



**Forestry Department**

**Food and Agriculture Organization of the United Nations**

**GLOBAL FOREST RESOURCES  
ASSESSMENT 2010**

**COUNTRY REPORT**

**THAILAND**

FRA2010/206  
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## **The Forest Resources Assessment Programme**

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

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2010 (FRA 2010).

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

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

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# 1 Table T1 – Extent of Forest and Other wooded land

## 1.1 FRA 2010 Categories and definitions

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

## 1.2 National data

### 1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
PRB, 1998. Para Rubber Bulletin 2541 (1998). ISSN 0125-4405.	H	Area	1996	
RFD, 2007. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. ISSN 0857-2711	H	Area	1961 to 2006	
DNP, 2007. Statistical Data 2007. Planning and Information Office. National Park, Wildlife and Plant Conservation. Thailand.	H	Area	2003 to 2007	
RFD, 2006. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. ISSN 0857-2711	H	Area	2000 to 2004	
Rubber Plantation. Website of Rubber Research Institute of Thailand. Department of Agriculture. ( <a href="http://www.rubberthai.com/statistic/stat_index.htm">http://www.rubberthai.com/statistic/stat_index.htm</a> )	H	Area	2003, 2006 and 2007	
NSO. 2008. Land Use Statistics 2003. Website of National Statistical office. Thailand. ( <a href="http://web.nso.go.th/eng/index.htm">http://web.nso.go.th/eng/index.htm</a> )	H	Area	2003	

## 1.2.2 Classification and definitions

National class	Definition
Existing Forest Area	Land spanning more than 0.5625 hectares which can be classified by using Landsat data at 30 m. resolution. It does not include land that is predominantly under agricultural or urban land use.
Non-forest Area	Land without any forest cover.

## 1.2.3 Original data

### A. Forest Area

Year	Forest Area (000ha)	Year	Forest Area (000ha)	Year	Forest Area (000ha)
1988	14380.3	1999	14928.4	2005	16100.1
1989 <sup>*1</sup>	14341.7	2000 <sup>*3</sup>	17011.1	2006	15865.3
1991 <sup>*2</sup>	13669.8	2001	16102.1	2007	
1993 <sup>*2</sup>	13355.4	2002		2008	
1995 <sup>*2</sup>	13148.5	2003		2009	
1998 <sup>*2</sup>	12972.2	2004 <sup>*3</sup>	16759.1	2010	

\*1 LANDSAT-TM \*2 LANDSAT-5(TM) Scales (1:250,000) \*3 LANDSAT-5(TM) Scales (1:50,000)

### B. Rubber Plantation Area

The “Para Rubber Bulletin” (1998) indicated that surveyed area of rubber plantations in 1996 using Landsat 1996 imageries was 1959284.8 ha (12245530 rai).

The “Rubber Research Institute of Thailand” (2008) indicated that surveyed area of rubber plantations in 2007 using Landsat 2007 imageries was 2,455,923.7 ha (15349523 rai). The areas of rubber plantations in 2003 and 2006 are 2,019,007 ha (12,618,792rai) and 2,294,087ha (14,338,046rai) respectively.

### C. Land Use (2001)

Land Use	Area in 000 ha
Forest	16102.1
Farm holding land	
Housing area	580.5
Paddy land	10435.4
Under field crop	4518.7
Under fruit trees and tree crops	4253.5
Under vegetable and flowers	184.5
Grass land	141.7
Idle land	439.3
Other	416.3
Sub-Total	37072
Unclassified land	14240
TOTAL Country Area	51312

### 1.3 Analysis and processing of national data

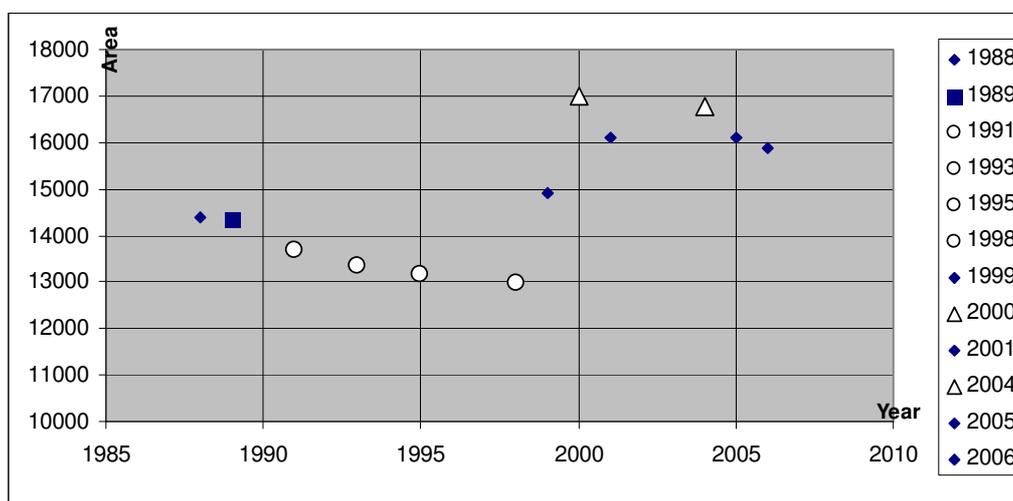
#### 1.3.1 Calibration

The total country area matches with FAOSTAT/UNSTAT but the area of inland water bodies (223000 ha) maintained by FAPSTAT/UNSTAT is zero (0) in the national statistics.

