PERU: FORESTRY INDUSTRY PROFILE

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THE FORESTRY INDUSTRY IN PERU

Introduction

The forests of Latin America constitute the world's largest lumber reserves, with about one third of the evergreens and hardwoods combined, and more than half of the estimated world figure for growing hardwoods. However, yields from this vast potential stand at less than 4% of world lumber production, making the region a net importer of forestry products. Peru has also in the last few years become a net importer of forestry products. In addition, the forestry sector's share of the Gross National Product of Latin American countries, bears little relation to the large economic potential it represents.

Of the 830 million hectares of forest in South America, Peru has about 74 million, of which 60% are considered to be available for production. This area is estimated to contain over 6,000 million cubic metres of lumber. Assuming that each hectare of forest produces an annual increase of 6 cubic metres of round wood, and considering only harvestable forests (44.4 million hectares), the maximum usable and sustainable harvest volume would be in the order of 2667 million cubic metres a year.

The Peruvian forestry industry has not played an important role in the past nor has it been given a great deal of attention by government authorities. Generally, the trend has been to produce consumer and intermediate goods while logging operations have barely exploited the tropical forests. Production has not even met the needs of the domestic market. This has been the direct result of the lack of concrete policies which have restricted a balanced development in the use and processing of forest resources, among which would be a wider and better use of different species, increase in productivity, reforestation, rationalization of production, training, investment and promotion.

As a result of a study financed by the United Nations Food and Agriculture Organization in 1985, the Peruvian government has for the first time a long term Forestry Development Program (Programa de Acción Forestal 1988 - 2000). This Program has helped the Peruvian government to become aware of most problems of its forestry sector and has begun to develop and implement policies to obtain a rational use of its forest resources. The national development plans include a number of objectives to ensure improved exploitation, on the premise that forests are a renewable resource which must be carefully managed so as to achieve increasing and sustainable production, and to supply the products required by the consumer in the most economical way possible. In spite of this one of the major problems still outstanding is reforestation. Peru is losing 3% of its forest annually. There are few nurseries, either private or government sponsored to supply seedlings in Peru. The main source of seedling is the jungle itself thus complicating this essential portion of forestry development.

The Peruvian Forest: Description

The Peruvian forest area is roughly divided into the following categories:

1) "Open use" areas: About 1% of the total forest area is called open use areas and are providing most of the timber at this time. Open use areas are mainly located in the Amazonic, near the cities of Pucallpa and Iquitos.

2) "National forests": 17 areas have been identified for evaluation and study. Pichis Palcazu is one important area where detailed evaluation was done, with the assistance of CIDA and other agencies.

3) Native community forests: Located throughout the jungle area.

4) Private forests: These are located in the high jungle. Local and/or foreign contractors can apply to the Government Forestry Department of Peru's Ministry of Agriculture. The Government provides 2 years for a feasibility study be carried out and plans must be submitted for Departmental approval. The study must include plans for reforestation. Frequent visits must be made to clear planted areas of natural growth (which occurs very rapidly under rain forest conditions).

Forest Species

All of the Selva (jungle) forests are heterogeneous and include up to 2,000 different species. It is significant that only 20 to 30 species are now used commercially. There is little current use for the remainder. Although it is thought that about 100 species can eventually be used commercially in applications such as veneer/plywood, lumber for furniture stock, poles, railway ties, pulp and participle board. Approximately 90% of the wood used in veneer industry is "Lapuna".

Extraction

Most of Peru's logging is located in the Pucallpa region and it is mainly in forest classified as "open use areas". Projects in these areas have been developed by individual contractors working either independently or being partially financed by mill operators. Selective harvesting is practiced and most logging takes place at distances no farther back from the rivers than a forest tractor can haul logs (approx 2 miles) although certain operations have used skidders over distances of 10, 15, even 40 km. This type of harvesting is necessary due to the absence of intense

infrastructure such as haul and access roads to logging areas in the Peruvian jungles where rivers represent a ready and inexpensive alternative. One forestry expert estimated that skidding alone represents 20 to 25% of the cost of a delivered log. Availability of the most desired species, Cedro and Mahogany, has been declining and there are indications that these species are in danger of running out entirely. There is little Government intervention of any kind in open Areas with respect to cutting practices.

