Mexico is less than in other countries in the region. Nevertheless, there is a diverse set of ecosystems in Mexico where: a number of trees are being planted in temperate, cold and warm/wet climates; access to land is relatively simple and there is infrastructure available; they are also strategically located in relation to high consumption areas - North America, the Pacific Rim and Europe. Moreover, the federal government provides economic support incentives in forest plantations, in addition the average rate of return on investment or Internal Rate of Return (IRR) obtained in Mexico is higher than that achieved in similar projects in other countries.

Domestic or foreign investors can invest in new projects, from the beginning or engage in projects that have already commenced, and in some cases beyond the stage next to pre production. To become involved in an on-going project, experts suggest establishing a relationship with a Mexican company or joint venture (domestic and foreign), which already has plantations but requires an injection of capital to expand its planted area. There are also a large number of afforestation or commercial forest plantations that are in a pre-productive phase and require partners with new financial resources even though they already have financial support from the federal government.

A second strategy is to start a new plantation project through a subsidiary company, incorporated under Mexican law, which could directly be involved in operational activities such as feasibility studies for projects, assessments of locations for new projects, selection of plantation species, programme management and presentations to SEMARNAT, plantation establishment and protection and management of plantations.

The investor that is engaged in a joint venture with a Mexican company or prefers starting on his/her own can access the support offered by the Mexican government. It is noteworthy that, whether or not he is beneficiary of federal funding, any investor in Mexico has the legal protection of the Mexican law, as long as the contracts associated with the rental, purchase, rural partnership or joint venture for the project are registered with the Secretary of Agrarian Reform. If foreign investors engage in commercial forest plantation projects, they must comply with Mexico's Foreign Investment Law.

For more information on plantation investment in Mexico, contact Carmelo Hernandez, Manager for Development of Commercial Plantations at 52-33-37-77-70-00 Ext. 2200 to 2223 or Toll Free 1-800-50-59-888 or email chernandezp@conafor.gob.mx.

GUYANA

Plantations have long history in Guyana

After the Second World War, colonizers set up a number of pilot plantations as permanent research plots to investigate the growth rate of *Pinus Caribaea* under different treatments – soil types, pruning and fertilizer. *Pinus Caribaea* were planted at Bartica from 1955-1965 and Ebini from 1964-1968.

Steadily rising prices for lumber coupled with more recognition of the (non-timber) values of natural forests seem destined to drive forest enterprises into the establishment of plantations. The Guyana Forestry Commission (GFC) has demonstrated in the past that exotic species such as teak (*Tectona grandis*) and Caribbean pine (*Pinus spp.*) can grow commercially in Guyana. It has been observed too that various local species such as tauroniro (*Humiria balsamifera*), and simarupa (*Quassia simarouba*) have potential as plantation species because they require a high amount of light and grow well on poor sandy soils.

There are many areas in Guyana which could benefit from plantations, especially the large expanses of savannah lands located in the hinterland areas of Guyana. Communities can certainly benefit economically from managing nurseries and producing seedlings for sale to persons engaged in setting up plantations. Nursery practices (and seed technology) could also provide employment for women and the aged.

Silvicultural projects based on plantations carry two major challenges. The first is to choose the right species (light demanding, fast growing, robust in the face of poor soils, pests and water scarcity). The second challenge is the cost of inputs and tending activities, once the trees start to grow.

The revised Forest Act also recognizes the value that plantation forests can bring to Guyana by encouraging the establishment of same. The GFC and other institutions, such as the University of Guyana, and the Guyana Geology and Mines Commission have already initiated discussions on promoting this as an activity.

Brazil Log Prices (domestic)

Brazilian logs, mill yard, domestic	US\$ per m ³
Ipê	135▲
Jatoba	96▲
Guariuba	64▲
Mescla (white virola)	70▲

Brazil Sawnwood Prices

Sawnwood, Belem/Paranagua Ports, FOB	US\$ per m ³
Jatoba Green (dressed)	785▲
Cambara KD	457▲
Asian Market (green)	Guariuba 259
	Angelim pedra 592▲
	Mandioqueira 228▲
Pine (AD)	189
Brazil sawnwood, domestic (Green)	US\$ per m ³
Northern Mills (ex-mill)	Ipê 632▲
	Jatoba 485▲
Southern Mills (ex-mill)	Eucalyptus (AD) 174▲
	Pine (KD) 1st grade 226▲

Brazil Veneer Prices

Veneer, FOB (Belem/Paranagua Ports)	US\$ per m ³
White Virola Face 2.5mm	290
Pine Veneer (C/D)	205
Rotary cut Veneer, domestic (ex-mill Northern Mill)	US\$ per m ³
White Virola	Face 236▲ Core 197▲

Brazil Plywood Prices

Plywood, FOB	US\$ per m ³
White Virola (US Market)	
5.2mm OV2 (MR)	455
15mm BB/CC (MR)	394▲
White Virola (Caribbean market)	
4mm BB/CC (MR)	499▲
12mm BB/CC (MR)	400▲
Pine Plywood EU market, FOB	US\$ per m ³
9mm C/CC (WBP)	265
15mm C/CC (WBP)	242
18mm C/CC (WBP)	237
Plywood, domestic (ex-mill Southern mill)	US\$ per m ³
Grade MR (B/BB)	White Virola 4mm 807▲
	White Virola 15mm 590▲

Domestic prices include taxes and may be subject to discounts.

Other Brazil Panel Prices

Belem/Paranagua Ports, FOB	US\$ per m ³
Blockboard Pine 18mm 5 ply (B/C)	309
Domestic Prices, Ex-mill Southern Region	
Blockboard White Virola faced 15mm	516▲
Particleboard 15mm	327▲

Brazil Added Value Products

FOB Belem/Paranagua Ports	US\$ per m ³
Edge Glued Pine Panel	
Korean market (1st Grade)	631
US Market	482
Decking Boards	Cambara 593▲
	Ipê 1540▲

Peru Sawnwood Prices

Peru Sawnwood, FOB Callao Port	US\$ per m ³
Mahogany S&B KD 16%, 1-2" random lengths (US market)	1722-1798
Spanish Cedar KD select	
North American market	918-922
Mexican market	897-921
Pumaquiro 25-50mm AD	Mexican market 497-527

*Cheaper and small-dimension sawnwood for this market.

