Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES
ASSESSMENT 2010

COUNTRY REPORT

INDONESIA

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).

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2010 is:

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Contents

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

1.2   National data

1.2.1   Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Final report on Indonesia Forest Resource, 1996 (In Indonesia).	H	Extent	1986 – 1991 mostly 1989	Based on Landsat MSS interpretation. Reference year is 1990
Forestry Statistic Book. Ministry of Forestry, 2000 (In Indonesia)	H	Land cover, extent	1999 – 2000	Landsat Imagery interpretation
Indonesia Land Cover Recalculation 2003. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	1999/2000	Information of land cover based on interpretation of Landsat 7 ETM+, acquired in 1999/2000 with field checking
Indonesia Land Cover Recalculation 2005. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	2002/2003	Information of land cover based on interpretation of Landsat 7 ETM+, acquired in 2002/2003 with field checking
Indonesia Land Cover Recalculation 2008. (In Indonesia) Forestry Planning Agency, MoF Indonesia.	H	Land cover, extent	2005/2006	Information of land cover based on interpretation of Landsat 7ETM+, acquired in 2005/2006 with field checking

1.2.2   Classification and definitions

National class	Definition
Primary Forest (Hutan Primer; Ind)	Forest with no ocular evidence of disturbance
Secondary Forest (Hutan Sekunder; Ind)	Forest with ocular evidence of disturbance
Planted Forest (Hutan Tanaman; Ind)	Manmade forest within state forestland
Non- forested area (Non Hutan; Ind)	It covers bush,_shrub , agriculture crops, settlement and savanna, etc.
Forestland	Land designated for forest land use
Non Forestland	Land designated for non forest land use, e.g., agriculture land, settlement. Some of non forested land are covered by forest, e.g., community forest.
Forest	Includes primary, secondary and planted forests. Forest and non forest are identified or mapped from Landsat images using visual interpretation. Since it is difficult to differentiate canopy cover in Landsat imageries, the forest is identified based on standard interpretation procedure in remote sensing such as tone or texture. During the mapping, the minimum interpreted area is 0.5 cm x 0.5 cm., approximately 6.25 hectars

1.2.3   Original data

1990	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Cloud & No Data	244	383	206	299	1,132	722	1,855	909	2,764
Forested	16,789	24,846	21,284	27,670	90,589	14,711	105,300	15,776	121,076
Non Forested	2,638	4,633	3,303	7,733	18,308	6,907	25,215	38,570	63,785
Shurbbush	-	-	-	-	-	-	-	-	-
Total	19,672	29,862	24,792	35,703	110,029	22,340	132,370	55,255	187,625

2000	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Cloud & No Data	260	431	241	327	1,258	231	1,489	111	1,600
Forested	15,671	23,771	19,320	22,359	81,123	11,313	92,436	9,500	101,936
Non Forested	2,223	3,811	3,247	7,105	16,386	7,128	23,514	37,425	60,940
Shurbbush	1,495	1,848	1,990	5,913	11,246	3,679	14,926	8,348	23,274
Total	19,649	29,861	24,798	35,705	110,013	22,351	132,364	55,385	187,750

2003	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Cloud & No Data	482	669	316	367	1,833	313	2,146	355	2,501
Forested	15,438	23,445	19,129	22,692	80,704	11,297	92,001	9,267	101,269
Non Forested	2,267	3,826	3,137	6,873	16,103	6,779	22,881	37,955	60,836
Shurbbush	1,516	1,931	2,207	5,784	11,439	3,965	15,404	7,844	23,248
Total	19,703	29,871	24,788	35,716	110,078	22,355	132,433	55,421	187,854

2006	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Cloud & No Data	712	940	454	536	2,642	344	2,986	571	3,557
Forested	15,197	23,020	18,835	22,080	79,132	11,004	90,135	8,325	98,460
Non Forested	2,385	3,965	3,337	7,665	17,353	7,170	24,523	38,850	63,373
Shurbbush	1,401	1,929	2,160	5,425	10,916	3,834	14,750	7,641	22,391
Total	19,696	29,855	24,786	35,706	110,043	22,351	132,394	55,387	187,781

Note : n.a (Not available data)
The total area of Forestlands are the sum of forest functions (conservation forest, protection forest and production forest

Original data after proportionate cloud cover allocation
The cloud cover area is not included in forested area or non forested area, but it should be taken into consideration. The assumption was made that the cloud cover area proportionally distributed into forested, Shrub bush and non forested class.).
The calculation of cloud allocation done based on forest function and then reported into forestland and non forestland

1990	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	17,001	25,169	21,462	27,904	91,535	15,203	106,738	16,040	122,777
Non Forested	2,671	4,694	3,331	7,799	18,494	7,138	25,632	39,215	64,847
Shurbbush	-	-	-	-	-	-	-	-	-
Total	19,672	29,862	24,792	35,703	110,029	22,340	132,370	55,255	187,625

2000	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	15,881	24,119	19,510	22,566	82,076	11,431	93,507	9,519	103,027
Non Forested	2,253	3,867	3,279	7,171	16,569	7,202	23,772	37,501	61,272
Shurbbush	1,515	1,875	2,010	5,968	11,368	3,718	15,085	8,365	23,450
Total	19,649	29,861	24,798	35,705	110,013	22,351	132,364	55,385	187,750

2003	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	15,825	23,982	19,375	22,928	82,110	11,458	93,568	9,327	102,895
Non Forested	2,324	3,913	3,178	6,944	16,359	6,875	23,234	38,199	61,433
Shurbbush	1,554	1,975	2,235	5,844	11,609	4,022	15,631	7,894	23,526
Total	19,703	29,871	24,788	35,716	110,078	22,355	132,433	55,421	187,854

2006	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	15,767	23,768	19,186	22,416	81,138	11,176	92,314	8,411	100,725
Non Forested	2,475	4,094	3,400	7,782	17,751	7,282	25,033	39,254	64,287
Shurbbush	1,454	1,992	2,200	5,508	11,154	3,894	15,048	7,721	22,769
Total	19,696	29,855	24,786	35,706	110,043	22,351	132,394	55,387	187,781

In the above tables, the forested area in the non forestland includes community forests.

1.3 Analysis and processing of national data

1.3.1 Calibration

The objective of calibration in this table is the total land area for all periods should be consistent. Because of the base line of image interpretation for four periods is different. The calibration is merely for FRA 2010 reporting purpose and does not reflect the official total country area of Indonesia.

Calibration for total land area

Calibration is carried out in order to ensure that the reported area figures are consistent and the total land area/ country area must match with the official UN statistics in FAOSTAT (as recommended at page 14 of the FRA 2010 Guidelines).

FAOSTAT Land area 000 ha   181 157
FAOSTAT Inland water 000 ha   9 300
FAOSTAT Country area 000 ha   190 457

Calibration factors are:
1990   0.96553
2000   0.96487
2003   0.96435
2006   0.96473

1990	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	16,415	24,301	20,722	26,942	88,380	14,678	103,058	15,487	118,545
Non Forested	2,579	4,532	3,216	7,530	17,857	6,892	24,748	37,863	62,612
Shurbbush	-	-	-	-	-	-	-	-	-
Total	18,994	28,833	23,938	34,472	106,236	21,570	127,807	53,350	181,157

2000	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	Permanent	HPK	Total Forest Land	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	15,324	23,272	18,825	21,774	79,194	11,030	90,224	9,185	99,409
Non Forested	2,174	3,731	3,164	6,919	15,987	6,949	22,937	36,184	59,121
Shurbbush	1,462	1,809	1,939	5,758	10,968	3,587	14,556	8,071	22,627
Total	18,959	28,812	23,928	34,451	106,150	21,566	127,716	53,441	181,157

2003	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	*Permanent*	HPK	*Total Forest Land*	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	15,261	23,127	18,684	22,110	79,183	11,049	90,232	8,994	99,227
Non Forested	2,241	3,774	3,064	6,697	15,776	6,630	22,406	36,838	59,243
Shurbbush	1,499	1,905	2,156	5,636	11,196	3,878	15,074	7,613	22,687
Total	19,000	28,806	23,905	34,443	106,154	21,558	127,712	53,445	181,157

2006	Forest Land Area (in 1000 Ha)							Non Forestland (in 1000Ha)	Total (1000Ha)
	HK	HL	HPT	HP	*Permanent*	HPK	*Total Forest Land*	APL	
1	2	3	4	5	6 (=2+3+4+5)	7	8 (=6+7)	9	10
Forested	15,211	22,930	18,509	21,626	78,276	10,781	89,057	8,115	97,172
Non Forested	2,388	3,950	3,280	7,507	17,124	7,025	24,150	37,870	62,020
Shurbbush	1,403	1,922	2,123	5,314	10,761	3,756	14,517	7,448	21,965
Total	19,001	28,802	23,912	34,447	106,161	21,563	127,724	53,433	181,157

1.3.2   Estimation and forecasting

Estimation and forecasting is needed to generate 2005 and 2010 data. These processes based on the 2003 data and 2006 data.