Therefore, calibration has been done after aggregating “farm holding” and “unclassified land” as “other land” and adjusting the difference in the area of “other land”.

#### 1.3.2 Estimation and forecasting

According to the original data in 1.2.3 A, the trend of forest area shows odd trend (Refer the following graph). It is probably due to the different forest assessment in the periods. The original data mentions that the forest area in 1989 is assessed by interpretation of LANDSAT-TM, the forest area from 1991 to 1998 is assessed by interpretation of LANDSAT-5 TM with scale 1:250,000, and the forest area 2000 and 2004 is assessed by interpretation of LANDSAT-5 TM with scale 1:50,000. The data source doesn't mention how forest area is assessed in other years including year 1999.



Considering the one of the main objectives of Forest Resource Assessment 2010 aiming at assessing the trend of forest area in 1990, 2000, 2005, and 2010, it's not sufficient to use the different type of data to estimate the forest area. The data assessed by using LANDSAT-5 TM with scale 1:50,000 is selected as basis to estimate trend of forest area among the three data since the data is most likely to similar to the FRA's definition of forest.

Looking at the data between 1991 and 1998 and between 2000 and 2004, it's found that the forest area shows decreasing trend in the both periods. Therefore the forest area is likely to continue to decrease. The loss of forest area from 1991 to 1998 is 697,600ha (annual loss is 99,600 ha) and the loss of forest area from 2000 to 2004 is 252,000ha (annual loss is 63,000 ha).

The original data of forest area in 2000 and 2004 is used as the basis for the estimation of forest area. The forest area in 1990, 2005 and 2010 is estimated by linear extrapolation of the basis data from 2000 and 2004.

Further, area of rubber plantations is part of forests in FRA 2010, therefore its area needs to be added to the area of forests. For this purpose the figure of area of rubber plantation is estimated using the original data. The area of rubber plantation in 1990 is extrapolated using data 1996 and 2003, the area in 2000 is interpolated using data 1996 and 2003, the area in 2005 is interpolated using data 2003 and 2006, and the area 2010 is extrapolated using data 1996 and 2007.

Category	Area in 000 ha			
	1990	2000	2005	2010
Forest	17641	17011	16696	16381
Rubber Plantation	1908	1993	2202	2591
Other land	31540	32085	32191	32117
Inland Water Bodies	223	223	223	223
Total Country Area	51312	51312	51312	51312

#### 1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	19549	19004	18898	18972
Other wooded land	0	0	0	0.
Other land	31540	32085	32191	32117
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	223	223	223	223
<b>TOTAL</b>	51312	51312	51312	51312

#### 1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	Further area of rubber plantations have been added with the area of forests in the final table.	Looking at the data between 1991 and 1998 and between 2000 and 2004, it's found that the forest area shows decreasing trend in the both periods. Therefore the forest area is likely to continue to decrease. The loss of forest area from 1991 to 1998 is 697,600ha (annual loss is 99,600 ha) and the loss of forest area from 2000 to 2004 is 252,000ha (annual loss is 63,000 ha). The increasing trend of forest reported in Table 1 is due to increase of rubber plantation.
Other wooded land	Available national data do not allow for estimating the area of other wooded land. Any such areas are included in the figures given for other land.	

Other land		
Other land with tree cover		
Inland water bodies		

<b>Other general comments to the table</b>

<b>Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping</b>	
Field inventory	2010
Remote sensing survey / mapping	2010

## 2 Table T2 – Forest ownership and management rights

### 2.1 FRA 2010 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals ( <i>sub-category of Private ownership</i> )	Forest owned by individuals and families.
Private business entities and institutions ( <i>sub-category of Private ownership</i> )	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and private religious and educational institutions, etc.
Local communities ( <i>sub-category of Private ownership</i> )	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities ( <i>sub-category of Private ownership</i> )	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
<b>Categories related to the holder of management rights of public forest resources</b>	
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
Global Forest Resources Assessment, Country Report of Thailand (FRA 2005/217, Rome 2005)	H	Ownership		

### 2.2.2 Classification and definitions

National class	Definition
	There are no national classifications and definitions relevant to this table.

### 2.2.3 Original data

All forest area in Thailand belongs to the state. Therefore, there is no private ownership. As regards rubber plantations it has been assumed that all the rubber plantations are under private ownership.

## 2.3 Analysis and processing of national data

The figures in Table2 are estimated based on the assumption in 2.2.3 and figures in Table1.