Peru Sawnwood, FOB Callao Port (cont.)	US\$ per m ³
Virola 1-2" thick, length 6'-8' KD	
Grade 1, Mexican market	302-355
Grade 2, Mexican market	255-275
Cumaru 4" thick, 6'-11' length KD	
Central American market	794-822
Asian market	772-794
Ishpingo (oak) 2" thick, 6'-8' length	
Spanish market	509-549
Dominican Republic	558-569
Marupa (simarouba) 1", 6-11 length Asian market	366-388
Peru Sawnwood, FOB Iquitos	US\$ per m ³
Spanish Cedar AD Select Mexican market	887-909
Virola 1-2" thick, length 6'-13' KD	
Grade 1, Mexican market	290-316
Grade 2, Mexican market	256-269
Grade 3, Mexican market	138-155
Marupa (simarouba) 1", 6-13 length KD	
Grade 1, Mexican market	211-222
Peru sawnwood, domestic	US\$ per m ³
Mahogany	935-951
Virola	46-61
Spanish Cedar	275-328
Marupa (simarouba)	57-69

Peru Veneer Prices

Veneer FOB	US\$ per m ³
Lupuna 3/Btr 2.5mm	189-202
Lupuna 2/Btr 4.2mm	203-217
Lupuna 3/Btr 1.5mm	211-221

Peru Plywood Prices

Peru plywood, FOB (Mexican Market)	US\$ per m ³
Copaiba, 2 faces sanded, B/C, 15x4x8mm	318-347
Virola, 2 faces sanded, B/C, 5.2x4x8mm	398-405
Cedar fissilis, 2 faces sanded 4x8x5.5mm	745-755
Lupuna, treated, 2 faces sanded, 5.2x4x8mm	348-359
Lupuna plywood B/C 15x4x8mm	341-350
B/C 9x4x8mm	345-350
B/C 12x4x8mm	350-360
B/C 8x4x15mm	410-419
C/C 4x8x4mm	380-388
Lupuna plywood B/C 8x4x4mm Central Am.	368-388

Lupuna Plywood BB/CC, domestic (Iquitos mills)	US\$ per m ³
122 x 244 x 4mm	441
122 x 244 x 6mm	397
122 x 244 x 8mm	409
122 x 244 x 12mm	399
(Pucallpa mills)	
122 x 244 x 4mm	458
122 x 244 x 6mm	439
122 x 244 x 8mm	430
122 x 244 x 12mm	429

Other Peru Panel Prices

Peru, Domestic Particleboard	US\$ per m ³
1.83m x 2.44m x 4mm	282
1.83m x 2.44m x 6mm	230
1.83m x 2.44m x 12mm	204

Peru Added Value Product Prices

Peru, strips for parquet	US\$ per m ³
Cabreuva/estoraque KD12% S4S, Asian market	1344-1433
Cumaru KD, S4S Swedish market	655-708
Asian market	969-996
Cumaru decking, AD, S4S E4S, US market	778-867
Pumaquiro KD # 1, C&B, Mexican market	388-444
Quinilla KD, S4S 2x10x62cm, Asian market	496-538
2x13x75cm, Asian market	626-688

Bolivia Sawnwood Prices

Sawnwood 1-3"x3x5"x7-19', FOB Arica Port	\$ Avg un. val. per m ³
Ipe (Argentina and Uruguay)	402-593
Caviuna (Italian markets)	1800
Oak (Argentina mkt)	470
Cedro (US, Argentina, Chile mkt)	593-720

Bolivia Added Value Product Prices

Doors 13/4"x36"x96", FOB Arica Port	Avg \$ per piece
US market Mara macho/Tornillo (FSC)	170
Cambara	177
Oak (US market)	159

Chairs FOB Arica Port	\$ Avg Per piece
Ipe (US market)	74-184
Roble/Oak (UK market)	71-94
Parquet Flooring 3/4"x3-5"x1-7', FOB Arica Port	\$ Avg un. val. per m ³
Jatoba (US market)	1185-1525
Ipe (US market)	805-1800
Cumaru (FSC) (China mkt)	1620-1735

Guyana Log Prices

Logs, FOB Georgetown	SQ - \$ Avg unit value per m ³
	Std Fair Small
Greenheart	130-155↓ 120-145↓ 100-135↓
Purpleheart	180-240↓ 150-205↓ 130↓
Mora	110-120↑ 110-120↑ -

*Small SQ is used for piling in the USA and EU. Price depends on length.

Guyana Sawnwood Prices

Sawnwood, FOB Georgetown	\$ Avg unit val. per m ³
EU and US markets	Undressed Dressed
Greenheart Prime	- -
Select/Standard	600-684↑ 551-742↓
Purpleheart Prime	- -
Select/Standard	750-780↓ 594-806↓
Mora Select	- -

Guyana Plywood Prices

Plywood, FOB Georgetown Port	\$ Avg unit val. per m ³
Baromalli BB/CC 5.5mm	-
12mm	394-405↓
Utility 5.5mm	-
12mm	372↓

Report from North/East Asia

Status of China's plantation forests

According to the China's Sixth Forest Inventory Report (covering 1999-2003), China's forested area was 175 million hectares with the forest stock volume at 12.45 million m³. Forest coverage was estimated at 18%. Of the total forested area, the area of tree plantations in China was 53 million hectares. China's plantation area was expected to expand rapidly due to high domestic demand.

Plantations play an important role in restoring and rebuilding the total forest ecosystem. They supply wood and non-wood products and help improve the eco-environment. The country's plantations contain an estimated 1.5 billion m³ of standing volume and account for around 12% of the country's total forest volume. Of the total plantation area, the forest area was 32.29 million hectares (60.64% of the total plantation area); cash tree crops, 19.31 million hectares (36.26%); and bamboo plantations, 1.65 million hectares (3.1%).

