Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

PHILIPPINES

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The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2005 (FRA 2005), which is the most comprehensive assessment to date. More than 800 people have been involved, including 172 national correspondents and their colleagues, an Advisory Group, international experts, FAO staff, consultants and volunteers. Information has been collated from 229 countries and territories for three points in time: 1990, 2000 and 2005.

The reporting framework for FRA 2005 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes more than 40 variables related to the extent, condition, uses and values of forest resources. More information on the FRA 2005 process and the results - including all the country reports - is available on the FRA 2005 Web site (www.fao.org/forestry/fra2005).

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1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2005 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as "Forest", spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds *in situ*; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as "Forest" or "Other wooded land".
Other land with tree cover (Subordinated to "Other land")	Land classified as "Other land", spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
GOP. 1969. First National Forest Inventory. Philippines.	M	Extent	1969
FMB. 1988. Natural Forest Resources of the Philippines. Philippine –German Forest Resources Inventory Project. 1988. Forest Management Bureau. Philippines.	H	Extent	1988
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Extent	2003

1.2.2 Classification and definitions

A. 1969 Definitions

National class	Definition
Brushland	Degraded areas dominated by a discontinuous cover of shrubby vegetation.
Dicterocarp Old Growth	Tropical rain forest dominated by Dipterocarpaceae without traces of commercial logging.
Dicterocarp Residual	Tropical rain forest dominated by Dipterocarpaceae after commercial logging.
	Tropical rain forest dominated by Dipterocarpaceae after commercial logging.
Mangrove	Tidal forest on the mud flats at the mouth of streams and along the shore of shallow bays.
Mossy	Tropical rain forest of the high elevations dominated by Podocarpaceae, Myrtaceae and Fagaceae with trees of short to medium height, covered with epiphytes.
Pine, Closed	Pure stands of Benguet pine (Pinus kesiya) or Mindoro pine (P. merkusii) with a crown cover above 30%
Pine, Open	Pure stands of Benguet pine (Pinus kesiya) or Mindoro pine (P. merkusii) with a crown cover of 10-30%.
Other land	Subtotal of other land.
Submarginal	Tropical rain forest dominated by lesser utilized species, mainly restricted to

	shallow and excessively drained limestone soils.

B. 2003 Definitions (NFA 2002 to 2004)

It in general follows FRA 2005 definition of "Forest" and "Other wooded lands".

Categories	Definition
Total area	Total area (of country), including area under inland water bodies, but excluding offshore territorial waters.
Forest	Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha).
Broadleaved forest	Forest with predominance (more than 75 percent of tree crown cover) of trees of broadleaved species.
Coniferous forest	Forest with predominance (more than 75 percent of tree crown cover) of trees of coniferous species.
Bamboo/palms formations	Forest on which more than 75% of the crown cover consists of tree species other than coniferous or broadleaved species (e.g. tree-form species of the bamboo, palm and fern families).
Mixed forest	Forest in which neither coniferous, nor broadleaved, nor palms, bamboos, account for more than 75 percent of the tree crown cover.
Open forest (10-<40%)	Formations where trees form a discontinuous layer covering between 10 to 40 percent of ground. This forest usually includes a continuous grass layer allowing grazing activities and the spreading of fires. (Examples are the different types of «cerrado» and «chaco» in Latin America, wooded savannas and woodlands in Africa).
Closed forest (≥ 40%)	Natural forest where trees in the various storeys and undergrowth cover 40 percent of the ground. These formations do not; have a continuous dense grass layer. They are either managed or unmanaged forests primary or in an advanced state of reconstitution and may have been logged-over one or more times, having kept their characteristics of forest stands, possibly with modified structure and composition. Typical examples of tropical closed forest formations include tropical rain forest and mangrove forest .
Forest plantation	Forest stands established by planting or/and seeding in the process of afforestation or reforestation. They are either of introduced species (all planted stands), or intensively managed stands of indigenous species, which meet all the following criteria: one or two species at plantation, even age class, regular spacing.
Open broad leaved forest plantation (10-<40%)	Forest plantation where the crown cover is between 10 and 40 percent of the area.
Closed broad leaved forest plantation (≥ 40%)	Forest plantation where the crown cover is above or 40 percent of the area.
Other wooded land	Land either with a crown cover (or equivalent stocking level) of 5-10 percent of trees able to reach a height of 5 m at maturity *in situ*; or a crown cover (or equivalent stocking level) of more than 10 percent of trees not able to reach a height of 5 m at maturity *in situ* (e.g. dwarf or stunted trees); or with shrub or bush cover of more than 10 percent.
Shrubs	Refers to vegetation types where the dominant woody elements are shrubs i.e. woody perennial plants, generally of more than 0.5 m and less than 5 m in height on maturity and without a definite crown. The height limits for trees and shrubs should be interpreted with flexibility, particularly the minimum tree and maximum shrub height, which may vary between 5 and 7 meters approximately.
Fallow	It encompasses forest fallow where the woody vegetation is under 5 m. Height. It refers to woody vegetation deriving from the clearing of natural forest for shifting agriculture. It is part of a forest fallow consisting of a mosaic of various reconstitution phases. The vegetation does not reach a height of 5 m.
Wooded grasslands (5-<10%)	Land where the trees cover between 5 to 10 percent of the area and their height may reach 5 m at maturity.
Other land	Land not classified as forest or other wooded land, as described above. Including cultivated land, grasslands and pastures, built-up areas, barren land etc.
Inland water	Area occupied by major rivers, lakes and reservoirs.

1.2.3 Original data

A. 1969 National Inventory

Categories		**Area (000 ha)**	**Reclassification to FRA 2005 categories**	
			Forest	**Non-forest**
Dipterocarp				
	Old growth	5,216.82	5,216.82	
	Young growth	3,277.52	3,277.52	
	Reproduction	5293.949		5293.949
	Unproductive	1,438.76	1,438.76	
Pine		217.21	217.21	
Mangrove		295.19		
	Old growth	15.37	15.37	
	Young growth	125.60	125.60	
	Reproduction	154.23		154.23
Mossy		330.24	330.24	
Bamboo		15.57		15.57
Others		13,914.74		
	Open/grassland	3,303.90		3,303.90
	Cultivated, etc.	6,303.70		6,303.70
	Marshes	217.75		217.75
	Managed pasture	297.21		297.21
	Plantation	3,219.75		3,219.75
	Urban & others	572.43		572.43
Total, Philippines		30,000.00	10,621.51	19,378.49

B. 1988 Survey of National Forest Resources

Categories	**Area (000) ha**	**Reclassify to FRA 2005 categories**	
		Forest	**Non-forest**
Dipterocarp		4,401.1	
Dipt. Old growth	988.3	988.3	
Dipt. Residual	3,412.8	3,412.8	
Submarginal	544.2	544.2	
Pine forest			
Pine, closed	129.6	129.6	
Pine, open	109.2	109.2	
Mangrove forest	139.1	139.1	
Mangrove old growth	139.1	139.1	
Mangrove reproduction			
Mossy	1,137.4	1,137.4	
Brushland	2,525.1		2,525.1
Other (land uses)	21,014.3		21,014.3
Total, Philippines	**30,000.00**	6,460.6	23,539.4

