



Forestry Department

Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT 2010**

COUNTRY REPORT

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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 2010 (FRA 2010).

The reporting framework for FRA 2010 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes variables related to the extent, condition, uses and values of forest resources, as well as the policy, legal and institutional framework related to forests. More information on the FRA 2010 process and the results - including all the country reports - is available on the FRA Web site (www.fao.org/forestry/fra).

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The Global Forest Resources Assessment Country Report Series is designed to document and make available the information forming the basis for the FRA reports. The Country Reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. Prior to finalisation, these reports were subject to validation by forestry authorities in the respective countries.

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1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2010 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 <i>in situ</i> . 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 <i>in situ</i> ; 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)	Additional comments
GOP (Government of the Philippines). 1969. First National Forest Inventory. Philippines.	M	Extent of Forest	1969	The inventory was carried out from 1965 to 1969. The double sampling design was employed, consisting of photo-point sampling on aerial photographs and ground plot sampling in the field.
FMB. 1988. Natural Forest Resources of the Philippines. Philippine – German Forest Resources Inventory Project. Forest Management Bureau. Philippines.	H	Extent of Forest	1988	The inventory was carried out from 1979 to 1988. Regions 10 & 11 were inventoried using systematically distributed clusters of strip samples. Other regions were inventoried using clusters of angle-count samples with concentric circles.
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	H	Extent of Forest	2005	The FAO-supported National Forest Assessment (NFA) Project was implemented from 2002-2005. Sampling units were established at each 15 minutes longitude and 15 minutes latitude. The inventory estimates forest area through its percentage in each of the measurement plot of 0.5 ha.
FMB. 2003. Philippine Forestry Statistics. Forest Management Bureau, Department of Environment and Natural Resources. Philippines	H	Extent of Forest	2003	The National Mapping and Resource Information Authority (NAMRIA) carried out a national remote sensing survey to complement the FAO-supported NFA Project. The Forest Cover Data generated by NAMRIA was adopted as the official forest cover statistics in the Philippines as it provides information at the sub-national level.

FMB. 2006. Philippine Official Reference for Forest-Related Terms and Definitions. Forest Management Bureau, Department of Environment and Natural Resources. Philippines	H	Extent of Forest	2006	It is a compendium of harmonized forest-related terms and definitions. It is the final output of the ITTO-funded project entitled “Harmonization of Forest-Related Terms and definitions”.
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1.2.2 Classification and definitions

A. 1988 Definitions

National class	Definition
Forest	Area of one hectare or more which is 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.
Dipterocarp Forest, Old Growth	Tropical rain forest dominated by <i>Dipteroarpaceae</i> without traces of commercial logging.
Dipterocarp Forest, Residual	Tropical rain forest dominated by <i>Dipteroarpaceae</i> with traces of commercial logging.
Mangrove Forest	The type of forest occurring on tidal mudflats along the sea coast extending along the streams where the water is brackish and composed mainly of bakauan, pototan, langarai, api-api, nipa pal and the like.
Mossy Forest	Forest stand found principally on high and very rough mountainous regions characterized by steep ridges rising to peaks whose sides cut into smaller ridges. The trees are mostly dwarf with stems and branches usually covered by moss.
Pine Forest, Closed	Pure stand of Benguet Pine (<i>Pinus kesiya</i>) or Mindoro Pine (<i>Pinus merkusii</i>) with a crown cover above 30%.
Pine Forest, Open	Pure stand of Benguet Pine (<i>Pinus kesiya</i>) or Mindoro Pine (<i>Pinus merkusii</i>) with a crown cover of 10-30%.
Submarginal Forest	Tropical rain forest dominated by <i>Leguminosae</i> and lesser utilized species, mainly restricted to shallow and excessively drained limestone soils.
Brushland	Degraded areas dominated by a discontinuous cover of shrubby vegetation.
Other land use	Land not classified as forest and brushland.

B. 2003 Definitions (NFA 2002 to 2004)

It in general follows FRA definition of “Forest” and “Other wooded lands”.

National class	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 ($\geq 40\%$)	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 ($\geq 40\%$)	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 <i>in situ</i> ; 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 <i>in situ</i> (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. 1988 FRI (RP-GTZ FRI Project. Details may not add up to totals due to rounding)

Land Cover/Forest Type	Area (1 000 ha)		
	Forestland	A&D land	Total
Forest	6 351.9	108.7	6 460.6
Dipterocarp Forest	4 319.6	81.5	4 401.1
Dipterocarp Forest, Old growth	986.8	1.5	988.3
Dipterocarp Forest, Residual	3 332.8	80.0	3 412.8
Pine Forest	236.7	2.1	238.8
Closed	129.6	0	129.6
Open	107.1	2.1	109.2
Submarginal Forest	535.7	8.5	544.2
Mangrove Forest	125.7	13.4	139.1
Mossy Forest	1 134.2	3.2	1 137.4
Brushland	2 045.1	480.0	2 525.1
Other land use	7 494.9	13 519.4	21 014.3
Total, Philippines	15 891.9	14 108.1	30 000.0

B. 2003 NFA (NAMRIA Data. Details may not add up to totals due to rounding)

Land Cover/Forest Type	TOTAL		
	Forestland (ha)	A&D land (ha)	Total (ha)
Forest	6 432	737	7 168
Closed Forest	2 481	80	2 561
Broadleaved	2 377	72	2 449
Mixed	17	8	25
Coniferous	87	1	87
Open Forest	3 516	515	4 031
Broadleaved	3 359	488	3 847
Mixed	51	19	70
Coniferous	106	7	113
Mangrove	154	94	247
Forest Plantation	282	48	330
Broadleaved	277	48	325
Coniferous	3	0	3
Mangrove	1	0	2
Other Wooded land	4 794	2 795	7 589
Shrubs	2 387	1 266	3 653
Fallow	42	18	61
Wooded Grassland	2 365	1 512	3 876
Other Land	3 925	10 333	14 258
Barren Land	32	115	147
Grassland	1 095	854	1 949
Marshland	80	102	183
Annual Crop	1 228	5 643	6 871
Perennial Crop	1 465	3 345	4 810
Built-up-area	24	274	298
Inland Water	125	393	518
Inland Water	35	264	299
Fishpond	90	129	219
GRAND TOTAL	15 185	14 129	29 534

1.3 Analysis and processing of national data**1.3.1 Calibration**

The 1988 FRI data was not calibrated as the area of the country is consistent with official figures (30 M); however, the area of “Other land” was adjusted to provide data for “Inland water” to match with FAOSTAT Data (183 000 ha). On the other hand, the 2003 NFA data (NAMRIA) was calibrated to match with internationally reported and validated total area of the Philippines as maintained by the UN Statistical Division (30 M ha) and then adjusted the area of “Inland Water” to match the FAOSTAT figure (183 000 ha), with all adjustments made in the area of “Other Land”.

A. 1988 FRI (RP-GTZ FRI Project. Details may not add up to totals due to rounding)

Land Cover/Forest Type	Original Data			Adjusted data		
	Area (1 000 ha)			Area (1 000 ha)		
	Forestland	A&D land	Total	Forestland	A&D land	Total
Forest	6 351.9	108.7	6 460.6	6 351.9	108.7	6 460.6
Dipterocarp Forest	4 319.6	81.5	4 401.1	4 319.6	81.5	4 401.1
Dipterocarp Forest, Old growth	986.8	1.5	988.3	986.8	1.5	988.3
Dipterocarp Forest, Residual	3 332.8	80.0	3 412.8	3 332.8	80.0	3 412.8
Pine Forest	236.7	2.1	238.8	236.7	2.1	238.8
Closed	129.6	0	129.6	129.6	0	129.6
Open	107.1	2.1	109.2	107.1	2.1	109.2
Submarginal Forest	535.7	8.5	544.2	535.7	8.5	544.2
Mangrove Forest	125.7	13.4	139.1	125.7	13.4	139.1
Mossy Forest	1 134.2	3.2	1 137.4	1 134.2	3.2	1 137.4
Brushland	2 045.1	480.0	2 525.1	2 045.1	480.0	2 525.1
Other land use	7 494.9	13 519.4	21 014.3	7 429.6	13 401.7	20 831.3
Inland water				65.3	117.7	183.0
Total, Philippines	15 891.9	14 108.1	30 000.0	15 891.9	14 108.1	30 000.0

B. 2003 NFA (NAMRIA Data. Details may not add up to totals due to rounding)

Land Cover/Forest Type	TOTAL		
	Forestland 1000 (ha)	A&D land 1000 (ha)	Total 1000 (ha)
Forest	6 432	737	7 168
Closed Forest	2 481	80	2 561
Broadleaved	2 377	72	2 449
Mixed	17	8	25
Coniferous	87	1	87
Open Forest	3 516	515	4 031
Broadleaved	3 359	488	3 847
Mixed	51	19	70
Coniferous	106	7	113
Mangrove	154	94	247
Forest Plantation	282	48	330
Broadleaved	277	48	325
Coniferous	3	0	3
Mangrove	1	0	2
Other Wooded land	4 794	2 795	7 589
Shrubs	2 387	1 266	3 653
Fallow	42	18	61
Wooded Grassland	2 365	1 512	3 876
Other Land	3 925	10 333	14 258
Barren Land	32	115	147
Grassland	1 095	854	1 949
Marshland	80	102	183
Annual Crop	1 228	5 643	6 871
Perennial Crop	1 465	3 345	4 810
Built-up-area	24	274	298
Inland Water	125	393	518
Inland Water	35	264	299
Fishpond	90	129	219
GRAND TOTAL	15 185	14 129	29 534

calculating the calibration factor

Area of the Philippines (original 2003 NAMRIA Data)	29 534
Area of the Philippines (FAOSTAT)	30 000
Calibration factor (FAOSTAT/NAMRIA data)	1.01579

2003 NFA (calibrated and adjusted NAMRIA Data. Details may not add up to totals due to rounding)

Land Use/Forest Type	Calibrated			Adjusted		
	Area (1000 ha)			Area (1000 ha)		
	Forestland	A&D land	Total	Forestland	A&D land	Total
Forest	6 533	748	7 282	6 533	748	7 282
Closed Forest	2 520	81	2 601	2 520	81	2 601
Broadleaved	2 415	73	2 488	2 415	73	2 488
Mixed	17	8	25	17	8	25
Coniferous	88	1	89	88	1	89
Open Forest	3 571	523	4 094	3 571	523	4 094
Broadleaved	3 412	496	3 908	3 412	496	3 908
Mixed	51	20	71	51	20	71
Coniferous	108	8	115	108	8	115
Mangrove	156	95	251	156	95	251
Forest Plantation	286	49	335	286	49	335
Broadleaved	281	48	330	281	48	330
Coniferous	3	0	4	3	0	4
Mangrove	1	0	2	1	0	2
Other Wooded land	4 870	2 839	7 709	4 870	2 839	7 709
Shrubs	2 425	1 286	3 710	2 425	1 286	3 710
Fallow	43	18	61	43	18	61
Wooded Grassland	2 402	1 536	3 937	2 402	1 536	3 937
Other Land	3 987	10 496	14 483	4 112	10 714	14 826
Barren Land	32	117	150	33	118	151
Grassland	1 112	867	1 980	1 122	874	1 996
Marshland	82	104	186	82	105	187
Annual Crop	1 247	5 732	6 979	1 258	5 779	7 036
Perennial Crop	1 489	3 398	4 886	1 501	3 426	4 926
Built-up-area	25	278	303	25	280	305
Fishpond				92	132	225
Inland Water	127	399	526	21	162	183
Inland Water	35	268	303	21	162	183
Fishpond	92	131	223			
GRAND TOTAL	15 517	14 483	30 000	15 536	14 464	30 000

1.3.2 Estimation and forecasting

In the estimation and forecast of Land Use area, the adjusted 1988 FRI and 2003 NFA (calibrated and adjusted NAMRIA data) datasets were used. Furthermore, for 2003 the area of “Other Land” was adjusted to make the area of “inland water bodies” consistent with FAOSTAT figures.