Of the standing forest plantations, the productive plantation area was 23.18 million hectares with a standing volume of 1.15 billion m³. Protective plantations covered an area of 8.12 million hectares and fuelwood plantations covered an area of 483,300 hectares (4 million m³ by volume). The area of forest for special uses is 514,600 hectares, with a forest volume of 31.12 million m³. Plantations for timber production accounted for the largest area and volume and these plantations account for around 70% of the total plantation area.

Plantation resources have been mainly distributed in the south of the country and mainly collectively owned forests. The following five provinces (regions) account for the bulk of the plantation areas, namely Guangxi, Guangdong, Hunan, Fujian and Sichuan. The total area and volume of these five provinces accounted for 37.2% and 41.76% of the country's total plantation area and volume, respectively. The main plantation species were Chinese fir (*Cunninghamia lanceolata*), Masson's pine (*Pinus massoniana*) and poplar (*Populus spp.*), these three species accounting for some 60% of all plantation areas in the country.

1.1 Tropical forests

Distribution and types of tropical forests

China's tropical forests have been distributed across parts of Yunnan, Guangxi, Guangdong and Hainan provinces and the southern most tip of the Tibet Autonomous Region where there is a unique ecosystem influenced by warm air flows reaching deep inland up the Yalu Tsangpo River valley. The total area of tropical forest region in China was 26.49 million hectares, accounting for less than 3% of the country's land area. Tropical seasonal rainforest has been the predominant forest type of tropical forest in China but there are also areas of tropical evergreen broadleaved forests, tropical rainforests and mangrove forests.

According to the 6th national forest inventory, forestry land area in the forest regions is 14.24 million hectares, accounting for 53.77% of the total forest regions. Of the total 14.24 million hectares, the forested area was 10.17 million hectares, open forest land area 232,600 hectares and brush land area 1.39 million hectares. The total volume of standing timber in the tropical forest was some 952 million m³, accounting for over 7% of the country's total standing timber volume. Of the total 952 million m³, the forest volume was 902.87 million m³, accounting for 94.9% of the forest region's standing timber volume. The open forest volume was 5.25 million m³. Scattered timber volume was 35.94 million m³ and the volume of the 'four-around' plantations around houses, rivers, villages and roads was 7.52 million m³, accounting for 0.79%.

In the tropical forest regions, the area of natural forest was 5.7 million hectares, with a standing volume of 820 million m³, and natural forest accounts for 56% of the forested land area. In natural tropical forests, the forest stand area was 5.65 million hectares, with cash tree crops covering 9,400 hectares and bamboo forest amounting to 50,400 hectares. The plantation area in the tropical zone amounted to 4.47 million hectares. In the plantation area, the stand area is 2.02 million hectares, with cash tree crops consisting of an area of 2.36 million hectares and bamboo forest area covering 92,400 hectares.

The Chinese government divides tropical forests into three types: commercial forests, 'beneficial' forests and dual purpose forest. The proportions of the various forest categories are shown in Figure 2.

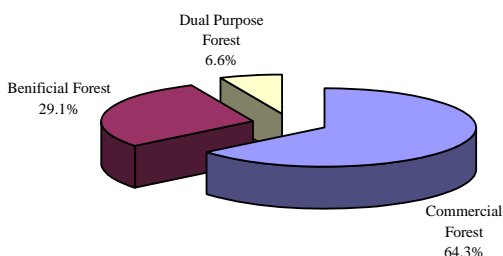


Figure 2: China's tropical forest categories. Source: Environmental Resources of China's Tropical Forest

Notes:

1. Including Fujian, but Tibet not included.
2. Beneficial forest includes protected forest and some forest for special uses, indicating the forest has the objective of environmental protection, scientific experimentation, scenery and tourism.
3. Dual purposes forest is a forest that can be a commercial and beneficial forest.

1.2 The challenges of and opportunities for China's plantation development

Over several decades, China's plantation area has grown to 53 million hectares, making China's plantations the largest in the world. However, most plantations have yet to reach full maturation (about 77.4%), with the volume per unit area reaching only 46.59 m³ per hectare, corresponding to 55% of the national stand average level. In national plantations, Chinese fir, Masson's pine and poplars accounted for 59% of the total area and the proportion of conifers was 71%. Foresters point to the risks of concentrating plantations with just a few species and point out that this increases the risk of pests and diseases, a potential decline in land fertility and a likely decline in bio-diversity all of which are unfavorable to healthy forest development.

Chinese government promotes sound policies for its plantation-based wood pulp industry

The Chinese government has been aggressively promoting development of a domestic wood pulp industry, integrated with plantation-based fiber supply and downstream paper production. It has been doing so by providing discounted loans from state banks, fiscal incentives and capital subsidies for establishment of fast growing pulpwood plantation.

During the last 15 years, China has emerged as a leading player in the global pulp and paper sector. China has accounted for more than 50% of the world's overall growth in paper and paperboard production since 1990, when the country produced an aggregate of 13.7 million tons across all grades. With 84.0 million tons of paper and board production in 2008, China is now the world's largest producer, exceeding the US.

Historically, China's domestic pulp industry has been structured around large numbers of small-scale mills relying heavily on non-wood fibers, including bamboo, bagasse, wheat straw and other agricultural residues. Much of the new paper and board capacity now being produced, however, relies on recovered paper obtained from both domestic sources and imports. Demand for wood-based pulp has also grown substantially in recent years, particularly as China's production of printing and writing paper and other high grade papers has expanded.

In order to meet the huge demand for timber, China has energetically developed plantation resources. There are three types of plantations in China, fast-growing and high yielding plantations, pulp paper plantations and industrial timber plantations. On the one hand, Chinese government has adopted a variety of policy measures to promote the development of domestic plantations. The government has offered significant financial incentives and capital subsidies to support priority plantation projects. The Chinese government has also sought to encourage foreign investment.

The fast-growing plantation programme covers four priority geographic regions, the southern coastal region, the lower and middle reaches of the Yangze River, the

lower and middle reaches of Yellow River and the Northeast China/Inner Mongolia Autonomous region. In aggregate terms, the largest area allocated for pulpwood plantation development is in the Northeast China/Inner Mongolia Autonomous Region, where 2.4 million hectares of plantation are planned to produce pulpwood fiber (see Table 2). However, in the South Coastal and Yellow River region, the areas planned for pulpwood are substantially larger relative to the total area allocated for fast growing high yielding (FGHY) plantations than they are in the other two regions. China target is to plant 13 million hectares of FGHY forest by 2015.