Log deliveries to mills via river depend upon rains which raise river levels from January to April. Storage facilities for the logs are inadequate within distances that then allow practical movement. Some mills run out of logs and shut down as early as August. Steady operation of the mills will involve a complete revamping of the logging methods and of the transportation arrangements. Wood-supply continues to be the bottleneck in the industry.

Logging in the jungle in most areas is primitive. Desired trees are felled and cut into log length and rolled to the river or at same point where they can be rafted out at high water. Wide rollways can be prepared relatively easily and 16 to 20' log lengths produced. Moving further from water the logs must be cut shorter and shorter as the cost of preparing rollways and rolling them to the river would be prohibitive.

In most areas of the jungle, trucks, skidders and other sophisticated equipment are not yet in widespread use for one main reason -the heavy capital investment required. There is also a lack of gravel for roads, severe mud due to rains complicated by alluvial sands, a changing river level, and many other factors such as remoteness, lack of rapid communication and equipment service. Caterpillar tractors have been tried but the coarse alluvial sand eats the tread so rapidly that after a few months they have to be "sent out" for new and expensive treads. In this respect, large wheeled articulated rubber tire tractors have proved to be more serviceable.

The jungle area is characterized by heavy rainfall. It is absolutely essential for truck roads to be gravelled, if they are to be used consistently. However, in many areas of the jungle, rock and gravel are not available. In other areas, the distance between suitable trees is so great that the cost of a truck road would be economically unsound. The use of the "high lead" (wire cable and winches rigged on tall spars or trees) is not possible in selective logging where only a limited number of trees are removed and therefore there is interference from the trees left standing.

Equipment used in logging goes from animals to winches, large wheeled automotive equipment, skidders, pick ups and light tractors. It is very reasonable to assume that in the jungle forest of Peru new logging techniques must combine with old primitive methods.

One very important phase of logging is the transporting of logs from the felling area to the mill. The same practice, used for decades, is still in use. Logs are made up into rafts and floated or towed by diesel powered tugs to the mill. In relatively few cases are flat bed trucks used for this purpose due mainly to the lack of serviceable roads and the large sizes of the raw material.

When more species come to be exploited a more efficient means of transport of the raw logs can be implemented and one of the major impediments to further development of the forestry will be solved.

Sawmilling

Sawmills for the Peruvian forestry industry must be very carefully thought out and planned. Provisions have to be made for handling a variety of species of trees, as well as consideration given to the treatment of the logs before milling. Some species are durable and can be stored on dry land while others, due to the depredations of insects and fungi, must be cut and immediately treated, or "stored" in the quiet waters of a near by river

The treatment of lumber after it is sawn also varies widely. Some species must be sprayed with toxic material to prevent stain and insect attack before the lumber is seasoned, some should be kiln dried immediately, others can be air dried.

The mill sites must be on high, well-drained ground well above the "high waters" level, common during the rainy season. Logs are received by water, truck or both, and can vary in size up to 6 feet in diameter and from 8 to 24 feet in length. Logs can also weigh from under 500 pounds to over 10 tons. Within the mill itself, cut pieces of the log can weigh up to one ton. Chainsaw quartering in the log yard is a general practice.

The conveyors must be heavy and rugged. The power to drive the saws must be sufficient to stand up under heavy peak loads and yet be sufficiently high speed to keep a steady reasonable production flowing.

One other consideration is that mills should be designed to saw logs for grade and industrial use or produce sizes and grades for construction purposes. This is usually necessary in the tropics because of the mixture of species found in the forest.

Treatment of lumber

Some of the lumber of the Selva is very resistant to decay and to insects such as termites. Huacapu is an outstanding example. Many other trees have many desirable characteristics but lack durability. Some of them can be treated with creosote, pentachlorphenol, or other toxic materials to enhance quality. However, intensive research still remains to be done in this area.

Transport of lumber

The forests of Peru lie east of the high Andes. In order to emphasize the importance of the transportation factor your attention is called to the following conditions:

1.- **Ocean shipments of lumber from the port of Iquitos:** There is one deep water wharf in Iquitos at which ocean-going boats can moor year round. This dock normally does not handle lumber.. When there is sufficient water large boats tie up alongside the bank or at poor docking facilities and lumber is carried piece by piece or by sling loads into the boat.