C. 2003 National Inventory (National Forest Assessment)

Categories		**Area (000 ha)**
Forest		
	Broadleaved Forests	6,029
	Coniferous Forests	211
	Mixed Forests	83
	Plantation Forests	627
	Bamboo	172
	Mangroves	40
	Sub Total Forests	**7,162**
Other wooded lands		**3,611**
Other Land		**18,424**
Inland Water		**803**
Total, Philippines		**30000**

1.3 Analysis and processing of national data

The estimation of extent of "Forest" in 1990 and 2000 uses 1969 and 2003 inventories. The 1988 data set has not been used as it has under estimated the area of "forests" by counting dots, where each dot represented an area of 100 ha (FMB, 1988). The NFA (2005) followed the minimum limit of FRA of 0.5 ha on the ground in and around each measurement plot of 0.5 ha. The 1969 data set does not provide area of "Other Wooded lands" (OWL). Therefore, the area of OWL in the 1988 data set has been used for estimating OWL in 1990 and 2000, even though these may be underestimate.

1.3.1 Calibration

The area of inland water bodies in 1969 and 2003 has been calibrated to match the figure (183,000 ha) in FAOSTAT with all adjustments made in the area of "Other land".

FRA 2005 Categories	1969	1988	2003
Forest	16085	6461	7162
Other Wooded lands		2525	3611
Other Land	13732	20831	19044
Inland Water bodies	183	183	183
Total	30000	30000	30000

1.3.2 Estimation and forecasting

The "forests " in 1990 and 2000 has been estimated by linear interpolation of 1969 and 2003 figures. The "OWL" has been estimated by linear extrapolation and interpolation of 1988 and 2003 figures. The figures of all categories in 2003 has been assumed as figures for 2005 since the field inventory work (NFA, 2005) was spread till late 2004.

FRA 2005 Categories	Area in 000 ha		
	1990	2000	2005
Forest	10574	7949	7162
Other Wooded lands	2230	3292	3611
Other Land	17013	18576	19044
Inland Water bodies	183	183	183
Total	30000	30000	30000

1.4 Reclassification into FRA 2005 classes

This step has already been implemented in section1.2.3.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	10574	7949	7162
Other wooded land	2230	3292	3611
Other land	17013	18576	19044
...of which with tree cover [1)]			
Inland water bodies	183	183	183
TOTAL	30000	30000	30000

1.6 Comments to National reporting table T1

1. Three inventories have been conducted in the Philippines providing information for 1969, 1988 and 2003. The methodology of estimating areas vary between these inventories. For example the 1988 data set is based on estimation of areas on maps with the helps of dots where each dot represents 100 ha. and the 2003 (NFA) inventory estimates forest area on ground through its percentage in each of the measurement plot of 0.5 ha. The 1988 thus underestimates “forests” in terms of FRA 2005 minimum area of 0.5 ha.

2. The figures differ from FAR 2000 because FRA 2000 used 1988 data set and a model based projection of 1988 figures to 1997 for estimation and forecast of areas in 1990 and 2000. Where as this report uses the original data and latest ground based inventory (NFA) rather than model based projections for its estimation and forecasts of areas for 1990, 2000 and 2005.

2 Table T2 – Ownership of Forest and Other wooded land

2.1 FRA 2005 Categories and definitions

Category	Definition
Private ownership	Land owned by individuals, families, private co-operatives, corporations, industries, religious and educational institutions, pension or investment funds, and other private institutions.
Public ownership	Land owned by the State (national, state and regional governments) or government-owned institutions or corporations or other public bodies including cities, municipalities, villages and communes.
Other ownership	Land that is not classified either as "Public ownership" or as "Private ownership".

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
Thang, H. C. 1991. Asean Forest Resource Database- Country Report – The Philippines. Asean Institute of Forest Management. Kula Lumpur.	H	Extent	1988
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Extent	2003

2.2.2 Classification and definitions

No national definition and classification relevant to this table are available.

2.2.3 Original data

Categories	Area in 000 ha	
	1988	2003
Private ownership	28	1168
Public Ownership	14102	5978
Total	14130	7146

2.3 Analysis and processing of national data

2.3.1 Calibration

This step is not necessary.

2.3.2 Estimation and forecasting

The area of private ownership in 1990 has been assumed to be same as in 1988 as mentioned in the study by Thang (1991). The area in 2000 has been estimated through linear

interpolation of the figures for 1988 and 2003. The area of forests less the area under private ownership has been assumed as area under public ownership to maintain area consistency with Table T1.

Categories	**Area in "000"ha**	
	1990	**2000**
Private ownership	28	833
Public Ownership	10546	7116
Total	10574	7949

2.4 Reclassification into FRA 2005 classes

This step is not necessary

2.5 Data for National reporting table T2

FRA 2005 Categories	**Area (000 hectares)**			
	Forest		**OWL**	
	1990	2000	1990	2000
Private ownership	28	833	n.a.	n.a.
Public ownership	10546	7116	n.a.	n.a.
Other ownership	n.a.	n.a.	n.a.	n.a.
Total, Philippines	10574	7949	n.a.	n.a.

2.6 Comments to National reporting table T2

3 Table T3 – Designated function of Forest and Other wooded land

3.1 FRA 2005 Categories and definitions

Types of designation

Category	Definition
Primary function	A designated function is considered to be primary when it is significantly more important than other functions. This includes areas that are legally or voluntarily set aside for specific purposes.
Total area with function	Total area where a specific function has been designated, regardless whether it is primary or not.

Designation categories

Category / Designated function	Definition
Production	Forest / Other wooded land designated for production and extraction of forest goods, including both wood and non-wood forest products.
Protection of soil and water	Forest / Other wooded land designated for protection of soil and water.
Conservation of biodiversity	Forest / Other wooded land designated for conservation of biological diversity.
Social services	Forest / Other wooded land designated for the provision of social services.
Multiple purpose	Forest / Other wooded land designated to any combination of: production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others.
No or unknown function	Forest / Other wooded land for which a specific function has not been designated or where designated function is unknown.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
Thang, H. C. 1991. Asean Forest Resource Database- Country Report – The Philippines. Asean Institute of Forest Management. Kula Lumpur.	H	Designation	1988
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Designation	2003

3.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

3.2.3 Original data

Category	Area in 000 ha			
	1988	Percentage	2003	Percentage
Production	9555	68	5352	75
Conservation	2481	18	829	12
Protection	1139	8	817	11
Unspecified	955	7	148	2
Total	14130	100	7146	100

The 1998 figures are from the study by Thang (1991) and the conservation areas include national parks and national reserves. This table T3 has sued the percentages rather than actual number.

3.3 Analysis and processing of national data

3.3.1 Calibration

This step is not necessary.

3.3.2 Estimation and forecasting

The percentage distribution in various functional classes in 1988 and in 2003 has been used to estimate the percentage distribution in 2000 through linear interpolation.