Region	Provinces	Total FGHY (million ha)	FGHY for pulpwood (million ha)	The proportion of Pulpwood (%)
South coastal	Guangdong, Guangxi, Hainan, Fujian	1.9	1.4	74
Lower Middle Yangtze River	Zhejiang, Jiangxi, Hubei, Hunan	3.0	1.3	43
Lower Middle Yellow River	Hebei, Henan, Shandong	1.0	0.8	80
Northeast China/Inner Mongolia	Inner Mongolia, Liaoning, Heilongjiang, Jilin	7.2	2.4	33

Table 2: Fast growing, high yielding plantation area targets by region, 2001-2015. Source: the State Forestry Administration (SFA)

According to the State Forestry Administration, the government has structured the FGHY programme around 99 priority projects, which are eligible to receive subsidized financing to encourage fast growing plantation development. Thirty-nine of these projects involve the development of pulpwood plantations. Under the government's plan, development of these plantations will be subsidized through loan interest subsidies, discounted loans from state banks and extended repayment periods. Specifically, the State Forestry Administration has indicated financing for priority fast growing plantation projects will come from four sources:

- 1) State-owned banks will provide 70% of the overall financing for the FGHY programme or approximately USD6.1 billion in the form of discounted loans to state forest farms, private sector plantation companies and farmers' cooperatives. The China Development Bank and the Agricultural Bank of China in particular will provide loans with reduced interest rates and an extended 10-15 year repayment period;
- 2) The Ministry of Finance will allocate 20% of the FGHY programme's total financing, or approximately USD1.7 billion, through loan interest subsidies;
- 3) Local governments are responsible for providing 3% of the program's financing; and

- 4) Plantation companies receiving the discounted government finance are responsible for contributing 7% of their projects' financing from their own funds or commercial sources.

In many parts of China, delivered wood costs are also substantially higher than those found in more efficient pulp producing countries. Delivered wood costs in South China currently range between USD20-25 per ton for eucalyptus from state forest farms and USD3-40 per ton for eucalyptus grown on collectively owned land that is either managed by farmers' cooperatives or leased from local communities by plantation companies. By contrast, pulp producers in Indonesia are reported to pay USD12-25 per ton for 'mixed tropical hardwoods' harvested from natural forest and for plantation-grown *Acatia mangium*. In Brazil, where highly efficient eucalyptus plantation have been developed near major mill sites, some producers report delivered wood costs as low as USD5-15 per ton. The relatively higher wood costs in China can generally be attributed to substantial cost involved in leasing land, high transport costs resulting from poor infrastructure and dispersed nature of small-holder plantation sites and the need, in many areas, for heavy fertilizer inputs to compensate for poor soil conditions. In the northwest part of Hainan, leasing land that is not suitable for agriculture costs approximately USD55-100 per hectares per year depending on the location, topography and soil fertility. Land lease prices on the provincial east coast are not less than USD130 per hectares per year since soils are more fertile and there is more demand for agricultural land.

Investors eye higher returns from teak plantations

Teak is fast growing precious species and can reach heights of 8.31 meters in three years. Teak is very popular to be produced into high grade furniture and floors. However, natural teak forests have become extinct in China. China imports a large volume of teak from foreign countries every year. The price for a 30-50 cm diameter teak log is RMB7,000 to 10,000 yuan per m³. For teak log more than 50 centimeters in diameter, the price can reach RMB10,000 to 15,000 yuan per m³.

The Chinese government has adopted appropriate policies to encourage both domestic and foreign investment in the development of teak plantations in China. The conditions of soil and climate in southern regions of China like Guangdong, Guangxi, Hainan and Yunnan are suitable for planting teak. According to local experts' analysis, RMB 55,000 yuan per mu of returns can be gained from investing in plantation teak in Guangdong Province over a 15 year period.

Guangzhou City Imported Timber Market

Logs	Yuan per m ³
Lauan (50-60cm)	1900-2400
Kapur	1900-2450
Merbau 6m, 79-100cm diam.	4300-5200
Teak	11000-16000
Wenge	6500-7000
Sawnwood	
Teak sawn grade A	8500-9500
US Maple 2" KD	8800-11000
US Cherry 2"	13800-14200
US Walnut 2"	15800-16800
Lauan	3500-4000

Shanghai Furen Wholesale Market

Sawnwood	Yuan per m ³
Beech KD Grade AB	2500-3000
US Cherry, 25mm	9500-10000
US Red Oak, 50mm	9800-10500
Sapele 50mm FAS (Congo)	
KD (2", FAS)	5600-5700
KD (2", grade A)	5200-5300

Shandong De Zhou Timber market

Logs		Yuan per m ³
Larch	6m, 24-28cm diam.	1100
White Pine	6m, 24-28cm diam.	1200
Korean Pine	4m, 30cm diam.	1400
	6m, 30cm diam.	1500

Hebei Shijiazhuang Wholesale Market

Logs		Yuan per m ³
Korean Pine 4m, 38cm+ diam		1800↑
Mongolian Scots Pine 4m, 30cm diam.		1150↓
	6m, 30cm+ diam.	1200↓
Sawnwood		
Mongolian Scots Pine 4m, 5-6cm thick		1400
	4m, 10cm thick	1450↑

Zhejiang Jiashan Kaihua International Timber Market

Logs	Yuan per m ³
Okoume 80cm+	2800-3400
Sapele 80cm+	6000-6500
Wenge 80cm+	13000-14000
Plywood	
US Black Walnut 4x8x3 mm	6000-8000
Beech 4x8x3 mm	6000-8000
Teak 4x8x3 mm	6000-8000
Poplar (4x8x3-5 mm)	3000-4000