Land Cover/Forest Type	Adjusted 1988 FRI Data (1000 ha)	Adjusted 2003 NFA Data (1000 ha)	Difference	Annual Rate of Change	
Forest	6 461	7 282	821	55	
Other Wooded Land	2 525	7 709	5 184	346	
Other Land	20 831	14 826	-6 005	-400	
Inland Water	183	183	0	0	
Total	30 000	30 000			
Area by Land Use (1000 ha)					
Year	Forest	OWL	OL	IW	Total
1988	6 461	2 525	20 831	183	30 000
1990	6 570	3 216	20 031	183	30 000
2000	7 117	6 672	16 027	183	30 000
2003	7 282	7 709	14 826	183	30 000
2005	7 391	8 400	14 026	183	30 000
2010	7 665	10 128	12 024	183	30 000

(Details may not add up to totals due to rounding)

Other land is calculated as a difference between total country area as given by FAOSTAT, inland water, forest and other wooded land area.

1.3.3 Reclassification into FRA 2010 categories

For 1988 data

Forest = 100% Forest following FRA 2010 categories

Brushland = 100% Other wooded land following FRA 2010 categories

Other land use= 100% Other land following FRA 2010 categories

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	6 570	7 117	7 391	7 665
Other wooded land	3 216	6 672	8 400	10 128
Other land	20 031	16 028	14 026	12 024
...of which with tree cover	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Inland water bodies	183	183	183	183
Total, Philippines	30 000	30 000	30 000	30 000

(Details may not add up to totals due to rounding)

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	The 1988 national definition of “forest” varies with the FRA 2000 definition in terms of minimum area limit. The 1988 definition has a minimum area of 1.0 hectare.	The increasing trend is attributed to the extensive forest development programs of the government. It is also attributed to the increasing participation of private land owners in tree plantation establishment.
Other wooded land	The 1988 national definition of “brushland” is consistent with the FRA 2000 definition of “Other wooded land”.	The increasing trend is attributed to the ecological succession in open and grassland areas.
Other land	The 1988 national definition of “Other land use” is consistent with the FRA 2000 definition of “Other Land”.	The decreasing trend is attributed to the conversion of open/grasslands into tree plantations as a consequence of the government’s extensive forest development programs.
Other land with tree cover	No data is available on other land with tree cover.	
Inland water bodies	The 1988 FRI has no data on “inland water” whereas the 2003 NFA (NAMRIA data) exceeds the FAOSTAT data. In both inventories, the area of “Other Land” was adjusted to make the area of “inland water bodies” consistent with FAOSTAT figures.	The area of inland water remains the same from 1988 to 2003.

Other general comments to the table

- The data on planted forest is weak. The 1988 inventory has no data on planted forest. Further, the 2003 NAMRIA data may also be of low quality because it is difficult to identify and segregate planted forest from the natural forest in the satellite imagery.
- The FRA 2010 figures differ from the FRA 2005 figures because in the estimation and forecast FRA 2005 used 1969 and 2003 datasets whereas FRA 2010 used 1988 and 2003 datasets. “Other land with tree cover” has no available data. During the implementation of the FAO-supported NFA Project, “Other land with tree cover” is not among the national land use classes.

Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping

Field inventory	No ongoing national forest inventory.
Remote sensing survey / mapping	The planned national remote sensing survey/mapping will be conducted by NAMRIA in collaboration with FMB. It is expected to be completed in 2010.

2 Table T2 – Forest ownership and management rights

2.1 FRA 2010 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals (<i>sub-category of Private ownership</i>)	Forest owned by individuals and families.
Private business entities and institutions (<i>sub-category of Private ownership</i>)	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and private religious and educational institutions, etc.
Local communities (<i>sub-category of Private ownership</i>)	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities (<i>sub-category of Private ownership</i>)	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
Categories related to the holder of management rights of public forest resources	
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals/households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private institutions	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities, private co-operatives, private non-profit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
NFA 2005. National Forest Resource Assessment – Philippines. Working Paper 96. FAO Rome.	H	Forest ownership and management rights	2005	Contains information on forest in legally classified Forestland and A&D land as well as forest ownership and management rights.
FMB. 2003. Philippine Forestry Statistics. Forest Management Bureau, Department of Environment and Natural Resources. Philippines.	M	Forest ownership and management rights	2003	Contains information on forest in legally classified Forestland and A&D land but lacks information on forest ownership and management rights.

2.2.2 Classification and definitions

National class/ NFA 2003 class	Definition
Forestland	Refers to lands of the public domain which has not been declared as alienable or disposable land and includes the public forest, the permanent forest or forest reserves, forest reservations, timberlands, grazing lands and game refuge and bird sanctuaries.
Alienable or Disposable land	Refers to lands of the public domain which have been the subject of the present system of classification and declared as not needed for forest purposes.
Privately-owned	Owned by individuals, families, companies, private companies, cooperatives or institutions.
State-owned	Owned by national, regional or local government, or state companies.
Municipality-owned	Owned by the city, municipality, village municipalities, villages or communes.
Community-owned	Tenure right certificate by tribal or indigenous groups in view of historical use of forest area.

2.2.3 Original data

2003 NFA Project Data

	Total Forest Area	State Owned	Municipality Owned*	Privately Owned	Community Owned**
Forest Area by ownership	7 162 560	6 087 029	9 486	1 044 486	21559
Percentage		85.0%	0.1%	14.6%	0.3%

Note: * The forests owned by municipalities are also owned by the state.

** The forests owned by communities are privately-owned.

2.3 Analysis and processing of national data

2.3.1 Calibration

The calibration of the 2003 NAMRIA data was undertaken in item 1.3.1.

2.3.2 Estimation and forecasting

The percentage distribution of forest ownership categories in the **2003 NFA Project** has been applied to the calibrated 2003 NAMRIA data to estimate the requested information for the reporting years 2000 and 2005. Considering that the 1988 inventory has no information on forest ownership and management rights, it is difficult to provide data for the reporting year 1990.

2003 NFA Project Data			
Land Use/Forest Type	Total	State-owned	Privately-owned
Forest	7 162 560	6 096 515	1 066 045
Percentage		85.1%	14.9%
Area (1000 ha)			
	(Calibrated 2003 NAMRIA Data)		
Year	Forest	State-owned	Privately-owned
2000	7 117	6 058	1 059
2005	7 391	6 291	1 100
2010	7 665	6 524	1 141

(Details may not add up to totals due to rounding)

2.3.3 Reclassification into FRA 2010 categories

This step has been undertaken in item 1.3.3.

2.4 Data for Table T2

Table 2a - Forest ownership (Details may not add up to totals due to rounding)

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	n.a	6 058	6 291
Private ownership	n.a	1 059	1 100
...of which owned by individuals	n..a.	n.a.	n.a.
...of which owned by private business entities and institutions	n..a.	n.a.	n.a.
...of which owned by local communities	n..a.	n.a.	n.a.
...of which owned by indigenous / tribal communities	n..a.	n.a.	n.a.
Other types of ownership	0	0	0
TOTAL	6 570	7 117	7 391

Note: If other types of ownership are reported, please specify details in comment to the table.

Does ownership of trees coincide with ownership of the land on which they are situated?	<input checked="" type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If No above, please describe below how the two differ:		

Table 2b - Holder of management rights of public forests (Details may not add up to totals due to rounding)

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	n.a.	2 113	2 032
Individuals	n.a.	17	31
Private corporations and institutions	n.a.	1 187	1 243
Communities	n.a.	2 741	2 985
Other	n.a.	0	0
TOTAL	n.a.	6 058	6 291

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership	This refers to forest in legally classified forestland	The increasing trend is attributed to the extensive forest development programs of the government. It is also attributed to the increased participation of upland communities in forest development thru the implementation of the community-based forest management approach as a national strategy to forest development.
Private ownership	This refers to forest in legally classified alienable or disposable (A&D) lands	The increasing trend is attributed to the increasing participation of private land owners in tree plantation establishment.
Other types of ownership	No other types of ownership exist in the country, only public and private ownership.	
Management rights		Forests under public administration are decreasing because of the continuing issuance by the government of tenurial instruments in “open access areas” within legally classified forestlands.

Other general comments to the table

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3 Table T3 – Forest designation and management

3.1 FRA 2010 Categories and definitions

Term	Definition
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription, documented decision of the landowner/manager, or evidence provided by documented studies of forest management practices and customary use.
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.
Categories of primary designated functions	
Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Social services	Forest area designated primarily for social services.
Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.
Special designation and management categories	
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustainable forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Thang, H. C. 1991. Asean Forest Resource Database-Country Report – The Philippines. Asean Institute of Forest Management. Kuala Lumpur.	M	Forest Designation & management	1988	
NFA 2005. National Forest Resource Assessment – Philippines. Working paper 96. FAO Rome.	M	Forest Designation & management	2005	The report includes information on forest designation & protection status and forest management system.

3.2.2 Classification and definitions

National class	Definition
Managed Forest	A forest under a deliberate system of protection, rehabilitation and development which may include utilization of resources, to ensure the sustainable production of desired products and services and the conservation of soil, water, wildlife and other resources therein.
Permanent Forest Estate	Land, whether public or private, secured by law and kept under permanent forest cover.
Production Forest	Forest lands that can be made available for timber and agro-forestry production,
Protected areas	Refers to identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against destructive human exploitation.
Protection Forest	An area wholly or partly covered with woody vegetation managed primarily for its beneficial effects on water, climate, soil, aesthetic value and preservation of genetic diversity.

3.2.3 Original data

The 1988 figures are from the study by Thang (1991); the conservation areas include national parks and national reserves. Table T3 uses the percentages rather than actual number.

A. 1988 (Thang study)

Forest Designation	Forest Area (1 000 ha)	Percentage
Production	4 393	68
Conservation	1 098	18
Protection	517	8
Unknown	452	7
Total	6 461	100

B. 2003 NFA (FAO-supported NFA Project)

Forest Designation	Forest Area (1000 ha)	Percentage
Production	5 463	76
Natural Reserve	538	7
National Park	259	4
Managed Protected Area	904	13
Total	7 163	100

(Details may not add up to totals due to rounding)

3.3 Analysis and processing of national data

3.3.1 Calibration

A. 2003 NFA

Forest Designation	Original 2003 NFA Data (1000 ha)	Calibrated 2003 NFA Data (1000 ha)	Percent
Production	5 463	5 553	76.%
Natural Reserve (Protection)	538	547	7.%
National Park (Conservation)	259	263	4%
Managed Protected Area (Conservation)	904	919	13%
Total	7 163	7 282	100%

(FAO-supported NFA Project. Details may not add up to totals due to rounding)

3.3.2 Estimation and forecasting

The percentage distribution in various functional classes in 1988 and in 2003 was used to estimate the percentage distribution in 1990, 2000, 2005 and 2010 through linear interpolation. In 1988, the area under “unknown” category has been taken as the remainder area to maintain the area consistency with Table T1.