2005 data = 2003 data - [(2003 data – 2006 data)/3]*2
2010 data = 2006 data - [(2006 data – 2003 data)/3]*4
The result of estimation and forecasting are presented in the following table:

National Class	Area (in 1000 Ha)					
	1990	2000	2003	2006	2005	2010
Forestland	127,807	127,716	127,712	127,724	127,720	127,740
Forested	103,058	90,224	90,232	89,057	89,449	87,491
Shrub mix with bush	-	14,556	15,074	14,517	14,703	13,775
Not Forested	24,748	22,937	22,406	24,150	23,568	26,475
NonForestland	53,350	53,441	53,445	53,433	53,437	53,417
Forested	15,487	9,185	8,994	8,115	8,408	6,942
Shrub mix with bush	-	8,071	7,613	7,448	7,503	7,228
Not Forested	37,863	36,184	36,838	37,870	37,526	39,246
Total	181,157	181,157	181,157	181,157	181,157	181,157

1.3.3 Reclassification into FRA 2010 categories

The following table shows the percentage of national classes included into FRA 2010 categories.

National Class	Percentage allocation to FRA 2010 Categories			
	Forest	Other wooded land	Other land	Other land with tree cover
Forestland				
Forested	100			
Shrub bush		100		
Not Forested			100	
Non Forestland				
Forested	100			
Shrub bush		100		
Not Forested			100	

categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	118,545	99,409	97,857	94,432
Other wooded land	n.a.	22,627	22,206	21,003
Other land	62,612	59,121	61,094	65,721
Other land with tree cover	n.a.	n.a.	n.a.	n.a.
Total	**181,157**	**181,157**	**181,157**	**181,157**

1.4   Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	118,545	99,409	97,857	94,432
Other wooded land	n.a.	22,627	22,206	21,003
Other land	62,612	59,121	61,094	65,722
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	9,300	9,300	9,300	9,300
TOTAL	**190,457**	**190,457**	**190,457**	**190,457**

1.5   Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	Classification of forest and non forest in this report derived from Landsat ETM image interpretation. Due to the limitation of ground resolution, any forest with area less than the resolution of this image will be ignored. On Landsat images is difficult to differentiate canopy cover. The minimum interpreted area is approximately 6.25 hectars.	Decrease in forest area is not too significant, might be caused by a balance between logging and planting Three yearly monitoring data indicates decreasing on cloud cover, it probably becomes mislead if the report just relies on single monitoring , since the percentage and distribution of cloud cover are various from each period, and the latest monitoring (2006) shows smallest percentage of cloud cover. Spatial analysis has been done to improve the data and 2006 data has been decided as reference to improve previous monitoring especially to fill cloud cover and

		not available data, hence the figure reported is a bit different as it has been reported on FRA 2005.
Other wooded land	Shrub bush area within or outside of forestland, that is land grown by bushes and small trees less than 20 cm in diameter and crown cover more than 10 %. Shrub bush has low timber volume	
Other land	All non forested areas are classified as "other land". It covers by agriculture crops, settlement, savanna and other uses. Oil palm plantation are also categorized as "other land" since they are managed by Ministry of Agriculture.	Increase in other land probably caused by the need of land for other sectors, such as estate, agriculture, settlements, mining and infrastructure .
Other land with tree cover	The definition given by FAO is closely related to "estate" in landcover classification, and the country prefers to group it into non forested, because the management is under the Ministry of Agriculture	
Inland water bodies	The extent of inland water bodies based on the FAO statistics for Indonesia that is 9,300,000 ha.	

Other general comments to the table
Forest extent derived from 3 yearly forest monitoring by using Landsat Imageries, that are 1990/2000, 2002/2003 and 2005/2006. All period have same classification, except for 1990/2000. The land cover extent of 2003 and 2006 were used to estimate the land cover extent of 2005 and to forecast the land cover extent of 2010. That is might be one of the reasons then the figure in this report is a bit different compared with previous assessment (FRA 2005). To be able to make consistence monitoring then the classes are grouped into forested and non forested.

The significant decline in deforestation rates from period of 1990 – 2000 to the next period because of several reasons;

- Large forest fires during long drought in year 1997 – 1998, more than 4 millions hectares of natural forest burnt
- Moratorium of forest converion through Ministry of Forestry letter in year 2000
- Policy on soft landing through quota reduction on round wood production from natural forest in year 2002
- Promoting forest plantation for non forested Production Forest to support wood industries
- Reforestation/Afforestation

Since the decision has been made to calibrate all total land area for all periods to country land area based on FAOSTAT, which is the area is 6 millions ha smaller than the factual area, we suggest to consider it for next assessment. This figure will also influence the calculation of growing stock, biomass and carbon stock.

Expected year for completion of ongoing/planned <u>national</u> forest inventory and/or RS survey / mapping	
Field inventory	
Remote sensing survey / mapping	Wall to wall mapping using medium resolution images (e.g., Landsat) is implemented three yearly. The Directorate General of Forestry Planning is working on interpretation of Landsat images year 2009. The final results of this activitiy will be accomplished at the end of year 2010, and will be used to update the data in year 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 *(sub-category of Private ownership)*	Forest owned by individuals and families.
Private business entities and institutions *(sub-category of Private ownership)*	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 *(sub-category of Private ownership)*	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 *(sub-category of Private ownership)*	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
Forestry Statistic Book, 1991, Ministry of Forestry	H	Extent	1990/1991	Based on Forest Land Use by Consesus map and Community Forest area
Forestry Statistic Book, 2002, Ministry of Forestry	H	Extent	2002	Based on Forest Land Use by Consensus map and Community Forest area
DG of Land Rehabilitation and Social Forestry Data, Ministry of Forestry	H	Extent	1990 – 2004	
Indonesia Land Cover Recalculation 2003. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	1999/2000	Information of land cover based on interpretation of Landsat 7 ETM+, acquired at 1999/2000 with field checking
Indonesia Land Cover Recalculation 2005. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	2002/2003	Information of land cover based on interpretation of Landsat 7 ETM+, acquired at 2002/2003 with field checking
Indonesia Land Cover Recalculation 2008. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	2005/2006	Information of land cover based on interpretation of Landsat 7 ETM+ that acquired at 2005/2006 with field sample plot
2008, DG of Land Rehabilitation and Social Forestry. Statistic of Land Rehabilitation and Social Forestry. MoF.	H	Extent	1980-2007	This data based on the terrestrial survey by DG of Rehabilitation and Social Forestry.

2.2.2   Classification and definitions

National class	Definition
Public forest	Land owned by the State (national, state and regional governments) or government-owned institutions or corporations or other public bodies including cities, municipalities, villages and communes.
People forest (Hutan rakyat)	People forest is forest plantation on private land or non forestland, mainly planted with fast growing hardwood species. It's different with agro forestry.

2.2.3   Original data

In Indonesia all forest land is owned by government. Some people grow forest in their own land, called as community forest (hutan rakyat; Ind).

Forest ownership

National Class	Area (in 1000 Ha)			
	1990	**2000**	**2005**	**2010**
Forestland	**127,807**	**127,716**	**127,720**	**127,740**
Forested	103,058	90,224	89,449	87,491
Shrub bush	na	14,556	14,703	13,775
Not Forested	24,748	22,937	23,568	26,475
Non Forestland	**53,350**	**53,441**	**53,437**	**53,417**
Forested	15,487	9,185	8,408	6,942
Shrub bush	Na	8,071	7,503	7,228
Not Forested	37,863	36,184	37,526	39,246
Total land area	**181,157**	**181,157**	**181,157**	**181,157**

National categories	Area (in 1000 Ha)			
	1990	**2000**	**2005**	**2010**
Production forest (HP)	62,342	51,628	51,226	49,679
Communities (HKM) inside HP	*0.0*	*24.6*	*3.3*	
Protection forest (HL)	24,301	23,272	22,996	22,667
Conservation forest (HK)	16,415	15,324	15,228	15,145
Forested on Non Forestland (APL)	15,487	9,185	8,408	6,942
Individuals (HR) inside APL	*59.6*	*49.8*	*32.2*	
Total Forest	118,545	99,409	97,857	94,432

2.3   Analysis and processing of national data

2.3.1   Calibration

No calibration is needed for this table.

2.3.2   Estimation and forecasting

No estimation and forecasting is needed for this table.
All "non forestland"which is forested is privately owned and all the "forestland"is publicly owned.
For table 2b, all Protection Forest (HL) and all Conservation Forest (HK) are managed by the Public
Administration. The remaining Forestland is classified as production Forest (HP) with some sub categories.
Some Production Forests are managed by communities (HKM or social forestry), but mosly by private
corporations and institutions, meanwhile people forest (HR) is owned by individuals

2.3.3   Reclassification into FRA 2010 categories

National Categories	Percentage allocation to FRA 2010 Categories		
	Private ownership	Public ownership	Other ownership
Forested Forestland		100	
Forested Non Forestland	100		

2.4   Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	103,058	90,224	89,449
Private ownership	15,487	9,185	8,408
...of which owned by individuals			
...of which owned by private business entities and institutions			
...of which owned by local communities			
...of which owned by indigenous / tribal communities			
Other types of ownership	0	0	0
TOTAL	118,545	99,409	97,857

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

Does ownership of trees coincide with ownership of the land on which they are situated?	X	Yes
		No
If **No** above, please describe below how the two differ:		

Table 2b - Holder of management rights of public forests

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	40,716	38,596	38,224
Individuals	0	49.8	32.2
Private corporations and institutions	62,342	51,554	51,190
Communities	0.0	24.6	3.3
Other	0	0	0
TOTAL	**103,058**	**90,224**	**89,449**

2.5   Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership	In Indonesia all forest land is owned by government, and management right could be given to local communities, private corporations and institutions.	The figure shows the trend slightly decreased and heavily depend on the policy of government
Private ownership	People grow threes on their own land, particularly in Java	
Other types of ownership		
Management rights	Management right is mainly given for forest concession or forest plantation	

Other general comments to the table
Public administration was included the conservation forest, protection forest and production forest.