Category	Percentage distribution		
	1988	2000	2003
Production	68	74	75
Conservation	17	13	12
Protection	8	10	11
Unknown	7	3	2
Total	100	100	100

These percentage distributions have been applied to the area figures in Table 1 for 1990, 2000 and 2005 to estimate areas under different functions. The area under "unknown" function has been taken as the remainder area to maintain the area consistency with Table T1.

Category	Area in 000 ha		
	1990	2000	2005
Production	7190	5851	5372
Conservation	1798	1033	859
Protection	846	827	788
Unknown	740	238	143
	10574	7949	7162

3.4 Reclassification into FRA 2005 classes

A. Area with Primary Function

National Class	Percentage of a National Class to a FRA Classes of Primary Function					
	Production	Protection	Conservation of Biodiversity	Social Service	Multiple Function	Unknown Function
Production	100					
Protection		100				
Conservation			100			
Unknown						100

B. Total Area with Function

National Class	Percentage of a National Class to a FRA Classes of Total Area with Function					
	Production	**Protection**	**Conservation of Biodiversity**	**Social Service**	**Multiple Function**	**Unknown Function**
Production	100					
Protection		100	100			
Conservation		100	100	100		

3.5 Data for National reporting table T3

FRA 2005 Categories / Designated function	Area (1000 hectares)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	7190	5851	5372	7190	5851	5372
Protection of soil and water	846	827	788	2644	1860	1647
Conservation of biodiversity	1798	1033	859	2644	1860	1647
Social services				1798	1033	859
Multiple purpose				Not appl.	not appl.	not appl.
No or unknown function	740	238	143	Not appl.	not appl.	not appl.
Total - Forest	**10574**	**7949**	**7162**	**Not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production				2230	3292	3611
Protection of soil and water				2230	3292	3611
Conservation of biodiversity						
Social services						
Multiple purpose	2230	3292	3611	Not appl.	not appl.	not appl.
No or unknown function				Not appl.	not appl.	not appl.
Total – Other wooded land	**2230**	**3292**	**3611**	**Not appl.**	**not appl.**	**not appl.**

3.6 Comments to National reporting table T3

4 Table T4 – Characteristics of Forest and Other wooded land

4.1 FRA 2005 Categories and definitions

Category	Definition
Primary	Forest / Other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Modified natural	Forest / Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities.
Semi-natural	Forest / Other wooded land of native species, established through planting, seeding or assisted natural regeneration.
Productive plantation	Forest / Other wooded land of introduced species, and in some cases native species, established through planting or seeding mainly for production of wood or non wood goods.
Protective plantation	Forest / Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
Thang, H. C. 1991. Asean Forest Resource Database- Country Report – The Philippines. Asean Institute of Forest Management. Kula Lumpur.	H	Characteristic	1988
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Characteristic	2003

4.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

4.2.3 Original data

A. 1988

Category	Area (000 ha)
Productive plantation	389
Protective	1391

B. 2003

Category	Area (000 ha)
Broadleaf, plantation	607
Conifer, plantation	11
Mangrove, plantation	2
Total	620

4.3 Analysis and processing of national data

4.3.1 Calibration

This step is not needed.

4.3.2 Estimation and forecasting

A. Primary Forests

The area of forests that continues to be under protected area network since 1990 i.e. minimum area between 1990 and 2005, has been assumed to be primary forests.

B. Modified forests

To maintain area consistency with Table 1 it has been assumed that the area of the modified forest is the area that remains after excluding under "primary" and "plantations".

C. Plantations

The Thang (1991) provide figures for plantations for 1988 and these have been adopted for 1990. The NFA (2005) provides latest estimate of area under plantations these have been assumed for 2005. It is recognised that these assumption lead to conservative estimate of area under plantations. The figure for 2000 has been estimated through linear interpolation. Further, based on information provided by the country at the November 2004 meeting of National Correspondents, the area of productive plantations in 2003 have been assumed to be 50 percent of the broadleaved (excluding mangrove plantations) plantations and the remaining area of plantations (50 percent of broad leaved + 100% of conifer plantations + 100% mangrove plantations) has been considered as "protective" plantation.

4.4 Reclassification into FRA 2005 classes

This step is not necessary.

4.5 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	829	829	829	n.a.	n.a.	n.a.
Modified natural	7965	6268	5713	n.a.	n.a.	n.a.
Semi-natural				n.a.	n.a.	n.a.
Productive plantation	389	321	304	n.a.	n.a.	n.a.
Protective plantation	1391	531	316	n.a.	n.a.	n.a.
TOTAL	10574	7949	7162	n.a.	n.a.	n.a.

4.6 Comments to National reporting table T4

5 Table T5 – Growing stock

5.1 FRA 2005 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Commercial growing stock	The part of the growing stock of species that are considered as commercial or potentially commercial under current market conditions, and with a diameter at breast height of Z cm or more.

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
FMB. 1988. Natural Forest Resources of the Philippines. Philippine –German Forest Resources Inventory Project. 1988. Forest Management Bureau. Philippines.	H	Volume	1988
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Volume	2003

5.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

5.2.3 Original data

A. Growing stock

Variable	Volume (million m^3)	Per ha volume (m^3/ha)	Comments
Growing Stock in 1988	744.10	160.37	Volume assessed over productive forests (4639900 ha) and for trees with dbh. of 15 cm and more
Growing Stock in 2003	1,247.86	174.22	Volume assessed over total forest area (7,162,560 ha)) and for trees with dbh of 10 cm and more

B. Commercial Growing Stock

Variable	Volume (million m^3)	Per ha volume (m^3/ha)	Comments
Commercial Growing Stock in 1988	253.6	54.66	Volume assessed over productive forests (4639900 ha) and for trees with dbh of 55 cm and more
Commercial Growing Stock in 2003	386.96	54.02	Volume assessed over total forest area (7,162,560 ha) and for trees with dbh of 50 cm and more

C. Diameter-wise Basal Area distribution

The NFA (2005) also provide information on number of trees per ha in each diameter class which leads to following proportion of basal area among diameter classes.

Variable	Mean diameter (cm) of DBH Classes						
	15	**25**	**35**	**45**	**55**	**65**	**75**
Number of trees	1201	355	209	156	66	66	39
Proportion of Basal area	14.9	12.3	14.1	17.4	11.0	15.4	12.1

5.3 Analysis and processing of national data

5.3.1 Calibration

This step is not necessary.

5.3.2 Estimation and forecasting

A. Growing Stock per hectare

The 1988 figure of growing stock per hectare of trees over 15 cm dbh has been increased by a volume expansion factor (VEF) of 0.075 to estimate the growing stock per hectare of trees over 10 cm dbh. The VEF has been derived form the distribution of basal area among various diameter classes in 2003 (NFA, 2005).

The growing stock per ha figures of 1988 and 2003 have been used to estimate the growing stock per ha in 1990 and 2000 using linear extrapolation and interpolation method. The 2005 figure of growing stock per ha has been assumed to be same as that of 2003.

B. Growing stock of trees over 10 cm dbh

The growing stock of trees (10 cm dbh and more) in 1990, 2000 and 2005 has been estimated using per hectare figures of growing stock.