For more information on China's forestry see: www.forestry.ac.cn

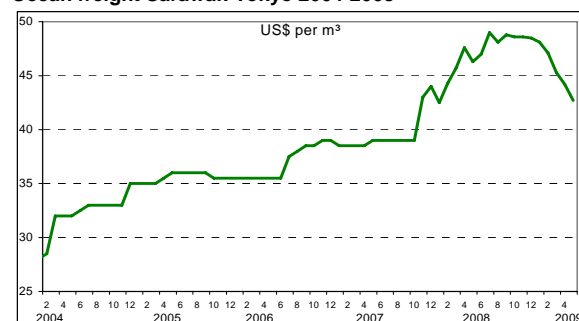
Log and Sawnwood Prices in Japan

Logs for Ply Manufacture, CIF	Yen per Koku
Meranti (Hill, Sarawak)	(Koku=0.278 m ³)
Medium Mixed	7,100
Standard Mixed	7,300
Small Log (SM60%, SSM40%)	7,100
Taun, Calophyllum, others (PNG)	7,600
Mixed light hardwood, G3/4 grade (PNG)	-
Keruing MQ & up (Sarawak)	10,800
Kapur MQ & up (Sarawak)	9,000
Logs for Sawmilling, CIF	Yen per Koku
Melapi (Sarawak) High Select	11,500
Agathis (Sarawak) High Select	-
Lumber, FOB	Yen per m ³
White Seraya (Sabah) 24x150mm, 4m, Grade 1	145,000
Mixed Seraya, Sangi 24x48mm, 1.8-4m, S2S	53,000

Wholesale Prices (Tokyo)

Indonesian & Malaysian Plywood	Size (mm)	Jul (¥ per sheet)	Aug
2.4mm (thin plywood, F 4star, type 2)	920 X 1830	310 ↓	320 ↑
3.7mm (med. Thickness, F 4star, type1)	910 X 1820	440	450 ↑
5.2mm (med. Thickness, F 4star, type 1)	910 X 1820	550	560 ↑
11.5mm for sheathing (F 4star, type 2)	910 X 1820	850 ↓	850
12mm for foundation (F 4star, special)	910 X 1820	880 ↓	880
12mm concrete-form ply (JAS)	900 X 1800	780 ↓	790 ↑
12m coated concrete-form ply (JAS)	900 X 1800	920 ↓	930 ↑
11.5mm flooring board	945 X 1840	1050 ↓	1050
3.6mm baseboard for overlays (OVL)	1230 X 2440	700	700
OSB (North American)			
12mm foundation of roof (JAS)	910 X 1820	1000	1000
9mm foundation for 2 by 4 (JAS)	910 X 2440	1050	1050
9mm conventional foundation (JAS)	910 X 2730	1250	1250
9mm conventional foundation (JAS)	910 X 3030	1350	1350

Ocean freight Sarawak-Tokyo 2004-2008



More information on Japan in www.n-mokuzai.com

Report from Europe and North America

Identifying plantation forests in Europe proves difficult

The forest situation in Europe illustrates that there is often no clear boundary line separating 'plantations' from 'natural forest'. It is much more accurate to consider forest ecosystems as a continuum with forests totally undisturbed by man at one end and those totally dependent on man's intervention at the other. In Europe, the vast majority of forest landscapes lie somewhere between these two extremes.

According to a 2007 sustainability report issued by the Ministerial Conference for Protection of Forests in Europe (MCPFE), 87.2% of forest area in Europe (excluding the Russian Federation) is classified as 'semi-natural' forest – a category which includes a huge range of forest types with different levels of naturalness and biodiversity. This is inevitable in a region where man has interacted with forests for thousands of years. Many forests that might be considered 'natural' by the local inhabitants – by virtue of the fact that they contain mainly native species and are extensively rather than intensively managed – may well have been planted.

To overcome these difficulties of interpretation, MCPFE defines plantations tightly as 'Forest stands established by planting or/and seeding in the process of afforestation or reforestation which are either of introduced species (all planted stands) or intensively managed stands of indigenous species'. To be classified as a plantation, MCPFE requires that the latter forest stands meet all the following criteria: 'one or two species at plantation; even age class; and regular spacing'. MCPFE specifically excludes 'stands which were established as plantations but

which have been without intensive management for a significant period of time’.

According to this tight definition, plantations cover only about 16 million hectares, or 7.9% of the total forest area in Europe excluding the Russian Federation. These intensively managed tree crops are important for wood production in several countries and form a very large share of forest area in Ireland (85%), the UK (55%), and Denmark (62%). Plantations also account for more than 10% of the forest area in Belgium, Luxembourg, Portugal, Belarus, Turkey, France and Albania.

	1990	2000	2005
Turkey	1839.0	2304.0	2537.0
Belarus	1727.7	1864.0	2017.6
France	1842.0	1936.0	1968.0
United Kingdom	1877.0	1934.0	1924.0
Spain	1126.0	1356.0	1471.0
Portugal	550.0	1034.0	1234.0
Italy	766.0	773.0	777.0
Sweden	516.9	617.2	636.3
Ireland	350.0	519.0	579.0
Ukraine	325.0	367.0	388.0
Denmark	291.0	305.0	314.0
Other	1790.0	1862.4	1913.3
Total	13000.6	14871.6	15759.2

Chart 1: Plantation area in Europe (excluding Russia) 1990-2005 (000 hectares). Source: MCPFE 2007 State of Europe's Forests

Plantation area in Europe (excluding Russia) increased by 2.8 million hectares in the period 1990 to 2005 at an annual rate of 180,000 hectares. This was not at the expense of either semi-natural or undisturbed forests, both of which also increased during the 15 year period, by 8.0 million hectares and 1.2 million hectares respectively.

With regard to species, MCPFE collects data separately for plantation area and for the area of forests dominated by introduced tree species. Only a proportion of European plantations comprise introduced species, while introduced tree species also find their way into “semi-natural” forests. However there is inevitably a close correlation between the plantation data and the introduced species data.

MCPFE records that in total, about 8.1 million hectares, or 5.2% of the total forest area in Europe (excluding Russia) is dominated by introduced tree species. The occurrence of introduced species is highest in North West European countries, where the proportion of forest area dominated by introduced species is, on average, 15% of the total forest area. Countries with the highest share of introduced tree species are Ireland, Denmark, the UK, Hungary, Belgium, Luxembourg and the Netherlands. In the Baltic countries, Finland, Switzerland, Slovenia, Belarus and Serbia, introduced tree species have only been planted on an experimental scale.

