

**PART III**  
**TRADE**

## WOOD PRODUCTS EXPORT

### Log

Tables 3.1.2 and 3.1.2.1 depict the volume and value of log export to the country's traditional export markets. For the year 1979, a total of 1.2 million cubic meters of log valued at \$144 million was exported. This volume is 19 per cent of the total production for the period. This year's log exports fell by 44 per cent over last year's record of 2.2 million cubic meters, which could be attributed to the government's protective policy on log exports. Japan remained to be the number one importer of Philippine logs with 813 thousand cubic meters valued at \$99 million. A far second was France importing 137 thousand cubic meters worth \$18 million. Republic of China (Taiwan) came third with 127 thousand cubic meters contributing \$10 million. A closer look at Table 3.1.3 reveals that the bulk of log exports consists mainly of white lauan taking 88% contributing \$127 million to the total earnings. Apitong contributed \$10 million with a volume of 132 thousand cubic meters. The remaining bulk consisted of red lauan, and other species.

### Lumber

Lumber export for 1979 registered an impressive 60% increase over last year's total of 573 thousand cubic meters worth \$85.2 million. This year's earnings from lumber exports amounted to \$198.3 million with an aggregate volume of 915 thousand cubic meters, representing 63% of the lumber produced for the period. Referring to Table 3.2, France ranked first among our importers of lumber taking 26% or 240 thousand cubic meters valued at \$55.7 million followed by Japan absorbing 15% or 140 thousand cubic meters amounting to \$28 million.

Third was U.K. and N. Ireland with 15% or 136 thousand cubic meters contributing \$33 million to the country's total earnings on lumber exports.

By species, red and white lauan comprised the bulk of the lumber export representing 59% and 39%, respectively, valued at \$195.4 million.

Third was apitong with 11,289 cubic meters worth \$1.9 million. The remaining volume exported was contributed by other species.

### Plywood

A negative growth of 10% marked the 1979 export of plywood over that of the previous year. Tables 3.3 and 3.3.1 show the volume and value of plywood export by country of destination. A total of 324 thousand cubic meters of plywood representing 64% of the total production amounting to \$85 million was exported. This decline on plywood exports may be due to its increased price in the world market as a result of the oil price hike. USA took the largest share of our exports with 170 thousand cubic meters worth \$44 million. Hongkong and UK and N. Ireland came second and third buying a total of 72 thousand cubic meters valued at \$18 million and 46 thousand cubic meters worth \$13 million, respectively.

### Veneer

The year 1979 registered an increase of 21% in the export of veneer from the 1978 record of 154 thousand cubic meters valued at \$22 million to 186 thousand amounting to \$35 million. The total veneer export was 29% of the total production for the year. The United States topped the list of importers of veneer with 111 thousand cubic meters worth some \$20 million. Japan took the second lead with 20 thousand cubic meters with an aggregate value of \$3.7 million. Third was Israel contributing a share of 7% or 13 thousand cubic meters worth \$3.3 million.

### Forest-Based Manufactured Articles

For the year 1979, forest-based manufactured articles contributed \$76.8 million to the country's total earnings on generation among the forest-based manufactured articles exported this year contributing \$28.5 million or 37% of the total earnings. Other builders woodworks ranked second with 22% or \$16.5 million, followed by household utensils of wood earning 13% or \$10 million.

PART IV  
REVENUES

### Revenues Collected/Assessed by the Bureau of Forest Development

Assessment of government revenues derived from timber cut from the public forest and other forested lands is based on fixed charges set by C. A. No. 466 of 1939, as amended, which varies from P0.60 to P3.50 per cubic meter depending on the net volume of logs, except those for export in which the gross volume is used. Aside from the regular forest charges, trust funds are being collected for specific purposes as follows:

Reforestation Fund (R.A. 115)	.....	P0.40 to P0.50/cu.m.
Forestry Information Fund (R. A. 3523)	.....	P0.10/cu.m.
Special Deposits (FAO 64)		
Forest Research	.....	P 1.00/cu.m.
Forest Protection & Management	.....	P 4.00/cu.m.
Forest Development (Exported Logs only)	.....	P 4.50/cu.m.

Forest charges on minor forest products are also being assessed based on the rates as provided for under Revenue Regulation No. 3-72 dated April 17, 1972.

Table 4.1 and 4.1.1 depict the assessment charges on timber harvested. The total revenues assessed for the year under review displayed a decrease of 16% over that of last year's performance. This is due to the fact that log production has likewise exhibited a negative growth. Note that 53% or P32.89 million of the total assessed amount of P61.55 million are from FAO 64 and the remaining balance are regular forest charges and other funds.

Geographically, Mindanao accounts for 70% of the total assessments in 1979 followed by Luzon contributing 21% and the remaining 9% coming from the Visayas.

Minor forest products continued to contribute a sizeable portion to the total income derived from our forests. Table 4.2 and 4.2.1 show that for 1979, the total forest charges collected from ordinary minor forest products amounted to P1.1 million which is 231% higher than last year's income of P.330 million. Similarly, Mangrove exhibited a gain in income. A closer look at Table 4.2.1 will show that Region 1 topped the income earners for ordinary minor forest products with 41% followed by Regions 11 and 4 with 21% and 14%, respectively.