FRA 2010 Category	Percentage (%)				
	1988 FRI data	2003 NFA data	Difference	Annual Rate of Change	
Production	68	76	8	0.53	
Conservation	17	16	-1	-0.07	
Protection	8	8	0	0.00	
Unknown	7	0	-7	-0.47	
Total	100	100			
Percentage (%) distribution by Category					
Year	Production	Conservation	Protection	Unknown	Total
1988	68	17.	8	7	100
1990	69	17	8	6	100
2000	74	16	8	1	100
2003	76	16	8	0	100
2005	76	16	8	0	100
2010	77	15	8	0	100

(Details may not add up to totals due to rounding)

The percentage of forest with “Formal Management Plan” in the 2003 NFA Project, which is 29.4%, was applied to the calibrated 2003 NAMRIA data to estimate the forest area with management plan for the reporting years 2000, 2005 and 2010.

FRA Category	Area	Percentage
Formal management	2 102 942	29.4%
No known management	5 059 618	70.6%
Total	7 162 560	100%

3.3.3 Reclassification into FRA 2010 categories

Production forest= 100% production following FRA 2010 categories

National park and Managed protected areas= 100% Conservation

Natural reserve= 100% Protection

3.4 Data for Table T3

The percentage distributions in Table 3.3.2 have been applied to the forest area in Table 1 to estimate areas under the different designated functions.

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	4 538	5 295	5 627	5 861
Protection of soil and water	526	569	591	613
Conservation of biodiversity	1 108	1 153	1 173	1 191
Social services	0	0	0	0
Multiple use	0	0	0	0
Other (please specify in comments below the table)	0	0	0	0
No / unknown	398	100	0	0
TOTAL	6 570	7 117	7 391	7 665

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	n.a.	n.a.	n.a.	n.a.
Forest area within protected areas	1 634	1 722	1 764	1 804
Forest area under sustainable forest management	n.a.	3 812	3 934	4 054
Forest area with management plan	n.a.	2 090	2 170	2 250

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production	The national definition of production forest is consistent with the FRA definition.	The increasing trend is attributed to the continuing forest developmental programs of the national government as well as the increasing participation of private land owners in tree plantation establishment.
Protection of soil and water	Includes forest in watershed areas and in areas above 50% in slope and more than 1000 meters in elevation as well as along 20 meters on both sides of river banks	The increasing trend is attributed to the strict implementation of government regulations banning timber harvesting in areas above 50% in slope and more than 1000 meters in elevation (above sea level) as well as along 20 meters on both sides of river banks as well as the continuing implementation of plantation developmental activities in watershed areas .
Conservation of biodiversity	Includes forest in national parks and managed protected areas	The increasing trend is attributed to the continuing implementation of efficient forest protection measures as well as forest developmental activities in areas under the National Integrated Protected Area System (NIPAS).
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate	The area of permanent forest estate has not been delineated.	
Forest area within protected areas	It covers both the forest area for the protection of soil and water and for the conservation of biodiversity.	The increasing trend is attributed to the strict implementation of existing forestry laws, rules and regulations as well as the continued forest development activities within protected areas.
Forest area under sustainable forest management	All forest area covered by management plans is considered to be under sustainable forest management.	The increasing trend is attributed to the continuing issuance by the government of tenurial instruments in “open-access areas” within legally classified forestland.
Forest area with management plan	All forest area covered by tenurial instruments such as: Timber License Agreement (TLA), Integrated Forest Management Agreement (IFMA), Socialized Integrated Forest Management Agreement (SIFMA), Community-based Forest Management Agreement (CBFMA) as well as those forest areas within the NIPAS areas have management plan.	The increasing trend is attributed to the continuing issuance by the government of tenurial instruments in “open-access areas” within legally classified forestland.

Other general comments to the table

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4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring <u>outside</u> its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
Characteristics categories	
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
Other naturally regenerated forest of introduced species (<i>sub-category</i>)	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species (<i>sub-category</i>)	Planted forest, where the planted/seeded trees are predominantly of introduced species.
Special categories	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FMB. Philippine Forestry Statistics. Forest Management Bureau, Department of Environment and Natural Resources. Philippines.	H	Forest characteristics	1990 & 2003	Provides information on forest cover by forest type in a given year.
FMB. 2006. Philippine Official Reference for Forest-Related Terms and Definitions. Forest Management Bureau, Department of Environment and Natural Resources. Philippines.	H	Forest characteristics	2006	It is a compendium of harmonized forest-related terms and definitions. It is the final output of the ITTO-funded project entitled “Harmonization of Forest-Related Terms and definitions”.
FAO. 2007. World Bamboo Resources. A thematic study prepared		Forest	2007	A thematic study on bamboo prepared in the framework of the

in the framework of the Global Forest Resources Assessment 2005. FAO, Rome.	H	characteristics		Global Forest Resource Assessment 2005.
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4.2.2 Classification and definitions

National class	Definition
Natural regeneration	The establishment of a plant or a plant age class from natural seeding, suckering or layering
Introduced species	Species that have been transported by human activity, intentional or accidental, into a region where it does not naturally occur. Also called alien, exotic, non-indigenous, or non-native species.
Mangrove Forest	Forested wetland growing along tidal mudflats and along shallow water coastal areas extending inland along rivers, streams and their tributaries where the water is generally brackish and composed mainly of <i>Rhizophora</i> , <i>Bruguiera</i> , <i>Ceripos</i> , <i>Avicenia</i> , and <i>A egicera</i> spp.
Old-growth forest	A primary natural forest, sometimes referred to as virgin forest, never been modified of which the composition, structure and function has not been altered. Areas that are identified initial components of the National Protected Areas System of 1992.
Planted forest	Trees planted on bare or open land which used to be covered with forest growth.
Residual forest	The status or condition of a forest subsequent to commercial logging and which there is more or less sufficient or adequate volume of residuals of the desired species of trees for future harvest.

4.2.3 Original data

1990 Philippine Forestry Statistics

Land Use/Forest Type	Area (1000 ha)
Dipterocarp Forest	
Old-growth	861
Residual	3 288
Total	4 149

4.3 Analysis and processing of national data

4.3.1 Calibration

This step is not necessary.

4.3.2 Estimation and forecasting

The area of “Dipterocarp forest, old growth” which is considered synonymous to “Primary forest” is assumed to be the same from 1990 onwards because of the 1990 DENR regulation which bans the conduct of logging operations in old-growth forest. To maintain area consistency with Table T1, it has been assumed that the area of “Other naturally regenerated forest” is the area that remains after deducting the area of “Primary forest” and “Planted forest”. “Further, the calibrated 2003 NAMRIA data on mangrove area was used for the reporting years 2000, 2005 and 2010.”

4.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	861	861	861	861
Other naturally regenerated forest	5 407	5 929	6 190	6 452
...of which of introduced species	n.d.a	n.d.a	n.d.a	n.d.a
Planted forest	302	327	340	352
...of which of introduced species	297	322	335	347
TOTAL	6 570	7 117	7 391	7 665

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	n.a.	n.a.	7.9	8.0
Mangroves (Forest and OWL)	n.a.	257	257	257
Bamboo (Forest and OWL)	127	156	172	188

4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	Primary forest is synonymous to “Dipterocarp Forest, Old-growth” but not to “Closed forest”.	It is assumed that the area of “Dipterocarp Forest, Old-growth” did not change from 1990 onwards because of the 1990 DENR regulation which provides for the shift in logging operations from the old-growth forest to residual forest.
Other naturally regenerating forest	It is synonymous to “residual forest”.	The increasing trend is attributed to the ecological succession taking place in “Other wooded land”
Planted forest	Coniferous and mangrove plantations are perceived to be composed of native tree species whereas broadleaved plantations are assumed to consist mostly of introduced tree species.	The increasing trend is attributed to the government’s continuing extensive forest developmental programs as well as the increasing participation of private land owners in tree plantation establishment.

Rubber plantations	The data in 2005 was based on the report submitted by the DENR field offices in 2008.	It is assumed that there will be a slight increase in rubber plantations from 2008 to 2010 in view of the preference of private tree planters for fast growing timber producing species.
Mangroves	The Calibrated 2003 NAMRIA Data on mangrove (both natural and planted) was adopted for the reporting years 2000, 2005 & 2010.	The stable trend is attributed to the implementation of government regulations banning the harvesting of mangrove as well as the conversion of mangrove forest into fishpond or prawn farms.
Bamboo	Data were obtained from the bamboo Country Report for 2000 and the FRA 2005 country report for 2005. Data for 1990 and 2010 were extrapolated.	The increasing trend is attributed to the continuing establishment of bamboo plantation by private land owners as well as in some government projects.

Other general comments to the table

The national data on planted forest is weak. The 1988 FRI data has no information on established plantations. Likewise, the 2003 NAMRIA data on planted forest may not be highly reliable as it is difficult to identify and segregate planted forest from natural forest in the satellite imagery.

5 Table T5 – Forest establishment and reforestation

5.1 FRA 2010 Categories and definitions

Term	Definition
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
Natural expansion of forest	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FMB Philippine Forestry Statistics. Forest Management Bureau, Department of Environment and Natural Resources	M To L	Forest establishment & regeneration	1988 to 2007	Provides information on the area planted by region and by sector for a given year.

5.2.2 Classification and definitions

National class	Definition
Afforestation	Artificial establishment of forest on lands previously not covered with forest vegetation.
Reforestation	The establishment of forest plantations on temporarily unstocked lands that are considered as forest. Also called as artificial regeneration.

5.2.3 Original data

A. Philippine Forestry Statistics

Year	Area Planted			5-Year Average
	Total	Government Sector	Non-government sector	
2007	27 838	8 838	19 000	17 397
2006	7 223	4 476	2 747	
2005	16 498	7 187	9 311	
2004	20 338	12 436	7 902	
2003	15 088	13 195	1 893	
2002	25 620	20 681	4 939	33 846
2001	31 444	26 524	4 920	
2000	27 632	21 740	5 892	
1999	42 167	31 184	10 983	
1998	42 368	33 219	9 149	

1992	40 593	24 304	16 289	104 176
1991	93 039	73 602	19 437	
1990	191 663	153 949	37 714	
1989	131 404	89 452	41 952	
1988	64 183	31 226	32 957	

5.3 Analysis and processing of national data

5.3.1 Calibration

This step is not necessary.

5.3.2 Estimation and forecasting

This step is not necessary.

5.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species ¹⁾ (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Reforestation	104 176	33 846	17 397	n.d.a.	n.d.a.	n.d.a.
...of which on areas previously planted	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Natural expansion of forest	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.