15

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 sustain-able 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
RePProT data (Forestry Planning Agency Statistic Baplan 2000) for 1990 data for Java (In Ind.)	H	Extent	1985	Based on various remote sensing data interpretation
1982/1983, Forestland Use by Concensus, DGForesry, MoA	M	Extent	1982/1983	Based on map overlaying,
1990, Forestland Use Designation (Penunjukan	M	Extent	1990/1992	Based on map oevrlaying

Kawasan Hutan dan Perairan), MoF				
Final report on Indonesia Forest Resource, 1996 (In Indonesian)	H	Extent	1986 – 1991 mostly 1989	Based on Landsat MSS interpretation data
Forestry Statistic book, Ministry of Forestry, 2000 (In Indonesia)	H	Extent	2000	Based on Landsat Imagery interpretation
Indonesia Land Cover Recalculation 2003. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	1999/2000	Based on interpretation of Landsat 7 ETM+, acquired in 1999/2000 with field checking
Indonesia Land Cover Recalculation 2005. (In Indonesia) Forestry Planning Agency, MoF.	H	Land cover, extent	2002/2003	Based on interpretation of Landsat 7 ETM+, acquired in 2002/2003 with field checking
Indonesia Land Cover Recalculation 2008. (In Indonesia) Forestry Planning Agency, Mo F.	H	Land cover, extent	2005/2006	Based on interpretation of Landsat 7 ETM+, acquired in 2005/2006 with field checking

3.2.2   Classification and definitions

National class	Definition
Production Forest (HP)	State Forestland designated for production purposes
Limited production forest (HPT)	State Forestland designated for limited production purposes due to the topographic and soil condition
Convertible production forest (HPK)	Forestland designated for production purposes and reserved for non forestry purposes development. Forest type is mostly dry land forest.
Total production forest (HP+HPT+HPK)	Explanation : Sum of HP, HPT and HPK
Protection forest (HL)	Forestland designated for protecting soil and hydrology
Conservation forest (HK)	Forestland designated for conservation purposes. In this class include national park, nature reserved, wildlife reserved, other protected areas
Non Forestland (APL)	Land outside forestland which designated for non forestry purposes. Though this is not a forestland, community forest, forests occur on this land
Social services	Forest/other wooded land designated for the provision of social services, eg., religion, cultural, education.
Multiple purpose	Forest/other wooded land designated to any combination of : production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others.
No or unknown function	Forest/other wooded land for which a specific function has not been designated or where designated function is unknown.
Permanent Forestland (Kawasan Hutan Tetap)	Land with permanent designation of forest land use (HP+HPT+HL+HK).

3.2.3   Original data

The original data in the following tables is calculated after distributing cloud cover proportionally into forested and not forested

A. 1990 Data

National Class	Cover (1000 ha)	
	Forested	**Not Forested**
Total Production forest (HP)	64,568	18,267
Protection forest (HL)	25,169	4,694
Conservation forest (HK)	17,001	2,671
Non forest land (APL)	16,040	39,215
Total	122,777	64,847

B. 2000 data

National Class	Cover (1000 ha)	
	Forested	**Not Forested**
Total Production forest (HP)	53,507	17,652
Protection forest (HL)	24,119	3,867
Conservation forest (HK)	15,881	2,253
Non forest land (APL)	9,519	37,501
Total	103,027	61,272

C. 2003 Data

National Class	Cover (1000 ha)	
	Forested	**Not Forested**
Total Production forest (HP)	51,843	16,391
Protection forest (HL)	23,127	3,774
Conservation forest (HK)	15,261	2,241
Non forest land (APL)	8,994	36,838
Total	99,225	59,244

D. 2006 Data

National Class	Cover (1000 ha)	
	Forested	**Not Forested**
Total Production forest (HP)	52,778	18,464
Protection forest (HL)	23,768	4,094
Conservation forest (HK)	15,767	2,475
Non forest land (APL)	8,411	39,254
Total	100,725	64,287

3.3   Analysis and processing of national data

3.3.1   Calibration

Calibration has been conducted for 1990, 2000,2003 and 2006 data.

B. 1990 Data

National Class	Cover (1000 ha)
	Forested
Total Production forest (HP)	62,342
Protection forest (HL)	24,301
Conservation forest (HK)	16,415
Non forest land (APL)	15,487
Total	118,545

B. 2000 data

National Class	Cover (1000 ha)
	Forested
Total Production forest (HP)	51,628
Protection forest (HL)	23,272
Conservation forest (HK)	15,324
Non forest land (APL)	9,185
Total	99,409

E. 2003 Data

National Class	Cover (1000 ha)
	Forested
Total Production forest (HP)	51884
Protection forest (HL)	23127
Conservation forest (HK)	15,261
Non forest land (APL)	8,994
Total	99,226

F. 2006 Data

National Class	Cover (1000 ha)
	Forested
Total Production forest (HP)	50,916
Protection forest (HL)	22,930
Conservation forest (HK)	15,211
Non forest land (APL)	8,115
Total	97,172

Note: A Calibration factor for 1990 data is:0.96553
         B Calibration factor for 2000 data is:0.96487
         C Calibration factor for 2003 data is:0.99067
         D Calibration factor for 2006 data is:0.96473

3.3.2   Estimation and forecasting

Estimation is needed for 2005 and 2010

2005 data = 2003 data – [(2003 data – 2006 data)/3]*2
2010 data = 2006 data – [(2003 data – 2006 data)/3]*4

National categories	1990	2000	2003	2006	2005	2010
Production forest HP+HK+HPT	62342	51,628	51884	50916	51225	49680
Protection forest HL	24301	23,272	23127	22930	22996	22667
Conservation forest HK	16415	15,324	15261	15211	15228	15144
Non forest land APL	15487	9,185	8994	8115	8408	6941
Total forest	**118545**	**99409**	**99226**	**97172**	**97857**	**94432**

3.3.3   Reclassification into FRA 2010 categories

National Class	FRA 2010 Categories					
	Production	Protection for soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Production forest (HP)	100					
Protection forest (HL)		100				
Conservation forest (HK)			100			
Non forestland						100

3.4   *Data for Table T3*

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	62,342	51,628	51,225	49,680
Protection of soil and water	24,301	23,272	22,996	22,667
Conservation of biodiversity	16,415	15,324	15,228	15,144
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	15,487	9,185	8,408	6,941
TOTAL	118,545	99,409	97,857	94,432

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	*88,380*	*79,194*	*78,578*	*77,067*
Forest area within protected areas	*40,716*	*38,596*	*38,224*	*37,811*
Forest area under sustainable forest management	*59,790*	*43,600*	*33,450*	n.a.
Forest area with management plan	*76,205*	*58,924*	*48,678*	n.a.

3.5   Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production	Most of production forest in Indonesia are managed by the private companies that controlled by Ministry of Forestry.	
Protection of soil and water	It is assumed that forest areas with protection of soil and water function .	
Conservation of biodiversity	The conservation of biodiversity data is the conservation forest that includes national park, nature conservation land and game preserve.	
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate	Area of permanent forest estate is the land that designated for forest land based on the forest function that include production forest (HP and HPT), conservation forest (HK) and protected forest (HL).	
Forest area within protected areas	Forest area within protected areas include protected forest (HL) and conservation forest (HK)	
Forest area under sustainable forest management	Forest area under sustainable forest management includes HPH and HT) HPH is forest utilization rights/ forestry concession area that hold by public or private legal entities such as nationally owned enterprises (BUMN), privately owned enterprises (BUMS), regionally owned enterprises (BUMD) and cooperative. The Minister of Forestry issues licenses for specific forested areas and also for specific periods of time. HTI is Industrial plantation forest in production forest	
Forest area with management plan	Forest area with management plan includes production forest (HPH and HTI) and some conservation forests which are categorized as National Parks.	

Other general comments to the table
Forest area under sustainable forest management and Forest area with management plan * base on statistic 2006 and remote sensing data. The forest based on forest function (conservation forest, production forest and protection forest) was derived from remote sensing data and designation forest land use map. Convertible Production Forest (HPK) is allocated for development of other sectors.