Variable	**1990**	**2000**	**2005**
Growing stock per hectare (m^3/ha)	172.6	173.9	174.2
Area in 000 ha	10574	7949	7162
Growing stock in million m^3	1825	1382	1248

C. Commercial Growing Stock per hectare

The 1988 figure of commercial growing stock per hectare of trees over 55 cm dbh has been increased by a volume expansion factor (VEF) of 0.055 to estimate the growing stock per hectare of trees over 50 cm dbh. The VEF has been derived form the distribution of basal area among various diameter classes in 2003 (NFA, 2005). The commercial growing stock per ha figures of 1988 and 2003 have been used to estimate the commercial growing stock per ha in 1990 and 2000 using linear extrapolation and interpolation method. The 2005 figure of commercial growing stock per ha has been assumed to be same as that of 2003.

D. Commercial Growing stock of trees over 50 cm dbh

The commercial growing stock of trees (50 cm dbh and more) in 1990, 2000 and 2005 has been estimated using per hectare figures of the commercial growing stock.

Variable	1990	2000	2005
Commercial Growing stock per hectare (m^3/ha)	57.2	54.8	54.0
Area in 000 ha	10574	7949	7162
Commercial Growing stock in million m^3	605	435	387

5.4 Reclassification into FRA 2005 classes

This step is not necessary.

5.5 Data for National reporting table T5

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock	1825	1382	1248	n.a.	n.a.	n.a.
Commercial growing stock	57.2	54.8	54.0	n.a.	n.a.	n.a.

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	10	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	10	
3. Minimum diameter of branches included in Growing stock (W)	cm		
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	50	
5. Volume refers to "Above ground" (AG) or "Above stump" (AS)	AG / AS	n.a.	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	yes	
7. If yes, then attach a separate note giving details of the change	Attachment		Given below

5.6 Comments to National reporting table T5

In 1988, the minimum diameter at breast height was 15 cm for growing stock and 55 cm for commercial growing stock instead of current thresholds of 10 cm and 50cm respectively.

6 Table T6 – Biomass stock

6.1 FRA 2005 Categories and definitions

Category	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
Below-ground biomass	All living biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood biomass	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
GPG, 2003. Good Practise Guidance for Land-use, Land-use Change and Forestry. IPCC.	H	Basic Densities, Root: Shoot Ratio, Dead to Live Ration	All
Sandra Brown, 1997. Estimating Biomass Change in Topical Forests. A Primer. FAO Forestry Paper No. 134.	H	Biomass Expansion Factor	All
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Growing Stock by species	2003

6.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available .

6.2.3 Original data

A. Basic Wood Density

Following are the basic densities for the ten most common species.

Scientific name	Local Name	Volume in 2003	Basic Density
Shorea polysperma	Tanguile	125.19	0.47
Shorea contorta	White lauan	128.14	0.44
Shorea negrosensis	Red lauan	105.71	0.44
Shorea squamata	Mayapis	95.3	0.44
Dipterocarpus grandiflorus	Apitong	69.96	0.62
Parashorea plicata	Bagtikan	48.61	0.51
Shora astylosa	Yakal	32.33	0.73
Shorea almon	Almon	23.78	0.44
Lithocarpus Lianosii	Ulayan	22.06	0.63
Gmelina arborea	Yemane	10.11	0.41
Remainder of species		587	0.44
Total		1248	

The most of the basic density figures come from GPG (2003). For some species it has been assumed based on similarity with other species. For remainder of the species it has been assumed that they have a basic density of 0.44

6.3 Analysis and processing of national data

6.3.1 Calibration

This step is not needed.

6.3.2 Estimation and forecasting

A. Weighted Wood Density

The weighted density has been computed by using the basic density and volume figures.

Scientific name	Local Name	Volume in 2003	Basic Density	Stem biomass 2003	Weighted Density
Shorea polysperma	Tanguile	125.19	0.47	58.8	
Shorea contorta	White lauan	128.14	0.44	56.4	
Shorea negrosensis	Red lauan	105.71	0.44	46.5	
Shorea squamata	Mayapis	95.3	0.44	41.9	
Dipterocarpus grandiflorus	Apitong	69.96	0.62	43.4	
Parashorea plicata	Bagtikan	48.61	0.51	24.8	
Shora astylosa	Yakal	32.33	0.73	23.6	
Shorea almon	Almon	23.78	0.44	10.5	
Lithocarpus Lianosii	Ulayan	22.06	0.63	13.9	
Gmelina arborea	Yemane	10.11	0.41	4.1	
Remainder of species		587	0.44	258.1	
Total		**1248**		**582.0**	**0.47**

B. Stem Biomass

The total and per hectare stem biomass has been estimated by multiplying the growing stock figures in Table T5 with weighted basic density.

Variable	Forest		
	1990	**2000**	**2005**
Total Growing Stock (million m3)	1825	1382	1248
Weighted Density	0.47	0.47	0.47
Stem biomass (million tonnes)	852	645	582
Area Table 1	10574	7949	7162
Per hectare Stem Biomass	80.53	81.10	81.27

C. Biomass Expansion Factor (BEF)

The BEFs have been calculated by using following formula of Sandra Brown (1997).

BEF = EXP (3.213-0.506*LN(Stem biomass in tonnes per hectare))

C. Above Ground Biomass

The following estimates of "Above Ground Biomass" have been developed by using the figures of stem biomass and BEF.

Variable	Unit	Forest		
		1990	2000	2005
Stem biomass	Million tonnes	852	645	582
BEF		2.70	2.69	2.69
Above Ground Biomass	Million tonnes	2299	1734	1566

D. Below Ground Biomass

A default value of 0.24 for the Root to Shoot ratio (ratio of below ground bio-mass and above ground biomass) has been adopted from GPG (2003).

Variable	Unit	Forest		
		1990	2000	2005
Above Ground Biomass	Million tonnes	2299	1734	1566
Root to shoot ratio		0.24	0.24	0.24
Below Ground Biomass	Million tonnes	552	416	376

E. Deadwood Biomass

It has been calculated by adopting a default value of 0.11 for dead to total live biomass (total of above and below ground biomass) ratio from GPG (2003).

Variable	Unit	Forest		
		1990	2000	2005
Total Live Biomass	Million tonnes	2851	2150	1942
Dead to live ratio		0.11	0.11	0.11
Dead Wood Biomass	Million tonnes	314	237	214

6.4 Reclassification into FRA 2005 classes

This step is not necessary.

6.5 Data for National reporting table T6

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	2299	1734	1566	n.a.	n.a.	n.a.
Below-ground biomass	552	416	376	n.a.	n.a.	n.a.
Dead wood biomass	314	237	214	n.a.	n.a.	n.a.
TOTAL	3165	2387	2156	n.a.	n.a.	n.a.