## 2.4 Data for Table T2

**Table 2a - Forest ownership**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	17641	17011	16696
Private ownership	1908	1993	2202
...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
<b>TOTAL</b>	19549	19004	18898

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?	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If No above, please describe below how the two differ:		

**Table 2b - Holder of management rights of public forests**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration			
Individuals			
Private corporations and institutions			
Communities			
Other			
<b>TOTAL</b>			

**2.5 Comments to Table T2**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		
Private ownership		
Other types of ownership		
Management rights		

Other general comments to the table

### 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.
<b>Categories of primary designated functions</b>	
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.
<b>Special designation and management categories</b>	
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustainable forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

#### 3.2 National data

##### 3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
RFD, 2007. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. ISSN 0857-2711 <a href="http://www.forest.go.th/stat/stat50/stat2550.htm">http://www.forest.go.th/stat/stat50/stat2550.htm</a>	H	Reforestation, Afforestation,	2001-2007	
RFD, 2001. Statistical Data 2001. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat44/stat2544.htm">http://www.forest.go.th/stat/stat44/stat2544.htm</a>	H	Reforestation, Afforestation	1997-2001	
RFD, 1996 and 1997. Statistical Data 1996. Office of the	H	Reforestation,	1991-	

Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat39/stat2539.htm">http://www.forest.go.th/stat/stat39/stat2539.htm</a> <a href="http://www.forest.go.th/stat/stat40/stat2540.htm">http://www.forest.go.th/stat/stat40/stat2540.htm</a>		Afforestation, Protected area	1996	
NSO. 2008. The 2008 Environment Core Indicator. Website of National Statistical office. Thailand. <a href="http://web.nso.go.th/en/indicator/enviro/ind_env08.htm">http://web.nso.go.th/en/indicator/enviro/ind_env08.htm</a>	H	Protected area	2000- 2006	
Rubber Plantation. Website of Rubber Research Institute of Thailand. Department of Agriculture. ( <a href="http://www.rubberthai.com/statistic/stat_index.htm">http://www.rubberthai.com/statistic/stat_index.htm</a> )	H	Rubber Plantation Area	2000 to 2007	

### 3.2.2 Classification and definitions

National class	Definition
Production Forest	Forest plantation areas planted by government agencies and private sectors.
Conservation of Biodiversity	Areas of national parks, wildlife sanctuaries, watershed areas, non-hunting areas, botanical gardens and arboretum.
Social Services	Forest Designated for Community

### 3.2.3 Original data

#### Annual Reforestation and Afforestation

(Unit : sq.km.)

Item	From beginning to 1992	From beginning to 2000	2001	2002	2003	2004	2005	2006	2007
Afforestation by Government Budget	5551.5	6727.4	42.1	55.9	39.4	56.0	132.0	94.2	92.8
The Reforestation Campaign in Commemoration of The Royal Golden Jubilee	1451.5*	3686.8	160.1	168.3	23.9	49.9	262.8	97.2	106.8
By Forest Industry Organization (FIO)	323.8	336.6	0.0	0.0	0.0	0.0	25.9	47.8	29.8
By Thai Plywood Co.,Ltd.	1.7	35.7	3.4	5.7	1.2	2.8	3.9	2.0	2.8
Reforestation According to Ministry's Regulations	116.1	165.8	19.1	4.5	4.7	5.7	14.0	10.1	34.8
Reforestation by Concessionaire Budget	153.1	225.1	1.4	24.0	48.7	29.1	54.0	65.1	27.4
<b>Total</b>	<b>7597.5</b>	<b>11177.4</b>	<b>226.1</b>	<b>258.5</b>	<b>117.8</b>	<b>143.4</b>	<b>492.6</b>	<b>316.4</b>	<b>294.4</b>

\* According to the original source, this figure (this column) is categorized as "Concessionaire's Reforestation"

#### Protected Area by type of area

(Unit : sq.km.)

	1992		2000		2005		2006	
	Unit	area	Unit	area	Unit	area	Unit	area
National Park	77	39,283.5	102	52,226.1	103	52,782.2	103	52,782.2
Forest Park	44	823.8	68	852.1	84	958.4	112	1,298.9
Wildlife Conservation Area	35	27,975.4	53	34,848.8	55	35,748.8	55	35,748.8
No Hunting Area	49	3,206.2	49	3,304.6	56	4,346.5	56	4,346.5
Botanical Garden	5	16.4	15	59.0	16	65.3	16	46.3
Arboretum	44	31.9	54	36.1	55	40.5	55	41.9
<b>Total</b>	<b>254</b>	<b>71337.2</b>	<b>341</b>	<b>91,326.7</b>	<b>369</b>	<b>93,941.7</b>	<b>397</b>	<b>94,264.6</b>

### 3.3 Analysis and processing of national data

#### 3.3.1 Estimation and forecasting

##### A. Production Areas

The production areas include productive reforestation (Reforestation By Forest Industry Organization (FIO) and By Thai Plywood Co.,Ltd.) areas and rubber plantation areas. The area of Productive Reforestation in 1990 is assumed as 1991 and 2010 is extrapolated by data 2005 and 2007.

Production Areas	Area in 000 ha				
	1990	2000	2005	2007	2010
Productive Reforestation	33	37	42	50	62
Rubber Plantation	1908	1993	2202	2456	2591
Total	1941	2030	2244	2506	2653

##### B. Protective Areas

The watershed class 1 area include conservation areas and protective reforestation areas. To ensure exclusiveness only protective reforestation areas (Afforestation by Government Budget, The Reforestation Campaign in Commemoration of The Royal Golden Jubilee, Reforestation According to Ministry's Regulations, and Reforestation by Concessionaire Budget) are considered as protective areas.