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 *(sub-category)*	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 *(sub-category)*	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
GOI. 2000. RePPProT data (Forestry Planning Agency Statistic Baplan 2000) for 1990 data for Java (In Indonesian)	H	Extent	1985	Based on various remote sensing data interpretation
GOI.1996. Final report on Indonesia Forest Resource (In Indonesian)	H	Extent	1986 – 1991 mostly 1989	Based on Landsat MSS interpretation data
GOI. 2000. Forestry Statistic book, Ministry of Forestry (In Indonesia)	H	Extent	2000	Based on Landsat Imagery interpretation
GOI, 2003. Indonesia Land Cover Recalculation 2003. (In	H	Land cover, extent	1999/2000	Information of land cover based on interpretation of Landsat 7 ETM+ that acquired at 1999/2000 with

Indonesia) Forestry Planning Agency, MoF				field sample plot
GOI, 2005. Indonesia Land Cover Recalculation 2005. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	2002/2003	Information of land cover based on interpretation of Landsat 7 ETM+ that acquired at 2002/2003 with field sample plot
GOI, 2008. Indonesia Land Cover Recalculation 2008. (In Indonesia) Forestry Planning Agency, MoF	H	Land cover, extent	2005/2006	Information of land cover based on interpretation of Landsat 7 ETM+ that acquired at 2005/2006 with field sample plot
GOI. 2000. RePProT data (Forestry Planning Agency Statistic Baplan 2000) for 1990 data for Java (In Indonesian)	H	Extent	1985	Based on various remote sensing data interpretation
GOI.1996. Final report on Indonesia Forest Resource (In Indonesian)	H	Extent	1986 – 1991 mostly 1989	Based on Landsat MSS interpretation data

4.2.2   Classification and definitions

National class	Definition
Primary Forest (Hutan Primer)	Explanation : Forest with no ocular evidence of disturbance. This is indicated by the occurrence of logging roads.
Secondary Forest (Hutan Sekunder)	Explanation : Forest with ocular evidence of disturbance
Planted Forest (Hutan Tanaman)	Explanation : Man made forest within legal forest boundaries
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

4.2.3   Original data

Forestland

Forest classification on 1990 is different form forest classification on 2000, 2003 and 2006, which was standardized

National Class	Area (1000 ha)			
	1990 *	2000	2003	2006
Primary Forest	n.a.	45,791	44,465	44,095
Secondary Forest	n.a.	43,225	44,053	42,622
Planted Forest	n.a.	3,419	3,484	3,419
Total	105,300	92,435	92,001	90,136

Non Forestland

National Class	Area (1000 ha)			
	1990 *	**2000**	**2003**	**2006**
Primary Forest	n.a.	1,231	1,129	1,051
Secondary Forest	n.a.	6,946	6,887	6,034
Planted Forest	n.a.	1,323	1,251	1,240
Total		9,500	9,267	8,325

Proportional cloud cover allocation

Forestland

National Class	Area (1000 ha)			
	1990	**2000**	**2003**	**2006**
Primary Forest	n.a.	46,345	45,197	45,181
Secondary Forest	n.a.	43,709	44,778	43,482
Planted Forest	n.a.	3,454	3,541	3,478
Total	106,737	93,507	93,517	92,142

Non Forestland

National Class	Area (1000 ha)			
	1990	**2000**	**2003**	**2006**
Primary Forest	n.a.	1,233	1,136	1,061
Secondary Forest	n.a.	6,960	6,932	6,097
Planted Forest	n.a.	1,326	1,259	1,253
Total	16,040	9,519	9,327	8,411

FRA 2010 Categories	Area (1000 hectares)			
	1990	**2000**	**2005**	**2010**
Rubber plantations (Forest)	n.a	n.a	n.a	n.a
Mangroves (Forest and OWL)	3,153	3,593	3,448	3,207
Bamboo (Forest and OWL)	n.a	na	0.64	n.a

Mangrove area obtained from the Landsat image interpolation.

4.3   Analysis and processing of national data

4.3.1   Calibration

Calibration factors:
2000 is 0.94062
2003 is 0.94246
2006 is 0.94823

National class	Calibrated area (1000ha)			
National class	1990	2000	2003	2006
Primary forest	n.a.	49270	47956	47647
Secondary forest	n.a.	46468	47512	45856
Planted forest	n.a.	3672	3757	3668
Total	118,545	99,409	99,226	97,172

4.3.2 Estimation and forecasting

Estimation is needed for 2005. Estimation has been done using linear interpolation. Forecasting is required to predict the extent of forest based on the designated forest function in 2010. Forecasting has been done using linear extrapolation method.

$$2005 = 2003 - ((2003-2006)/3)*2$$
$$2010 = 2006 - ((2006-2003)/3)*4$$

Forest area (1000ha)	2005	2010
Primary forest	47750	47236
Secondary forest	46408	43647
Planted forest	3699	3548
Total	97857	94432

2005 data = 2003 data – [(2003 data – 2006 data)/3]*2
2010 data = 2006 data – [(2003 data – 2006 data)/3]*4

4.3.3 Reclassification into FRA 2010 categories

National Class	FRA 2010 categories		
	Primary	Other naturally regenerated forest	Planted forest
Primary forest	100		
Secondary forest		100	
Planted forest			100

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	n.a.	49,270	47,750	47,236
Other naturally regenerated forest	n.a.	46,467	46,408	43,647
...of which of introduced species	n.a.	n.a	n.a	n.a
Planted forest	n.a.	3,672	3,699	3,549
...of which of introduced species	n.a.	n.a	n.a	n.a
TOTAL	118,545	99,409	97,857	94,432

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	**2000**	**2005**	**2010**
Rubber plantations (Forest)	n.a	n.a	n.a	n.a
Mangroves (Forest and OWL)	3,153	3,593	3,448	3,207
Bamboo (Forest and OWL)	n.a	na	0.64	n.a

4.5   Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	The extent of primary forest from 1990 until 2010 has been reduced. This caused by the land cover change from forest to other land (deforestation) and reducing of forest quality (degradation).	
Other naturally regenerating forest	Other naturally regenerating forest also called secondary forest that is clearly visible indications of human activities, such as illegal logging, land occupation etc.	
Planted forest	Planted forest is man made forest within legal forest boundaries. This area was managed by the companies (HPH and HTI) and placed in production forest.	
Rubber plantations		
Mangroves		
Bamboo	Bamboo begins planted in 1997. For 2010 data, forecast was made by using 2000 and 2005 data	

Other general comments to the table
It is difficult to match the forest classification for all assessments, since classification of forest in 1990 is different from others.

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
DG of Land Rehabilitation and Social Forestry. 2008. Statistic of development of land rehabilitation and social forestry. MoF	H	extent	1980-2007	

5.2.2   Classification and definitions

National class	Definition
Afforestation	The activities include urban forest, private forest, planting along the road side and environmental re-greening that was done outside forest land.
Reforestation	Forest establishment include community forest and re-greening in forest land.

5.2.3   Original data

A. 1990 data

National Class	Annual forest establishment (hectares/year)				
	1988	1989	1990	1991	1992
Afforestation	3,801	11,021	69,033	109,673	107,681
Reforestation	22,923	42,933	53,275	105,007	79,239
Total	26,724	53,954	122,308	214,680	186,920

B. 2000 data

National Class	Annual forest establishment (hectares/year)				
	1998	1999	2000	2001	2002
Afforestation	138,836	142,942	62,520	30,124	54,994
Reforestation	33,795	12,952	33,542	29,401	55,457
Total	172,631	155,894	96,062	59,525	110,451

C. 2005 data

National Class	Annual forest establishment (hectares/year)				
	2003	2004	2005	2006	2007
Afforestation	241,872	376,918	60,820	300,207	272,286
Reforestation	64,359	345,850	30,217	250,813	78,468
Total	306,231	722,768	91,037	551,020	350,754

5.3 Analysis and processing of national data

5.3.1 Calibration

There is no need for calibration for processing the national data.

5.3.2 Estimation and forecasting

5.3.3 Reclassification into FRA 2010 categories

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	60,241.8	85,883.20	250,420.6	n.a	n.a	n.a
Reforestation	60,675.4	33,029.4	153,941.4	n.a	n.a	n.a
...of which on areas previously planted	n.a	n.a	n.a	n.a	n.a	n.a
Natural expansion of forest	n.a	n.a	n.a	n.a	n.a	n.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	The afforestation data are also based on the terrestrial survey. The afforestation activities include community forest (Hutan Rakyat), terras rehabilitation, city forest, mangrove rehabilitation and development of community forest outside forestland. Oil palms plantation do not include at this activity. Afforestation activities in Ministry of Forestry also have other activities, such as rehabilitation along river and road	
Reforestation	The reforestation data based on the terrestrial survey. The reforestation activities include re-greening, social forestry and community forest (HKm) in forestland.	
Natural expansion of forest		

Other general comments to the table
Reforestation programs and the development of plantation forests have a different target location, although both are in forestland. Plantation forests are forests established in forestland under concessions. Reforestation is carried out in forestland that are not being utilized or no utilization rights (eg. forest consessions) on that, therefore reforestation is definitely located outside of forest plantations.
Many reforestation and afforestation activities could not be monitored by using Landsat imges, due to the wide spread location and only a few hectares

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.

6.2   National data

6.2.1   Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
National forest inventory (Forest Resource statistic) with 1853 plot	H	Volume	1990 – 1996	Reference year become 1992.
National forest inventory (Reenumeration data) with 605 plot	H	Volume	1996 – 2000	Reference year become 1998.
National forest inventory (Reenumeration data) with 91 plot	H	Volume	2000 – 2005	Reference year become 2003.

6.2.2   Classification and definitions

National class	Definition
Volume for all species (Volume seluruh jenis)	Volume of all species with diameter of 20 cm or more at breast height or 20 cm above buttress.

6.2.3   Original data

National Class	All Species								
	1992			1998			2003		
	Area (000 ha)	Volume m3/ha	GS 20 up '000 m3	Area (000 ha)	Volume m3/ha	GS 20 up '000 m3	Area (000 ha)	Volume m3/ha	GS 20 up '000 m3
All forest below 1,000 m altitude (lowland, swamp and mangrove	99,239	124.4	12,345.36	88,680	137.4	12,186.41	83,762	130.2	10,906.65

Note : GS = Growing Stock
The original data for 10 most dominant species and others as the result of re enumeration for NFI's PSP data.
The reference year is 1998.