6.6 Comments to National reporting table T6

7 Table T7 – Carbon stock

7.1 FRA 2005 Categories and definitions

Category	Definition
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.
Carbon in below-ground biomass	Carbon in all living biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.
Carbon in dead wood biomass	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than a minimum diameter chose by the country for lying dead (for example 10 cm), in various states of decomposition above the mineral or organic soil. This includes the litter, fumic, and humic layers.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
GPG, 2003. Good Practise Guidance for Land-use, Land-use Change and Forestry. IPCC.	H	Basic Densities, Root: Shoot Ratio, Dead to Live Ration	All

7.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

7.2.3 Original data

The table uses biomass estimates from Table T6 and default factors from GPG (2003).

7.3 Analysis and processing of national data

7.3.1 Calibration

This step is not needed.

7.3.2 Estimation and forecasting

A. Carbon in live biomass

The carbon in living (above and below ground) biomass in 1990, 2000 and 2005 has been calculated by using the biomass figures in Table T6 and the default factor of 0.5 (GPG, 2003).

Variables	Units	Forest		
		1990	2000	2005
Carbon in Above Ground Biomass	million tonnes	1150	867	783
Carbon in Below Ground Biomass	million tonnes	276	208	188

B. Carbon in Deadwood biomass

It has been calculated by using the respective figures in Table T 6 and the GPG default factor.

Variables	Units	Forest		
		1990	2000	2005
Carbon in Dead Wood Biomass	million tonnes	157	118	107

C. Carbon in litter

It has been calculated by using default value of 2.1 for tropical forests in GPG (2003).

Variables	Units	Forest		
		1990	2000	2005
Forest Area Table1	000 ha	10574	7949	7162
Carbon in forest litter/ha	tonnes/ha	2.1	2.1	2.1
Carbon in Forest Litter	million tonnes	22	17	15

7.4 Reclassification into FRA 2005 classes

This step is not necessary.

7.5 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	1150	867	783	n.a.	n.a.	n.a.
Carbon in below-ground biomass	276	208	188	n.a.	n.a.	n.a.
Sub-total: Carbon in living biomass	**1426**	**1075**	**971**	n.a.	n.a.	n.a.
Carbon in dead wood	157	118	107	n.a.	n.a.	n.a.
Carbon in litter	22	17	15	n.a.	n.a.	n.a.
Sub-total: Carbon in dead wood and litter	**179**	**135**	**122**	n.a.	n.a.	n.a.
Soil carbon to a depth of _____ cm				n.a.	n.a.	n.a.
TOTAL CARBON	**1605**	**1210**	**1093**	n.a.	n.a.	n.a.

7.6 Comments to National reporting table T7

8 Table T8 – Disturbances affecting health and vitality

8.1 FRA 2005 Categories and definitions

Category	Definition
Disturbance by fire	Disturbance caused by wildfire, independently *or deliberately set,* whether it broke out inside or outside the forest/OWL.
Disturbance by insects	Disturbance caused by insect pests that are detrimental to tree health.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as a bacteria, fungi, phytoplasma or virus.
Other disturbance	Disturbance caused by other factors than fire, insects or diseases.

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
Periodic damage reports from field offices of DENR	M to L	Area affected	1990 and 1998 to 2002

8.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

8.2.3 Original data

Variable	Extent of damage in (000 ha)					
	1990	1998	1999	2000	2001	2002
Fire	36.900	18.313	5.642	4.809	0.776	2.435
Insect			0.099			
Disease			0.586			
Others		6.860	0.593	1.780	0.587	4.782

8.3 Analysis and processing of national data

8.3.1 Calibration

This step is not needed.

8.3.2 Estimation and forecasting

A. Fire

For 1990, the single year for 1990 instead of five year average has been taken for reporting in this table. For 2000- a five year average (1998 to 2002) has been computed.

B. Insect and Diseases

No data is available for 1990. The single figure for 1999 has been taken for reporting in this table for the year 2000.

C. Others

The country compilation does not indicate what processes cause "other" damages to forests. No information is available for 1990. A five year average has been computed for reporting damage for 2000.

8.4 Reclassification into FRA 2005 classes

This step is not necessary.

8.5 Data for National reporting table T8

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire	36.9	6.40	n.a	n.a
Disturbance by insects	n.a.	0.10	n.a	n.a
Disturbance by diseases	n.a	0.59	n.a	n.a
Other disturbance	n.a	2.92	n.a	n.a

(Source: 1990 data is from FMB report, 1992 and 1998-2002 from Planning Division. DENR)

8.6 Comments to National reporting table T8

Data are based on reports from field offices of the Department of Environment and Natural Resources, but these are incidence reports and many incidence of occurrence of disturbance may not have been reported.

9 Table T9 – Diversity of tree species

9.1 FRA 2005 Categories and definitions

Category	Definition
Number of native tree species	The total number of native tree species that have been identified within the country.
Number of critically endangered tree species	The number of native tree species that are classified as "Critically endangered" in the IUCN red list.
Number of endangered tree species	The number of native tree species that are classified as "Endangered" in the IUCN red list.
Number of vulnerable tree species	The number of native tree species that are classified as "Vulnerable" in the IUCN red list.

9.2 National data

9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
IUCN. 2004. Red List of Threatened Species. Gland, Switzerland: The World Conservation Union.	H	Threatened species	2004
Thang, H. C. 1991. Asean Forest Resource Database- Country Report – The Philippines. Asean Institute of Forest Management. Kula Lumpur.	H	Endemic Species	1988

9.2.2 Classification and definitions

No national information is available.

9.2.3 Original data

A. Native species

Thang (1991) report that Philippine has about 3000 number of tree species that can attain a diameter of more than 30 cm and most of them are endemic species. No other national information is available on number of native tree species.

B. Threatened Tree Species.

No national information is available on number of threatened forest tree species. The website of the IUCN RED List of Threatened Species 2004 provides following information on critically endangered species, endangered species, and vulnerable species. It also does not indicate as to how many of these are tree species.

a. Critically Endangered - 46

1	*Amesiella monticola*
2	*Ascoglossum calopterum*
3	*Ceratocentron fesselii*
4	*Cryptocarya elliptifolia*
5	*Dendrobium schuetzei*
6	*Dipterocarpus eurynchus*
7	*Dipterocarpus gracilis*
8	*Dipterocarpus grandiflorus*
9	*Dipterocarpus hasseltii*
10	*Dipterocarpus kerrii*
11	*Dipterocarpus kunstleri*
12	*Dipterocarpus validus*
13	*Gastrochilus calceolaris*
14	*Gongrospermum philippinense*
15	*Guioa palawanica*
16	*Guioa parvifoliola*
17	*Guioa reticulata*
18	*Hopea acuminata*
19	*Hopea basilanica*
20	*Hopea brachyptera*
21	*Hopea cagayanensis*
22	*Hopea malibato*
23	*Hopea mindanensis*
24	*Hopea philippinensis*
25	*Hopea plagata*
26	*Hopea quisumbingiana*
27	*Hopea samarensis*
28	*Kibatalia longifolia*
29	*Paphiopedilum adductum*
30	*Paphiopedilum fowliei*
31	*Paphiopedilum urbanianum*
32	*Parashorea malaanonan*
33	*Phalaenopsis micholitzii*
34	*Shorea almon*
35	*Shorea astylosa*
36	*Shorea contorta*
37	*Shorea falciferoides*
38	*Shorea guiso*
39	*Shorea hopeifolia*
40	*Shorea malibato*
41	*Shorea negrosensis*
42	*Shorea palosapis*
43	*Shorea polysperma*
44	*Shorea seminis*
45	*Vatica elliptica*
46	*Vatica pachyphylla*