Note: The figures for the reporting years refer to the averages for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation	It is not possible to report on afforestation data separately.	
Reforestation	Data was based on the reported area planted by both government and non-government sectors. Part of these forest establishments consists in afforestation activities.	The decreasing trend is attributed to the decreasing budgetary allocation for plantation establishment, maintenance and protection.
Natural expansion of forest	No data available	
Other general comments to the table		
The data on reforestation is weak because of the possibility that there may be instances of double reporting for the same area. An area that may have been reported reforested in previous years that were burned and reforested in later years were again reported as newly established plantation thereby increasing the total area planted. Further, no reliable data is available on the actual extent of planted forest as of 2008.		

6 Table T6 – Growing stock

6.1 FRA 2010 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.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FMB. 1988. Natural Forest Resources of the Philippines. Philippine –German Forest Resources Inventory Project. Forest Management Bureau. Philippines.	M	Growing stock	1988	Provides information on the total bole volume of trees with DBH 15 cm and larger in both Dipterocarp and Pine forests. It has no data on the bole volume per hectare of trees in mossy forest, mangrove forest and submarginal forest.
NFA 2005. National Forest Resource Assessment – Philippines. Working Paper 96. FAO Rome.	H	Growing stock	2003	Provides information on growing stock above stump of trees with DBH \geq 10 cm in all forest types.

6.2.2 Classification and definitions

National class	Definition
Commercial species	Refers to all tree species in the categories of Premium, Common Hardwood, Construction and Furniture, Light Hardwoods, and Softwoods.

6.2.3 Original data

A. Growing stock

A.1 1988 FRI (RP-GTZ FRI)

Forest Type	Area (1000 ha)	Bole Volume (1000 cu m)	Vol/ha
Dipterocarp Forest	4 401	719 144	163.4
Pine Forest	239	24 929	104.4
Submarginal Forest	544	no data	no data
Mossy Forest	1 137	no data	no data
Mangroves	139	no data	no data
Total	6 461	744 073	160.4

A.2 2003 NFA (FAO-supported NFA Project. Details may not add up to totals due to rounding)

Natural Forest	Area (1000 ha)	Gross Volume (1000 cu m)	Vol/ha
Broad-leaved Forest	6 029	1 175 643	195.0
Coniferous Forest	211	27 919	132.1
Mixed Forest	83	1 277	70.5
Bamboo/Boho Formation	172	5 363	31.2
Mangrove Forest	41	5 121	126.1
Subtotal (Natural)	6 535	1 215 322	186.0
Planted Forest			
Broad-leaved Forest	617	31 308	50.8
Coniferous Forest	11	1 228	117.0
Subtotal (Plantation)	627	32 537	51.9
Total	7 163	1 247 859	174.2

B. 10 most common tree species

B.1 1988 FRI (RP-GTZ FRI, bole volume of trees with DBH ≥ 15 cm in productive forests. Details may not add up to totals due to rounding)

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

B.2 2003 NFA (FAO-supported NFA Project, gross volume of all trees with DBH ≥ 10 cm in forest. Details may not add up to totals due to rounding)

Scientific name	Local name	Volume (million cu m)
<i>Shorea polysperma</i>	Tanguile	125.2
<i>Shorea contorta</i>	White lauan	128.1
<i>Shorea negrosensis</i>	Red lauan	105.7
<i>Shorea squamata</i>	Mayapis	95.3
<i>Dipterocarpus grandiflorus</i>	Apitong	70.0
<i>Parashorea plicata</i>	Bagtikan	48.6
<i>Shorea astylosa</i>	Yakal	32.3
<i>Shorea almon</i>	Almon	23.8
<i>Lithocarpus Lianosii</i>	Ulayan	22.1
<i>Gmelina arborea</i>	Yemane	10.1
Remainder of species		586.7
Total		1 247.9

B.3 2003 NFA Data (Gross volume based on total height and Commercial volume based on bole height of all trees in natural forest, except mangrove species, with DBH \geq 10 cm based)

Climatic Region	Gross Volume (cu m)	Comm. Volume (cu m)	VEF (B/C)
A	9 853.8	6450.2	1.528
B	1 711.2	845.4	2.024
C	3 841.8	3 179.0	1.209
D	2 735.4	1 628.5	1.680
E	2 367.6	1 651.4	1.434
F	1 050.8	648.2	1.621
Total	21 560.6	14 402.7	1.497

6.3 Analysis and processing of national data

6.3.1 Calibration

This step is not necessary.

6.3.2 Estimation and forecasting

The 1988 FRI data on growing stock was based on the bole height (commercial volume) of all natural-grown trees with DBH \geq 15 cm in dipterocarp and pine forest. No volume data is indicated on other forest types. On the other hand, the 2003 NFA data was based on the total height (gross volume) of all trees with DBH \geq 10 cm in all forest types. To estimate the growing stock of the 1988 FRI data based on total height (gross volume), this was increased by a volume expansion factor (VEF) of 1.497. The VEF was derived from the proportion of the gross volume to the commercial volume of all natural grown trees, except mangrove species, in the 2003 NFA data. Further, considering that the 1988 FRI lacks data on growing stock for the mangrove forest, mossy forest and submarginal forest, the volume per hectare in the 2003 NFA was substituted. It was assumed that the gross volume per hectare in mossy forest is the same as in mixed forest, submarginal forest is the same as in bamboo/boho formation and mangrove forest to mangrove forest.

In the estimation and forecast of growing stock in “Other wooded land”, the growing stock per hectare of 21.99 cu m, based on the 2003 NFA data, was constantly applied in the reporting years in view of the lack of growing stock data in brushlands in the 1988 FRI.

1988 FRI (RP-GTZ FRI. Details may not add up to totals due to rounding)

Forest Type	Area (1000 ha)	Original Data		VEF	Adjusted Data	
		Gross Volume (1000 cu m)	Vol/ha		Gross Volume (1000 cu m)	Vol/ha
Dipterocarp Forest	4 401	719 144	163.4	1.497	1 076 559	244.6
Pine Forest	239	24 929	104.4		37 319	156.3
Submarginal Forest	544	no data			16 979	31.20
Mossy Forest	1 137	no data			80 187	70.50
Mangroves	139	no data			17 541	126.10
Total	6 461	744 073	160.4		1 228 584	190.2

In the estimation and forecast of growing stock in forest, the adjusted 1988 FRI data and the 2003 NFA data were used.

	Adjusted 1988 FRI Data	2003 NFA Data	Difference	Annual Change
cu m/ha	190.2	174.2	-15.9	-1.1
Difference (1988-2003)			15	
Estimated growing stock				
Year	cu m/ha	Forest (1000 ha)	Gross Vol. (1000 cu m)	
1988	190.2	6 4601	1 228 584	
1990	188.0	6 570	1 235 430	
2000	177.4	7 117	1 262 679	
2003	174.2	7 282	1 268 584	
2005	172.1	7 391	1 271 939	
2010	166.8	7 665	1 278 290	

B. Growing stock of trees with dbh ≥ 10 cm

Variable	1990	2000	2005	2010
Growing stock (m ³ /ha)	188.0	177.4	172.1	166.8
Area in 1000 ha	6 570	7 117	7 391	7 665
Growing stock in million m ³	1 235	1 263	1 272	1 278

In the estimation of the growing stock for the 10 most frequent species, their proportion to the growing stock in the adjusted 1988 FRI data and 2003 NFA data were extrapolated to estimate the growing stock in 1990 and 2005. The order of species follows their ranking (by volume) in 2005.

Growing stock based on gross volume (in million cu m) of the ten most frequent species.
(Details may not add up to totals due to rounding)

Scientific Name	Common Name	Growing stock (million cu m)	
		1990	2005
<i>Shorea contorta</i>	White Lauan	83.0	135.1
<i>Shorea polysperma</i>	Tanguile	140.5	122.8
<i>Shorea negrosensis</i>	Red lauan	83.0	109.2
<i>Shorea squamata</i>	Mayapis	120.8	91.4
<i>Dipterocarpus grandiflorus</i>	Apitong	64.1	70.9
<i>Parashorea plicata</i>	Bagtikan	58.8	47.0
<i>Shorea astylosa</i>	Yakal	14.8	35.0
<i>Shorea almon</i>	Almon	34.7	22.1
<i>Lithocarpus lianosii</i>	Ulayan	33.9	20.2
<i>Gmelina arborea</i>	Yemane	1.3	11.5
Remainder of species		600.4	606.7
Total		1 235.4	1 271.9

6.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

6.4 Data for Table T6

Table 6a – Growing stock (Details may not add up to totals due to rounding)

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	1 235.4	1 262.7	1 271.9	1 278.3	70.7	146.7	184.7	222.7
... of which coniferous	37.9	40.3	41.1	41.6	n.d.a.	n.d.a.	n.d.a.	n.d.a.
... of which broadleaved	1 197.5	1 222.4	1 230.9	1 236.7	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Growing stock of commercial species	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.

Table 6b – Growing stock of the 10 most common species (Details may not add up to totals due to rounding)

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1 st	<i>Shorea contorta</i>	White Lauan	83.0	117.7	135.1
2 nd	<i>Shorea polysperma</i>	Tanguile	140.5	128.7	122.8
3 rd	<i>Shorea negrosensis</i>	Red lauan	83.0	100.5	109.2
4 th	<i>Shorea squamata</i>	Mayapis	120.8	101.2	91.4
5 th	<i>Dipterocarpus grandiflorus</i>	Apitong	64.1	68.6	70.9
6 th	<i>Parashorea plicata</i>	Bagtikan	58.8	51.0	47.0
7 th	<i>Shorea astylosa</i>	Yakal	14.8	28.3	35.0
8 th	<i>Shorea almon</i>	Almon	34.7	26.3	22.1
9 th	<i>Lithocarpus lianosii</i>	Ulayan	33.9	24.8	20.2
10 th	<i>Gmelina arborea</i>	Yemane	1.3	8.1	11.5
Remaining	Remainder of species		600.4	607.5	606.7
TOTAL			1 235.4	1 262.7	1 271.9

Note: Rank refers to the order of importance in terms of growing stock, i.e. 1st is the species with the highest growing stock. Year 2000 is the reference year for defining the species list and the order of the species.

Table 6c – Specification of threshold values

Item	Value	Complementary information
Minimum diameter (cm) at breast height ¹ of trees included in growing stock (X)	10 cm	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)		The total height of the tree was used in the calculation of growing stock (gross volume)
Minimum diameter (cm) of branches included in growing stock (W)		Minimum diameter of branches is not known
Volume refers to “above ground” (AG) or “above stump” (AS)	above stump (AS)	

¹ Diameter at breast height (DBH) refers to diameter over bark measured at a height of 1.30 m above ground level or 30 cm above buttresses if these are higher than 1 m.

6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock	The total growing stock for each reporting year was estimated by extrapolating the data on growing stock per hectare in the 1988 FRI and 2003 NFA. The estimated growing stock/ ha per year was then multiplied to the estimated “Forest” area for the same year.	The increasing trend is directly proportional to the increase in forest area.
Growing stock of broadleaved / coniferous	The growing stock in “Coniferous Forest” was first estimated considering that data on growing stock per hectare is available in both 1988 FRI and 2003 NFA. The estimated growing stock/ha in “Coniferous Forest” was then deducted from the estimated “Total growing stock” to come up with the growing stock in “Broadleaved Forest”.	The growing stock is increasing due to the expanding forest area; however, the growing stock per hectare is decreasing due to the continued utilization of large diameter trees in production forest.
Growing stock of commercial species	No data available. The 2003 NFA project was not able to produce a Stand and Stock Table showing the number of trees and their corresponding volume by diameter class and species group.	
Growing stock composition	Consist of all tree species including lesser-used species.	