TABLE 4.1 ASSESSMENT CHARGES ON LOGS HARVESTED: FY 1969 - 70 to 1971 - 72,  
CY 1973 - 1979  
(In thousand pesos)

Year	TOTAL	Forest Charges	Reforestation Fund	Forestry Information Fund	Forpridecom Fund	Special Deposits (FAO 64)
1969 - 70	26,026	18,284	4,936	1,092	1,714	-
1970 - 71	32,803	24,161	4,933	1,068	2,641	-
1971 - 72	35,117	28,081	4,127	831	2,078	-
1973	97,586	27,013	3,868	949	2,373	63,383
1974	77,088	20,629	3,002	624	1,549	51,284
1975	62,960	11,255	2,313	649	1,698	47,045
1976	50,655	6,385	990	208	410	42,662
1977	75,259	27,485	4,077	816	2,071	40,810
1978	73,119	24,946	3,584	717	1,792	42,080
1979	61,548	23,068	3,289	658	1,644	32,889

-- None

Source: BFD

TABLE 4.1.1 ASSESSMENT OF REVENUES FROM TIMBER HARVESTED BY REGION: 1979  
(In Pesos)

REGION	GRAND TOTAL	KIND OF CHARGES					FAO 64
		Regular Forest Charges	Reforestation Fund	Forestry Information Fund	FORPRIDECOM Fund		
Philippines	61,548,020	23,067,527	3,288,935	657,792	1,644,446	32,889,320	
Luzon	12,854,539	4,811,867	687,410	137,484	343,683	6,874,095	
NCR	-	-	-	-	-	-	
Region 1	1,008,599	377,559	53,937	10,787	26,946	539,370	
2	8,791,357	3,290,882	470,126	94,026	235,063	4,701,260	
3	168,749	63,168	9,024	1,805	4,512	90,240	
4	2,254,697	844,004	120,572	24,115	60,286	1,205,720	
5	631,137	236,254	33,751	6,751	16,876	337,505	
Visayas	5,544,413	2,103,603	294,087	58,819	147,044	2,940,860	
Region 6	1,690,900	661,112	88,016	17,604	44,008	880,160	
7	978,376	366,237	52,320	10,464	26,160	523,195	
8	2,875,137	1,076,254	153,751	30,751	76,876	1,537,505	
Mindanao	43,149,068	16,152,057	2,307,438	461,489	1,153,719	23,074,365	
Region 9	5,928,294	2,219,147	317,021	63,405	158,511	3,170,210	
10	12,138,649	4,543,879	649,126	129,826	324,563	6,491,255	
11	18,243,375	6,829,071	975,582	195,116	487,791	9,755,815	
12	6,838,750	2,559,960	365,709	73,142	182,854	3,657,085	

- None  
Sources: BFD Field Reports.

**TABLE 4.2 FOREST CHARGES ON ORDINARY MINOR FOREST PRODUCTS AND MANGROVE:**  
**FY 1969 - 70 TO FY 1971 - 72, CY 1973 - 1979**

(In Thousand Pesos)

Year	Ordinary Minor Forest Products	Mangrove
1969 - 70	191	-
1970 - 71	161	-
1971 - 72	202	-
1973	87	26
1974	129	34
1975	80	22
1976	41	11
1977	146	17
1978	330	1
1979	1,091	16

- None

Source: Bureau of Forest Development

TABLE 4.2.1 FOREST CHARGES ON SELECTED ORDINARY MINOR PRODUCTS BY REGION: 1979

(In Pesos)

Product	Philippines	N C R	R -- 1	R - 2	R - 3	R - 4	R - 5
TOTAL	<u>1,107,467</u>	<u>72,204</u>	<u>456,932</u>	<u>906</u>	<u>49,499</u>	<u>160,498</u>	<u>916</u>
Aimaciga	7,921	291	-	214	1,591	5,629	-
Bamboo & Boho	212,257	61,865	37,015	384	37,658	35	-
Beeswax & Honey	3,206	80	-	-	-	3,084	-
Charcoal	507,530	3,456	400,200	-	240	51,500	-
Firewood (Mangrove)	16,323	1,011	-	-	-	7,307	178
Firewood (Upland)	93,913	387	3,345	-	659	2,041	338
Nipa Shingle	809	96	-	89	8	28	63
Oleoresin	17,297	-	16,352	-	-	-	-
Rattan (Split)	52,741	2,185	-	36	535	44,439	32
Rattan (Unsplit)	53,135	2,833	20	183	8,808	1,435	305
Tanbark	141,000	-	-	-	-	45,000	-
Salago	1,335	-	-	-	-	-	-



Table 4.2.1 (cont'd.)

Product	R - 6	R - 7	R - 8	R - 9	R - 10	R - 11	R - 12
TOTAL	<u>17,303</u>	<u>52,848</u>	<u>1,011</u>	<u>1,274</u>	<u>37,414</u>	<u>236,926</u>	<u>19,736</u>
Almaciga	21	-	125	-	50	-	-
Bamboo & Boho	96	432	-	-	13,343	48,462	12,967
Beeswax & Honey	-	-	-	-	-	-	42
Charcoal	1,644	50,440	-	-	-	-	50
Firewood (Mangrove)	6,850	459	-	432	-	86	-
Firewood (Upland)	7,663	80	12	-	-	78,561	827
Nipa Shingle	16	102	-	30	244	-	133
Oleoresin	945	-	-	-	-	-	-
Rattan (Split)	45	-	35	274	2,701	2,062	397
Rattan (Unsplit)	23	-	839	538	21,076	11,755	5,320
Tanbark	-	-	-	-	-	96,000	-
Salago	-	1,335	-	-	-	-	-

Source: Bureau of Forest Development

**APPENDIX**

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AVERAGE ANNUAL LAND USE CHANGE IN THE PHILIPPINES

(In hectares)