2.- **River shipments to Pucallpa for truck shipment to Lima:** Barge and boat loads of lumber tie up at the bank where the lumber is piled waiting for trucks to be later loaded piece by piece for transport to destination.

3.- **Lumber transport by truck:** The quantity of lumber moving West over the mountains is increasing and although the Central Highway is deteriorated it is the only way lumber can be transported to the Peruvian coast.
The Peruvian Minister of Transports announced at the end of September 1991, that in 1992 the Central Road System (Lima to Pucallpa and Tingo Maria) and the Panamerican Highway will be repaired in 1992 under a $200 million program mostly financed by the Interamerican Development Bank.

Special problems of the lumber industry of Peru

One of the characteristics of the lumber industry all over the world is that there are both small and large mills with the small mills playing an important role in total lumber production. Communications between the mills in the jungle and the potential market are still poor in Peru.

Another major problem is developing a method of introducing new species to the market. Most users of lumber buy on the basis of past experience and are very slow to accept new species.

The third major problem is that Peruvians are not accustomed to the extensive use of wood in construction of both housing and offices. Development of knowledge on the use of lumber as an effective, safe and economic material would have to take place before a great expansion of the lumber industry can take place. Peru can not hope to develop an industry solely on export potential but must also develop a domestic market which can be relied upon.

Products

Aside from sawn wood, which is the major forestry product in Peru, the following are also produced:

a) **Veneer any plywood:** The two main areas in Peru today where veneer or plywood are produced are Iquitos, and Pucallpa, where plants produce large amounts of finished product. Exotic wood is the glamorous side of the plywood business. Sliced veneer from flitches are usually kept in the sequence they are produced. The effects resulting from "matched" panels from a single flitch can be strikingly beautiful. Less glamorous but nevertheless a potential profitable development is the cutting of rotary face veneers from suitable words (walnut, mahogany,, etc).

b) **Construction plywood:** This term is applied to plywood which does not require special faces for appearances as is the case of "triplay enchapado". It is used for interior walls, sub-floors, concrete form stock, boxes, agricultural buildings, etc. Thickness will vary up to one inch.

c) **Decorative plywood (triplay enchapado):** This is the term applied to plywood where at least one face is well manufactured, is free of defects desired for appearance. This plywood has extensive use in thin wall panels, in furniture, doors, etc.

d) **Parquets:** These, while only marginally produced, represent an excellent export market potential; and,

e) **Sleepers/railroad ties:** Produced mainly for limited domestic market since cost of transport to foreign markets is prohibitive

Where profitability lies

In Canada and others countries we depend on highly developed logging, lumbering, plywood and fiberboard operations which have come as a result of high labor costs, by a very knowledgeable and

highly discriminating purchasing public and by companies that manufacture material frequently with highly mechanized and automated equipment. There is a tendency to believe that Peru could duplicate the use of modern equipment and techniques with few problems however, the result of using such philosophy could be disastrous.

In approaching the profitability problem in Peru it must be remembered that the purposes for the existence of any industry are not only the potential worth of the resource versus other investment opportunities, but the provision of work for people, and the provision of materials for construction and industry. Peruvian operations tend to using simple equipment requiring lower capital costs and labour intensive methods which can be profitable.

The long-term National Program

As mentioned, the Peruvian government with the financial assistance of the United Nations Food and Agriculture Organization prepared a Long Term Forestry Development Program (1988-2000)

Peru's Long Term Forestry Development Program is based on the following policies:

a) Foster the rational exploitation of natural forests, intensifying forestry operations, integrating the potential of the area with development of agriculture in forest zones and cattle raising, maintaining a balance between forestry and livestock production.

b) Exploit forestry assets intensively and rationally in accordance with guidelines which ensure regeneration and improvement of the resource.

c) Organize loggers and native communitives in order to eliminate the deficiences in traditional logging and marketing systems.

d) Carry out studies and research on the use and full exploitation of forest wood varieties, with the support of universities, research centres and other responsible authorities so as to solve the technological problems which constitute limiting factors.

e) Increase the volume of lumber and wood manufactured products benefiting the Peruvian economy with the influx of hard currency. An increase in the volume of exports of lumber and wood manufactured products produce a multiplying effect in the forestry sector since national parks and conservation units will begin to be used as the main sources of seedlings for future reforestation projects.