Other general comments to the table

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7 Table T7 – Biomass stock

7.1 FRA 2010 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 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	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.

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
IPCC. 2003. IPCC Good Practice Guidance for Land-Use, Land-Use Change and Forestry. Kanagawa, Japan	H	Biomass stock	2003	Provides supplementary methods and good practice guidance for estimating, measuring, monitoring and reporting on carbon stock changes and greenhouse gas emissions.
NFA 2005. National Forest Resource Assessment – Philippines. Working Paper 96. FAO Rome.	H	Biomass stock	2003	Provides information on biomass stocks following the allometric equation developed by Sandra Brown
FMB. 2006. Philippine Official Reference for Forest-Related Terms and Definitions. Forest Management Bureau, Department of Environment and Natural Resources. Philippines.	H	Biomass stock	2006	It is a compendium of harmonized forest-related terms and definitions. It is the final output of the ITTO-funded project entitled “Harmonization of Forest-Related Terms and definitions”.

7.2.2 Classification and definitions

National class	Definition
Biomass	The amount of living matter expressed in terms of weight per unit area or unit volume of water. It is the total mass of life in an ecosystem t any given time. It is an indicator of the productivity of the ecosystem.

7.2.3 Original data

This is shown in item 6.2.3.

7.3 Analysis and processing of national data

7.3.1 Calibration

This step is not necessary.

7.3.2 Estimation and forecasting

The following estimates on “Above-ground biomass” and “Below-ground biomass” in “Forest” and “Other wooded land” were derived following the formula prescribed in the *Guidelines for Country Reporting to FRA 2010*.

A. Biomass in Forest

Forest Type	Variable	1990	2000	2005	2010
Broadleaved	Growing stock (M cu m)	1 197.5	1 222.4	1 230.9	1 236.7
Coniferous		37.9	40.3	41.1	41.6
Sub-total (M cu m)		1 235.4	1 262.7	1 271.9	1 278.3
Broadleaved	Growing stock /ha	189.0	177.1	171.4	165.7
Coniferous		161.3	186.1	198.0	209.7
Biomass Conversion Expansion Factors					
Broadleaved	BCEF	0.90	0.90	0.90	0.90
Coniferous		0.60	0.60	0.60	0.60
Above-Ground Biomass					
Broadleaved	AGB (M tonnes)	1 077.8	1 100.6	1 108.5	1 114.0
Coniferous		22.7	23.9	24.2	24.3
Sub-total (AGB) M tonnes		1 100.5	1 124.5	1 132.7	1 138.3
Root-shoot Ratio					
Broadleaved	Root-shoot ratio	0.24	0.24	0.24	0.24
Coniferous		0.24	0.24	0.24	0.24
Below-Ground Biomass					
Broadleaved	BGB (M tonnes)	258.7	264.1	266.0	267.4
Coniferous		5.5	5.7	5.8	5.8
Sub-total (BGB) M tonnes		264.1	269.9	271.8	273.2
Total (AGB+BGB) M tonnes		1 364.7	1 394.4	1 404.5	1 411.5
Dead to live ratio		0.11	0.11	0.11	0.11
Dead wood DWB (M tonnes)		150.1	153.4	154.5	155.3
Total (AGB + BGB + DWB) M tonnes		1 514.8	1 547.7	1 559.00	1 566.8

B. Biomass in Other wooded land

Other Wooded Land					
Variable		1990	2000	2005	2010
Growing stock (M cu m)		70.7	146.7	184.7	222.7
Growing stock /ha		21.99	21.99	21.99	21.99
BCEF		1.40	1.40	1.40	1.40
Sub-total AGB (M tonnes)		99.0	205.4	258.6	311.8
Root-shoot ratio		0.20	0.20	0.20	0.20
Sub-total BGB (M tonnes)		19.8	41.1	51.7	62.4
Total (AGB+BGB) M tonnes		118.8	246.5	310.3	374.2
Dead to live ratio		0.11	0.11	0.11	0.11
Dead Wood Biomass (M tonnes)		13.1	27.1	34.1	41.2
Total (AGB + BGB + DWB) M tonnes		131.9	273.6	344.2	415.3

7.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Above-ground biomass	1 100.5	1 124.5	1 132.7	1 138.32	99.0	205.4	258.6	311.8
Below-ground biomass	264.1	269.9	271.8	273.20	19.8	41.1	51.7	62.4
Dead wood	150.1	153.4	154.5	155.3	13.1	27.1	34.1	41.2
TOTAL	1 514.8	1 547.7	1 559.00	1 566.8	131.9	273.6	344.2	415.3

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	In estimating AGB, the lower ranges for the BCEFs (0.90 for broadleaved forest and 0.60 for coniferous forest) were used considering that the growing stock includes tops and branches. The AGB for “Broadleaved Forest” and “Coniferous Forest” were calculated separately then summed up to come up with the total AGB on a yearly basis. In the case of OWL, it was assumed that all the trees are broadleaved species; therefore, the applicable BCEF value for broadleaved forest was applied.	The increasing trend is attributed to the expanding “Forest” and “Other wooded land” areas.
Below-ground biomass	In estimating BGB in Forest, the default value of 0.24 Root-Shoot ratio was used. The BGB for “Broadleaved Forest” and “Coniferous Forest” were calculated separately then summed up to come up with the total BGB on a yearly basis. In the case of OWL, the “root-shoot ratio” of 0.20 was applied as it was assumed that all the trees are broadleaved species.	The increasing trend is attributed to the expanding “Forest” and “Other wooded land” areas.
Dead wood biomass	The default value of 0.11 ratio of dead to live biomass (total of above and below ground biomass) was used in the estimation.	The increasing trend is directly proportional to the increase in live biomass as well as to forest disturbances that causes inordinate tree mortality.

Other general comments to the table

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8 Table T8 – Carbon stock

8.1 FRA 2010 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 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	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 the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
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.

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
IPCC. 2003. IPCC Good Practice Guidance for Land-Use, Land-Use Change and Forestry. Kanagawa, Japan	H	Carbon stock	2003	Provides supplementary methods and good practice guidance for estimating, measuring, monitoring and reporting on carbon stock changes and greenhouse gas emissions.
NFA 2005. National Forest Resource Assessment – Philippines. Working Paper 96. FAO Rome.	H	Carbon stock	2003	Provides information on carbon stock calculated based on default values.
IPCC. 2006. IPCC Guidelines for National Greenhouse Gas Inventories	H	Carbon stock	2006	Provides guidance for preparing annual greenhouse gas inventories in the Agriculture, Forestry and Other Land Use (AFOLU) sector.

8.2.2 Classification and definitions

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

8.2.3 Original data

This is shown in item 6.2.3.

8.3 Analysis and processing of national data

In estimating the Carbon in above-ground biomass (AGB), below-ground biomass (BGB) and dead wood biomass (DWB), the default Carbon Fraction of 0.47 was applied. In the case of carbon content in litter, the default value of 2.1 was applied; while the default value of 65 for soil organic carbon with HAC soils was used in the estimation of soil carbon.

8.4 Data for Table T8 (Details may not add up to totals due to rounding)

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	517.25	528.50	532.35	535.01	46.54	96.54	121.55	146.55
Carbon in below-ground biomass	124.14	126.84	127.76	128.40	9.31	19.31	24.31	29.31
Sub-total: Living biomass	641.39	655.35	660.12	663.42	55.85	115.85	145.86	175.86
Carbon in dead wood	70.55	72.09	72.61	72.98	6.14	12.74	16.04	19.34
Carbon in litter	13.80	14.95	15.52	16.10	6.75	14.01	17.64	21.27
Sub-total: Dead wood and litter	84.35	87.03	88.13	89.07	12.90	26.76	33.68	40.61
Soil carbon	427.05	462.63	480.42	498.20	209.06	433.70	546.01	658.33
TOTAL	1 152.79	1 205.01	1228.67	1250.69	277.80	576.30	725.55	874.81

Soil depth (cm) used for soil carbon estimates	30
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8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass		The increasing trend is directly proportional to the increase in growing stock and forest cover.
Carbon in below-ground biomass		The increasing trend is directly proportional to the increase in growing stock and forest cover.
Carbon in dead wood		The increasing trend is directly proportional to the increase in above-ground and below-ground biomass.
Carbon in litter		The increasing trend is directly proportional to the increase in forest cover.
Soil carbon		The increasing trend is directly proportional to the increase in above-ground and below-ground biomass.

Other general comments to the table

9 Table T9 – Forest fires

9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire (supplementary term)	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any unplanned and/or uncontrolled vegetation fire.
Planned fire	A vegetation fire regardless of ignition source that burns according to management objectives and requires limited or no suppression action.

9.2 National data

9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Periodic damage reports from DENR field offices	M to L	Area affected	1988 to 2006	

9.2.2 Classification and definitions

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

9.2.3 Original data

(The data was based on the reports submitted by the DENR field offices except Regions 12, 13 and the Autonomous Region in Muslim Mindanao (ARMM). Many incidences of forest fires, however, may not have been reported)

Philippines								
Frequency and Area Affected by Fire								
Year	Forest		OWL		Other Land		Total	
	No. of Fire	ha	No. of Fire	ha	No. of Fire	ha	No. of Fire	ha
2007	44	772.44	14	667.95	29	1,922.73	87	3,363.12
2006	17	3,032.87	1	1.44	3	272.00	21	3,306.31
2005	66	1,679.79	12	835.72	6	538.32	84	3,053.83
2004	31	869.91	21	865.49	8	77.50	60	1,812.90
2003	94	1,285.39	8	422.80	5	112.00	107	1,820.19
Subtotal	252	7 640	56	2 793	51	2 923	359	13 356
Average	50	1 528	11	559	10	585	72	2 671
2002	134	4 725.93	21	1 431.98	17	1 524.12	172	7 682.03
2001	16	502.69	15	530.87	1	24.48	32	1 058.04
2000	20	1 230.75	8	395.88	11	462.75	39	2 089.38
1999	15	164.45	20	2 223.83	2	44.00	37	2 432.28
1998	500	26 146.10	49	2 738.96	35	10 403.10	584	39 288.16
Subtotal	685	32 770	113	7 322	66	12 458	864	52 550
Average	137	6 554	23	1 464	13	2 492	173	10 510

1992	39	2 891.13	0	597.70	0	0.00	39	3 488.83
1991	10	360.00	0	0.00	0	0.00	10	360.00
1990	23	862.50	0	226.15	3	26.40	26	1 115.05
1989	14	432.00	0	91.80	0	0.00	14	523.80
1988	9	285.75	0	0.00	1	21.50	10	307.25
Subtotal	95	4 831.38	0	915.65	4	47.90	99	5 794.93
Average	19	966	0	183	1	10	20	1 159

9.3 Analysis and processing of national data

9.3.1 Calibration

This step is not necessary.

9.3.2 Estimation and forecasting

This step is not necessary.

