



**Forestry Department**

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

**GLOBAL FOREST RESOURCES  
ASSESSMENT 2010**

**COUNTRY REPORT**

**SRI LANKA**

FRA2010/197  
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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
Legg and Jewell. 1995. A 1:50.000 scale Forest Map of Sri Lanka: The basis for National Geographic System. Christopher Legg and Nicholas Jewell. The Sri Lanka Forester. Special Issue 1995.	H	Vegetation types & canopy cover	1992	Satellite imageries and aerial photos taken in 1992 and field checking
GOSL. 2000. Forest Cover Mapping 2000. Forest Inventory Division. Forest Department. Sri Lanka	H	Vegetation types & canopy cover	1996	Satellite imageries and aerial photos taken in 1996 and field checking
FAO. 1996. Sri Lanka Profile, In Asia Pacific Agroforestry Profiles: Second Edition. RAP Publication 1996/20. Asia – Pacific Agroforestry Network. FAO. Bangkok.	M	Land use type & extent	1994	
CBSL.2004. Sri Lanka Socio-Economic Data 2004, Vol Xxvii, Central Bank Of Sri Lanka, June 2004	M	Rubber Plantation	1978-2003	

GOSL. 1999. Biodiversity Conservation in Sri Lanka – A framework for Action, Ministry of Forestry & Environment Sri Lanka	M	Definitions		
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## 1.2.2 Classification and definitions

National class	Definition
<b>Closed Canopy Forests</b>	All lands, with a forest cover with canopy density of 70 percent or above
a. Montane Forest	Altitude 1500 – 2500 m. Annual rainfall 2500 – 5000 mm. No dry months
b. Sub-Montane Forest	Altitude 1000 – 1500 m. Annual rainfall 2500 – 5000 mm. No dry months
c. Lowland Forest (Tropical Wet Evergreen Forest)	Altitude 0 – 1000 m. Annual rainfall 2500 – 5000 mm. No dry months
d. Moist Monsoon Forest (Moist Evergreen Forest)	Altitude 0 – 1000 m. Annual rainfall 1900 – 2500mm. Less than 3 dry months
e. Dry Monsoon Forest (Dry Mixed Evergreen Forest)	Altitude 0 – 500 m. Annual rainfall 1250 – 1900 mm. 4-5 dry months
f. Riverine Forest	Forests found along the rivers and streams
g. Mangrove Forest	Area covered by Mangrove Vegetation
<b>Open Canopy Forests</b>	<b>All lands, with a forest cover with canopy density less than 70 percent</b>
a. Sparse Forests	

(Source: Biodiversity Conservation in Sri Lanka – A framework for Action, Ministry of Forestry & Environment – 1999)

## 1.2.3 Original data

### Land Use in Sri Lanka (1994)

Land category	Specific land use	Ha
<b>Urban Land</b>		
	Built-up land	22,640
	Associated non-agricultural land	7,319
<b>Agricultural land</b>		
	Homesteads	781,280
	Tree & Other Perennial Crops	

	Tea	201,630
	Rubber	166,500
	Coconut	332,140
	Cinnamon	8,880
	Cashew	580
	Oil-palm	1,070
	Other perennial crops	54,740
<b>Crop land</b>		
	Paddy	494,460
	Sparsely used cropland	1,069,990
	Other crop land	599,110
<b>Forestland</b>		
	Natural Forest	
	Dense forest	1,582,700
	Open forest	463,800
	Forest Plantations	72,300
<b>Range land</b>		
	Scrub land	205,630
	Grass land	91,190
<b>Wet land</b>		
	Forested	
	<b>MANGROVES</b>	20,150
	Non-forested	
	Marsh	42,400
<b>Water</b>		290,520
<b>Barren land</b>		77,480
<b>Total</b>		<b>6,586,509</b>

(Source: Asia – Pacific Agroforestry Profiles: Second Edition, Sri Lanka Profile, Asia – Pacific Agroforestry network)

### Area of Natural Forest by National Classes, 1992 & 1996

Forest Class	1992 (ha)	1996 (ha)
Montane Forest	<b>3,108</b>	3,099
Sub-montane Forest	68,838	65,792
Lowland Rain Forest	141,549	124,340
Moist Monsoon Forest	243,877	221,977
Dry Monsoon Forest	1,094,287	1,027,544
Riverine Dry Forest	22,411	18,352
Mangroves	8,687	9,530
Sparse Forest	463,842	471,583
Forest Plantations Excluding Rubber	72,340	79,940
<b>Total Forest Area</b>	<b>2,118,940</b>	<b>2,022,160</b>
<b>Total Land Area</b>	<b>6,586,509</b>	<b>6,616,628</b>