Considering the above, any forest program of real value for Peru, must be developed from within the country. Assistance is needed and can be given by experienced experts who will help to avoid some obvious mistakes that other countries have made.

Only in recent years has Peru set up Government departments to aid the development of the forestry industry. As a result there has been some impressive expansion in the industry with many more harvesting operations getting started and a number of sawmills and plywood mills opening up.

Experts indicate that development must grow on a unified basis. Limited and controlled productive forestry should proceed hand-in-hand with the expansion and modification of training programs. Danger arises when the production side of the program is allowed to expand to the point of massive exploitation before adquate controls have been instituted to prevent irreparable damage. In this respect, the Canadian International Development Agency technical assistance in the Pichis Palcatzu (1982-1984) project, proved to be very useful in implementing educational and training programs to allow adequate control and rational development of the Peruvian forestry industry.

Opportunities in the Equipment Market

There is definite market in Peru for the following equipment:

- Skidders
- Fork lits
- Chainsaws
- Rigging and tools
- Chain
- Portable sawmills
- Kilns
- Waste burners(waste wood fueled boiler systems in the size range from 5 HP to 35 HP).
- Small band mills

Moderate market prospects

- Yarders and aerial ropeways.
- Boom boats (prefer barges on rivers)
- Conveyors
- Veneer and plywood equipment

Poor market prospects

- Pulp mill equipment (only one operating in Peru)
- Large sophisticated sawmills
- Heavy trucks
- Volume reforestation equipment (not used because clearcutting is rare).
- Tree shears (mostly selective logging of very thick trunks).

In discussions with several forestry executives and experts, it is essential to follow a few basic principles in order to penetrate the Peruvian market and to enjoy repeat sales. We have dubbed the "4 S's " rule of thumb:

a) **Selection:** The potential supplier will have to be prepared to offer a wide range of equipment which is appropiate for the market;

b) **Simplicity:** Equipment must be simple in design and easy to repair. Sawmill conditions in Peru are extremely difficult and equipment that is not sufficiently durable will soon break down and should it break down, repairs should be quickly and easily effected;

c) **Service:** Any company hoping for ongoing sales should have a well trained representative who is near the forestry operations and can react quickly to requests and carry out minor repairs. A factory technician should also make frequent market visits and inspect equipment in operation;

d) **Spares:** The original sale should try to include spares, speccially if financed. Agents should also be encouraged to carry sufficient stocks of spares to minimize equipment down time.

General Policies

The following general policies are supported by the Forestry Division of the Ministry of Agriculture (Dirección Forestal Ministerio de Agricultura del Peru).

1) Rational utilization of the 100 species selected for harvest.

2) Maximum transformation of the logs within Peru. The process of industrialization is encouraged.

3) Mechanical processing of wood is recommended in the early stages of development. Chemical processing will come later.

4) Selective cutting is to be practised.

5) National Forests directly managed by the Government will be one means of controlling areas of exploitation.

6) Emphasis shall be directed towards the training of human resources.

7) Forestry will be used as an incentive to colonize the jungle.

8) Forest development should safeguard the environment

9) The forest needs of the indigenous tribes in the Amazonia shall be protected.

10) Research shall be encouraged.

11) Foreign investment is welcomed as it provides stimulation to increase production and help overcome the financial weakness of Peru's Agrarian Bank (Peru's government owned Bank) that traditionally financed the development of forestry projects.

Final Comments

The above comments and general description of the Peruvian forestry sector should be read as a background document.

The Peruvian government has paid little attention to the technical exploitation of the Peruvian forestry resources which have been "deforesting" at a rate of 3% per year. Very little reforestation has taken place. Only recently as a result of the United Nations interest in the preservation of wild life and forestry resources in the Amazon jungle, the Peruvian Ministry of Agriculture (Dirección Forestal) wishes to start a reforestation program with funds which they hope will be provided by an International Financing Institution. The exact amount to be allocated to this project is still unknown.