9.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

9.4 Data for Table T9

Table 9a (Details may not add to totals due to rounding)

FRA 2010 category	Annual average for 5-year period					
	1990		2000		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	1.159	20	10.510	173	2.671	72
... of which on forest	0.966	19	6.554	137	1.528	50
... of which on other wooded land	0.183	n.a.	1.464	23	0.559	11
... of which on other land	0.010	1	0.183	13	0.585	10

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	100	100	100
Planned fire	0	0	0

Note: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively

9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire	The data is underestimated as it lacks report from Regions 4A, 12, 13 & ARMM.	The high incidence of forest fire from 1998 to 2002 can be attributed to the strong El Nino phenomenon.
Number of fires	The data is underestimated as it lacks report from DENR Regions 4A, 12 & 13 as well as ARMM. Some DENR field offices also have no available data on the frequency of fire in some reporting years.	The high incidence of forest fire from 1998 to 2002 can be attributed to the strong El Nino phenomenon.
Wildfire / planned fire	The forest fires were mostly wildfire caused in part by incendiarism.	

Other general comments to the table

The data is weak as there may be incidence of forest fires that have not been reported.

10 Table T10 – Other disturbances affecting forest health and vitality

10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.
Category	Definition
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Periodic damage reports from DENR field offices	M to L	Area affected	1988 to 2007	

10.2.2 Classification and definitions

National class	Definition
Invasive species	Species of flora and fauna which may be accidentally or deliberately introduced to an area that may cause or likely to cause economic, environmental damage, and harm to human health.

10.2.3 Original data

The data was based on the reports submitted by the DENR field offices except regions 4A, 12, 13 and the Autonomous Region in Muslim Mindanao (ARMM).

A. Other disturbances

Year	Affected Forest Area (ha)				
	Disturbance by Insects	Disturbance by Diseases	Disturbance by other Biotic Agents	Disturbance caused by Abiotic Agent	Total ara affected by disturbances
2007	40.50	6.50	0.00	0.00	47.00
2006	0.60	0.00	0.00	209.00	209.60
2005	0.25	0.00	0.00	0.00	0.25
2004	0.50	0.00	0.00	0.00	0.50
2003	0.00	81.55	0.00	0.00	81.55
Subtotal	41.85	88.05	0.00	209.00	338.90
2002	0.00	1.50	0.00	5.00	6.50
2001	0.00	120.00	5.00	0.00	125.00
2000	0.00	35.00	0.00	4.50	39.50
1999	6.00	409.00	0.00	0.00	415.00
1998	0.00	325.00	0.00	417.75	742.75
Subtotal	6.00	890.50	5.00	427.25	1 328.75
1992	0.00	1.50	0.00	597.70	599.20
1991	0.50	0.00	0.00	0.00	0.50
1990	47.50	0.00	0.00	226.15	273.65
1989	0.00	12.00	2.50	91.80	106.30
1988	20.00	0.00	0.00	0.00	20.00
Subtotal	68.00	13.50	2.50	915.65	999.65

B. Major outbreaks of insects and diseases

Region	Scientific name of insect or disease causing the outbreak	Tree Species or genera affected	Year(s) of latest outbreak	Area affected (ha)	If cyclic, approx. cycle (years)
1	Tussock moth	Rhizophora species	2008	3	
2	Ips caligraphus	Pinus kesiya	1988	10	
8	Leaf folders	Rhizophora mucronata, R. apiculata, Avecenia officinalis	2003	50	n.a.
8	Termites, bug worm	Gmelina arborea, Xanthostemon verdugonianus		6	n.a.
8	Tussock moth, leaf mines	Rhizophora mucronata, R.apiculata		5	n.a.
8	Propagule borer	Ceriops tagal		5	n.a.
8	Leaf mines, defoliator	Sonneratia alba		3	n.a.
8	Termites, leaf spot	Eucalyptus deglupta		2.5	n.a.
8	Mealy bugs, leaf blight			0.5	n.a.
9	Uromycladium tepperianum (Gall rust)	Paraserianthis falcataria	1999	392	6 years
9	Lepidoptera	Swietenia macrophylla	1999	24	6 years
9	Uromycladium tepperianum (Gall rust)	Paraserianthis falcataria	1993	24	
11	Ozola minor	Gmelina arborea	1990	45	n.a.
11	Dryocoetiops laevis	Dipterocarpus grandiflorus	1990	20	n.a.
11	Uromycladium tepperianum (Gall rust)	Paraserianthis falcataria	2007	5	3
11	Pocilips fallax	Rhizophora mucronata, R.apiculata	1999	2	n.a.
11	Lymantriade euproctis spp.	Rhizophora mucronata, R.apiculata	1996	2	n.a.
11	Xyleutes sp.	Gmelina arborea	1991	0.5	n.a.
11	Hypsipyyla robusta	Swietenia macrophylla	1990	0.5	n.a.

10.3 Analysis and processing of national data

10.3.1 Calibration

This step is not necessary.

10.3.2 Estimation and forecasting

This step is not necessary.

10.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

10.4 Data for Table T10

Table 10a – Disturbances (Details may not add up to totals due to rounding)

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	0.014	0.001	0.008
Disturbance by diseases	0.003	0.178	0.018
Disturbance by other biotic agents	0.001	0.001	0.000
Disturbance caused by abiotic factors	0.183	0.085	0.042
Total area affected by disturbances	0.201	0.265	0.068

Notes: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

The total area affected by disturbances is not necessarily the sum of the individual disturbances as these may be overlapping.

Table 10b – Major outbreaks of insects and diseases affecting forest health and vitality

Description / name	Tree species or genera affected (scientific name)	Year(s) of latest outbreak	Area affected (1000 ha)	If cyclic, approx. cycle (years)
Dryocoetiops laevis	<i>Dipterocarpus grandiflorus</i>	1990	0.020	n.a.
Ips caligraphus	<i>Pinus kesiya</i>	1988	0.010	n.a.
Leaf folders	<i>Rhizophora mucronata</i> , <i>R. apiculata</i> , <i>Avecenia officinalis</i>	2003	0.050	n.a.
Leaf mines, defoliator	<i>Sonneratia alba</i>		0.003	n.a.
Lepidoptera	<i>Swietinia macrophylla</i>	1999	0.024	6 years
Lymantriade euproctis spp.	<i>Rhizophora mucronata</i> , <i>R. apiculata</i>	1996	0.002	n.a.
Ozola minor	<i>Gmelina arborea</i>	1990	0.045	n.a.
Pocilips fallax	<i>Rhizophora mucronata</i> , <i>R. apiculata</i>	1999	0.002	n.a.
Propagule borer	<i>Ceriops tangal</i>		0.005	n.a.
Termites (bug worm & leaf spot)	<i>Gmelina arborea</i> , <i>Xanthostemon verdugonianus</i> ,		0.009	

	<i>Eucalyptus deglupta</i>			n.a.
Tussock moth, leaf mines	<i>Rhizophora spp., R.apiculata</i>		0.008	n.a.
Uromycladium tepperianum (Gall rust)	<i>Paraserianthis falcataria</i>	1999	0.421	6 years

Note: Area affected refers to the total area affected during the outbreak.

Table 10c – Area of forest affected by woody invasive species

Scientific name of woody invasive species	Forest area affected 2005 (1000 hectares)
NONE	0.0
Total forest area affected by woody invasive species	0.0

Note: The total forest area affected by woody invasive species is not necessary the sum of the values above, as these may be overlapping.

10.5 Comments to Table T10

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Disturbance by insects	The data is underestimated as it lacks report from Regions 4A, 12, 13 & ARMM. Some incidence of insect infestation covering fragmented areas may not have been reported.	There is no predictable trend as the disturbance is not cyclic.
Disturbance by diseases	The data is underestimated as it lacks report from Regions 4A, 12, 13 & ARMM. Some incidence of insect infestation covering fragmented areas may not have been reported.	There is no predictable trend as the disturbance is not cyclic.
Disturbance by other biotic agents	The data is underestimated as it lacks report from Regions 4A, 12, 13 & ARMM. Some incidence of insect infestation covering fragmented areas may not have been reported.	There is no predictable trend as the disturbance is not cyclic.
Disturbance caused by abiotic factors	This was caused by an oil spill of 2.1 million liters of bunker oil affecting mangrove forest in the provinces of Guimaras and Iloilo in August 2006.	There is no predictable trend as the disturbance is not cyclic.
Major outbreaks		
Invasive species	No forest area has been reported to be affected by invasive tree species.	

Other general comments to the table

The data is weak as there may be incidence of forest disturbances that have not been reported. Most of the reported disturbances are endemic in nature; these only occasionally happened in isolated areas.

11 Table T11 – Wood removals and value of removals

11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	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)	Additional comments
FMB. Philippine Forestry Statistics. Forest Management Bureau. Philippines.	H	Value and Removal	1988 to 2006	Provides information on monthly roundwood and fuelwood production by region and by province in a given year.
FMB. 2006. Philippine Official Reference for Forest-Related Terms and Definitions. Forest Management Bureau, Department of Environment and Natural Resources. Philippines.	H	Value and Removal	2006	It is a compendium of harmonized forest-related terms and definitions. It is the final output of the ITTO-funded project entitled “Harmonization of Forest-Related Terms and Definitions”.

11.2.2 Classification and definitions

National class	Definition
Industrial roundwood	All round wood except fuel wood comprising of saw logs, veneer logs, and round and split pulpwood.
Round wood	Wood in its natural state as felled, or otherwise harvested, with or without bark, round, split, roughly squared or other forms.
Fuelwood	Wood used as fuel for purposes of cooking, heating or power production.

11.2.3 Original data

A. Wood removal (All the production has been assumed to come from forest.)

Year	Production (1000 cu m)		5-Year Average (1000 cu m)	
	Industrial roundwood	Woodfuel	Industrial roundwood	Woodfuel
2007	803	688	791	349
2006	1 036	527		
2005	841	182		
2004	768	166		
2003	506	183		
2002	403	138	628	116
2001	571	142		
2000	800	112		
1999	730	130		
1998	634	56		
1992	1 438	319	2 568	123
1991	1 922	69		
1990	2 503	93		
1989	3 169	48		
1988	3 809	84		

A. Unit value

The following are the average prices of wood based on information provided by the country in November 2004 meeting of the National correspondents in Bangkok, Thailand. The prices of woodfuel have been assumed to be 3.5% of the prices of industrial roundwood, based on 2002 information. The same prices were adopted in the FRA 2005 Country Report.

Variable	1990	2000
Price of Industrial Wood (Peso/m ³)	3 064	6 550

11.3 Analysis and processing of national data

11.3.1 Calibration

This step is not necessary.

11.3.2 Estimation and forecasting

A. Prices

The prices of industrial roundwood have been estimated through linear extrapolation of the 1990 and 2000 figures. Based on estimate, the average annual increase in the prices of industrial roundwood from 1990 to 2000 is about PhP348.60/ cu m. As indicated under item 11.2.3 B. Unit value, the prices of woodfuel have been assumed to be 3.5% of the prices of industrial roundwood.