The area of Protective Reforestation in 2010 is extrapolated by data 2005 and 2007.

Category	Area in 000 ha				
	1990	2000	2005	2007	2010
Reforestation - Protective	727	1081	1200	1253	1332

##### C. Conservation of Biodiversity Areas

National Park and Wildlife Conservation Area are considered as Conservation of Biodiversity Areas. National Park may include Marine Parks however original data source doesn't mention the information of Marine Parks. The data in 1992 and 2006 is used for 1990 and 2010 respectively.

Category	Area in 000 ha			
	1992	2000	2005	2006
National Park	3,928	5,222	5,278	5,278
Wildlife Conservation Area	2,798	3,485	3,575	3,575
Total	6,726	8,707	8,853	8,853

##### D. Social Service

Forest Park is considered Social Service Area. The data in 1992 and 2006 is used for 1990 and 2010 respectively.

Category	Area in 000 ha			
	1992	2000	2005	2006
Forest Park	82	85	96	130

### 3.3.2 Reclassification into FRA 2010 categories

National Class	Percent allocation to FRA Categories					
	Production	Protection for soil and water	Conservation of biodiversity	Social services	Multiple purposes	Unknown function
Production Areas	100					
Protective Areas		100				
Conservation of Biodiversity Areas			100			
Social Service				100		

### 3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	1941	2030	2244	2653
Protection of soil and water	727	1081	1200	1332
Conservation of biodiversity	6726	8707	8853	8853
Social services	82	85	96	130
Multiple use	0	0	0	0
Other (please specify in comments below the table)	0	0	0	0
No / unknown	10073	7101	6505	6004
<b>TOTAL</b>	<b>19549</b>	<b>19004</b>	<b>18898</b>	<b>18972</b>

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	17641	17011	16696	16381
Forest area within protected areas	7134	9133	9394	9426
Forest area under sustainable forest management	n.a.	n.a.	n.a.	n.a.
Forest area with management plan	17641	17011	16696	16381

### 3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		

Conservation of biodiversity		
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate		
Forest area within protected areas		
Forest area under sustainable forest management		
Forest area with management plan		

<b>Other general comments to the table</b>

## 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).
<b>Characteristics categories</b>	
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.
<b>Special categories</b>	
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
RFD, 2007. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. ISSN 0857-2711	H	Reforestation Area	2007	
DNP, 2007. Statistical Data 2007. Planning and Information Office. National Park, Wildlife and Plant Conservation. Thailand.	H	Nature Conservation Area	2001 to 2007	
NSO. 2008. The 2008 Environment Core Indicator. Website of National Statistical office. Thailand. <a href="http://web.nso.go.th/en/indicator/environ/ind_env08.htm">http://web.nso.go.th/en/indicator/environ/ind_env08.htm</a>	H	Mangrove Area	1991-2004	

## 4.2.2 Classification and definitions

National class	Definition
Primary	Areas of national parks and wildlife sanctuaries
Productive plantation	Reforestation by forest industry organization, Thai Plywood Co.Ltd.
Protective plantation	Afforestation by government budget, the reforestation campaign in commemoration of The Royal Golden Jubilee, reforestation according to ministry's regulations, reforestation by concessionaire budget

## 4.2.3 Original data

Figures of Table 4a is estimated by the data in 3.2.3 and 3.3.

Mangrove Forest Area 1991- 2004

(Area: Square kilometre)

1991	1993	1996	1998	2000	2004
1738.2	1686.8	1675.8	1675.6	2453.2	2758.0

## 4.3 Analysis and processing of national data

The areas of "National Park" and "Wildlife Conservation Area" in 1992 have been assumed as primary forests.

The areas of Production Areas (Productive reforestation and Rubber Plantation) in 3.3.2.A and Protective reforestation in 3.3.2.B are assumed as planted forest.

The remaining areas are assumed as other naturally regenerated area.

## 4.4 Data for Table T4

**Table 4a**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	6726	6726	6726	6726
Other naturally regenerated forest	10155	9167	8728	8261
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
Planted forest	2668	3111	3444	3986
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
<b>TOTAL</b>	<b>19549</b>	<b>19004</b>	<b>18898</b>	<b>18972</b>

**Table 4b**

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	1908	1993	2202	2591
Mangroves (Forest and OWL)	174	245	276	276
Bamboo (Forest and OWL)	n.a.	n.a.	n.a.	n.a.