No.	Local Name (Botanical name)	Growing stock (mill. m3)
1	Meranti (Shorea sp)	1.165,3
2	Medang (Beilschmiedia sp)	332,7
3	Keruing (Dipterocarpus sp)	316,2
4	Kelat (Eugenia sp)	118,7
5	Bintangur (Terminalia sp)	98,8
6	Nyatoh (Palaquium sp)	116,1
7	Jambu-jambu (Dysoxyllum sp)	71,9
8	Ubah (Eugenia sp)	81,4
9	Resak (Shorea sp)	71,9
10	Balam (Palaquium sp)	73,6
11	Others	6.608,2
	Total	9.054,8

6.3   Analysis and processing of national data

6.3.1   Calibration

There is no calibration for processing the national data.

6.3.2   Estimation and forecasting

Natural forest

Estimation and forecasted by calculated using the following formula :

- 1990 data = 1992 + (((1992 – 1998)/6)*2)
- 2000 data = 1998 – (((1998 – 1992)/6)*2)
- 2005 data = 2003 + (((2003-1998)/5)*2)
- 2010 data = 2003 + (((2003-1998)/5)*7)

A. Growing Stock per hectare

Estimation of growing stock is carried out for all forest (natural forest and plantation forest)

Variable	Volume (m3/ha)						
	1992	1998	2003	1990	2000	2005	2010
Growing Stock per hectare	124.40	137.40	130.20	120.07	133.07	127.32	120.12

B. Growing Stock

Since the growing stock per hectare has been assumed for all forest, then the data in table 1 is used to calculate total growing stock

Variables	Growing Stock in million m3			
	1990	2000	2005	2010
Extent of forest (000 ha)	**118,545**	**99,409**	**97,857**	**94,432**
Growing stock per ha	120.07	133.07	127.32	120.12
Total Growing Stock in million m3	14,234	13,228	12,459	11,343

C. Growing stock of the 10 most common species

Same growing stock composition in percentage has been applied to the growing stock of 1990, 2000 and 2005.

6.3.3   Reclassification into FRA 2010 categories

National Class	FRA 2010 Categories	
		Growing Stock
Volume for all species (Seluruh Jenis)		100

6.4   Data for Table T6

Table 6a – Growing stock

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	14,233	13,229	12,459	11,343	n.a.	n.a.	n.a.	n.a.
... of which coniferous								
... of which broadleaved								
Growing stock of commercial species	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 6b – Growing stock of the 10 most common species

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1st	Shorea sp	Meranti	1832	1702	1603
2nd	Beilschmiedia sp	Medang	523	486	458
3rd	Dipterocarpus sp	Keruing	497	462	435
4th	Eugenia sp	Kelat	187	173	163
5th	Terminalia sp	Bintangur	155	144	136
6th	Palaquium sp	Nyatoh	182	170	160
7th	Dysoxyllum sp	Jambu-jambu	113	105	99
8th	Eugenia sp	Ubah	128	119	112
9th	Shorea sp	Resak	113	105	99
10th	Palaquium sp	Balam	116	108	101
Remaining			10387	9655	9093
TOTAL			**14,233**	**13,229**	**12,459**

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)		This threshold is only for natural forest.
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)		Top end of stem is the position of the first branch
Minimum diameter (cm) of branches included in growing stock (W)		Branches are not included in the growing stock calculation
Volume refers to "above ground" (AG) or "above stump" (AS)		

6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock	The growing stock for 1992 is only from natural forest, since the growing stock from plantation forest was not available. The growing stock for 1998 is taken from natural forest and from Java plantation forest. The growing stock for 2003 data to estimate 2005 and 2010 figures were taken from natural forest data of NFI 1996 – 2006.	
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

Other general comments to the table
Total growing stock calculated for all species includes commercial and non commercial species. Growing stock for year 2005 is calculated based on inventory data between 1998 – 2003

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[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.

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
GPG, 2006. Good Practise Guidance for Land use, Land use change and forestry IPCC.	H	Basic Densities, Root : Shoot Ratio, Dead to Live Ratio	All	
Sandra Brown, 1997. Estimating Biomass Change in Tropical Forests. A Primer. FAO Forestry Paper No. 134	H	Biomass Expansion Factor	All	

7.2.2   Classification and definitions

National class	Definition
	There is no specific definition for national biomass stock, for that reason we directly used definition under FRA 2010.

7.2.3   Original data

The growing stock figure from Table 6 have been used for this table

7.3   Analysis and processing of national data

7.3.1   Calibration

7.3.2   Estimation and forecasting

A.   Above Ground Biomass

Variables	Unit	1990	2000	2005	2010
Growing stock (Table 6)	million ha	14,234	13,228	12,459	11,343
Wighted wood density		0.54	0.54	0.54	0.54
Stem Biomass	million tonnes	7,686	7,143	6,728	6,125
Stem Biomass	tonnes/ha	643	598	563	512
BEF		3.4	3.4	3.4	3.4
Above Ground Biomass	million tonnes	26,134	24,287	22,875	20,826

Biomass expamsion factor (BEF) was calculated using the following formula:
$BEF = Exp\{3.213-0.506*LN(BM)\}$ (Brown, Sandra 1997. Estimating biomass change in tropical forests. A primier. FAO Forestry Paper No. 134.).

B.   Below Ground Biomass

Variables	Unit	1990	2000	2005	2010
Default Root Shoot Ratio		0.33	0.33	0.33	0.33
Above Ground Biomass	million tonnes	26,134	24,287	22,875	20,826
Below Ground Biomass	million tonnes	8,624	8,015	7,549	6,872
Total live Biomass	million tonnes	34,758	32,301	30,423	27,698

7.3.3   Reclassification into FRA 2010 categories
Reclassification is not needed.

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	26,134	24,287	22,875	20,826	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	8,624	8,015	7,549	6,872	n.a.	n.a.	n.a.	n.a.
Dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

7.5   Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass		
Below-ground biomass		
Dead wood		

Other general comments to the table
Biomass is only calculated for the forest, since there is inadequate data to calculate other category (other wooded land)

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
GPG, 2006. Good Practise Guidance for Land use, Land use Change and Forestry. IPPC.	H	Basic Densities, Root : Shoot Ratio, Dead to Live Ratio	All	

8.2.2   Classification and definitions

National class	Definition
	There is no specific classes and definition relating to this table.

8.2.3   Original data

The original data to calculate carbon stock were taken from biomass stock Table 7

8.3   Analysis and processing of national data

8.3.1   Calibration

No calibration is needed.

8.3.2 Estimation and forecasting

The default conversion factor (biomass to carbon) of 0.47 adopted from IPCC GPG, 2006 was used to estimate carbon stock in forest.

Variables	Unit	1990	2000	2005	2010
Above ground biomass		26,132	24,288	22,875	20,824
Default factor		0.47	0.47	0.47	0.47
Carbon in Above ground biomass	million tonnes	12,282	11,415	10,751	9,787
Below ground biomass		8,624	8,015	7,549	6,872
Default factor		0.47	0.47	0.47	0.47
Carbon in Below ground biomass	million tonnes	4,053	3,767	3,548	3,230
Total	million tonnes	16,335	15,182	14,299	13,017

Variables	Unit	1990	2000	2005	2010
Above ground biomass		26,134	24,287	22,875	20,826
Default factor		0.47	0.47	0.47	0.47
Carbon in Above ground biomass	million tonnes	12,283	11,415	10,751	9,788
Below ground biomass		8,624	8,015	7,549	6,872
Default factor		0.47	0.47	0.47	0.47
Carbon in Below ground biomass	million tonnes	4,053	3,767	3,548	3,230
Total	million tonnes	16,336	15,182	14,299	13,018

8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	12,282	11,415	10,751	9,787	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	4,053	3,767	3,548	3,230	n.a.	n.a.	n.a.	n.a.
Sub-total: Living biomass	16,335	15,182	14,299	13,017	n.a.	n.a.	n.a.	n.a.
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Dead wood and litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Soil depth (cm) used for soil carbon estimates	

8.5   *Comments to Table T8*

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass		
Carbon in below-ground biomass		
Carbon in dead wood		
Carbon in litter		
Soil carbon		

Other general comments to the table
Same as biomass stock, carbon stock for 1990 and 2005 are calculated from stocks per hectare for natural forest and only for living biomass

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
GOI. 1989. Forestry statistic 1988/1989	H/M	Extent	1988	
GOI. 1990. Forestry statistic 1989/1990	H/M	Extent	1989	
GOI. 1991. Forestry statistic 1990/1991	H/M	Extent	1990	
GOI. 1992. Forestry statistic 1991/1992	H/M	Extent	1991	
GOI. 1993. Forestry statistic 1992/1993	H/M	Extent	1992	
GOI. 2000. DG of Forest Area Protection Statistic	H/M	Extent	2000	
GOI. 2001. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2001	
GOI. 2002. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2002	
GOI. 2003. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2003	
GOI. 2004. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2004	
GOI. 2005. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2005	
GOI. 2006. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2006	
GOI. 2007. Regional report (Jan-Des)	H/M	Extent	2007	Regularly report from regional forestry (province and district), National Park, Nature resource Conservation,HPH, communication radio.