Typically, the number of introduced tree species for forestry purposes varies between five and ten species in Central, East and North West Europe. The most important introduced conifer species for forestry purposes are: Norway spruce (*Picea abies*), Sitka spruce (*Picea*

sitchensis), Douglas fir, (*Pseudotsuga menziesii*), various pine species (most often *Pinus contorta*, *Pinus nigra* and *Pinus strobus*), western hemlock (*Tsuga heterophylla*) and larch species (*Larix spp*). Douglas fir is an important tree species in several countries due to its fast and high wood production capacity and excellent wood quality. Norway spruce is often planted in Denmark, Belgium and the Netherlands, where it does not occur naturally. Sitka spruce is very common and an important introduced tree species for wood production in the UK and Ireland. In Sweden, the Contorta pine (*Pinus contorta*) has been planted on over 0.5 million hectares. It should be noted that among the important introduced conifers in Europe, only Douglas fir, Sitka spruce and Contorta pine are indigenous to territories outside Europe, specifically from the western part of North America.

The most common broadleaved introduced tree species for forestry and wood production purposes in Europe are Red oak (*Quercus rubra*), false acacia (Robinia) (*Robinia pseudoacacia*) and poplar species, especially Balsam poplar (*Populus trichocarpa x maximoviczil*). Eucalyptus species have been planted for forestry in Spain on over 200,000 hectares and in Portugal in about 700,000 hectares.

Plantation assets attract European and North American investors

A key trend in the forest sector of North America and, increasingly, in Europe in recent years has been growing interest in timberland as a potential private sector investment. Large amounts of money are being channelled into forestry assets in two ways. First, large institutions and wealthy individuals are investing in timber investment management organizations (TIMOs). Such assets are generally outside the reach of individual investors as they usually require a minimum investment of several million dollars. This has led to the emergence of a second mechanism for ordinary investors seeking timber exposure: specialized exchange-traded funds (ETFs) or real estate investment trusts (REITs). REITs include Plum Creek Timber, Rayonier, and Potlatch, all operating out of the US. Examples of ETFs are the Claymore/Clear Global Timber Index ETF and the iShares S&P Global Timber & Forestry Index Fund ETF in the US, and the Phaunos Timber Fund and Cambium in Europe.

The financial assets of these investment companies and funds are now considerable and represent a major new force in the global forestry industry. For example, the Phaunos Fund alone had a Net Asset Value of USD495 million at the end of 2008, up from only USD115 million at the end of 2006.

The US is still generally regarded within the financial industry as the best place to invest in timberland, due to the large areas of forest land available, strong forest growth rates, a stable political system, clear and effective systems of regulation and strong property rights. However the recent influx of money is now chasing after a limited number of forests in the country as American forest-product conglomerates have largely completed the process of divesting millions of acres of forests to TIMOs and

REITs. As a result investors are increasingly looking overseas for deals.

Nations wishing to attract these funds will need to take effective measures to mitigate political, regulatory and tax risks. Over time there is an expectation in the financial community that institutional ownership of timberland by large investment funds will become more prevalent on a global basis.

An excellent series of articles on this trend has been prepared by George Nichols, a researcher for a major consulting firm, where he monitors market trends regarding institutional ownership of alternative investments. Nichols notes biological growth drives more than 60% of total returns from timber assets, while timber price changes and land appreciation account for the remainder of returns. Timber investments have generally outperformed stocks, bonds, and commodities over the long run. In fact their performance has been exceptional. Quoting data from Forest Investment Associates, he shows that the North American NCREIF Timberland Index, the standard benchmark for this asset class in the US, increased 18.4% in 2007, versus a 5.5% rise for the S&P 500. Longer term, the Timberland Index has outpaced major financial asset classes such as high-cap stocks, corporate bonds and international equities. Timber returns have been particularly high over the past couple of decades.

Timberland assets are particularly valued because they can improve a portfolio's risk-adjusted returns by virtue of fairly low correlation to other asset classes. This low correlation reflects the fact that the primary driver of returns - biological growth - is unaffected by economic cycles. Relative to the S&P 500, timber has exhibited low downside risk. Since its 1987 inception, the NCREIF Timberland Index has declined only in one year: -5.25% in 2001. By contrast, the S&P500 has fallen four times, including -22.10% in 2002. Other benefits of timberland assets are that they are a good hedge against long term inflation and are often more tax efficient than other portfolio diversifiers, generally being taxed at capital gains rates rather than ordinary rates. Longer term prospects for timberland assets seem particularly good now that international policy-makers are developing systems to increase financial incentives for forest carbon sequestration.

But there are risks. In his article, Nichols suggests that the physical risks to forests – for example from fire and insects – are often over-stated, for example usually eroding returns by no more than 0.1% annually for US timberland holdings that are well-diversified by geography, age, and species. Nichols believes more significant risks are associated with illiquidity (the inability to readily sell forest assets) and potential over-valuation of existing timberland assets. The potential benefits of investment in forestry-related assets are no longer a 'well kept' secret, and as more money chases a limited number of viable forest assets, a bubble may develop.

Nichols is also very critical of the way some REITs and existing ETFs are portrayed as a surrogate for investment in forests when in fact they are more closely linked to the performance of the forest products industry, particularly pulp and paper. However he suggests that this is not so much a problem with some new funds recently launched in Europe, some of which have significant assets in tropical countries. These new funds generally share a commitment to socially sound and sustainable forestry, often exhibited through pursuit of FSC certification, as they seek to appeal particularly to socially responsible investors.

One example is Cambium which trades on the Jersey Islands Stock Exchange. Cambium sets out specifically to 'seek out opportunities to gain value from the certification of its forest management systems, from the commercial development of environmental products and services, and from the reduction of risk by community engagement and workforce development'. It notes that investments may be managed for timber production, environmental credit production or both, but that 'the company will not engage in processing facilities'. It is advised by New Forests Pty Limited which aims to establish 'a portfolio that comprises geographically diverse assets located in mature and developing markets as well as driving returns from emerging environmental markets such as carbon, biodiversity, and water quality'. Cambium's total asset value in April 2009 was around GBP102 million. Investments include eucalyptus plantations in Brazil and Australia.