#### 4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest		
Other naturally regenerating forest		
Planted forest		
Rubber plantations		
Mangroves	The original data of 1991 is used for 1990, 2004 is used for 2005 and 2010.	The increase of mangrove area in 2000 might be due to change of the inventory. However, the original data source doesn't mention how to estimate area of mangrove.
Bamboo		

Other general comments to the table

## 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
RFD, 2007. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat50/TAB8.htm">http://www.forest.go.th/stat/stat50/TAB8.htm</a>	H	Afforestation and Reforestation	2002-2007	
RFD, 2007. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat44/TAB6.htm">http://www.forest.go.th/stat/stat44/TAB6.htm</a>	H	Afforestation and Reforestation	1997-2001	
RFD, 2007. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat39/TAB6.htm">http://www.forest.go.th/stat/stat39/TAB6.htm</a>	H	Afforestation and Reforestation	1992-1994	

#### 5.2.2 Classification and definitions

National class	Definition
No national definitions or classifications relevant to this table are available	

#### 5.2.3 Original data

Annual Reforestation by objectives (Unit: sq km)

	1992	1993	1994	Average
Afforestation by Government Budget	426.5	304.8	309.8	347.0
Concessionaire's Reforestation	17.1	8.9	4.4	10.1
By Forest Industry Organization (FIO)	6.4	6.7	4.2	5.8
By Thai Plywood Co., Ltd.	4.1	0.6	2.4	2.4
Reforestation According to Ministry's Regulations	8.1	2.2	0.6	3.6
Reforestation by Concessionaire Budget	60.6	10.7	6.4	25.9
Total	522.8	334.0	327.8	394.9

	until 1996	1997	1998	1999	2000	2001	2002	Average 1998-2002
Afforestation by Government Budget	6451.8	62	65.9	92.8	54.8	42.1	55.9	62.30
The Reforestation Campaign in Commemoration of The Royal Golden Jubilee	2998.9	302.7	102.1	153.5	129.7	160.1	168.3	142.74
By Forest Industry Organization (FIO)	270.3	0	0	59.2	7.1	0	0	13.26
By Thai Plywood Co.,Ltd.	11.7	7	6.2	6.9	3.8	3.4	5.7	5.20
Reforestation According to Ministry's Regulations	125.6	2.3	9.7	13.4	14.8	19.1	4.5	12.30
Reforestation by Concessionaire Budget	208.7	6.5	9	0.4	0.5	1.4	24	7.06
<b>Total</b>	<b>10067</b>	<b>380.6</b>	<b>192.9</b>	<b>326.3</b>	<b>210.7</b>	<b>226.1</b>	<b>258.5</b>	<b>242.90</b>

	2003	2004	2005	2006	2007	Average 2003-2007
Afforestation by Government Budget	39.4	56	132	94.2	92.8	82.88
The Reforestation Campaign in Commemoration of The Royal Golden Jubilee	23.9	49.9	262.8	97.2	106.8	108.12
By Forest Industry Organization (FIO)	0	0	25.9	47.8	29.8	20.70
By Thai Plywood Co.,Ltd.	1.2	2.8	3.9	2	2.8	2.54
Reforestation According to Ministry's Regulations	4.7	5.7	14	10.1	34.8	13.86
Reforestation by Concessionaire Budget	48.7	29.1	54	65.1	27.4	44.86
<b>Total</b>	<b>117.8</b>	<b>143.4</b>	<b>492.6</b>	<b>316.4</b>	<b>294.4</b>	<b>272.92</b>

### 5.3 Analysis and processing of national data

The figures for the reporting year 1990 refer to the averages for the 3-year periods 1992-1994, for the reporting year 2000 and 2005 refer to the averages for the 5-year periods 1998-2002 and 2003-2007 respectively.

### 5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species <sup>1)</sup> (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	34703	6230	8288			
Reforestation	4780	18056	19008			
...of which on areas previously planted	n.a.	n.a.	n.a.			
Natural expansion of forest	n.a.	n.a.	n.a.			

### 5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation	“Afforestation by Government Budget”	
Reforestation	Other reforestation activities in original data.	
Natural expansion of forest		

<b>Other general comments to the table</b>

## 6 Table T6 – Growing stock

### 6.1 FRA 2010 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

### 6.2 National data

#### 6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Inventory data compiled from the provincial inventories between 1992 and 1996.	H	Growing stock	1992 to 1996	

#### 6.2.2 Classification and definitions

National class	Definition
	No national definitions or classifications relevant to this table are available

#### 6.2.3 Original data

The province -wise inventory of Thailand conducted in the provinces in different years between 1992 and 1996 indicate that average growing stock per ha of trees over 100 cm girth at breast height (gbh) is

Region	Forest Type	Forest Area (ha)	Volume (m3) (gbh > 100 cm.)	Volume(m3)/ha (gbh > 100 cm.)
Northern	Evergreen Forest	1109715	37026891	33.37
	Pine Forest	27624	840415	30.42
	Mixed Deciduous Forest	2421500	38704563	15.98
	Dry Dipterocarp Forest	1758352	14110352	8.02
Northeastern	Evergreen Forest	162250	6882501	42.42
	Mixed Deciduous Forest	454145	8844312	19.47
	Dry Dipterocarp Forest	612132	7378139	12.05
Eastern	Evergreen Forest	341235	22469723	65.85

	Mixed Deciduous Forest	17198	775056	45.07
Central	Evergreen Forest	135772	10882593	80.15
	Mixed Deciduous Forest	223458	5499559	24.61
	Dry Dipterocarp Forest	143	3046	21.30
Southern	Evergreen Forest	635670	81035153	127.48
	<b>Total</b>	<b>7899194</b>	<b>234452303</b>	<b>29.68</b>

Further the diameter-wise breakdown of the inventory in each province when totalled together provided the following over all distribution of the growing stock.