Year	Cost per cu m (PhP)		5-Year Ave. Prices (PhP)	
	Industrial roundwood	Woodfuel	Industrial roundwood	Woodfuel
2007	8 990	315	8 293	290
2006	8 642	302		
2005	8 293	290		
2004	7 944	278		
2003	7 596	266		
2002	7 247	254	6 550	229
2001	6 899	241		
2000	6 550	229		
1999	6 201	217		
1998	5 853	205		
1992	3 761	132	3 064	107
1991	3 413	119		
1990	3 064	107		
1989	2 715	95		
1988	2 367	83		

11.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m ³ o.b.)	2 568	628	791	123	116	349
... of which from forest	2 568	628	791	123	116	349
Unit value (local currency / m ³ o.b.)	3 064	6 550	8 293	107	229	290
Total value (1000 local currency)	7 868 352	4 113 400	6 559 763	131 61	26 564	101 210

Note: The figures for the reporting years refer to the averages for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

	1990	2000	2005
Name of local currency	Philippine Peso	Philippine Peso	Philippine Peso

11.5 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	The data was based on the manifested annual log production report of the DENR field offices, excluding ARMM. All the production has been assumed to come from forest.	The low production in 2000 is attributed to the decrease in the number of forest-based industries, particularly timber license agreements (TLA), as well as the decreasing commercial forest area.
Total volume of woodfuel removals	The data was based on the manifested annual woodfuel production report of the DENR field offices, excluding ARMM. All the production has been assumed to come from forest.	
Unit value	The unit value per cu m for both industrial roundwood and woodfuel was adopted from the FRA 2005 Country Report.	The increasing trend in the unit value of wood is influenced by the “Law of Supply and Demand” as well as the fluctuation in the exchange rate of the US\$ dollar to the PHP peso. The Philippines is a net importer of roundwood; therefore, the price of imported logs has a direct effect on the domestic prices of locally produced logs.
Total value	The indicated value is the average value in 5 years. This was calculated by multiplying the total production by the unit value/cu m then dividing the product by 5 to come up with the 5-year average.	This is directly proportional to the volume of wood production and the unit value per cu m of wood.

Other general comments to the table

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12 Table T12 – Non-wood forest products removals and value of removals

12.1 FRA 2010 Categories and definitions

Term	Definition
Non-wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Value of NWFP removals	For the purpose of this table, value is defined as the market value at the site of collection or forest border.

NWFP categories

Category
<u>Plant products / raw material</u>
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
<u>Animal products / raw material</u>
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Wild meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FMB. Philippine Forestry Statistics. Forest Management Bureau. Philippines	H	Non-wood forest products	1988 to 1992 & 1998 to 2006	Provides information on the production and monthly retail price of selected non-timber forest products by region for a given year.
FMB. 2006. Philippine Official Reference for Forest-Related Terms and Definitions. Forest Management Bureau, Department of Environment and Natural Resources. Philippines	H	Non-wood forest products	2006	It is a compendium of harmonized forest-related terms and definitions. It is the final output of the ITTO-funded project entitled “Harmonization of Forest-Related Terms and definitions”.

12.2.2 Classification and definitions

National class	Definition
Non-wood forest products	Synonymous to non-timber forest products.
Non-timber forest products	All biological materials and derivatives other than timber, which are extracted from forests for human use.

12.2.3 Original data

2005 Production of Selected Non-Wood Forest Products				
Non-wood Forest Products	Unit of measure	Production	Ave. Cost/ piece	Remarks
Almaciga resin	kilo	50 545	10.00	Cost based on 1999 retail price
Anahaw leaves	piece	132 600	2.42	Cost based on 2005 retail price
Anahaw poles	piece	306 071	0.92	Cost based on 1992 retail price
Bamboo poles	piece	865 438	43.87	Cost based on 2005 retail price
Buri midribs	kilo	1 000	3.33	Cost based on 1992 retail price
Diliman & other vines	piece	55 800		No data on retail price
Hingiw*	kilo	1 872 250	4.07	Cost based on 2006 retail price
Nipa leaves	piece	4 000		No data on retail price
Nipa shingles	piece	10 340 314	4.05	Cost based on 2005 retail price
Split rattan	kilo	12 614	46.00	Cost based on 2002 retail price
Unsplit rattan	pole	12 970 246	6.24	Cost based on 2005 retail price
Note: * 2004 production				

12.3 Analysis and processing of national data

12.3.1 Calibration

This step is not necessary.

12.3.2 Estimation and forecasting

This step is not necessary.

12.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1 st	Nipa shingles	<i>Nypa fruticans</i>	pc	10 340 314	41 841	5
2 nd	Bamboo poles	<i>Bambusa blumeana</i>	pc	865 438	37 962	5
3 rd	Unsplit rattan	<i>Calamus merrillii</i>	lm	12 970 246	20 221	5
4 th	Hingiw vines*		kilo	1 872 250	7 620	5
5 th	Split rattan	<i>Calamus merrillii</i>	kilo	12 614	580	5
6 th	Almaciga resin	<i>Agathis philippinensis</i>	kilo	50 545	505	7
7 th	Anahaw leaves	<i>Livistona rotundifolia</i>	pc	132 600	321	5
8 th	Anahaw poles	<i>Livistona rotundifolia</i>	pc	306 071	282	5
9 th	Buri midribs	<i>Corypha elata</i>	kilo	1 000	3	5
10 th						
All other plant products						
All other animal products						
TOTAL					109335	

Note: * Based on 2004 production

	2005
Name of local currency	Philippines Peso

12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	The indicated quantity for the selected non-wood forest products was based on the production by administrative region in 2005, as reported in the 2005 Philippine Forestry Statistics.
Other plant products	In 2005, other non-wood forest products have been produced such as Nipa leaves and Diliman & other vines; however, no data is available on their respective retail price. In view thereof, these are not included in the top 10 most important products.
Other animal products	No available report on animal products.
Value by product	No available data on the market value at the border of the forest. The indicated prices were based on retail price.
Total value	In the case of unsplit rattan, the unit of measure in production is linear meters; however, the unit of measure in sales is pole. In coming up with the total value for unsplit rattan, it was assumed that 1 pole consists of 4 linear meters.

Other general comments to the table

13 Table T13 – Employment

13.1 FRA 2010 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment	Includes all persons in paid employment or self-employment.
Paid employment	Persons who during a specified reference period performed some work for <u>wage or salary</u> in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for <u>profit or family gain</u> in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Reports from DENR field offices	M to L	Employment		

13.2.2 Classification and definitions

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

13.2.3 Original data

13.3 Analysis and processing of national data

13.3.1 Calibration

This step is not necessary.

13.3.2 Estimation and forecasting

This step is not necessary.

13.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	17.80	18.06	22.79
...of which paid employment	13.80	12.52	16.54
...of which self-employment	4.00	5.54	6.26
Employment in management of protected areas	0.59	0.78	0.91

(Details may not add up to totals due to rounding)

13.5 Comments to Table T13

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods	The data generally consists of the employees of private business entities engaged in log production.	The low employment in 2000 can be attributed to the decrease in the number of logging companies and the forestlands covered by them from 1990 to 2000 and their subsequent increase from 2000 to 2005.
Paid employment / self-employment	The data on self-employment consists mostly of the families of private tree plantation owners who have engaged in log production.	The increasing trend in self-employment is attributed to the increasing log production in privately-owned planted forest.
Employment in management of protected areas	The data excludes personnel from the Protected Areas and Wildlife Sector.	The increasing trend can be attributed to the increasing number of protected areas and the forest areas covered by them.

Other general comments to the table

The data was based on the reports submitted by the DENR field offices except regions 4A, 12 and the Autonomous Region in Muslim Mindanao (ARMM). The data is weak considering that many DENR field offices lack information for the requested reporting years.

14 Table T14 – Policy and legal framework

14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

14.2 Data for Table T14

Indicate the existence of the following (2008)			
14.3 Forest policy statement with national scope	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement	1995	
	Reference to document	Executive Order 263: Adopting Community-Based Forest Management as the National Strategy to Ensure the Sustainable Development of the Country's Forestlands Resources and Providing Mechanisms for its Implementation.	
National forest programme (nfp)	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country	Revised Master Plan for Forestry Development	
	Starting year	2003	
	Current status	<input type="checkbox"/>	In formulation
		<input checked="" type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
Reference to document or web site	Process temporarily suspended		
Law (Act or Code) on forest with national scope	<input checked="" type="checkbox"/>	Yes, specific forest law exists	
	<input type="checkbox"/>	Yes, but rules on forests are incorporated in other (broader) legislation	
	<input type="checkbox"/>	No, forest issues are not regulated by national legislation	

If Yes above, provide:	Year of enactment	May 19, 1975
	Year of latest amendment	October 10, 1991
	Reference to document	Revised Forestry Code of the Philippines

In case the responsibility for forest policy- and/or forest law-making is decentralized, please indicate the existence of the following and explain in the comments below the table how the responsibility for forest policy- and law-making is organized in your country.

Sub-national forest policy statements	<input type="checkbox"/>	Yes
	<input checked="" type="checkbox"/>	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements		
Sub-national Laws (Acts or Codes) on forest	<input type="checkbox"/>	Yes
	<input checked="" type="checkbox"/>	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests		

14.4 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	EO 263 provides that “Community-based forest management shall be the national strategy to achieve sustainable forestry and social justice.”
National forest programme (nfp)	The 2003 Revised Master Plan for Forestry Development provides the forestry sector vision as: “A sustainably managed watershed and forest resources providing environmental and economic benefits to society with globally competitive industries contributing to the national economy and upliftment of upland communities.”
Law (Act or Code) on forest with national scope	PD 705 was drawn up when the major thrust of Philippine forestry was towards massive exploitation of natural forests. Now that the focus has shifted towards people-oriented, small scale, community-based forest management, PD 705 has become somewhat obsolete. A Bill entitled “Sustainable Forest Management Act” has been filed in both Houses of Congress to revise PD 705 and make forest laws more responsive to support re-oriented government programs on the management, utilization, protection, rehabilitation and development of forest lands. The bill has not yet been passed.
Sub-national forest policy statements	Not available
Sub-national Laws (Acts or Codes) on forest	Not available

Other general comments to the table

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15 Table T15 – Institutional framework

15.1 FRA 2010 Categories and definitions

Term	Definition
Minister responsible for forest policy-making	Minister holding the main responsibility for forest issues and the formulation of the forest policy.
Head of Forestry	The Head of Forestry is the Government Officer responsible for implementing the mandate of the public administration related to forests.
Level of subordination	Number of administrative levels between the Head of Forestry and the Minister.
University degree	Qualification provided by University after a minimum of 3 years of post secondary education.

15.2 Data for Table T15

Table 15a – Institutions

FRA 2010 Category	2008
Minister responsible for forest policy formulation : please provide full title	Secretary Jose L. Atienza, Jr. Department of Environment and Natural Resources (DENR)
Level of subordination of Head of Forestry within the Ministry	1 st level subordination to Minister
	X 2 nd level subordination to Minister
	3 rd level subordination to Minister
	4 th or lower level subordination to Minister
Other public forest agencies at national level	Protected Areas and Wildlife Bureau (PAWB) Ecosystems Research and Development Bureau (ERDB)
Institution(s) responsible for forest law enforcement	Department of Environment and Natural Resources (DENR) Department of Interior and Local Government (DILG)

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	7 393	27%	7 759	28%	7 627	28%
...of which with university degree or equivalent	5 246	32%	5 565	31%	5 540	29%

Notes:

1. Includes human resources within public forest institutions at sub-national level
2. Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.