9.2.2 Classification and definitions

National class	Definition
Kebakaran hutan (Forest fire)	Wildfire in the forestland

9.2.3 Original data

A. 1990 data

National Class	Extent (Ha)				
	1988	1989	1990	1991	1992
Kebakaran Hutan (Forest Fire)	7,769	15,885	34,241	118,462	14,286

B. 2000 data

National Class	Extent (Ha)				
	1998	1999	2000	2001	2002
Kebakaran Hutan (Forest Fire)	515,026	44,090	3,017	14,330	35,497

C. 2005 data

National Class	Extent (Ha)				
	2003	2004	2005	2006	2007
Kebakaran Hutan (Forest Fire)	3,545.45	3,343.99	5,502.47	4,241.59	7,077.52

9.3 Analysis and processing of national data

9.3.1 Calibration

No calibration is needed for Table 9.

9.3.2 Estimation and forecasting

National class	Average extent (1000 ha)		
	1990	2000	2005
Kebakaran Hutan (Forest Fire)	38.129	122.39	4.74

9.3.3 Reclassification into FRA 2010 categories

National Class	FRA categories			
	Disturbance by Fire	Disturbance by Insect	Disturbance by disease	Other disturbance
Kebakaran hutan (Forest fire)	100			

9.4 Data for Table T9

Table 9a

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	n.a	n.a	n.a	n.a	n.a	n.a
... of which on forest	38.129	n.a	122.39	n.a	4.74	n.a
... of which on other wooded land	n.a	n.a	n.a	n.a	n.a	n.a
... of which on other land	n.a	n.a	n.a	n.a	n.a	n.a

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	Area affected by fire reported in this table was occurred in forestland. Proportion of forest area that affected by fire is 0.004% .	Data of forest fire show that the biggest forest fire occurred in the period 1998-2002. This condition was caused by forest fires in Riau (Sumatra) and East Kalimantan between 1997-1998. In the period 2003-2007, data of forest fires decreased. After 2000, Indonesia began to protect and monitor forest fire. Ministry of Forestry not only use hot spot data from satellite images but also formalize a ranger quick response unit (SPORC) to control forest fire.
Number of fires	Number of fires data was not available.	
Wildfire / planned fire	All forest fires in Indonesia are wildfire.	

Other general comments to the table
Forest fire data is taken from Forestry Statistic, particularly for 1989, the data is calculated from reports submitted by regional offices. These reports were documented by Directorate of Forest Fire Control, Directorate General of Forest Protection and Nature Conservation.

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
GOI. 1989. Forestry statistic 1988/1989	H/M	Extent	1988	
GOI. 1990. Forestry statistic 1989/1990	H/M	Extent	1989	
GOI. 1991. Forestry statistic 1990/1991	H/M	Extent	1990	
GOI. 1992. Forestry statistic 1991/1992	H/M	Extent	1991	
GOI. 1993. Forestry statistic 1992/1993	H/M	Extent	1992	
GOI. 2000. DG of Forest Area Protection Statistic	H/M	Extent	2000	
GOI. 2001. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2001	
GOI. 2002. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2002	

GOI. 2003. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2003	
GOI. 2004. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2004	
GOI. 2005. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2005	
GOI. 2006. DG of Forest Protection and Nature Conservation Statistic	H/M	Extent	2006	
GOI. 2007. Regional report (Jan-Des)	H/M	Extent	2007	Regularly report from regional forestry (province and district), National Park, Nature resource Conservation, HPH, communication radio.

10.2.2 Classification and definitions

National class	Definition
Hama dan penyakit (Insect and disease)	Forest disturbance due to insect or disease
Media 43hysic (Biotic agents)	Forest disturbance due to biotic agents other than insects or disases, such as wildlife browsing, grazing, physical damage by animal, etc.

10.2.3 Original data

A. 1990 data

National Class	Extent (Ha)				
	1988	1989	1990	1991	1992
Hama dan Penyakit (Insect and diseases)	1,230	11,883	0	490	

B. 2000 data

National Class	Extent (Ha)				
	1998	1999	2000	2001	2002
Hama dan Penyakit (Insect and diseases)	n.a	n.a	n.a	n.a	n.a

C. 2005 data

National Class	Extent (Ha)				
	2003	2004	2005	2006	2007
Hama dan Penyakit (Insect and diseases)	n.a	n.a	n.a	n.a	n.a

10.3 Analysis and processing of national data

10.3.1 Calibration

No calibration is needed for Table 10.

10.3.2 Estimation and forecasting

Estimation is needed to calculate the 1990, 2000 and 2005 data which are the average value of five year data.

National class	Average extent (1000 ha)		
	1990	2000	2005
Hama dan Penyakit (Insect and diseases)	n.a	n.a	n.a
Media Biotik (Biotic Agents)			

10.3.3 Reclassification into FRA 2010 categories

In Indonesia, Hama dan penyakit which actually caused by either insect or disease is usually presented together. There is lack information on the impact of insect and disease to the forest area in the country.

National Class	FRA categories			
	Disturbance by Fire	Disturbance by Insect	Disturbance by disease	Other disturbance
Hama dan Penyakit (Insect and disease)				

10.4 Data for Table T10

Table 10a – Disturbances

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	**2000**	**2005**
Disturbance by insects	n.a.	n.a.	n.a.
Disturbance by diseases	n.a.	n.a.	n.a.
Disturbance by other biotic agents	n.a.	n.a.	n.a.
Disturbance caused by abiotic factors	n.a.	n.a.	n.a.
Total area affected by disturbances	**n.a.**	**n.a.**	**n.a.**

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 hectares)	If cyclic, approx. cycle (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)
Total forest area affected by woody invasive species	

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	No available data of insects type that affecting forest health and vitality.	
Disturbance by diseases		
Disturbance by other biotic agents		
Disturbance caused by abiotic factors		
Major outbreaks		
Invasive species		

Other general comments to the table
The disturbances reported in this table were disturbances which occurred in the forestland. n.a. : data is not available from the regional offices.

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
GOI. 1990. Directorate general of Forest Utilization	M	Volume of industrial roundwood	1990	
GOI. 2000. Directorate of Natural Forest Development	M	Volume of industrial roundwood	2000	
GOI. 1994. Pocket Statistic Book of Perum Perhutani	H	Volume of industrial roundwood	1990	Year 1990-1994
GOI. 2001. Perum Perhutani Statistic 2001	H	Volume of industrial roundwood	2000	
GOI. 2005. DG of Forest Production Development	H	Volume of industrial roundwood	2005	Data source: Directorate-NFD, Directorate of Forest Product Distribution, TIU
GOI. 2006. DG of Forest Production Development	H	Volume of industrial roundwood	2006	Data source: Directorate General of Forest Production Development and Forestry Provincial Office of Central Sulawesi
FAO STAT		Volume of woodfuel	1990-2006	

11.2.2 Classification and definitions

National class	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.

11.2.3 Original data

A.1990 data

National Class	Natural Forest (1000m3)					Plantation forest (1000m3)				
	1988	1989	1990	1991	1992	1988	1989	1990	1991	1992
Industrial roundwood (bahan baku industry; Ind)	27,566	27,760	22,165	26,127	23,809	0	0	0	0	0

Production of woodfuel (1000 m3 under bark)

National Class	1988	1989	1990	1991	1992
Fuel wood (kayu bakar; Ind)	135,748	130,814	126,043	120,776	115,666

(Source: FAOSTAT | © FAO Statistics Division 2008 | 29 January 2008)

A. 2000 data

National Class	Natural Forest (1000m3)					Plantation forest (1000m3)				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Industrial roundwood (bahan baku industry; Ind)	25,636	16,236	17,646	4,133	3,203	3,514	2,791	2,974	7,023	5,802

Production of woodfuel (1000 m3 under bark)

National Class	1998	1999	2000	2001	2002
Fuel wood (kayu bakar; Ind)	91,892	90,417	88,981	85,712	82,555

(Source: FAOSTAT | © FAO Statistics Division 2008 | 29 January 2008)

B. 2005 data

National Class	Natural Forest (1000m3)					Plantation forest (1000m3)				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Industrial roundwood (bahan baku industri; Ind)	5,061	5,143	9,335	9,021	634	6,362	8,406	14,888	12,771	521

Production of woodfuel (1000 m3 under bark)

National Class	2003	2004	2005	2006	2007
Fuel wood (kayu bakar; Ind)	79,508	76,564	73,720	70,719	n.a

(Source: FAOSTAT | © FAO Statistics Division 2008 | 29 January 2008)

Production of woodfuel (1000 m3 under bark)

1988	1989	1990	1991	1992	1998	1999
135748.0	130814.4	126043.5	120775.6	115665.9	91892.0	90416.9

2000	2001	2002	2003	2004	2005	2006
88981.1	85712.1	82555.8	79507.7	76563.8	73719.9	70719.2

(Source: FAOSTAT | © FAO Statistics Division 2008 | 29 January 2008)

11.3   Analysis and processing of national data

11.3.1 Calibration

No calibration is needed

11.3.2 Estimation and forecasting

Estimation is needed to calculate the 1990, 2000 and 2005 data which are the average value of five year data.