b. Endangered Species -35

1	*Aerides lawrenciae*
2	*Amesiella philippensis*
3	*Anisoptera costata*
4	*Cryptocarya palawanensis*
5	*Cycas chamberlainii*
6	*Diospyros philippinensis*
7	*Dipterocarpus alatus*
8	*Drepanolejeunea bakeri*
9	*Gloeocarpus patentivalvis*
10	*Guioa acuminata*
11	*Guioa discolor*
12	*Guioa myriadenia*
13	*Guioa truncata*
14	*Horsfieldia obscurineria*
15	*Kibatalia puberula*
16	*Kibatalia stenopetala*
17	*Mangifera monandra*
18	*Merrilliobryum fabronioides*
19	*Nepenthes bellii*
20	*Nepenthes truncata*

21	*Paphiopedilum ciliolare*
22	*Phalaenopsis lindenii*
23	*Podocarpus costalis*
24	*Prunus pulgarensis*
25	*Prunus rubiginosa*
26	*Schefflera agamae*
27	*Schefflera albido-bracteata*
28	*Schefflera curranii*

29	*Schefflera palawanensis*
30	*Shorea ovata*
31	*Tectona philippinensis*
32	*Vanda javierae*
33	*Vanda scandens*
34	*Vatica mangachapoi*
35	*Vatica maritima*

c. Vulnerable Species – 134

1	*Adenanthera intermedia*
2	*Aerides leeanum*
3	*Afzelia rhomboidea*
4	*Agathis philippinensis*
5	*Aglaia aherniana*
6	*Aglaia angustifolia*
7	*Aglaia costata*
8	*Aglaia cumingiana*
9	*Aglaia pyriformis*
10	*Aglaia smithii*
11	*Aglaia tenuicaulis*
12	*Alangium longiflorum*
13	*Antidesma obliquinervium*
14	*Antidesma subolivaceum*
15	*Aphanamixis cumingiana*
16	*Aporusa elliptifolia*
17	*Aquilaria cumingiana*
18	*Aquilaria malaccensis*
19	*Ardisia squamulosa*
20	*Areca ipot*
21	*Areca parens*
22	*Areca whitfardii*
23	*Arthrophyllum pulgarense*
24	*Artocarpus blancoi*
25	*Artocarpus rubrovenus*
26	*Artocarpus treculianus*
27	*Baccaurea glabrifolia*
28	*Baccaurea odoratissima*
29	*Canarium luzonicum*
30	*Canarium ovatum*

31	*Celtis luzonica*
32	*Cinnamomum mercadoi*
33	*Corypha microclada*
34	*Cynometra inaequifolia*
35	*Dasymaschalon scandens*
36	*Dendrobium sanderae*
37	*Dillenia fischeri*
38	*Dillenia luzoniensis*
39	*Dillenia megalantha*
40	*Dillenia philippinensis*
41	*Dillenia reifferscheidtia*
42	*Diospyros blancoi*
43	*Diospyros pulgarensis*
44	*Diplodiscus paniculatus*
45	*Drypetes palawanensis*
46	*Dysoxylum angustifolium*
47	*Dysoxylum palawanensis*
48	*Dysoxylum turczaninowii*
49	*Elaeocarpus dinagatensis*
50	*Elaeocarpus gigantifolius*
51	*Embolanthera spicata*
52	*Epigeneium treacherianum*
53	*Eusideroxylon zwageri*
54	*Ficus ulmifolia*
55	*Freycinetia auriculata*
56	*Glyptopetalum palawanense*
57	*Gonystylus macrophyllus*
58	*Guioa bicolor*
59	*Hopea foxworthyi*
60	*Horsfieldia ardisiifolia*

61 *Horsfieldia samarensis*
62 *Ilex palawanica*
63 *Intsia acuminata*
64 *Intsia bijuga*
65 *Kibatalia elmeri*
66 *Kibatalia gitingensis*
67 *Kibatalia macgregori*
68 *Kibatalia merrilliana*
69 *Knema alvarezii*
70 *Knema ridsdaleana*
71 *Knema stenocarpa*
72 *Lithocarpus ovalis*
73 *Litsea leytensis*
74 *Livistona robinsoniana*
75 *Macaranga bicolor*
76 *Macaranga caudatifolia*
77 *Macaranga cogostiflora*
78 *Macaranga grandifolia*
79 *Madhuca betis*
80 *Madhuca oblongifolia*
81 *Madhuca obovatifolia*
82 *Mallotus odoratus*
83 *Mangifera altissima*
84 *Mastixia macrocarpa*
85 *Mitrephora caudata*
86 *Mitrephora fragrans*
87 *Mitrephora lanota*
88 *Myristica basilanica*
89 *Myristica colinridsdalei*
90 *Myristica frugifera*
91 *Myristica longipetiolata*
92 *Myristica philippensis*
93 *Myristica pilosigemma*
94 *Neolitsea vidalii*
95 *Nepenthes argentii*
96 *Nepenthes merrilliana*
97 *Nepenthes sibuyanensis*
98 *Oncosperma platyphyllum*
99 *Orophea palawanensis*
100 *Orophea submaculata*
101 *Palaquium bataanense*
102 *Palaquium luzoniense*
103 *Palaquium mindanaense*
104 *Palaquium philippense*
105 *Pandanus decipiens*
106 *Pericopsis mooniana*
107 *Persea philippinensis*
108 *Pinus merkusii*
109 *Podocarpus lophatus*
110 *Polyalthia elmeri*
111 *Polyalthia palawanensis*
112 *Pouteria villamilii*
113 *Protium connarifolium*
114 *Prunus subglabra*
115 *Pterocarpus indicus*
116 *Reutealis trisperma*
117 *Sandoricum vidalii*
118 *Santalum album*
119 *Sapium luzonicum*
120 *Securinega flexuosa*
121 *Semecarpus paucinervius*
122 *Sindora inermis*
123 *Sindora supa*
124 *Stryphnodendron harbesonii*
125 *Tabernaemontana cordata*
126 *Terminalia nitens*
127 *Terminalia pellucida*
128 *Tristania decorticata*
129 *Tristania littoralis*
130 *Vitex parviflora*
131 *Xanthostemon verdugonianus*
132 *Xylosma palawanense*
133 *Ziziphus hutchinsonii*
134 *Ziziphus talanai*

9.3 Analysis and processing of national data

This step is not necessary.

9.4 Reclassification into FRA 2005 classes

This step is not necessary.

9.5 Data for National reporting table T9

FRA 2005 Categories	**Number of species (year 2000)**
Native tree species	3000
Critically endangered tree species	46
Endangered tree species	35
Vulnerable tree species	134

(The number of threatened species is from IUCN website and may include non-tree species.)

9.6 Comments to National reporting table T9

The number of threatened species is from IUCN website and may include non-tree species.