Land	Philippines	GEOGRAPHICAL REGION*			
		Luzon (1967)	Visayas (1968)	Mindanao (1963)	Palawan (1964)
A. FOREST	- 203,905	-76,311	-31,839	- 91,564	- 4,191
1. Dipterocarp Reproduction-Brush Young Growth Old Growth	- 67,713 + 65,931 - 198,110	- 6,536 +12,918 -79,829	+ 3,574 + 657 -35,863	- 68,048 + 48,835 - 71,892	+ 3,297 + 3,521 -10,526
2. Mangrove Reproduction-Brush Young Growth Old Growth	- 1,673 - 459 - 307	- 1,376 + 86 0	- 177 - 30 0	- 346 + 54 -167	+ 226 - 569 - 140
3. Pines	- 1,574	- 1,574	0	0	0
4. Unproductive	0	0	0	0	0
B. NON-FOREST	+ 203,905	+76,311	+31,839	+ 91,564	+ 4,191
1. Openland	- 96,914	-50,833	-36,978	- 10,540	+ 1,437
2. Managed Pasture	+ 16,337	+ 5,926	+ 2,689	+ 7,356	+ 366
3. Marsh & Small Water	- 2,805	- 1,439	- 1,056	- 310	-
4. Plantation	+ 130,105	+60,016	+35,195	+ 34,078	+ 816
5. Cultivated	+ 142,136	+55,756	+26,760	+ 58,058	+ 1,562
6. Urban & Others	+ 15,046	+ 6,885	+ 5,229	+ 2,922	+ 10

\* Year appearing in each region indicates when inventory was completed.

Source: Nationwide forest resources inventory conducted from 1962 to 1968 by the BFD with assistance from US-AID and the PAF.

## GLOSSARY

### GENERAL TERMS:

*Aerial Photogrammetry* — the science of measurement with the use of aerial photographs.

*Afforestation* — artificial establishment of forest on land which did not carry forest within the past 50 years or within living memory.

*Allowable Cut* — the volume of materials, whether of wood or other forest products, that is authorized to be cut regularly from a forest (P.D. No. 705).

*Critical Watershed* — a drainage area of a river system supporting existing and proposed hydro-electric power and irrigation water needing immediate rehabilitation as it is being subjected to a fast denudation causing accelerated erosion and destructive floods. It is closed from logging until it is fully rehabilitated. (P.D. No. 705)

*Forest Concession* — refers to any tract of forest land under license agreement, lease or permit.

*Forest Growth* — all trees and other plants on forest lands.

*Forest District* — a regional subdivision under the Bureau of Forest Development.

*Forestry Establishment* — any enterprise engaged in the development, harvesting and conservation of forest resources.

*Logging Establishment* — an enterprise engaged in the cutting of timber and producing logs and other raw wood materials, as well as transporting logs in the forest.

*Land* — all surface areas listed as land by the Bureau of Coast and Geodetic Survey.

*Processing Plant* — any mechanical set-up, machine or combination of machines used for the processing of logs and other forest raw materials into lumber, veneer, plywood, wallboard, blockboard, paperboard, pulp, paper or other finished wood products.

*Economic-Sized Sawmills* — band sawmills with capacities of more than 10,000 board feet per day.

*Uneconomic-Sized Sawmills* — band sawmills with capacities of less than 10,000 board feet per day and all circular sawmills regardless of capacity.

*Reforestation* — artificial establishment of forest on land which carried forest within the previous 50 years or within living memory.

*Regeneration, Artificial* — re-establishment of vegetation with the deliberate interference of man.

*Regeneration, Natural* — re-establishment of vegetation without the deliberate interference of man.

*Residual Inventory* — the physical examination and accounting of marked and unmarked residual trees after a selective logging operation to determine their condition and suitability for the next logging operation.

*Second Growth Forest* — forest that originates after the removal of a previous stand as by cutting, fire or other causes. A loosely used term for young stand. In the logger's parlance, the smaller trees left after a cutting, or residual trees available for another logging on the same area.

*Selective Logging* — systematic removal of mature, over mature and defective trees in such a manner as to leave an adequate number and

volume of healthy residual trees of the desired species necessary to assure a future crop of timber and forest cover for the protection and conservation of soil and water. (P.D. No. 705)

*Watershed* — a land area drained by a stream or fixed body of water and its tributaries having a common outlet for surface run-off. (P.D. No. 705)

*Watershed Management* — is the protection, conservation and use of the natural resources of a drainage basin to keep the soil mantle in place and make water available in a manner which best serves human requirements.

#### CLASSIFICATION OF FOREST:

##### A. According to Type of Dominant Vegetation

*Bamboo* — forest stands composed primarily of commercial bamboo species, such as buho, kawayan killing and kawayan tinik.

*Beach Type* — forest stands in sandy beaches above the high tide line which consist principally of talisai, dapdap, palomaria (bitaog), agoho, buri, and tawalis.

*Dipterocarp* — forest stands dominated by trees of the dipterocarp species such as red lauan, tanguile, tiaong, white lauan, almon, bag-tikan, mayapis of the Philippine mahogany group, apiitong and the yakals. (P.D. No. 705)

*Mangrove* — the type of forest occurring on tidal flats along the sea coast, extending along streams where the water is brackish and composed mainly of bakauan, pototan, langarai, api-api, nipa palm and the like.

*Mid-Mountain or Mossy* — forest stands found principally on high and very rough mountainous regions characterized by steep ridges rising to peaks whose sides cut into smaller ridges. The trees, predominantly of the oak species, are mostly dwarf, with stems and branches usually covered by moss.

*Molave-Legume* — forest stands composed primarily of molave of dangula trees and of leguminous tree species like tindalo, ipil and banuyo.

*Pine* — forest stands composed primarily of the native pine species, e.g., Benguet Pine in the Mountain Provinces and the Mindoro Pine in Mindoro and Zambales provinces.