In the statistics chart relevant to Peruvian lumber production it must be pointed out that beginning 1988 the volume of lumber has dramatically been reduced from 643,000 cubic meters to 388,000 cubic meters in 1989. The figure for 1990 according to unofficial

sources will be 10 to 15% lower and in 1991 it will go down a further 10%; the main reason for this decline in production is the deep recession faced by the Peruvian economy during the last several years aggravated by terrorism in some regions. Businessmen in the forestry sector comment that 60% of their forestry equipment is not being used now as result of lower demand for lumber for the construction industry which from 1985 to 1990 went through one of the most difficult periods in Peru's economic history.

Peruvian businessmen expect that the production figures for lumber will begin to rise again in 1992 when most of Peru's important sectors such as mining and construction, begin to increase their output as the economic recovery plan takes effect, aided by new loans from the World Bank and the Interamerican Development Bank.

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Sources of Information:

- Dirección General Forestal
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PERU: LUMBER PRODUCTS IMPORTS

(IN US$)

PRODUCTS	YEARS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
CHARCOAL	M3	-.-	-.-	17.4	1.5	0.99	0.07	-.-	0.12	0.3	-.-
	$FOB	-.-	-.-	20,174	1,612	3,129	10	-.-	98	811	-.-
CORNIFEROUS (ROUGH)	M3	2,318.2	160.7	742.6	1,359	300.4	93.47	4	75	-.-	57.2
	$FOB	492,893	65,255	274,455	457,856	180,522	32,111	30,525	25,445	-.-	19,377
QUARTERED LOGS	M3	972.4	215.51	1,629.9	2,329	4,106.5	3,442.8	4,594	1,531	-.-	154.9
	$FOB	136,453	17,821	213,124	550,842	790,385	482,463	597,814	250,679	-.-	35,558
SAWN CONIFEROUS LUMBER	M3	11,847.5	11,079.7	16,601.0	3,026	1,955.3	960.4	1.00	97	19.6	181.9
	$FOB	2'110,789	2'049,628	1'281,173	671,113	506,037	90,476	139,547	20,911	211,112	40,532
RAILROAD TIES	M3	2,652.2	11,638.04	-.-	-.-	2,153.4	490.4	1,337	*	-.-	10,457.3
	$FOB	652,911	3'801,488	-.-	-.-	543,840	195,000	424,105	*	-.-	5'962,755
FIBERBOARD	M3	555.9	91.9	371.0	191	55.90	348.7	536	1,067	-.-	1.1
	$FOB	191,419	51,828	152,758	113,048	21,758	63,155	120,311	188,248	-.-	197
DECORATIVE PLYWOOD	M3	56.7	90.13	6.7	50.6	32.9	34.1	105	85	0.9	-.-
	$FOB	49,009	115,778	19,456	39,110	25,725	14,785	108,207	64,504	7,197	-.-
CONSTRUCTION PLYWOOD	M3	0.2	148.41	198.4	5.0	0.24	4.4	34	23	0.4	-.-
	$FOB	736	104,941	68,890	40,056	707	4,653	14,786	14,610	936	-.-
WOOD MANUFACTURED PRODUCTS	M3	2,263.5	-.-	-.-	1,567.4	1,949.6	1,151.3	2,179	2,446	2,183	1,212.6
	$FOB	3'140,887	-.-	-.-	2'321,266	2'429,061	1'151,574	2'698,358	3'248,902	2'968,414	1'751,045
TOTAL	M3	20,660.60	23,424.39	19,567	8,529.50	8,605.13	6,525.64	9,790	5,324	2,204.3	12,065.0
	$FOB	6'775,000	6'206,739	2'030,030	4'194,903	4'501,186	2'034,227	4'133,653	3'813,457	2'998,470	7'809,464

SOURCE: MINISTRY OF AGRICULTURE (PERU)
CAMARA FORESTAL (PERU)

*Information not available

PERU; LUMBER PRODUCTS EXPORTS

(IN US$)