10 Table T10 – Growing stock composition

10.1 FRA 2005 Categories and definitions

List of species names (scientific and common names) of the ten most common species.

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
FMB. 1988. Natural Forest Resources of the Philippines. Philippine –German Forest Resources Inventory Project. 1988. Forest Management Bureau. Philippines.	H	Volume	1988
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Volume	2003

10.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

10.2.2 Original data

A. 1988

10 most common (growing stock) trees in production forests and with trees over 15 cm dbh

Scientific name	Local name	Volume in million m^3
Shorea polysperma	Tanguile	95.4
Shorea squamata	Mayapis	83.4
Shorea negrosensis	Red lauan	53.1
Shorea contorta	White lauan	50.8
Dipterocarpus grandiflorus	Apitong	42.2
Parashorea plicata	Bagtikan	40.4
Pinus keseya	Benguet Pine	24.7
Shorea almon	Almon	24.3
Lithocarpus lianosii	Ulayan	23.8
Palaquium species	Nato	19.1
Remainder of species		330.7
Total		744.1

B. 2003

10 most common trees in forests with trees over 10cm dbh.

Scientific name	Local name	Volume in million m3
Shorea polysperma	Tanguile	125.19
Shorea contorta	White lauan	128.14
Shorea negrosensis	Red lauan	105.71
Shorea squamata	Mayapis	95.30
Dipterocarpus grandiflorus	Apitong	69.96
Parashorea plicata	Bagtikan	48.61
Shora astylosa	Yakal	32.33
Shorea almon	Almon	23.78
Lithocarpus Lianosii	Ulayan	22.06
Gmelina arborea	Yemane	10.11
Remainder of species		585.81
Total		1247

10.3 Analysis and processing of national data

10.3.1 Calibration

This step is not needed.

10.3.2 Estimation and forecasting

The 10 most common species and their proportion in growing stock has been adopted for 1990. Similarly, the 10 most common species and their proportion in the growing stock in 2003 has been adopted for 2000. The order of species follows their ranking (by volume) in 2000.

Scientific name	Common name	1990	2000
Shorea polysperma	Tanguile	125	142
Shorea contorta	White lauan	234	139
Shorea negrosensis	Red lauan	130	117
Shorea squamata	Mayapis	205	106
Dipterocarpus grandiflorus	Apitong	104	77
Parashorea plicata	Bagtikan	99	54
Shora astylosa	Yakal	Nda	36
Shorea almon	Almon	60	26
Lithocarpus Lianosii	Ulayan	58	24
Gmelina arborea	Yemane	Nda	11
Remainder of species		810	650
Total		1825	1382

10.4 Data for National reporting table T10

FRA 2005 Categories / Species name (Scientific name and common name)		**Growing Stock in Forests (million cubic meters)**	
		1990	**2000**
Scientific name	**Common name**	**1990**	**2000**
Shorea polysperma	Tanguile	125	142
Shorea contorta	White lauan	234	139
Shorea negrosensis	Red lauan	130	117
Shorea squamata	Mayapis	205	106
Dipterocarpus grandiflorus	Apitong	104	77
Parashorea plicata	Bagtikan	99	54
Shora astylosa	Yakal	Nda	36
Shorea almon	Almon	60	26
Lithocarpus Lianosii	Ulayan	58	24
Gmelina arborea	Yemane	Nda	11
Remainder of species		810	650
Total		1825	1382

10.5 Comments to National reporting table T10

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

Category	Definition
Industrial wood removal	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removal	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

11.2 National data

11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
FMB. 2005. Forest Statistics on the website of the Department of Environment and Natural Resources Forest Management Bureau. Philippines. ((http://forestry.denr.gov.ph/ttf.htm).	M	Removal	1988 to 2002

11.2.2 Classification and definitions

No national definitions and classification relevant t this table are available.

11.2.3 Original data

Year	Production in 000 cubic meters	
	Industrial Wood	Wood Fuel
2002	403	138
2001	571	142
2000	800	112
1999	730	130
1998	634	56
1997	556	37
1996	771	33
1995	758	110
1994	957	106
1993	1022	130
1992	1438	319
1991	1922	219
1990	2503	93
1989	3169	48
1988	3809	84

11.3 Analysis and processing of national data

11.3.1 Calibration

This step is not necessary.

11.3.2 Estimation and forecasting

Five averages have been calculated for 1990 and 2000. The figure for 2002 has been assumed for 2005. All the production has been assumed to come from forests. Further, it has been assumed that all the measurements are over bark.

FRA 2005 Category	Forest		
	1990	2000	2005
Industrial roundwood	2568	628	403
Woodfuel	153	131	138
TOTAL	2721	759	541

11.4 Reclassification into FRA 2005 classes

This step is not needed.

11.5 Data for National reporting table T11

FRA 2005 Categories	**Volume in 1000 cubic meters of roundwood over bark**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Industrial roundwood	2568	628	403	n.a.	n.a.	n.a.
Woodfuel	153	131	138	n.a.	n.a.	n.a.
TOTAL for Country	2721	759	541	n.a.	n.a.	n.a.

11.6 Comments to National reporting table T11

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
FMB. 2005. Forest Statistics on the website of the Department of Environment and Natural Resources Forest Management Bureau. Philippines. (http://forestry.denr.gov.ph/ttf.htm).	M	Value and Removal	1988 to 2002
FMB. 2004. Timber and Timber Products Trade Flow Study in the Philippines, Website of the Department of Environment and Natural Resources Forest Management Bureau. Philippines. (http://forestry.denr.gov.ph/ttf.htm).	M	Value and Removal	

12.2.2 Classification and definitions

No national definitions and classifications relevant tot this table are available.

12.2.3 Original data

The following are average prices of wood based on the information provided by the country in November 2004 meeting of the National Correspondents in Bangkok.

Variable	1990	2000
Price Industrial Wood in Peso/m^3	3064	6550

The following are the exchange rates as mentioned in the FRA 2005 guidelines for the year 1990 and 2000 and at "COIN", the intranet site of FAO, Rome in July 2005.

Variable	1990	2000	2005
Exchange rate (value of 1 US $ in local currency-Peso)	28	50	55.45

12.3 Analysis and processing of national data

12.3.1 Calibration

This step is not needed

12.3.2 Estimation and forecasting

A. Prices

The wood prices for 2005 have been forecasted through linear extrapolation. Based on 2002 information, the price of wood fuel has been assumed to be 3.5% of the wood prices for 1990, 2000 and 2005. The local prices have been converted into US dollar prices using the exchange rates to estimate value of removal in US dollars.

Variable	**1990**	**2000**	**2005**
Price Industrial Wood in Peso	3064	6550	8293
Price Woodfuel in Peso (3.5% of Industrial wood prices)	107	229	290
Exchange rate	28	50	55.45
Price of Industrial wood in USD $	109	131	150
Price of Woodfuel in USD $	3.8	4.6	5.2

B. Value of removal

The value of removal has been calculated using above prices .