##### B. According to Stand Size

*Reproduction Stand* — forest stands predominantly stocked with trees of at least 1 meter high but less than 5 cm. in diameter at breast height.

*Sapling Stand* — forest stands composed primarily of trees 5 to 14.9 cm. in diameter at breast height.

*Poletimber Stand* — forest stands composed primarily of trees 15 to 34.9 cm. in diameter at breast height.

*Sawtimber Stand* — forest stands composed primarily of trees 35 cm. or larger in diameter at breast height.

##### C. According to Age

*Old Growth* — forest predominantly stocked with mature trees with less than 25 percent of the mature stand volume removed by cutting.

*Young Growth* — forest predominantly stocked with young trees 15 cm. or larger in diameter. Most stands in this class have been cut over the residual trees remaining. Stands stocked mainly with mature trees but with 25 percent or more of the mature stand volume removed by cutting, also qualify as young growth.

*Reproduction Brush* — forest predominantly stocked with tree reproduction or brush. Trees at least one meter high but less than 15 cm. in diameter are classified as reproduction brush.

D. According to Use

*Production Forest* — forest stands tended primarily for the production of timber.

*Protection Forest* — forest stands maintained essentially for their beneficial influence on soil and water in particular and the environment in general.

E. Other Classification

*Commercial Forest* — forest of commercial tree species in which the volume of trees with 15 cm. and over in diameter at breast height and merchantable height of at least 5 meters measured from the base up to the first branch, is 40 cubic meters or more per hectare.

*Non-commercial Forest* — forest of commercial species in which the volume of trees with 15 cm. in diameter at breast height and merchantable height of at least 5 meters measured from the base up to the first branch, is less than 40 cubic meters per hectare.

CLASSIFICATION OF TREES:

A. Based on Tree Size

*Seedling* — all trees below 5 cm. in diameter at breast height.

*Sapling* — all trees between 5 and 14.9 cm. in diameter at breast height.

*Poletimber* — includes those trees from 15 cm. to 34.9 cm. in diameter at breast height.

*Sawtimber* — trees having a diameter at breast height of 35 cm. or larger.

B. Based on Crown Class

*Dominant* — trees with crown extending above the general level of the crown cover and receiving full light from above and from the sides; larger than the average trees in the stand with crowns well-developed but possibly somewhat crowded on the sides.

*Co-dominant* — trees with crowns forming the general level of crown cover and receiving full light from above but comparatively little from the sides; usually with medium-sized crowns more or less crowded on the sides.

*Intermediate* — trees shorter than the dominant and co-dominant trees, but with crowns either below or extending into the crown cover formed by the two classes, receiving little direct light from above and none from the sides; usually with small crown considerably crowded on the sides.

*Overtopped* — trees with crowns suppressed and entirely below the general level of the crown cover, receiving no direct light either from above or from the sides.

LAND CLASSIFICATION:

*Alienable and Disposable Lands* — refer to those lands of the public domain which have been the subject of the present system of classification and declared as not needed for forest purposes. (P.D. No. 705)

*Forest Lands* — refer to lands of the public domain which have not been declared as alienable and disposable and includes the public forest, the permanent forest or forest reserves, forest reservations, timberlands, grazing lands, and game refuge and bird sanctuaries.

*Forest Reservations* — refer to forest land which have been reserved by the President of the Philippines for any specific purpose or purposes. (P.D. No. 705)

*Civil Reservation* — refer to forest land which have been proclaimed by the President for a specific purpose such as townsites, resettlement areas, ancestral lands, etc.

*Military Reservation* — refers to forest land which has been reserved by the President for military purposes.

*National Park* — refers to a forest land reservation essentially of primitive or wilderness character which has been withdrawn from settlement or occupancy and set aside as such exclusively to preserve the scenery, the natural and historic objects and the wild animals or plants therein, and to provide enjoyment of these features in such a manner as will leave them unimpaired for future generations. (P.D. No. 705)

*Watershed Reservation* — a forest land reservation established to protect or improve the conditions of the water yield thereof or reduce sedimentation. (P.D. No. 705)

*Game Refuge or Bird Sanctuary* — refers to a forest land designated for the protection of game animals, birds and fish and closed to hunting and fishing in order that the excess population may flow and restock surrounding areas. (P.D. No. 705)

*Permanent Forest or Forest Reserves* — refer to those lands of the

public domain which have been the subject of the present system of classification and determined to be needed for forest purposes. (P.D. No. 705)

*Public Forest or Unclassified Forest Land* — lands of the public domain which has not been the subject of the present system of classification for the determination of which lands are needed for forest purposes and which are not.

*Communal Forest* — a tract of public forest set aside by the Minister of Natural Resources upon the recommendation of the Director of the Bureau of Forest Development for the exclusive use of the residents of a municipality from which said residents may cut, collect and remove forest products for their personal use in accordance with existing laws and regulations.

*Timberland* — refers to lands of the public domain which have been the subject of the present system of land classification and determined to be needed for forest purposes. Eventually, these lands will be proclaimed as forest reserves by the President.

*Grazing Land* — refers to that portion of the public domain which have been set aside, in view of the suitability of its topography and vegetation, for the raising of livestock. (P.D. 705)

*Communal Pasture* — a public grazing land established as such by the Director of the Bureau of Forest Development for the exclusive use of the residents of the municipality for grazing of their animals for domestic use in accordance with existing laws and regulations.

#### LAND USE CLASSIFICATION

*Forest* — areas of one hectare or more which are at least 10 percent stocked with forest trees (including seedlings and saplings), wild

palm, bamboo, or brush. Narrow strips of land bearing forest must be at least 60 meters wide and one hectare in size to qualify as forest. Industrial tree plantations and tree farms one hectare or more in size are also included.