Category	Percent of total volume in girth at breast height classes			
	15-45	46-100	> 100	Total
Growing stock	7.7	20.3	72	100

It indicated that the growing stock of trees over 100 cm gbh was only 72% of the total volume. Therefore, it needed a Volume Expansion Factor of 1.39 to estimate the growing stock of trees over 15 cm gbh (about 5cm dbh).

It lead to the estimate of 41.26 m<sup>3</sup>/ha. Since this is the only figure available hence this has been used for all the four years (1990, 2000 2005 and 2010).

### 6.3 Analysis and processing of national data

The growing stock has been calculated using the figure of 41.26 m<sup>3</sup>/ha and the area reported in Table1.

### 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	807	784	780	783	n.a.	n.a.	n.a.	n.a.
... of which coniferous	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
... of which broadleaved	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
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
1 <sup>st</sup>					
2 <sup>nd</sup>					
3 <sup>rd</sup>					
4 <sup>th</sup>					

5 <sup>th</sup>					
6 <sup>th</sup>					
7 <sup>th</sup>					
8 <sup>th</sup>					
9 <sup>th</sup>					
10 <sup>th</sup>					
Remaining					
<b>TOTAL</b>					

Note: Rank refers to the order of importance in terms of growing stock, i.e. 1<sup>st</sup> 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 <sup>1</sup> of trees included in growing stock (X)	5 cm	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	5 cm	
Minimum diameter (cm) of branches included in growing stock (W)		
Volume refers to “above ground” (AG) or “above stump” (AS)	AG	

## 6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock		
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

Other general comments to the table

<sup>1</sup> 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
Brown, Sandra. 1997. Estimating Biomass Change in Tropical Forests. A Primer. FAO Forestry Paper No. 134	H	Biomass Expansion Factor	All years	
FRA 2010. Guidelines for country reporting to FRA 2010. FAO	H	Basic Densities Root: Shoot Ratio	All	

#### 7.2.2 Classification and definitions

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

#### 7.2.3 Original data

The biomass has been estimated based on growing stock data in Table 6 and using the following factors.

### 7.3 Analysis and processing of national data

#### A. Basic Density

An average basic density of 0.6 has been assumed for all the trees in the growing stock.

**B. Biomass Expansion Factor (BEF)**

There are no national estimates for Biomass Expansion Factor (BEF). Initially, BEF was computed using the formula  $(BEF = EXP(3.213 - 0.506 * LN(\text{Stem biomass per hectare})))$  for broadleaved species (Sandra Brown, 1997). However due to very low growing stock density the BEF figure from this formula was very high. Hence the mean default value (3.14) of BEF was adopted.

**C. Root to shoot ratio**

The default value (0.27) of the Root to Shoot ratio has been adopted

**D. Dead to live Ratio**

Following the FRA 2010 Guidelines, since there are no national data on dead wood biomass (as suggested at page 31) no estimation has been done, since they would be too weak.

**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	1520	1477	1470	1475	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	411	399	397	398	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.
<b>TOTAL</b>	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

## 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
FRA 2010. Guidelines for country reporting to FRA 2010. FAO	H	Carbon conversion factor		

#### 8.2.2 Classification and definitions

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

#### 8.2.3 Original data

The carbon stock, in the forest, has been estimated based on the biomass data from Table T7 and using the default conversion factor (0.47) provided by the FRA Guidelines.

### 8.3 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	715	694	691	693	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	193	187	186	187	n.a.	n.a.	n.a.	n.a.
<b>Sub-total: Living biomass</b>	908	882	877	881	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.
<b>Sub-total: Dead wood and litter</b>	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.
<b>TOTAL</b>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Soil depth (cm) used for soil carbon estimates	
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### 8.4 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

## 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
Data compiled from helicopters flying over the burnt areas	H	Area affected	1988 to 1992	
NSO. 2008. Table 1.9. Website of National Statistical office. Thailand. <a href="http://web.nso.go.th/indicator/environ/bg.pdf">http://web.nso.go.th/indicator/environ/bg.pdf</a>	H	Area affected	1998 to 2007	

#### 9.2.2 Classification and definitions

National class	Definition
	No national classification and definitions relevant to this table are available.

#### 9.2.3 Original data

The national data is only available for forest areas affected by fire. The figure for 1990 is average of the figures from 1990 to 1992 collected by using helicopters to fly over the burnt areas.

Disturbance	Area in 000 ha
	1990
Disturbance by fire	1940

#### Total Forest fire area

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area (1000 Rai)	7159.1	1843.1	583.3	476.2	872.1	98.5	201.8	189.3	53.9	117.4
Area (1000ha)	1145.5	294.9	93.3	76.2	139.5	15.8	32.3	30.3	8.6	18.8

\* 1 rai = 0.16 ha

### 9.3 Analysis and processing of national data

For 1990, original data is used.

For 2000 and 2005, five years average is calculated from original data year 1998- 2002 and 2003 – 2007 respectively.