	Value of roundwood removal (1000 USD)		
FRA 2005 Category	**Forests**		
	1990	**2000**	**2005**
Industrial roundwood	281034	82216	60272
Woodfuel	584	598	722
TOTAL	281619	82814	60994

12.4 Reclassification into FRA 2005 classes

This step is not necessary.

12.5 Data for National reporting table T12

FRA 2005 Categories	**Value of roundwood removal (1000 USD)**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Industrial roundwood	281034	82216	60272	n.a.	n.a.	n.a.
Woodfuel	584	598	722	n.a.	n.a.	n.a.
TOTAL for Country	281618	82814	60994	n.a.	n.a.	n.a.

12.6 Comments to National reporting table T12

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
Plant products / raw material
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

13.2 National data

13.2.1 Data sources

References to sources of information	**Quality (H/M/L)**	**Variable(s)**	**Year(s)**
FMB. 2004. Information for Table 13 provided at Nov 2004 meeting organised by FAO for the National correspondents in Bangkok.	M	NWFP Removal	1990 to 2000

13.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

13.2.3 Original data

The following table is based on the information provided by the country in the November 2004 meeting of the National Correspondents. No information is available regarding animal based NWFPs.

Plant Products	**Unit**	**1990**	**2000**
Food			
Fodder			
Raw material for medicine and aromatic products			
Raw material for colorant and dyes			
Tanbark	tonne	1.6	n.a.
Raw material for utensils, handicrafts and construction			
Rattan poles	tonne	2,703.0	1,475.0
Ornamental plants			
Exudates			
Almaciga resin	tonne	707.6	423.6
Manila elemi	tonne	1.6	n.a.
Other plant products			
Hingiw vine	tonne	7	n.a.
Diliman & other vines	tonne	98.2	46.6
Salago bark	tonne	3.2	n.a.
Split rattan	tonne	138.4	35
Rattan poles	tonne	2,703.0	1,475.0

13.3 Analysis and processing of national data

13.3.1 Calibration

This step is not necessary.

13.3.2 Estimation and forecasting

Sufficient information is not available to quantitatively forecast the removal of NWFP in 2005. Therefore the figures for 2000, wherever available, have been assumed for 2005.

13.4 Reclassification into FRA 2005 classes

This step is not necessary.

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
Plant products / raw material					
1. Food		tonne	n.a	n.a	n.a
2. Fodder		tonne	n.a	n.a	n.a
3. Raw material for medicine and aromatic products		tonne	n.a	n.a	n.a
4. Raw material for colorants and dyes		tonne	2	n.a.	n.a.
5. Raw material for utensils, handicrafts & construction		tonne	2703	1475	n.a
6. Ornamental plants		tonne	n.a	n.a	n.a
7. Exudates		tonne	709	423	n.a
8. Other plant products		tonne	247	82	n.a
Animal products / raw material					
9. Living animals			n.a	n.a	n.a
10. Hides, skins and trophies			n.a	n.a	n.a
11. Wild honey and bee-wax			n.a	n.a	n.a
12. Bush meat			n.a	n.a	n.a
13. Raw material for medicine			n.a	n.a	n.a
14. Raw material for colorants			n.a	n.a	n.a
15. Other edible animal products			n.a	n.a	n.a
16. Other non-edible animal products			n.a	n.a	n.a

13.6 Comments to National reporting table T13

14 Table T14 – Value of non-wood forest product removal

14.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
Plant products / raw material
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

14.2 National data

References to sources of information	**Quality (H/M/L)**	**Variable(s)**	**Year(s)**
FMB. 2004. Information for Table 13 provided at Nov 2004 meeting organised by FAO for the National correspondents in Bangkok.	M	Value of NWFP Removal	1990 to 2000

14.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

14.2.3 Original data

The following table is based on the information provided by the country in the November 2004 meeting of the National Correspondents. No information is available regarding animal based NWFPs.

Plant products/ raw material	**Value of NWFP removed (1000 USD)**	
	1990	**2000**
Raw material for utensils, handicrafts and construction		
Rattan poles	3283	946
Other plant products		
Split rattan	280	71

14.3 Analysis and processing of national data

14.3.1 Calibration

This step is not necessary.

14.3.2 Estimation and forecasting

Sufficient information is not available to quantitatively forecast the removal of NWFP in 2005.

14.4 Reclassification into FRA 2005 classes

14.5 Data for National reporting table T14

FRA 2005 Categories	Value of the of NWFP removed (1000 USD)		
	1990	2000	2005
Plant products / raw material			
1. Food	n.a.	n.a.	n.a.
2. Fodder	n.a.	n.a.	n.a.
3. Raw material for medicine and aromatic products	n.a.	n.a.	n.a.
4. Raw material for colorants and dyes	n.a.	n.a.	n.a.
5. Raw material for utensils, handicrafts & construction	3283	946	n.a.
6. Ornamental plants	n.a.	n.a.	n.a.
7. Exudates	n.a.	n.a.	n.a.
8. Other plant products	280	71	n.a.
Animal products / raw material			
9. Living animals	n.a.	n.a.	n.a.
10. Hides, skins and trophies	n.a.	n.a.	n.a.
11. Wild honey and bee-wax	n.a.	n.a.	n.a.
12. Bush meat	n.a.	n.a.	n.a.
13. Raw material for medicine	n.a.	n.a.	n.a.
14. Raw material for colorants	n.a.	n.a.	n.a.
15. Other edible animal products	n.a.	n.a.	n.a.
16. Other non-edible animal products	n.a.	n.a.	n.a.
TOTAL	**3563**	**1017**	n.a.

14.6 Comments to National reporting table T14

15 Table T15 – Employment in forestry

15.1 FRA 2005 Categories and definitions

Category	Definition
Primary production of goods	Employment in activities related to primary production of goods, like industrial roundwood, woodfuel and non-wood forest products.
Provision of services	Employment in activities directly related to services from forests and woodlands.
Unspecified forestry activities	Employment in unspecified forestry activities.

15.2 National data

15.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)
FMB. 2005. Forest Statistics on the website of the Department of Environment and Natural Resources Forest Management Bureau. Philippines. (http://forestry.denr.gov.ph/ttf.htm).	M	Employment	1988 to 2002

15.2.2 Classification and definitions

No national definitions and classifications relevant to this table are available.

15.2.3 Original data

The website of DENR provides following information on the annual number of families whose main source of income was forestry and hunting.

Variable	1988	1994	2000
Number of families	40121	32382	35288

15.3 Analysis and processing of national data

15.3.1 Calibration

This step is not needed.

15.3.2 Estimation and forecasting

The figures at the website of DENR regarding number of families whose main source of income is forestry and hunting have not been used as it is not clear whether the employment is self employment or through some sort of "contract" as defined by FRA 2005.

15.4 Reclassification into FRA 2005 classes

This step is not necessary.

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	n.a	n.a.
Provision of services	n.a	n.a.
Unspecified forestry activities		
TOTAL	n.a	n.a.

15.6 Comments to National reporting table T15

The website of DENR provides following information on the annual number of families whose main source of income was forestry and hunting. These figures have not been used as it is not clear whether the employment is self employment or through some sort of "contract" as defined by FRA 2005.