Another example of this new breed of investment fund is Phaunos Timber Fund Limited, launched in Dec. 2006, which has made numerous investments in developing countries, including in eucalyptus and teak plantations in southern Brazil, eucalyptus plantations in Uruguay, and various plantations in Tanzania, Mozambique and Uganda. There is also Quadris Environmental Investment Fund, which owns fast-growing teak plantations in Panama.

George Nichols articles on timberland investment funds can be obtained at:
<http://www.georgenichols.com/publishedwritings/timber/timber1/index.htm>.

The following is a good example of an article in the mainstream business press – in this case Business Week - about new funds allowing small investors to engage in timber assets:
http://www.businessweek.com/magazine/content/08_07/b4071069413635.htm?campaign_id=rss_null

The following blog is a good critique of the claims made for some of these funds:
<http://thetimberlandblog.blogspot.com/2008/02/etf-as-surrogate-for-timberland.html>

The Netherlands Sawnwood Prices

	USD per m ³
FOB (Rotterdam)	
Sapele KD	921▲
Iroko KD	1048▲
Sipo KD	1117▲
DRM Bukit KD	841▲
DRM Seraya KD	841▲
DRM Meranti KD Seraya MTCC cert.	877▲
Merbau KD	1109▲
Sapupira (non FSC) KD	889▲
Sapupira (FSC) KD	1402▲
Anti-slip decking AD C&F Rotterdam	
Selangan batu	1345▲

UK Log Prices

	€ per m ³
FOB plus commission	
N'Gollon (khaya) 70cm+ LM-C	310-340
Ayous (wawa) 80cm+ LM-C	220-230
Sapele 80cm+ LM-C	270-310
Iroko 80cm+ LM-C	290-320

UK Sawnwood Prices

	Pounds per m ³
FOB plus Commission	
Framire FAS 25mm	460-490▲
Sipo FAS 25mm	610-650▲
Sapele FAS 25mm	510-540▲
Iroko FAS 25mm	590-630▲
Wawa No.1 C&S 25mm	280-300▲
CIF plus Commission	
Tulipwood FAS 25mm	230-250▼
Meranti Tembaga Sel/Btr (KD 2"boards)	450-480
Balau/Bangkirai Decking	820-880
White Oak	390-410▼

UK Plywood and MDF Prices

	US\$ per m ³
Plywood Panels 8x4", CIF	
Brazilian WBP BB/CC 6mm	500-515
Malaysian WBP BB/B 6mm	490-510
China (hardwood face, eucalyptus core) 18mm	320-340
China (hard face, poplar core) 18mm	310-340

US Timber prices

	US\$ per m ³
FOB	
Ipe (Brazil) Decking Premium Grade AD	1785
Jatoba (Brazil) No.1 Common and Better AD	775
Jatoba (Brazil) No.1 Common and Better KD	825
Khaya (Cote d'Ivoire) FAS KD, Abdijan	685
Khaya (Ghana) FAS AD, Takoradi	785
Sapele (Cameroon) FAS AD, Doala	650
Sapele (FAS KD), Doala	765

Internet News

Below are web links to news items published by the press. These items do not necessarily reflect the views and policies of ITTO.

The amount of carbon emissions caused by world forest destruction is likely far less than the 20% figure being widely used before global climate talks in December, said the head of the Brazilian institute that measures Amazon deforestation.

<http://www.reuters.com/article/latestCrisis/idUSN2165866>

As world leaders raced against time to come up with a new global protocol to combat climate change at the Conference of Parties (COP-15) in Copenhagen on 12 December, Asia-Pacific nations met in Hanoi, Vietnam, to discuss how forests in the region can aid in mitigating climate change.

<http://www.mb.com.ph/articles/216986/alvarez-urges-action-save-world-s-forests>

At least 353 new species have been discovered in the Eastern Himalayas between 1998 and 2008, equating to an average of 35 new species finds every year for the last 10 years. The discoveries include 242 plants, 16 amphibians, 16 reptiles, 14 fish, 2 birds and 2 mammals, and at least 61 new invertebrates. The Eastern Himalayas is at the crossroads of two continental plates represented by two bio-geographical realms: the lowland Indo-Malayan Realm and to the north, the elevated Palearctic Realm. The meeting of these worlds has created one of the biologically richest areas on Earth.

http://www.nepalmonitor.com/2009/08/a_living_himalayas_3.html

Beneath the placid waters of Lake Volta, the shadow of death lurks in a jungle of submerged trees, where countless boats have capsized and scores of fishermen have drowned. The boats of Lake Volta have chilling names: 'Judgment Day' and 'Deliver Us from Evil'. But as they mend their nets on the shore, the fishermen of Africa's biggest artificial lake debate whether a former Canadian prime minister might be the one to deliver them from the evil of poverty and the threat of death.

<http://www.theglobeandmail.com/news/world/is-joe-clark-a-good-guy-or-a-bad-guy-in-ghana-logging-venture/article1252796/>

Climate change negotiators met in Germany to review a 260-page document, which U.N. officials hope will be crafted into a new treaty to reduce carbon emissions and adopted by world leaders at Copenhagen in December. At the center of this proposal is a strategy for governments to raise money by creating a large global market for carbon credits.

<http://www.forbes.com/2009/08/12/climate-change-carbon-credit-emissions-trading-opinions-contributors-forest.html>

Impoverished fishermen along the coast of tropical African countries like Mozambique and Madagascar may have only a few more years to eke out a profit from one of their nations' biggest agricultural exports. Within a few decades, they may no longer have a livelihood at all. That's because swampy mangrove forests – essential breeding grounds for fish and shellfish in these countries – are being destroyed by worsening pollution, encroaching real estate development, and deforestation necessary to sustain large-scale commercial shrimp farming.

http://esciencenews.com/articles/2009/08/20/nasa_researcher_nets_first_measure_africas_coastal_forests

Indonesia, owner of the earth's second-largest tropical forests, is counting its trees with satellites and on-the-ground observers to prepare for earning money in carbon markets by protecting woodlands. The South-east Asian country is taking steps to measure and verify the amount of carbon dioxide absorbed and stored by its forests, according to a proposal on the website of the United Nations Framework Convention on Climate Change. The

UN, operator of the second-biggest carbon-emissions market, is considering awarding securities to nations in return for their saving trees.