### Area of Rubber Plantations

Category	1978	1997	1998	1999	2000	2001	2002	2003
Main Agricultural Crops								
Rubber Plantations (000 ha)	226	158	158	159	157	157	157	129

(Source: Sri Lanka Socio-Economic Data 2004, Vol Xxvii, Central Bank Of Sri Lanka, June 2004)

### 1.3 Analysis and processing of national data

#### 1.3.1 Calibration

The calibration step was implemented as country land area figures did not match with the FAOSTAT. The forests figures were kept intact and all necessary adjustments were made in the area of “Other lands”. Further, the area of inland water bodies was taken as maintained by FAOSTAT. All the forest classes listed in 1992 and 1996 were classified as “forests”. However to match country definition the rubber plantation areas were not included in the area under forests.

FRA Categories	Area (1000 hectares)	
	1992	1996
Forest excluding rubber	2119	2022
Other Wooded Land	0	0
Other Land	4,344	4,441
.....of which with tree cover	1,115	n.a.
Inland water bodies	98	98
<b>TOTAL</b>	<b>6,561</b>	<b>6,561</b>

#### 1.3.2 Estimation and forecasting

##### A. Excluding Rubber Plantations

The available data provides information for 1992 and 1996. Therefore, figures for 1990 and 2000 were estimated using linear-interpolation and the figure for 2005 was forecasted using linear extrapolation. To match national definitions the area of rubber plantation was included.

FRA Categories	Area (1000 hectares)		
	1990	2000	2005
Forest excluding rubber	2167	1925	1804
Other Land	4296	4538	4659
Inland water bodies	98	98	98
<b>TOTAL</b>	<b>6,561</b>	<b>6,561</b>	<b>6,561</b>

##### B. Rubber Plantations

The estimate of area in 1990 under rubber trees was developed by linear interpolation method. The information for 2000 was directly available in the original data. Based on personnel communication of the National Correspondent with Rubber authorities, the figure for 2003 was taken as the figure for 2005.

Category	Area in 000 ha		
	1990	2000	2005
Rubber Plantations	183	157	129

##### C. Including Rubber Plantations

The area of rubber plantation was added to area of forest to match FRA definition of forests.

FRA Categories	Area (1000 hectares)		
	1990	2000	2005
Forests including rubber	2350	2082	1933
Other Wooded Land	0	0	
Other Land	4,113	4,381	4,530
.....of which with tree cover	n.a.	n.a.	n.a.
Inland water bodies	98	98	98
<b>TOTAL</b>	<b>6,561</b>	<b>6,561</b>	<b>6,561</b>

### 1.3.3 Reclassification into FRA 2010 categories

FRA Categories	Percentage allocation of a national category to FRA categories				
	Forests	Other Wooded land	Other Land	.... of which with tree cover	Inland water bodies
Forests including rubber	100	0	0	0	0
Other Wooded Land		100			
Other Land			100		
.....of which with tree cover				100	
Inland water bodies					100
<b>TOTAL</b>					

Data for 2010 were estimated using following information:

1. **Pilot study on change of Forest cover in selected districts (Kurunegala & Kaluthara Districts) from 1992 to 2008 – Information provided by GIS unit of the Forest Department and personal communication with the staff of GIS unit.**
2. **Information and data available on forest boundary survey carried under ADB funded Forest Resources Management Project**
3. **Recorded Encroachment Reports during 2005 – 2008**
4. **Forest Range Plans prepared for each range**
5. **Personal Communications with the staff of the Forest Department**
6. **Land use plans prepared at each Divisional Secretary division in Sri Lanka**

Based on above information and expert consultations, it was revealed that trend of declining of forest land reported in FRA 2005 was unacceptably high. One reason identified for this is the inaccuracy of calculations of GOSL Forest Cover Mapping 2000 published with satellite imageries taken in the year 1996. In addition, pilot studies carried out with 2008 satellite imageries have proven this hypothesis and indicated that it is less than 50% of the trend reported in 2005. Therefore, to attain more reasonable figure for 2010, 50% of declining rate of the 2005 trend forest land was used.

Accordingly following extents were estimated.