*Natural Forest* — forest established without the deliberate silvicultural assistance of man.

*Man-Made Forest* — forest established by man either by reforestation or afforestation.

*Industrial Tree Plantation* — any tract of forest land purposely and extensively planted to timber crops primarily to supply the raw material requirements of the existing or proposed processing plants and related industries. (P.D. No. 705)

*Tree Farm* — any small forest land or tract of land purposely planted to tree crops. (P.D. No. 1559)

*Mixed-Origin Forest* — forest with natural growth and enrichment plantings.

*Non-Forest* — areas with less than 10 percent stocking of forest trees, wild palm, bamboo or brush. Narrow strips of land without trees cover but surrounded by forest must be at least 60 meters wide and one hectare in size to qualify as non-forest.

*Cultivated Cropland* — non-forest areas planted within the past 12 months to low garden or field crops such as vegetables, rice, corn, or sugar cane.

*Grassland* — lands with natural grass cover without trees or very few isolated trees.

*Rangeland* — any tract of land covered with natural growths or vegetation of herbs, shrubs and grasses valuable for forage.

*Managed Pasture* — areas under pasture leases or permits and devoted for such purpose as evidenced by improvements introduced.

*Kaingin* — a portion of the forest land, whether occupied or not which is subjected to shifting and/or permanent slash-and-burn cultivation having little or no provision to prevent soil erosion. (P.D. No. 705)

*Marshland* — all natural wet areas characterized by a cover of grass, weeds or ferns and the absence of trees.

*Other Wooded Land* — lands with tree cover less than 10 percent of the area or with shrubs or stunted growth covering more than 20 percent of the ground area. The primary land use should be forestry. Included are windbreaks and shelterbelts, canal bank plantations, tree farms less than 1 hectare in size and grass areas with scattered tree growth.

*Open Land* — all denuded forest lands, croplands, and grazing lands that have been abandoned; also areas of exposed soil resulting from landslides or erosion.

*Plantation Cropland* — non-forest areas planted to high crops such as rubber, abaca, coconuts, bananas, citrus and other fruit trees.

*Small Water Areas* — areas of inland water at least one hectare in size and 60 meters in width (except commercial fishponds) not listed as lakes or navigable rivers by the Bureau of Coast and Geodetic Survey.

*Urban* — built-up areas which are occupied for settlements including residential, commercial, industrial and institutional areas; and the open spaces and infrastructure within the built-up areas.



## FOREST PRODUCTS

*Forest Products* — all usable raw materials yielded by the forest including surface stones, rocks, earth, guano, humus, etc.

*Major Forest Product* — includes only timber and pulpwood.

*Timber* — the major product of forest; the standing tree.

*Roundwood* — wood in the rough as felled or otherwise harvested, with or without bark, round, split roughly squared or other forms (e.g. roots, stumps, burls, etc.) It may also be impregnated (e.g. telegraph poles) or roughly shaped or pointed. It comprises all wood obtained from removals, i.e., the quantities removed from forest and from trees outside the forest, including wood recovered from natural, felling and logging losses during the period, calendar year or forest year. Commodities included are sawlogs and veneer logs, pitprops, pulpwood, and other industrial roundwood and fuelwood.

*Log (veneer and sawlog)* — felled trees bucked into convenient length of at least 1.5 meters, with at least 80 cm. in diameter.

*Poles & Piles* — logs for use as electric post, pier piling, railroad ties, sleepers and the like.

*Pulpwood* — any wood commercially used for the manufacture of any type of pulp.

## WOOD PRODUCTS

*Blockboard* — a board having a core of blocks, each not exceeding 2.54 cm. (1 inch) in width, connected or glued face to face to form a slab which is cemented and glued between two or more outer plies with the direction of the grain of the core blocks running at right angles to that of the adjacent outer veneers.

*Fiberboard* — a sheet material manufactured from the fibers of wood or other ligno-cellulosic materials. The primary bond is derived from the arrangement of the fibers and their inherent adhesive properties and/or the addition of resin or other bonding agents. Additives may also be added during manufacture to improve some properties of the product. The natural color of the board ranges from blonde to dark brown depending on the material and the manufacturing process used.

*Plywood* — an assembled product made of layers of veneers held together by an adhesive, the chief characteristic of which is the alternate cross layers, distributing the longitudinal wood strength. It consists of three layers of thin wood, firmly glued together, with the grain direction of the middle layer at right angles to that of the two parallel outer layers.

*Wood Pulp* — the soft, fibrous part of wood which is the material reduced to a soft uniform mass for making paper, paperboard and fiberboard. Commodities included are mechanical, semi-chemical and dissolving woodpulp.

*Mechanical Wood Pulp* — wood pulp obtained by grinding or milling into thin fibers, coniferous or non-coniferous rounds, quarters, billets, etc. or through refining coniferous or non-coniferous chips. Also called groundwood pulp and refined pulp. It can be bleached or unbleached. It excludes exploded and defibrated pulp.

*Semi-chemical Wood Pulp* — wood pulp obtained by subjecting coniferous or non-coniferous wood to a series of mechanical and chemical treatment, none of which separately is sufficient to make the fibres separate readily. According to the order and importance of the treatment, wood pulp is variously named: semi-chemical, chemical, groundwood, chemi-mechanical, etc. It can be bleached or unbleached.

*Chemical Wood Pulp* — sulphate (kraft) and soda and sulphite wood pulp except dissolving grades, bleached, semi-bleached and unbleached.