<http://www.bloomberg.com/apps/news?pid=20601081&sid=ao5qfCCwz2LY>

While there is growing international support for tackling global deforestation -- there's even generous support in the Waxman-Markey bill for the effort -- action has been stymied by the overall lack of progress on a global climate agreement. The circumstance is exemplified by the UN's program on Reduced Emissions from Deforestation and Degradation in Developing Countries (REDD). It has only one donor, Norway, and six projects off the ground.

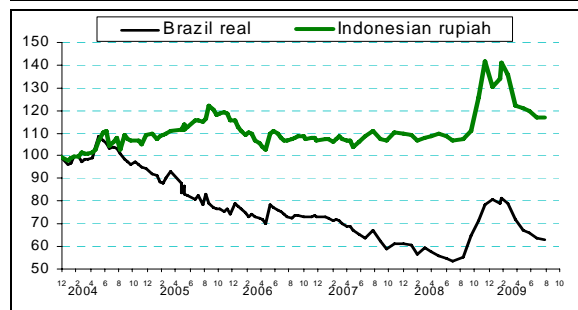
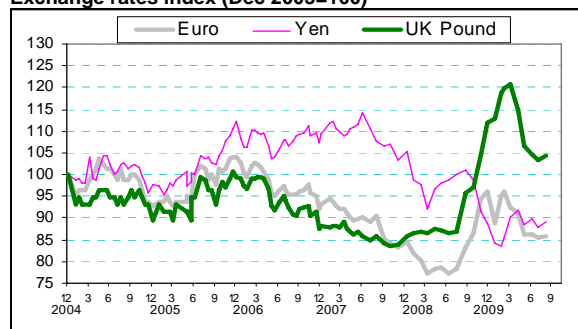
<http://solveclimate.com/blog/20090819/reforestation-taking-root-projects-around-world>

Main US Dollar Exchange Rates

As of 1 September 2009

Brazil	Real	1.9109	↑
CFA countries	CFA Franc	461.334	↓
China	Yuan	6.8302	↓
EU	Euro	0.7033	↓
Indonesia	Rupiah	10070	↑
Japan	Yen	92.87	↓
Malaysia	Ringgit	3.5273	↓
Peru	New Sol	2.9525	↑
UK	Pound	0.6189	↑

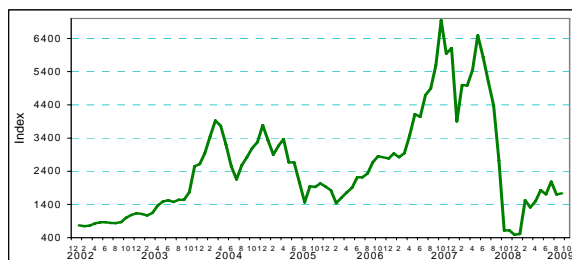
Exchange rates index (Dec 2003=100)



Abbreviations and Equivalences

LM	Loyale Merchant, a grade of log parcel
QS	Qualite Superieure
CI, CE, CS	Choix Industriel, Economique or Supplimentaire
FOB	Free-on-Board
CIF; CNF	Cost, insurance and freight; Cost and freight
KD; AD	Kiln Dry; Air Dry
Boule	A log sawn through and through, the boards from one log are bundled together.
BB/CC, etc.	Log/plywood grades. Letter(s) on the left indicate face veneer(s), on the right backing veneer(s). Grade decreases in order B, BB, C, CC, etc.
BF; MBF	Board Foot; 1000 Board Feet
Hoppus ton	1.8 m ³
Koku	0.278 m ³ or 120 BF
SQ; SSQ	Sawmill Quality; Select Sawmill Quality
FAS	Sawnwood Grade First and Second
GMS	General Market Specifications
GSP	Guiding Selling Price
MR; WBP	Moisture Resistant; Water and Boil Proof
MDF	Medium Density Fibreboard
PHND	Pin hole no defect grade
\$; ↑↓	US dollar; Price has moved up or down

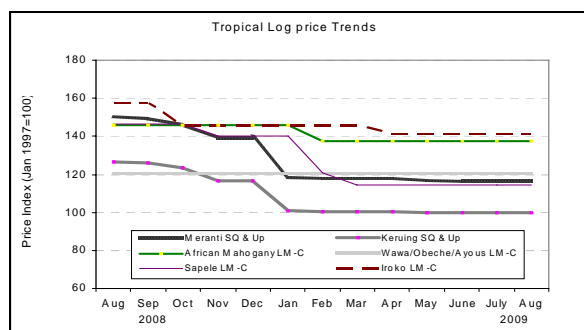
Ocean Freight Index



The BSI (Baltic Supramax Index), published by the Baltic Exchange, is the weighted average on 5 major time-charter routes. It is based on a 52,454 mt bulk carrier carrying commodities such as timber.

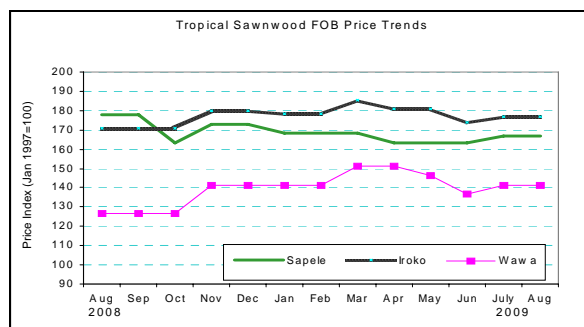
Appendix. Tropical Timber Price Trends

Tropical Log Price Trends



More price trends in Appendix 4, ITTO's Annual Review
<http://www.ito.or.jp/live/PageDisplayHandler?pagelD=199>

Tropical Sawnwood Price Trends



Tropical Plywood Price Trends