### 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	1940		350		21	
... of which on other wooded land	n.a.		n.a.		n.a.	
... of which on other land	n.a.		n.a.		n.a.	

**Table 9b**

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	n.a.	n.a.	n.a.
Planned fire	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

### 9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire		
Number of fires		
Wildfire / planned fire		

Other general comments to the table

## **10 Table T10 – Other disturbances affecting forest health and vitality**

No information is available for this table.

## 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
RFD, 1995. Forest Statistics of Thailand. Data Center. Information Office. Royal Forest Department. Thailand.	H	Wood Fuel Revenue	1991 & 1992	
RFD, 1999. Forest Statistics of Thailand. Data Center. Information Office. Royal Forest Department. Thailand.	H	Wood Fuel Revenue	1998 & 1999	
RFD, 2002. Forest Statistics of Thailand. Website of Royal Forest Department. Thailand ( <a href="http://www.forest.go.th/default_e.asp">www.forest.go.th/default_e.asp</a> )	H	Wood Fuel Revenue	2000 & 2001	
RFD, 2006. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat49/TAB11.htm">http://www.forest.go.th/stat/stat49/TAB11.htm</a>	H	Production of Timber Revenue	1991-2006 2004-2006	
RFD, 2003. Statistical Data. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat46/TAB55.pdf">http://www.forest.go.th/stat/stat46/TAB55.pdf</a>	H	Revenue	1999-2003	

#### 11.2.2 Classification and definitions

National class	Definition
Industrial wood removal	The wood removed (volume of round wood over bark) for production of goods and services other than energy production(wood fuel)
Wood fuel removal	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

#### 11.2.3 Original data

Round Wood	Volume (roundwood over bark in 1000 m <sup>3</sup> )					
	1991	1992	1998	1999	2000	2001
Teak	3	1	24	24	10	16

Other	229	118	31	26	36	25
Total	232	119	55	50	46	41
Wood fuel (Firewood )	634	434	10	4	1	8

Round Wood	Volume (roundwood over bark in 1000 m <sup>3</sup> )				
	2002	2003	2004	2005	2006
Teak	9	2	0	3	2
Other	25	18	2	6	11
Total	34	20	2	9	13
Wood fuel (Firewood )	7	n.a.	n.a.	n.a.	n.a.

(Firewood included wood charcoal)

Roundwood	Value in “000” baht					
	1991	1992	1998	1999	2000	2001
Teak	71	256	881	943	988	910
Other	5295	5310	486	1100	626	270
Total	5366	5566	1367	2043	1614	1180
Woodfuel (Firewood)	2542	2592	10	4	31	532

Round Wood	Value in “000” baht				
	2002	2003	2004	2005	2006
Teak	1134	172	193	235	224
Other	457	154	50	148	284
Total	1591	326	243	383	508
Fire wood	101	36	15	5	33

(Firewood includes wood charcoal)

### 11.3 Analysis and processing of national data

#### 11.3.1 Estimation and forecasting

##### Industrial Roundwood

- A. For 1990: Two year average of data from 1991 and 1992 has been used.
- B. For 2000: Four year average of data from 1998 to 2001 has been used.
- C. For 2005: Four year average of data from 2003 to 2006 is used.

##### Wood Fuel

- A. For 1990: Two year average of data from 1991 and 1992 has been used.
- B. For 2000: Four year average of data from 1998 to 2001 has been used.
- C. For 2005: The 2002 data has been assumed to hold good for 2005.

**11.4 Data for Table T11**

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m <sup>3</sup> o.b.)	176	45	11	534	6	7
... of which from forest	176	45	11	534	6	7
Unit value (local currency / m <sup>3</sup> o.b.)	31	34	33	5	24	14
Total value (1000 local currency)	5466	1559	365	2567	136	101

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	Baht	Baht	Baht

**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 woodfuel removals		
Unit value		
Total value	The above value is based on royalty or price of wood at the stump.	

Other general comments to the table

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

No information is available for this table.

## **13 Table T13 – Employment**

No information is available for this 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)			
<b>Forest policy statement with national scope</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement	2007	
	Reference to document	10 <sup>th</sup> Social and Economic Development Plan	
<b>National forest programme (nfp)</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country	Thailand National Forestry Policy	
	Starting year	1985	
	Current status	<input type="checkbox"/>	In formulation
		<input checked="" type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
<input type="checkbox"/>		Process temporarily suspended	
Reference to document or web site	Cabinate Resolution on 3 December 1985 <a href="http://www.forest.go.th/rfd/policy/policy_e.htm">http://www.forest.go.th/rfd/policy/policy_e.htm</a>		
<b>Law (Act or Code) on forest with national scope</b>	<input checked="" type="checkbox"/>	Yes, specific forest law exists	
	<input type="checkbox"/>	Yes, but rules on forests are incorporated in other (broader) legislation	
	<input type="checkbox"/>	No, forest issues are not regulated by national legislation	
If Yes above, provide:	Year of enactment	1941	
	Year of latest amendment		
	Reference to document	Forest Act ( <a href="http://faolex.fao.org/docs/pdf/tha70605.pdf">http://faolex.fao.org/docs/pdf/tha70605.pdf</a> )	