*Wood Pulp, Dissolving Grades* — chemical pulp sulphate soda or sulphite) from coniferous or non-coniferous wood, of special quality, with a very high alpha-cellulose content (usually 90% and over), readily adaptable for uses other than paper making. These pulps are always bleached. They are used principally as a source of cellulose in the manufacture of products such as man-made fibers, cellulosic plastic materials, lacquers, explosives, etc.

*Paper* — a material used for writing, printing, packaging and newsprint, manufacturing principally from rag, wood and other vegetable fiber reduced to a pulp. Commodities included are newsprint, printing and writing paper, other paper and paperboard.

*Newsprint* — uncoated paper, unsized (or only slightly sized), containing at least 60% mechanical wood pulp (percent of fibrous content), usually weighing not less than 40 g/m<sup>2</sup> and generally not more than 60 g/m<sup>2</sup> of the type used mainly for the printing of newspapers.

*Other printing and writing paper* — paper except newsprint suitable for printing and business purposes, writing, sketching, drawing, etc. made from a variety of pulp blends and with various finishes. Included are such papers as those for book and magazine, wall paper base stock, box lining and covering calculator paper, rotonews, duplicating tablet or block, label, lithograph, bank note, tabulating card stock, bible or imitation bible, stationery, manifold, onionskin, typewriter, poster, etc.

*Other paper and paperboard* — includes construction paper and paperboard, household and sanitary paper, special thin paper, wrapping and packaging paper and paperboard.

*Minor Forest Product* — includes all forest products except wood.

## PLANTS AND PLANT PARTS

*Buho* — a common name referring to a bamboo species (*Schizostachyum lumampao*) having an erect and thin-walled culm and used by papermills in the manufacture of bleach paper.

*Buri* — (*Corypha elata*) the largest native palm species ever found in the Philippines, with trunks attaining a diameter of 1 meter and a height of 20 meters with large fan-shaped leaves from which buri braids and buri raffia are made.

*Buri Braids* — products made from buri leaves (strips or fibers) as a result of braiding such as lucban hats, mats, bags, and baskets.

*Buri Raffia* — strong weaving material obtained by hand stripping the fine fibers from the young leaves of buri.

*Diliman or Hingiw* — a coarse climbing fern (*Stenochlaena palustris*) of indefinite length whose stem is brown, smooth, generally less than 1 cm. in diameter and sparingly branched.

*Firewood or Fuelwood* — wood used for fuel for household (cooking) and industrial purposes (boiler fuel).

*Charcoal* — a solid product obtained from the destructive distillation and/or thermal degradation of wood.

*Charcoal (M)* — refers to mangrove charcoal or charcoal derived from mangrove species.

*Charcoal (U)* — refers to upland charcoal or charcoal derived from upland tree species.

**Lumbang Nut** — the hard shell seed of lumbang (Aleurites *moluccana*) and bagui lumbang (*A. trisperma*) from which oil is extracted for the use in the preparation of varnish, paints and linoleum, illumination, soap manufacture, wood preservation, etc.

**Nipa Shingle** — roofing materials made from the fronds of nipa palm (*Nypha fruticans*).

**Salago Bark** — bark obtained from the salago species (*Wikstroemia speciosa*) and is used in making paper money.

**Tanbark** — a general term for tannin-producing barks, e.g., camachile and bakauan barks.

**Tiger Grass** — a member of the grass family the inflorescence of flower stalk of which is used in making broom (walis na tambo).

**Wood Residues** — are by-products of logging, sawmilling, and manufacturing operations in the form of sawdust, flakes and other particulates and sub-particulates.

**Woodwaste** — are by-products of logging, sawmilling, and manufacturing operations in the form of slabs, edgings, trimmings, log cores, and tree tops.

**Extractives** — substance in wood, not an integral part of the cellular structure, that can be dissolved out with hot or cold water, ether, benzene or other relatively inert solvents.

**Latex or Gums** — tree exudants which are soluble in water as differentiated from resins. The usual sources are para rubber, raintree, chico and camachile.

**Natural Resin** — tree exudants which are insoluble in water but solu-

ble in neutral organic solvents such as anhydrous diethyl ether and petroleum ether.

**Balau** — resins exuded by the Dipterocarpus species such as apitong, hagakhak and panau.

**Almaciga Resin** — resins exuded by almaciga trees (*Agathis philippinensis*) of the family Araucariaceae.

**Gum Elemi or Manila Elemi or Brea Balanca** — resins exuded by the Canarium species, such as pili and piling litan, of the family Burseraceae.

**Oleoresin** — an oily resin exuded by the pine species.

**Rosin** — a translucent amber-colored to almost black brittle resin obtained by chemical means from oeloresin.

**Nipa Sap** — liquid extracted from the bud of nipa palm (*Nypha fruticans*) as a result of tapping and is used in the manufacture of wine and vinegar.

**Tannin** — water soluble chemicals (polyphenolic polymers) extracted from barks and used to convert animal hide to leather.

**V<sub>1</sub>** — Veneer No. 1 — diameter, 80 cm. or larger; length, 2.5 m. or longer. Logs shall be fresh cut, straight, cylindrical, straight-grained with well-bucked ends. Heart may not be well-centered, provided not in excess of one-fourth of log diameter off-center.

**V<sub>2</sub>** — Veneer No. 2 — diameter, 60 cm. or larger; length, 2.5 m. or longer. Logs shall be fresh cut, straight, straight-grained and cylindrical with well-bucked ends. Heart may not be well-centered, provided not in excess of one-third of the diameter off-center.