National class	Natural Forest (1000m3)			Plantation forest (1000m3)		
	1990	2000	2005	1990	2000	2005
Industrial roundwood (bahan baku industri; Ind)	25.485	13,371	5,839	n.a	4,421	8,590

Production of woodfuel (1000 m3 under bark)

National class	1990	2000	2005
Fuel wood (kayu bakar; Ind)	125,809	87,911	75,128

The Woodfuel removal is estimated by following method using the original data mentioned above.

   Average removal of Woodfuel (under bark)
        The average figure (1988 - 1992) are 125809.50 (1000 m3) and used for 1990.
        The average figure (1998 - 2002) are   87911.58 (1000 m3) and used for 2000.
        The average figure (2003 - 2006) are   75127.65 (1000 m3) and used for 2005.

The reported figures on woodfuel removals above are volume under bark while FRA 2010 requests information on removal as volume over bark. In order to use the data to make estimations for table T11, the figures are converted to volume over bark by applying a bark factor. A global default conversion factor of 1.15 is used for converting volume under bark to volume over bark.

   For 1990: 125809.50 * 1.15 = 144680.9
   For 2000:   87911.58 * 1.15 = 101098.3
   For 2005:   75127.65 * 1.15 =   86396.8

11.3.3 Reclassification into FRA 2010 categories

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.)	25,485	17,792	14,428	144,680	101,098	86,396
... of which from forest	25,485	17,792	14,428	n.a	n.a	n.a
Unit value (local currency / m^3 o.b.)	n.a	n.a	n.a	n.a	n.a	n.a
Total value (1000 local currency)	n.a	n.a	n.a	n.a	n.a	n.a

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.

	1990	**2000**	**2005**
Name of local currency	na	na	Rupiah

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	Total volume of industrial roundwood removals was industrial round wood that yield from natural forest (kayu rimba) and plantation forest (such as jati). On 1990, source of data is not separated, whether it came from natural forest or plantation forest, but mostly from natural forest. In this period, plantation forest has not been developed widely.	
Total volume of woodfuel removals		
Unit value		
Total value		

Other general comments to the table
Unit value is not presented because its value fluctuated over time, even in the same year.

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
Plant products / raw material
1.   Food
2.   Fodder
3.   Raw material for medicine and aromatic products
4.   Raw material for colorants and dyes
5.   Raw material for utensils, handicrafts & construction
6.   Ornamental plants
7.   Exudates
8.   Other plant products
Animal products / raw material
9.   Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. 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
GOI. 1990. DG of Forest Utilization	M	Volume		
GOI. 2000. DG Natural Forest Development	M	Volume		
GOI. 1994. Pocket Statistic Book of Perum Perhutani	H	Volume		Year 1990-1994
GOI. 2001. Perum Perhutani Statistic 2001	H	Volume	2000	

GOI. 2005. DG of Forest Production Development	H	Volume	2005	Source: Directorate-NFD, Dir. of Forest Product Distribution, TIU
GOI. 2006. DG of Forest Production Development	H	Volume	2006	Source: DG of Forest Production Development, and Forest Service of Central Sulawesi

12.2.2 Classification and definitions

National class	Definition
Rattan (rotan; Ind)	Raw rattan
Gum resin (gondorukem; Ind)	Resin tapped from pine trees
Turpentin (terpentin; Ind)	Processed gondorukem (Turpentin)
Silk (sutera; Ind)	Raw silk
Cajuput oil (kayu putih; Ind)	Oil extracted from leaf of Melaluca sp.
Agarwood (gaharu; Ind)	Agarwood taken from Aquilaria malaccensis and Aquilaria filaria
Charcoal (arang; Ind)	Charcoal
Silk yarn (benang sutera; Ind)	Material for silk.

12.2.3 Original data

A. 1990 data

National Class	Unit	Years					Remarks
		1988	1989	1990	1991	1992	
Rattan/rotan	Ton			52,170	64,020	69,384	
Gum resin/gondorukem	Ton			38,150	37,141	53,090	
Resin/dammar	Ton			10,496	9,539	14,253	
Sago/sagu	Ton			303	3,075	4,158	
Turpentin/terpentin	Ton			2,191	8,593	9,038	
Silk/sutera	Ton			n.a	n.a	n.a	
Copal/kopal	Ton			n.a	n.a	n.a	
Cajuput Oil/minyak kayu putih	Ton			167,646	274,124	280,305	
Charcoal/arang	Ton			n.a	n.a	n.a	
Agarwood/gaharu	Ton			n.a	n.a	n.a	
Kemedangan (other product from gaharu)	Ton			n.a	n.a	n.a	
Getah-getahan/sap	Ton			n.a	n.a	n.a	
Honey/madu	Ton			n.a	n.a	n.a	
Silk yarn/benang sutera	Ton			n.a	n.a	n.a	

B. 2000 data

National Class	Unit	Years					Remarks
		1998	1999	2000	2001	2002	
Rattan/rotan	Ton	62,644	38,417	94,752	23,836	17,779	
Gum resin/gondorukem	Ton	43,785	24,025	n.a	580	n.a	
Resin/dammar	Ton	7,887	6,310	3,342	2,921	1,131	
Sago/sagu	Ton	1,479	585	114	n.a	n.a	
Turpentin/terpentin	Ton	7,633	2,667	n.a	n.a	n.a	
Silk/sutera	Ton	13,279	1,911	n.a	n.a	n.a	
Copal/kopal	Ton	516	114	647	428	442	
Cajuput Oil/minyak kayu putih	Ton	357,035	63,465	n.a	n.a	27,925	
Charcoal/arang	Ton	n.a	n.a	n.a	n.a	n.a	
Agarwood/gaharu	Ton	n.a	n.a	n.a	n.a	n.a	
Kemedangan (other product from gaharu)	Ton	n.a	n.a	n.a	n.a	n.a	
Getah-getahan/sap	Ton	n.a	n.a	n.a	n.a	n.a	
Honey/madu	Ton	1,519	2,019	1,862	2,112	1,932	
Silk yarn/benang sutera	Ton	136	64	71	110	91	

C. 2005 data

National Class	Unit	Years					Remarks
		2003	2004	2005	2006	2007	
Rattan/rotan	Ton	127,295	1,880,503	221,381	24,554	n.a	
Gum resin/gondorukem	Ton	4,592	38,435	27,098	3,210	n.a	
Resin/damar	Ton	4,401	2,722,866	9,131	11,087	n.a	
Sago/sagu	Ton	n.a	n.a	n.a	n.a	n.a	
Turpentin/terpentin	Ton	544	7,684	36,958	5,152	n.a	
Silk/sutera	Ton	n.a	n.a	n.a	n.a	n.a	
Copal/kopal	Ton	403	318	320	149	n.a	
Cajuput Oil/minyak kayu putih	Ton	28,138	31,978	275,192	20,010	n.a	
Charcoal/arang	Ton	n.a	5,057,390	33,117	n.a	n.a	
Agarwood/gaharu	Ton	n.a	6,175	231	668	n.a	
Kemedangan (other product from gaharu)	Ton	n.a	394	4,424	252	n.a	
Getah-getahan/sap	Ton	n.a	87,170	45,465	556	n.a	
Honey/madu	Ton	1,949	3,841	1,568	1,421	n.a	
Silk yarn/benang sutera	Ton	89	55	69	14	n.a	

Note: n.a : Not available data

12.3   Analysis and processing of national data

12.3.1 Calibration

12.3.2 Estimation and forecasting

National Class	Unit	Years		
		1990	2000	2005
Rattan/rotan	Ton	61,858	47,486	563,433
Gum resin/gondorukem	Ton	42,794	22,797	18,334

	Unit			
Resin/damar	Ton	11,429	4,318	686,871
Sago/sagu	Ton	2,512	726	n.a
Turpentin/terpentin	Ton	6,607	5,150	12,585
Silk/sutera	Ton	n.a	7,595	n.a
Copal/kopal	Ton	n.a	429	298
Cajuput Oil/minyak kayu putih	Ton	240,692	149,475	88,830
Charcoal/arang	Ton	n.a	n.a	2,545,254
Agarwood/gaharu	Ton	n.a	n.a	2,358
Kemedangan (other product from gaharu)	Ton	n.a	n.a	1,690
Getah-getahan/sap	Ton	n.a	n.a	44,397
Honey/madu	Ton	n.a	1,889	2,195
Silk yarn/benang sutera	Ton	n.a	94	57

Note : n.a : Not available data. Data 2005 is averaged from 2003, 2004, 2005 and 2006 data.

12.3.3 Reclassification into FRA 2010 categories

12.4 Data for Table T12

				NWFP removals 2005		NWFP category
Rank	Name of product	Key species	Unit	Quantity	Value (1000 local currency)	
1st	Resin/damar	n.a	Ton	686,871		7
2nd	Rattan/rotan	n.a	Ton	563,433		5
3rd	Cajuput oil	Melaluca sp.	Ton	88,830		3
4th	Getah-getahan/sap	n.a	Ton	44,397		8
5th	Gum resin/Gondorukem	n.a	Ton	18,334		7
6th	Turpentin	n.a	Ton	12,585		7
7th	Honey/madu	Apies dorsata	Ton	2,195		11
8th	Agarwood/gaharu	Aquilaria malaccensis and Aquilaria filaria	Ton	2,358		3
9th	Kemedangan (other product from gaharu)	n.a	Ton	1,690		5
10th	Copal/Kopal	n.a	Ton	298		8
All other plant products						
All other animal products				57		16
TOTAL				1,421,048		

	2005
Name of local currency	Rupiah

12.5   Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	The 10 most important products based on the rank of products quantity. These products divided by 6 category that are other plant product, exudates, raw material for utensils, handicrafts & construction, raw material for medicine and aromatic products, and wild honey & bee-wax.
Other plant products	The products that include in other animal products are silk and silk yarn.
Other animal products	The value by product used rupiah (local currency). This value based on the rate of exchange of rupiah to US$ in 2005 that 1 US$ is Rp. 9,500,00. This value was calculated by ton unit.
Value by product	
Total value	

Other general comments to the table
Unit value is not presented because its value fluctuated over time, even in the same year.