FRA Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest excluding rubber	2167	1925	1804	<b>1743</b>
Other Land	4296	4538	4659	<b>4720</b>
Inland water bodies	98	98	98	<b>98</b>
<b>TOTAL</b>	<b>6,561</b>	<b>6,561</b>	<b>6,561</b>	<b>6,561</b>

As per the statistical hand book-2007 prepared by Department of census and statistics, Sri Lanka the extent of Rubber plantations in Sri Lanka are as follows:

Year	2002	2003	2004	2005	2006
Extent	114,681	114,681	114,681	115,823	116,478

Based on personal communications with the officials of Ministry of Plantation Industries and the Rubber Research Institute, Sri Lanka an extent of 117,000 ha was agreed for the year 2010.

Accordingly figures for T-1 were estimated.

#### 1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	2 350	2 082	1 933	1 860
Other wooded land	0	0	0	0
Other land	4 113	4 381	4 530	4 603
...of which with tree cover				
Inland water bodies	98	98	98	98
<b>Total for country</b>	<b>6 561</b>	<b>6 561</b>	<b>6 561</b>	<b>6 561</b>

#### 1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest		
Other wooded land	There may exist areas of other wooded land but the extent cannot be estimated from available data and any such areas are included under the other categories.	

Other land		
Other land with tree cover		
Inland water bodies		

**Other general comments to the table**

1. The country does not consider rubber as part of forests. The above table has been developed for the purposes of FRA only.

2. Coconut timber plays an important role in wood industry in Sri Lanka. It is considered as a multipurpose tree and grown in home gardens as well as large plantations.

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

Field inventory	-
Remote sensing survey / mapping	2009

## 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.
<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

Almost all natural forests and forest plantations in Sri Lanka are administered by the state. Two state agencies namely; the Forest Department and Department of Wildlife Conservation are the responsible institutions for forest administration and management. In addition, state plantation Corporation and Land Reform Commission are responsible for administration of less than 5% of state forests in Sri Lanka.

Rubber plantations which are owned by private companies and individuals are classified under private ownership group.

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Legg and Jewell. 1995. A 1:50.000 scale Forest Map of Sri Lanka: The basis for National Geographic System. Christopher Legg and Nicholas Jewell. The Sri Lanka Forester. Special Issue 1995.	H	Vegetation types & canopy cover	1992	Satellite imageries and aerial photos taken in 1992 and field checking
GOSL. 2000. Forest Cover Mapping 2000. Forest Inventory Division. Forest Department. Sri Lanka	H	Vegetation types & canopy cover	1996	Satellite imageries and aerial photos taken in 1996 and field checking
Administrative Reports	H	Different Land ownerships and extents		Reports issued by the Ministry of Lands

### 2.2.2 Classification and definitions

National class	Definition
<b>Forest Department</b>	<b>Areas gazetted under the provisions given in the Forest ordinance</b>
1. Conservation Forests	Forests allocated strictly for biodiversity conservation
2. Forest Reserves	Conservation and non-destructive uses
3. Proposed Forest Reserves	Forests to be gazetted as Reserved Forests
4. Other State Forests	Allocated for multiple purposes

<p><b>Department of Wildlife Conservation</b></p> <ol style="list-style-type: none"> <li>1. Strict Nature Reserves</li> <li>2. National Parks</li> <li>3. Nature reserves</li> <li>4. Jungle Corridors</li> <li>5. Sanctuaries</li> </ol>	<p><b>Areas gazetted under the provisions given in the Forest ordinance</b></p> <p>Forests allocated strictly for biodiversity conservation</p> <p>Area open for public and used for ecotourism activities Restricted visitor activities and focussed on Conservation</p> <p>Area that has been used to combine two or more areas administered by the Department of Wildlife Conservation</p> <p>Both public and privately owned lands where development activities controlled under Fauna &amp; Flora protection Ordinance (Wildlife Ordinance)</p>
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### 2.2.3 Original data

The data recorded in Table T1 was used as the original data source

### 2.3 Analysis and processing of national data

No analysis and calibration is needed as data were directly transferred from the table T1

### 2.4 Data for Table T2

**Table 2a - Forest ownership**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	2 167	1925	1804
Private ownership	183	157	129
...of which owned by individuals	n.a.	n.a.	n.a.
...of which owned by private business entities and institutions	n.a.	n.a.	n.a.
...of which owned by local communities	n.a.	n.a.	n.a.
...of which owned by indigenous / tribal communities	n.a.	n.a.	n.a.
Other types of ownership	0	0	0
<b>TOTAL</b>	<b>2 350</b>	<b>2 082</b>	<b>1 933</b>

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 checked="" type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If <b>No</b> 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	2 167	1925	1804
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
<b>TOTAL</b>	2 167	1925	1804

## 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

Although official data are not available, there are very small extents of private forest lands managed by private individuals and companies. A survey will be conducted to estimate the figure by 2010.