*S<sub>1</sub>* — Sawlog No. 1 — diameter, 60 cm. or larger, length 2.5 m. or longer. Log shall be fairly cylindrical, reasonably straight and fairly straight-grain. Heart may be off-center.

*S<sub>2</sub>* — Sawlog No. 2 — any log not coming up to the grade of at least Sawlog No. 1 shall fall under this grade, provided it is at least 2.0 m. long and scales at least 70% sound.

*S<sub>3</sub>* — Sawlog No. 3 — any log at least 2.0 m. long and scales below 70% sound.

*Sawlog (Short)* — any log shorter than 2.0 meter long.

#### LEASES, LICENSES AND PERMITS

*Lease* — a privilege granted by the State to a person to occupy and possess, in consideration of a specified rental, any forest land of the public domain in order to undertake any authorized activity therein.

*Lease, Industrial Plantation* — a lease for the occupancy and use of a portion of the public forest for the purpose of growing commercial timber on denuded or degraded forest lands, executed by and between the Minister of Natural Resources in behalf of the Republic, and the grantee, as recommended by the Director of the Bureau of Forest Development.

*Lease, Pasture* — a lease for the occupancy and use of a portion of a forest land for pasture purposes, executed by and between the Minister of Natural Resources in behalf of the Republic and the grantee, as recommended by the Director of the Bureau of Forest Development.

*Lease, Special Use* — a lease executed by the Minister of Natural Resources upon the recommendation of the Director of the Bureau

of Forest Development for a long term occupancy and use of a portion of a public forest for purposes other than those stated in other leases.

*License* — a privilege granted by the State to a person to utilize forest resources in any forest land, without any right of occupation and possession over the same to the exclusion of others, or establish and operate a wood-processing plant, or conduct any activity involving the utilization of any forest resources.

*License, Minor Forest Products* — a license issued by the Bureau of Forest Development for the cutting and utilization of any forest products other than timber within a public forest or forested land.

*License, Registered Private Woodland* — a license issued by the Director of the Bureau of Forest Development for the cutting and commercial utilization of timber in a private land the title of which is registered with the Bureau.

*Timber License, Land Grant* — a license issued by the Minister of Natural Resources or by the Director of the Bureau of Forest Development for the cutting and utilization of timber species within a land grant.

*Timber License, Mangrove* — a license issued by the Director of the Bureau of Forest Development for the cutting and utilization of mangrove timber species.

*Timber License, A & D* — a license issued by the Director of the Bureau of Forest Development for the clear-cutting and commercial utilization of timber growing on lands that have been declared as alienable or disposable but not yet covered by a title ownership.

*Timber License, Gratuitous* — a license issued by the Director of the

Bureau of Forest Development or his duly authorized representative for the cutting of timber strictly for personal use, for public purposes, or for mining operations.

*Timber License, Hardwood* — a license issued by the Director of the Bureau of Forest Development for the cutting within a forest land, of timber species principally used for furniture, house components, sash, handicraft and other such woodcraft.

*Timber License, Private Land* — a license issued by the Director of the Bureau of Forest Development for the cutting and commercial utilization of timber in a private land the title of which is not registered with the Bureau.

*Timber License, Provisional* — a short term license issued by the Minister of Natural Resources over areas previously under ordinary timber license where field evaluation has not been undertaken or completed due to fortuitous events or where the area is covered by mining claim and the claimant does not need the timber for mining purposes and commercializes it or waives his right to another who is qualified to acquire a timber license.

*Timber License, Softwood* — a license issued by the Director of the Bureau of Forest Development for the cutting within forest land, of selected timber species suitable and used solely for "bakya", matchsticks, carvings and similar purposes.

*License Agreement* — a privilege granted by the State to a person to utilize forest resources within any forest land with the right of possession and occupation thereof to the exclusion of others, except the government, but with the corresponding obligation to develop, protect and rehabilitate the same in accordance with the terms and conditions set forth in the said agreement.

*License Agreement, Timber* — a long term license executed by and between the Minister of Natural Resources on behalf of the Government, and the grantee, for the harvesting and removal from the public forest of timber, and in appropriate cases also of other forest products. It is drawn up by the Director of the Bureau of Forest Development and recommended to the Minister of Natural Resources for his final approval. It is subject to review at least once every five (5) years to ascertain compliance with the terms thereof and adjust such terms to major policy changes.

*License Agreement, Pulpwood* — similar to timber license agreement except that it is primarily for the cutting of pulpwood.

*Permit* — a short term privilege or authority granted by the State to a person to utilize any limited forest resources or undertake a limited activity within any forest land without any right of occupation and possession therein.

*Permit, Special Use* — a short term permit granted by the Director of the Bureau of Forest Development for the occupancy or use of a portion of public forest for purposes other than those stated in foregoing leases.

## CONVERSION FACTORS

### 1. General Measures

#### 1.1 Metric System

1 metre	=	1000 millimetres
1 kilometre	=	1000 metres
1 square kilometre	=	100 hectares
1 acre	=	100 square metres
1 hectare	=	100 acres
1 hectare	=	10000 square metres
1 metric ton	=	1000 kilograms
1 metric ton	=	10 quintals
1 cubic metre	=	1000 liters
1 kilogramme	=	1000 grams

#### 1.2 Conversion from Metric to English System and vice versa

1 centimetre	=	0.3937 inch
1 metre	=	39.3700 inches
1 metre	=	3.2810 feet
1 metre	=	1.0936 yards
1 metre	=	0.5470 fathom
1 kilometre	=	0.6214 mile
1 kilometre	=	0.5399 nautical mile
1 square centimetre	=	0.155 square inch
1 square metre	=	10.764 square feet
1 square metre	=	1.196 square yards
1 square kilometre	=	0.386 square mile
1 hectare	=	2.471 acres
1 inch	=	25.4000 millimetres
1 inch	=	2.5400 centimetres
1 foot	=	0.3048 metre