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
GOI. 2000. DG of Forest Production Development. MoF (in Indonesian)	H	Number of persons	2000	Will be used as 2000 data for company employment
GOI. 2005. DG of Forest Production Development. MoF(in Indonesian)	H	Number of persons	2005	Will be used as 2005 data for company employment
GOI. 2000. DG of Protection and Nature Conservation Statistic	H	Number of persons	2000	Will be used as 2000 data for National Park employment
GOI. 2005. DG of Forest Protection and Nature Conservation Statistic	H	Number of persons	2005	Will be used as 2005 data for National Park employment
Statistic of Timber Culture Estate	H	Number of persons	2002	Will be used as 2000 data for Company employment
Statistic of Forest Consession Estate	H	Number of persons	2005	Will be used as 2005 data for Company employment

13.2.2 Classification and definitions

National class	Definition
Company employment	Persons who work for Forest Production (Forest Concessionaires or Forest Plantation). It can be permanent/certain period base on the skill
National Park employment	Persons who work for National Park (Forest Protection or Forest Conservation)

13.2.3 Original data

National class	Number of persons	
	2000	**2005**
Company employment	133,576	54,140
Temporary employment	na	na
National Park employment	2,826	3,270
Total	42,199	19,836

The number of employment in the above table are permanent workers involved in wood production, i.e., Forest Concessionaires or Forest Plantation) excluding Java (no data is available), as well as government officials who work in the National Park. For certain activities, concessions, often hire temporary workers, but the data is not yet available. The data are available for years 2000 and 2005.

13.3 Analysis and processing of national data

13.3.1 Calibration

No calibration is required

13.3.2 Estimation and forecasting

No estimation or forecasting is required.

13.3.3 Reclassification into FRA 2010 categories

National Class	FRA categories
	Primary production of goods
Company employment	100
National Park employment	100
Total	

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	**2000**	**2005**
Employment in primary production of goods	na	39.4	16.6
...of which paid employment	na	na	na
...of which self-employment	na	na	na
Employment in management of protected areas	na	2.8	3.3

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 employees recorded in this table are only the ones working for wood production from natural forest and plantation forest concessionaires	Compared with 2000 period, employment in primary production of goods in 2005 was decreased as critically concurrent with the decrease of the number of the companies.
Paid employment / self-employment		
Employment in management of protected areas	Forest protection and conservation activities are mainly done by government. The employees reported in this table reflected the government officials who are directly involved in the national park management.	Employment in 2005 in management of conservation areas was increased. It purposes to increase protection of forest concurrent with the increase of the unit/coverage of the National Park area.

Other general comments to the table

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)			
Forest policy statement with national scope		√	Yes
			No
If Yes above, provide:	Year of endorsement	2006	
	Reference to document	Permenhut No. 26 Tahun 2006 tentang Rencana Pembangunan Jangka Panjang Kehutanan 2006-2025 (Minister of Forestry Decree No. 27 Year 2006 on Long Term Forestry Development Planning Year 2006-2025)	
National forest programme (nfp)		√	Yes
			No
If Yes above, provide:	Name of nfp in country	Program Kehutanan Nasional	
	Starting year	2000	
	Current status		In formulation
		√	In implementation
			Under revision
			Process temporarily suspended
	Reference to document or web site	Q/A of NFP Website address : www.nfp-indonesia.org	
Law (Act or Code) on forest with national scope		√	Yes, specific forest law exists
			Yes, but rules on forests are incorporated in other (broader) legislation
			No, forest issues are not regulated by national legislation
If Yes above, provide:	Year of enactment	1999	
	Year of latest amendment	2004	
	Reference to document	In Indonesian language : UU Kehutanan No. 41 Tahun 1999 (Act on Forestry Number 41 Year 1999)	

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			Yes
		√	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements			
Sub-national Laws (Acts or Codes) on forest			Yes
		√	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests			

59

14.3   Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	The national scope of forest policy statement is stated in the first part of document of the Long Term Forestry Development Planning Year 2006-2025 which endorsed through Minister of Forestry Decree No. 26 Year 2006
National forest programme (nfp)	All information of the implementation of the Indonesian National Forest Programme has been addressed at the website (www.nfp-indonesia.org) which launched in February 2009. For example, the website user can download the Indonesian National Forestry Statement (http://nfp-indonesia.org/download/NationalForestry Statement.pdf)
Law (Act or Code) on forest with national scope	In Indonesia, the forestry management must be based on Undang-Undang Kehutanan No. 41 Tahun 1999 (Act on Forestry Number 41 Year 1999)
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table

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	Ministry of Forestry of Republic of Indonesia	
Level of subordination of Head of Forestry within the Ministry	√	1st level subordination to Minister
		2nd level subordination to Minister
		3rd level subordination to Minister
		4th or lower level subordination to Minister
Other public forest agencies at national level	Exclude Inhutani and Perum Perhutani	
Institution(s) responsible for forest law enforcement	Ministry of Forestry (DG of Forest Protection and Nature Conservation), Indonesian Police, the Indonesian Court and Justice (Kejaksaan) and Indonesian Military (if necessary)	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	14,809	13	15,548	17.6	16,803	18
...of which with university degree or equivalent	n.a	n.a	4,550	25.2	5,183	26.3

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	National Act No. 39 year 2009 states that in Indonesia, Forestry is under the Ministry of Forestry' jurisdiction.	
Level of subordination of Head of Forestry within the Ministry	Ministry of Forestry consists of Director General (including FORDA) and Senior Advisors. The second level consist of Directors The third level consists of Deputy Directors and Head of Regional Offices.	
Other public forest agencies at national level	There is no agencies with direct access/authority to forest area others than the Ministry of Forestry	
Institution(s) responsible for forest law enforcement	The Ministry of Forestry has its own forestry police forces under the DG of Forest Protection and Nature Conservation. Besides, there are forestry police forces under the provincial forestry services	
Human resources within public forest institutions	Human resources recorded in this table are only the ones working as government official at national level.	

Other general comments to the table
Recapitulation of human resources based on gender and education degree just began on year 2001 and have been published in Forestry Statistics of Indonesia since year 2001.

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 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
GOI.2007. Forestry Statistics of Indonesia 2006	H	Number of persons	2007	
Bureau of Human Resources Development, Secretariat General, MoF	H	Number of persons	2000, 2005 and 2007	Graduation of students in forest related education and working at MoF.
Forest Research and Development	H	Number of persons	2000, 2005 and 2007	

16.2.2 Original data

16.3   Analysis and processing of national data

16.3.1 Estimation and forecasting

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	-	-	-	-	1	-
Bachelor's degree (BSc) or equivalent	4	25.0	179	28.5	307	46.6
Forest technician certificate / diploma	341	9.0	80	10.0	126	26.2
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)	73	n.a	37	21.6	42	23.8
Master's degree (MSc) or equivalent	224	n.a	157	28.0	223	34.5
Bachelor's degree (BSc) or equivalent	544	n.a	526	39.4	523	37.9

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		
Professionals working in public forest research centres		

Other general comments to the table

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
Secretariat General MoF. 2005. Financial Report 2004	H	value	2004	Government revenue and expenditure budget on 2004
Secretariat General MoF. 2006. Financial Report 2005	H	value	2005	2005 Audited Financial Report

17.2.2 Classification and definitions

National class	Definition
Non tax state revenue (Penerimaan Negara Bukan Pajak, Indonesian)	Income of forest provision and reforestation, ecotourism, wildlife exploitation, forest exploitation penalty
Forestry expenditure	Budget realization at national level (includes regional office) and province level, and national movement on forestland and plant rehabilitation.

17.2.3 Original data

National class	Total (1000 local currency)	
	2004	**2005**
Non tax state revenue (Penerimaan Negara Bukan Pajak, Indonesian)	3,424,681,476	3,248,817,024
Forestry expenditure	841,186,545	959,875,419

17.3   Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	**2005**
Forest revenue	n.a.	3,248,817,024

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	n.a	n.a	n.a	n.a	n.a	n.a
Transfer payments	n.a	n.a	n.a	n.a	n.a	n.a
Total public expenditure	n.a	n.a	n.a	n.a	n.a.	959,875,419

If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.		Reforestation
		Afforestation
		Forest inventory and/or planning
		Conservation of forest biodiversity
		Protection of soil and water
		Forest stand improvement
		Establishment or maintenance of protected areas
		Other, specify below

17.4   Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue	Available data only for 2004 and 2005 years	The value only shows the income received by MoF. The additional incomes resulted by wood processing and exports are not included here.
Operational expenditure	Available data only for 2004 and 2005 years	
Transfer payments		

Other general comments to the table