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

### 14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	The 10 <sup>th</sup> Social and Economic Development Plan (2007-2011) has emphasized the maintenance of forest ecosystem integrity and restoring the over exploited forest ecosystems including the promotion of sustainable use of biodiversity at community level through the sufficiency economy concept of H.M. the King.
National forest programme (nfp)	
Law (Act or Code) on forest with national scope	There are five main Forest related Acts in Thailand. Forest Act, National Park Act (1961), National Reserved Forest Act (1964), Wildlife Preservation and Protection Act (1992) and Forest Plantation Act (1992)
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	Minister of Natural Resources and Environment	
Level of subordination of Head of Forestry within the Ministry		1 <sup>st</sup> level subordination to Minister
		2 <sup>nd</sup> level subordination to Minister
		3 <sup>rd</sup> level subordination to Minister
		4 <sup>th</sup> or lower level subordination to Minister
Other public forest agencies at national level	Forest Industry Organization	
Institution(s) responsible for forest law enforcement	Royal Forest Department Department of National Parks, Wildlife and Plant Department of Marine and Coastal Conservation	

**Table 15b – Human resources**

FRA 2010 Category	Human resources within public forest institutions					
	2001		2005		2007	
	Number	%Female	Number	%Female	Number	%Female
Total staff	8030	n.a.	2338	n.a.	2329	n.a.
...of which with university degree or equivalent						

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		
Level of subordination of Head of Forestry within the Ministry		
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement	Royal Forest Department (RFD) is responsible for the protection of national reserved forests and keen on community forest and promote reforestation for economic purposes Department of National Parks, Wildlife and Plant Conservation (DNP) is responsible for forest conservation mainly in Protected Areas Department of Marine and Coastal Conservation (DMC) is responsible for administration of mangrove forests, Three departments were established in 2002 from previous RFD.	
Human resources within public forest institutions	This information is from statistics of RFD. ( <a href="http://www.forest.go.th/stat/stat50/TAB51.htm">http://www.forest.go.th/stat/stat50/TAB51.htm</a> ). It contains only forestry officer and may not include officers in DNP and DMC.	

Other general comments to the table

## 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
Website of Faculty of Forestry, Kasetsart University. <a href="http://www.forest.ku.ac.th/forestry/en/faculty_stat.php">http://www.forest.ku.ac.th/forestry/en/faculty_stat.php</a>	H	Enrollment	2006	

#### 16.2.2 Original data

The number of Enrolment in Faculty of Forestry, Kasetsart University in 2006 is 1140, 856 undergraduate and 284 graduate (256 Ms.c and 28 Ph.D.)

### 16.3 Data for Table T16

FRA 2010 Category	Graduation <sup>1)</sup> of students in forest-related education					
	2000		2005		2008	
	Number	% Female	Number	% Female	Number	% Female
Master's degree (MSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Forest technician certificate / diploma	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FRA 2010 Category	Professionals working in publicly funded forest research centres <sup>2)</sup>					
	2000		2005		2008	
	Number	% Female	Number	% Female	Number	% Female
Doctor's degree (PhD)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Master's degree (MSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

#### 16.4 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
RFD, 2006. Statistical Data 2007. Office of the Secretary. Royal Forest Department. Thailand. <a href="http://www.forest.go.th/stat/stat49/TAB55.htm">http://www.forest.go.th/stat/stat49/TAB55.htm</a>	H	Revenue	2002-2006	

#### 17.2.2 Original data

Revenue	(Unit: 1000 baht)				
	2002	2003	2004	2005	2006
Royalty of Teak	1,134	172	193	235	224
Royalty of Other Woods	457	154	50	148	284
Royalty of Firewood, Charcoal and others	101	36	15	5	33
Sale of Timber	1,842	35	388	1,964	5,000
Sale of Confiscated Goods	8,164	2,783	1,345	1	4,226
License Fee	421	194	80	16,693	10,956
Forest Improvement Fee	12,366	53,145	334	1,571	9,832
Miscellaneous Fee	70,034	1,126	40,857	21,749	29,725
Others	36,321	7,019	4,940	3,377	6,170
<b>Total</b>	<b>130,840</b>	<b>64,664</b>	<b>48,200</b>	<b>45,742</b>	<b>66,451</b>

### 17.3 Data for Table T17

**Table 17a - Forest revenues**

FRA 2010 Categories	Revenues (1000 local currency)	
	2002	2005
Forest revenue	130840	45742

**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						
Transfer payments						
<b>Total public expenditure</b>						
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input type="checkbox"/>	Reforestation				
	<input type="checkbox"/>	Afforestation				
	<input type="checkbox"/>	Forest inventory and/or planning				
	<input type="checkbox"/>	Conservation of forest biodiversity				
	<input type="checkbox"/>	Protection of soil and water				
	<input type="checkbox"/>	Forest stand improvement				
	<input type="checkbox"/>	Establishment or maintenance of protected areas				
	<input type="checkbox"/>	Other, specify below				

### 17.4 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue		
Operational expenditure		
Transfer payments		

Other general comments to the table