1 yard	=	0.9144 metre
1 fathom	=	1.8288 metres
1 mile	=	1.6093 kilometres
1 nautical mile	=	1.8522 kilometres
1 square inch	=	6.4516 square centimetres
1 square foot	=	0.0929 square metre
1 square yard	=	0.8361 square metre
1 square mile	=	2.5898 square kilometre
1 acre	=	0.4047 hectare
1 cubic centimetre	=	0.0610 cubic inch
1 cubic metre	=	35.3150 cubic feet
1 cubic metre	=	424.00 board feet
1 litre	=	33.8140 ounces
1 litre	=	2.1130 pints
1 litre	=	1.0570 quarts
1 litre	=	0.2642 gallons (US)
1 litre	=	0.2191 gallon (UK)
1 kilogramme	=	2.2050 pounds
1 metric ton	=	1.1020 short ton
1 metric ton	=	0.9842 long ton
1 metric ton	=	19.6840 hundred weights of 1120 pounds
1 metric ton	=	22.0460 hundred weight of 100 pounds
1 kilogramme per cubic metre	=	0.6243 pounds per cubic foot
1 square metre per hectare	=	4.3560 square feet per acre
1 cubic meter per hectare	=	14.2910 cubic feet per acre
1 cubic inch	=	16.39344 cubic centimetres

1 cubic foot	=	0.02830 cubic metre	1 hundred weight	=	0.0508 metric ton
1 board foot	=	0.00236 cubic metre	(of 1120 pounds)		
1 ounce	=	0.02960 litre	1 hundred weight	=	0.0455 metric ton
1 pint	=	0.47320 litre	(of 100 pounds)	=	16.0180 kilogramme per
1 quart	=	0.94630 litre	1 pound per cubic foot	=	cubic metre
1 gallon (US)	=	3.78500 litres	1 square foot per acre	=	0.2296 cubic metre per metre
1 gallon (UK)	=	4.54610 litres	1 cubic foot per acre	=	0.0700 cubic metre per hectare
1 pound	=	0.4536 kilogramme			
1 short ton	=	0.9072 metric ton			
1 long ton	=	1.0160 metric ton			

## 2. Wood Products Measures

2.1 Philippine Metric Unit of Sawwood Measure  
(Proposed by the Metric System Board pursuant to Presidential Decree 187,  
dated May 10, 1973)

BOARD METRE (bd m) with dimension of 10 mm x 1 m x 1 m and volume of 0.01 cubic metre  
 1 bd m = 4.24 bd ft.  
 1 cubic metre = 100 board metres

Timber Product Measures

Product/Thickness	Unit	Cubic Metre	Volume Solid Cubic Feet	Equivalent Board Foot	Board Metre
<b>Roundwood</b>					
Logs	Cubic Metre	1.00000	35.3147	424.000	100.000
Logs	1 ft <sup>3</sup> (hoppus)	0.03605	1.2731	15.824	3.605
Fuel or pulpwood	1 cord	3.62500	128.0158	1536.797	362.500
<b>Sawnwood</b>					
Lumber	board foot	0.00236		1.000	0.236
	1000 bd ft./mi	2.35850	83.333	1.000	235.85
	Cubic feet	0.02832	1.000	12.00	2.830
<b>Wood Panel Products</b>					
Veneer, Plywood, Particleboard and Fiberwood					
per 1 mm thickness	1000 sq. metre	1.00000	35.31472	424.00000	100.000
per 1/32 inch thickness	1000 sq. feet	0.07375	2.60446	31.27000	7.375
per 1/24 inch thickness	1000 sq. feet	0.09833	3.47250	41.69192	9.833
per 1/20 inch thickness	1000 sq. feet	0.11800	4.16714	50.03200	11.800
per 1/16 inch thickness	1000 sq. feet	0.14750	5.20892	62.54000	14.750
per 1/10 inch thickness	1000 sq. feet	0.23600	8.33427	100.06400	23.600
per 1/8 inch thickness	1000 sq feet	0.29500	10.41784	125.08000	29.500
per 1/6 inch thickness	1000 sq. feet	0.39333	13.89034	166.77192	39.333
per 1/4 inch thickness	1000 sq. feet	0.59000	20.83569	250.16000	59.000
per 1/3 inch thickness	1000 sq. feet	0.78667	27.78103	333.54808	78.667
per 1/2 inch thickness	1000 sq. feet	1.18000	41.67137	500.32000	118.000



Republic of the Philippines  
 Ministry of Natural Resources  
**BUREAU OF FOREST DEVELOPMENT**  
 Diliman, Quezon City

**EDMUNDO V. CORTES**  
 Director

**JESUS B. ALVAREZ, JR.**  
 Asst. Director, Planning & Management

**DOROTEO U. ANTONIO**  
 Asst. Director, Technical Services

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**STAFF/UNIT HEADS**

Republic of the Philippines  
 Ministry of Natural Resources  
**BUREAU OF FOREST DEVELOPMENT**  
**PLANNING AND EVALUATION DIVISION**  
 Diliman, Quezon City

**CIRILO B. SERNA**

Chief

**ANTONIO M. MENDOZA**

Asst. Chief

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16. Lorna Sta. Cruz	16. Lolita Lucas		
17. Eddie Ubaldo	17. Mercedes Ulibas		
* - On study grant			
1 - Assigned to the Office of the Director			
2 - Assigned to the Office of the Chief			
3 - Detailed with SFLEG			
4 - Detailed with NFI			
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JICA