### 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
FSMP. 1995. Forestry Sector Mater Plan. Sri Lanka	M	Plantation Areas	1992	
GOSL. 2003. Forest Department Annual Report - 2003	H	Plantation Areas	2003	
UNEP_WCMC. 2005. The World Database on Protected Areas (WDPA).	H	Protected Areas	2004	

Legg and Jewell. 1995. A 1:50.000 scale Forest Map of Sri Lanka: The basis for National Geographic System. Christopher Legg and Nicholas Jewell. The Sri Lanka Forester. Special Issue 1995.	H	Vegetation types & canopy cover	1992	
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### 3.2.2 Classification and definitions

National class	Definition
<b>Area with Forest Department</b>  <b>FOREST RESERVE</b>  Proposed Reserve  National Heritage Wilderness Area	Forest areas administered by the Forest Department  Natural Forest areas which, have been gazetted as Forest Reserves & Forest Plantations  Natural Forest areas pending to be gazetted as Forest Reserves  Forest Lands declared under National Heritage Wilderness Area Act
<b>Area with Department of Wildlife Conservation</b>  <b>JUNGLE CORRIDORS</b>  National Parks  Nature Reserves  Sanctuaries  Strict Natural reserves	Areas declared under the Flora & Fauna Protection Ordinance and administered by the Department of Wildlife Conservation  Area that has been used to combine two or more areas administered by the Department of Wildlife Conservation  Area open for general public and used for ecotourism development activities  Restricted visitor activities and mainly focus on Biodiversity Conservation  Both private and public land where development activities are controlled  Areas strictly reserved for Biodiversity conservation and only research works are allowed

### 3.2.3 Original data

National statistics are not maintained by designation of forests as given in FRA categories and definitions. However, areas administered by the Department of Wildlife Conservation Department could be further classified according to the objectives of management. Areas under Forest Department can also be broadly categorised into three categories based on management objectives.

## A. Forest Plantations Excluding Rubber

The main production activity in forest areas in Sri Lanka is confined to plantation areas. The following table provides the area under plantations in 1995 based on FSMP (1995) and Legg and Jwell (1995).

Species	Extent in 000 ha
Conifers	16.8
Eucalyptus and Acacias	16.2
Teak	35.3
Mahogany	4.0
<b>Total</b>	<b>72.3</b>

The above figures of area under plantations are being regularly updated by successive plantation inventories. The country information for FRA 2000 provides the following information by purpose of plantations in 1998 based on Plantation Management Plans of Pines, Eucalyptus, Teak and Mahogany.

Species	Area in 1998			
	Productive	Protective	Conservation	Total
Conifers	12.1	2.5	1.0	15.6
Eucalyptus	5.1	3.3		8.4
Teak	18.4	10.7	3.9	33.0
Mahogany	3.0	0.1		3.1
<b>Total</b>	<b>38.6</b>	<b>16.6</b>	<b>4.9</b>	<b>60.1</b>
<b>Percentage</b>	<b>64</b>	<b>28</b>	<b>8</b>	<b>100</b>

The forest statistics provides following information on plantations in for 2003

Species	Area in 000 ha
Conifers	16.4
Eucalyptus and Acacias	27.5
Teak	31.7
Mahogany	2.8
Miscellaneous	14.5
<b>Total Including Misc.</b>	<b>93.0</b>
<b>Total Excluding Misc.</b>	<b>78.5</b>

## B. Area of Rubber plantations

The information from Table T1 has been used.

## C. Conservation of Biodiversity

The protected area details at the website of UNEP-WCMC provides following information on PAs in Sri Lanka.