15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation	The Department of Environment and Natural Resources (DENR) is the primary government agency responsible for the conservation, management development and proper use of the country's environment and natural resources. The authority and responsibility for the exercise of the mandate of the DENR is the Secretary, who is appointed by the President of the Philippines.	
Level of subordination of Head of Forestry within the Ministry	The Director of the Forest Management Bureau is at the 2nd level of subordination with the DENR Secretary as the DENR Secretary is assisted by Undersecretaries and Assistant Secretaries.	
Other public forest agencies at national level	Aside from the Forest Management Bureau (FMB), the Protected Areas and Wildlife Bureau (PAWB) and the Ecosystems Research and Development Bureau (ERDB) are the sectoral bureaus that advise and assist the DENR Secretary on matters pertaining to forest development & conservation as well as in the monitoring and assessment of the management of Integrated Protected Areas System and integrated research program relating to Philippine ecosystems and natural resources.	
Institution(s) responsible for forest law enforcement	The Department of Interior and Local Government (DILG) through the Local Government Units (LGUs) and the Philippine National Police (PNP) supports the DENR in forest law enforcement within their territorial jurisdiction.	
Human resources within public forest institutions	The data covers the manpower resources in the Forest Management Sector and Protected Areas and Wildlife Sector at the national and sub-national level. It includes personnel with and without university degree. The figures will increase if professionals working within the Forest Management Sector and Protected Areas and Management Sector in PAWB, Region 12 and ARMM are included.	

Other general comments to the table

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16 Table T16 – Education and research

16.1 FRA 2010 Categories and definitions

Term	Definition
Forest-related education	Post-secondary education programme with focus on forests and related subjects.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a total duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers primarily implementing research programmes on forest matters. Funding is mainly public or channelled through public institutions.

16.2 National data

16.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Commission on Higher Education, Philippines	H	Education	2000, 2005, 2008	
Universities and Colleges offering Forestry Courses in the Philippines.	H	Education	2000, 2005, 2008	
DENR Offices and other government agencies	H	Research	2000, 2005, 2008	Aside from the DENR, the Forest Products Research and Development Institute (FPRDI) is also engaged in forestry-related research programs.

16.2.2 Original data

16.3 Analysis and processing of national data

16.3.1 Estimation and forecasting

This step is not necessary.

16.4 Data for Table T16

FRA 2010 Category	Graduation ¹⁾ of students in forest-related education					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent	30	27%	27	26%	17	35%
Bachelor's degree (BSc) or equivalent	787	41%	632	46%	487	50%
Forest technician certificate / diploma	196	40%	184	41%	82	26%
FRA 2010 Category	Professionals working in publicly funded forest research centres ²⁾					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	48	48%	50	52%	47	53%
Master's degree (MSc) or equivalent	150	55%	145	58%	140	60%
Bachelor's degree (BSc) or equivalent	399	60%	373	58%	370	59%

Notes:

1. Graduation refers to the number of students that have successfully completed a Bachelor's or higher degree or achieved a certificate or diploma as forest technician.
2. Covers degrees in all sciences, not only forestry.

16.5 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	The data was collected from 36 institutions offering forestry-related education. Lacks data in Region 12 and ARMM. Some regions also have not collected data in some institutions within their jurisdiction. Based on the 2006 Philippine Forestry Statistics, there were 54 & 72 institutions offering forestry-related education for Academic Years 2000-2001 & 2004 -2005, respectively.	The decreasing trend is attributed to the closure of forestry course in some institutions due to lack of enrollees.
Professionals working in public forest research centres	The figures will increase if professionals working at the Ecosystem Research and Development Sector in Region 12 and ARMM are included.	The decreasing trend is attributed to separation from the service of personnel either by retirement, resignation or death as well as the implementation of the 1990 "Attrition Law" whereby vacated plantilla positions were ordered not to be filled.

Other general comments to the table

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17 Table T17 – Public revenue collection and expenditure

17.1 FRA 2010 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose, forest products include: roundwood; sawnwood; wood-based panels; pulp and paper; and non-wood forest products. As far as possible, this should include revenue collected by all levels of government (i.e. central, regional/provincial and municipal level), but it should exclude the income of publicly owned business entities.
Public expenditure	All government expenditure on forest related activities (further defined below).
Operational expenditure (sub-category to Public expenditure)	All government expenditure on public institutions solely engaged in the forest sector. Where the forest administration is part of a larger public agency (e.g. department or ministry), this should only include the forest sector component of the agency's total expenditure. As far as possible, this should also include other institutions (e.g. in research, training and marketing) solely engaged in the forest sector, but it should exclude the expenditure of publicly owned business entities.
Transfer payments (sub-category to Public expenditure)	All government expenditure on direct financial incentives paid to non-government and private-sector institutions, enterprises communities or individuals operating in the forest sector to implement forest related activities.
Domestic funding	Public expenditure funded from domestic public financial resources, including: retained forest revenue; forest-related funds; and allocations from the national budget (i.e. from non-forest sector public revenue sources).
External funding	Public expenditure funded from grants and loans from donors, non-governmental organisations, international lending agencies and international organisations, where such funds are channelled through national public institutions.

17.2 National data

17.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FMB. Philippine Forestry Statistics. Forest Management Bureau, Department of Environment and Natural Resources. Philippines	H	Forest Revenue	2000 & 2005	Includes information on the amount of forest charges collected annually on harvested roundwood and non-timber forest products.
General Appropriations Act. Official Gazette. Republic of the Philippines	H	Public Expenditure	2000 & 2005	Provides information on the national budgetary allocations of the different government agencies in a given year. The General Appropriations Act is enacted by both houses of Congress.
FMB. 2006. Philippine Official Reference for Forest-Related Terms and Definitions. 2006. Forest Management Bureau, Department of Environment and Natural Resources. Philippines	H	Forest Revenue	2006	It is a compendium of harmonized forest-related terms and definitions. It is the final output of the ITTO-funded project entitled "Harmonization of Forest-Related Terms and definitions".

17.2.2 Classification and definitions

National class	Definition
Forest Charges	Refer to levies imposed by the government on naturally-growing timber and other forest products cut/harvested by the licensee and from plantations established in compliance with Timber License agreement (TLA) reforestation obligations. The rate of which is provided under republic Act No. 7161, otherwise known as the Forest Charges Law.
Revenue/Sales	Includes cash received and receivable for goods sold and services rendered. For manufacturing, total receipts include value of products sold, value of industrial services done for others, value of goods for resale, interest/dividend income and other revenue. Valuation is at producer's prices (ex-establishment), net of discounts and allowances, including duties and taxes but excluding subsidies.

17.2.3 Original data

A. Forest Revenue

Collected Forest Charges (PhP1000)			
Year	Roundwood	NWFP	Total
2005	127 184	9 194	136 378
2000	135 100	9 154	144 254

B. Public expenditure (Based on General Appropriations)

Sector	Budgetary Allocations (PhP1000)							
	FY 2000				FY 2005			
	PS	MOOE	CO	TOTAL	PS	MOOE	CO	TOTAL
III. Operations								
A. Forest Management	1 140 293	245 688	128 824	1 514 805	1 280 471	183 880	99 731	1 564 082
a.1 Forest Management Service	596 574	29 415	-	625 989	675 082	23 127	3 464	701 673
a.2 Plantation Establishment, Maintenance & Protection	78 890	25 438	86 547	190 875	86 470	14 320	59,716	160 506
a.3 Forest Protection	330 652	63 327	10 120	404 099	367 699	37 282	150	405 131
a.4 Community-Based Forestry Program	37 502	57 227	2 632	97 361	41 379	30 058	5 081	76 518
a.5 Soil Conservation & Watershed Management	10 953	62,221	29 525	102 699	10 953	26 685	31 320	68 958
a.6 Forest Land Sub-classification Party	85 722	8 060	-	93 782	98 888	52 408	-	151 296
B. Protected Areas and Wildlife Management	90 536	107 317	1 662	199 515	124 769	67 970	11 907	204 646
b.1 Protected Areas and Wildlife Resources Development	67 645	61 144	752	129 541	100 622	35 605	6 507	142 734
b.2 Operation and Maintenance of Ninoy Aquino PWNC	8 687	8 928	700	18 315	9 354	8 629	4 725	22 708
b.3 Dev't. and rehabilitation of Hinulugang Taktak NP	2 669	2 300	60	5 029	2 669	1 373		4 042
b.4 Dev't. and rehabilitation of the Mt. Apo National Park		2 000		2 000		992		992
b.5 Phil. Eagle Conservation Proj.		7 029		7 029		4 978	500	5 478
b.6 Pawikan Conservation Proj.	2 664	3 338		6 002	2 664	2 115		4 779
b.7 Tamaraw Conservation Proj.		6 000		6 000		3 687	175	3 862
b.8 Operation & maintenance of Crocodile Farm Inst.	5 568	4 740		10 308	5 568	2 947		8 515
b.9 Biodiversity Conservation Program	3 303	11 838	150	15 291	3 892	7 644		11 536
C. Ecosystems Research and Development	121 090	106 061	2 120	229 271	142 593	70 345	732	213 670
c.1 Ecosystems Research and Development Service	118 800	37 842	1 975	158 617	140 311	30 357	482	171 150
c.2 Pilot plantation estab. of selected forest species		5 527	145	5 672		3 236	250	3 486
c.3 Management of coastal and marine resources	2 290	62 692		64 982	2 282	36 752		39 034
TOTAL	1 351 919	459 066	132 606	1 943 591	1 547 833	322 195	112 370	1 982 398

17.3 Analysis and processing of national data**17.3.1 Calibration**

This step is not necessary.

17.3.2 Estimation and forecasting

This step is not necessary.

17.3.3 Reclassification into FRA 2010 categories

This step is not necessary.

17.4 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	144 254	136 378

Table 17b - Public expenditure in forest sector by funding source

FRA 2010 Categories	Domestic funding (1000 local currency)		External funding (1000 local currency)		Total (1000 local currency)	
	2000	2005	2000	2005	2000	2005
Operational expenditure	1 943 591	1 982 398	n.a.	n.a.	1 943 591	1 982 398
Transfer payments	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total public expenditure	1 943 591	1 982 398	n.a.	n.a.	1 943 591	1 982 398
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input checked="" type="checkbox"/>	Reforestation				
	<input type="checkbox"/>	Afforestation				
	<input type="checkbox"/>	Forest inventory and/or planning				
	<input checked="" type="checkbox"/>	Conservation of forest biodiversity				
	<input type="checkbox"/>	Protection of soil and water				
	<input type="checkbox"/>	Forest stand improvement				
	<input type="checkbox"/>	Establishment or maintenance of protected areas				
<input type="checkbox"/>	Other, specify below					

17.5 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue	These are the forest charges collected by the government on harvested roundwood and non-wood forest products (NWFP) pursuant to RA 7161.	The decreasing trend is attributed to the decrease in the production of logs and NWFP resulting from the reduction in the number of licensees and permittees.
Operational expenditure	This is the budgetary allocations provided in the General Appropriations Act for the implementation of Forest Management, Protected Areas & Wildlife Management and Ecosystems Research & Development programs.	The increasing trend is attributed in part to the increased budget for Personnel Services resulting from the grant of salary adjustments to all government personnel, as provided by law. It is also attributed to the increased targets in the different forest-related activities.
Transfer payments	No data available	

Other general comments to the table

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