PRODUCT	YEARS	1980	1981	1982	1983	1984	1985	1986	1987	1988*	1,989*
ROUND WOOD	M3	47.95	-.-	4.90	-.-	-.-	0.08	-.-	0.37	-.-	-.-
	$FOB	1,200	-.-	84,014	-.-	-.-	527	-.-	92	-.-	-.-
PARQUETS	M3	236.30	689.50	27.70	821.00	112.40	201.20	208.00	88.00	59.30	63.30
	$FOB	210,784	508,619	59,830	588,763	200,940	173,914	90,279	56,646	23,456	35,935
SAWN WOOD	M3	15,702.50	7,370.10	4,266.90	2,775.00	3,142.8	2,508,.1	1,457.00	2,717.00	523.20	7,207.80
	$FOB	2'821,070	2'743,069	1'381,758	826,961	965,157	776,079	413,041	1'045,908	163,395	2'178,258
VENEER	M3	258.02	6.90	47.10	141.00	161.80	1,035.60	1,000.00	7.32	-.-	11.9
	$FOB	152,424	11,348	47,760	129,348	51,803	440,684	437,504	12,000	-.-	39,600
PLYWOOD	M3	4,957.52	4,475.50	94.80	391.00	-.-	-.-	-.-	-.-	-.-	-.-
	$FOB	1'351,916	1'773,755	54,768	181,880	-.-	-.-	-.-	-.-	-.-	-.-
DECORATIVE PLYWOOD	M3	1,444.59	261.50	1,101.50	43.00	19.40	39.90	88.00	8.06	23.50	168.00
	$FOB	868,093	156,167	713,678	302,849	26,518	61,942	66,095	12,508	9,338	57,863
WOOD MANUFACTURED PRODUCTS	M3	821.94	796.30	292.10	211.00	533.90	911.10	551.00	603.00	350.70	909.7
	$FOB	852,599	1'350,189	1'864,111	1'621,738	940,736	3'880,354	923,554	1'174,733	389,123	1'109,147
OTHER	M3	42.08	43.10	5.10	-.-	-.-	-.-	-.-	-.-	0.10	33.7
	$FOB	6,216	7,300	86,119	-.-	-.-	-.-	-.-	-.-	45	3,250
TOTAL (M3)		23,510.91	13,642.90	5,920.10	4,310.00	3,970.30	4,695.98	3,304.00	3,423.75	956.80	8,394.40
VALUE FOB US$		6'264,302	6'269,801	4'200,038	3'651,539	2'185,154	5'333,540	1'930,473	2'301,887	585,357	3'424,053

*PRELIMINARY FIGURES SOURCE: MINISTRY OF AGRICULTURE AND CAMARA FORESTAL (PERU)

PERU: PRODUCTION OF SAWN WOOD (CUBIC METERS)

SPECIES	YEARS									
	1980	1981	1982	1983	1984	1985	1986	1987	1988*	1989*
MAHOGANY	48,374	57,101	60,789	20,686	28,603	39,670	32,901	15,472	19,096	14,909
CATAHUA	17,786	17,064	12,082	11,375	19,942	25,501	45,917	37,703	1,814	1,217
CEDAR	84,325	84,633	68,011	53,674	54,322	56,715	73,234	30,303	28,262	23,833
COPAIBA	19,264	20,076	15,220	8,716	10,251	19,442	22,742	12,676	1,091	335
CUMALA	15,980	20,987	15,635	11,820	22,502	39,078	26,390	14,716	9,110	11,081
EUCALYPTUS	103,074	94,584	63,839	23,784	33,899	58,082	70,211	77,272	55,344	21,992
ISHPINGO	9,027	11,304	8,236	9,507	7,659	11,426	17,044	14,911	3,862	1,867
MOENA	35,195	38,643	40,988	29,221	41,323	28,349	34,091	28,929	9,785	2,085
OAK	58,763	72,227	67,956	19,755	15,686	12,330	52,405	56,288	14,521	24,962
TORNILLO(BOMBACACEA)	114,643	131,731	121,078	101,944	93,430	118,497	112,372	65,791	42,202	24,138
OTHER	100,163	94,993	80,143	89,601	145,731	115,646	119,349	258,737	353,240	261,087
TOTAL PRODUCTION	606,594	643,343	523,977	380,083	474,348	524,736	606,656	612,798	538,327	387,576

*PRELIMINARY INFORMATION

SOURCE: MINISTRY OF AGRICULTURE (PERU)
CAMARA FORESTAL (PERU)