Year	Area in ha.	Year	Area in ha.	Year	Area in ha.
1875	6,283	1931	493	1992	3,125

1888	150	1932	7,03 0	1998	-45
1890	5,455	1933	379	Till 2000	551,571
1892	6,163	1935	7,536		
1893	1,747	1936	5,540		
1894	861	1937	506		
1895	24	1938	1,528		
1896	16,781	1939	21,165		
1897	196	1940	24,234		
1898	0	1941	4,367		
1899	86	1942	26,580		
1901	458	1943	539		
1902	47,259	1944	5,664		
1903	636	1946	2,746		
1912	8,730	1948	103		
1918	145	1949	73		
1921	122,500	1950	2,520		
1922	285	1970	10,360		
1924	3,313	1978	1,372		
1927	82,225	1979	45		
1929	110,881	1980	3,416		
1930	8,117	Till 1990	548,491		

### 3.3 Analysis and processing of national data

#### 3.3.1 Calibration

#### 3.3.2 Estimation and forecasting

##### A. Forest Plantation Excluding Rubber

The net plantation area has been calculated using the ratio (0.83) between the areas of plantations contained in management plans for plantations and reported in FSMP. Further, the ratio of production, protective and conservation plantations from management plans has been used to break down the net plantation figure into these categories. Lastly linear interpolation and extra-polation method has been used to estimate following figures for 1990, 2000 and 2005 and 2010.

Variable	1992	2003	1990	2000	2005	2010
Gross Total Plantation Area (000 ha)	72.3	78.5	71.2	76.8	79.6	82.4
Ratio Net/Total	0.83	0.83	0.83	0.83	0.83	0.83
Net Total Plantation Area (000 ha)	60.0	65.2	59.1	63.8	66.1	68.4
Production Plantation (000 ha)	38.4	41.7	37.8	40.8	42.3	43.8
Protective Plantation (000 ha)	16.8	18.2	16.5	17.9	18.5	19.1
Conservation Plantation (000 ha)	4.8	5.2	4.7	5.1	5.3	5.5

##### B. Rubber Plantation

These plantation has been treated as productive plantation.

Variable	Area in 000 ha			
	1990	2000	2005	2010
Rubber Plantations	183	157	129	117

### C. Protected Area

The 2005 forecast has been developed through linear extra-polation method. It has been assumed that all the area is forested with more than 10 percent cover. 2010 is assumed the same as 2005.

Variable	Area in 000 ha			
	1990	2000	2005	2010
Protected Areas	548.5	551.6	553.15	553.15

### D. Forests for Protection of Soil and Water

The area of protective plantations has been used for this purpose.

### D. Remaining forest

The total forest area except that under plantations and protected areas has been assumed to serve multiple purpose function.

## 3.3.3 Reclassification into FRA 2010 categories

### A. Primary Function

National Category	Percentage allocation of a National Class to FRA Categories- Primary Function					
	Production	Protection	Conservation	Social Service	Multipurpose	No o r Unknown
Production Plantation	100					
Protective Plantation		100				
Conservation Plantations			100			
Protected Areas			100			
Rubber Plantations	100					
Remainder Forest Areas					100	

### 3.4 Data for Table T3

**Table 3a – Primary designated function**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	221	199	171	161
Protection of soil and water	17	18	19	19
Conservation of biodiversity	553	557	558	558
Social services	0	0	0	0
Multiple use	1559	1308	1185	1122
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
<b>TOTAL</b>	<b>2 350</b>	<b>2 082</b>	<b>1 933</b>	<b>1 860</b>

**Table 3b – Special designation and management categories**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	n.a.	n.a.	n.a.	n.a.
Forest area within protected areas	n.a.	n.a.	n.a.	n.a.
Forest area under sustainable forest management	n.a.	n.a.	n.a.	n.a.
Forest area with management plan	n.a.	n.a.	n.a.	n.a.

### 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		

Other general comments to the table

## 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
table 3				
FAO.2007. Mangroves of Asia, working paper 137		Mangroves		Secondary source
FAO. 2005. Thematic study on bamboo, Country report of Sri Lanka Working paper 137		Bamboo		Secondary source

## 4.2.2 Original data

Based on expert consultation national data on characteristics of forests (excluding rubber plantations) in Sri Lanka for 1992 & 1996 will be as follows;

National Data on the following	Forest	
	1992	1996
Primary	245	221

The area of plantations has been taken from Table 3

All remaining areas of forest (excluding primary forests and plantations)

Data for mangroves come from the FAO Atlas of Mangroves which reports the followings:

Mangroves area ha	1992	1996
	8 688	9 530

Original source 1992: 1992 8 800 WCMC. 2000. *Coral reefs and mangroves of the world*. ([http://www.wcmc.org.uk/marine/data/coral\\_mangrove/](http://www.wcmc.org.uk/marine/data/coral_mangrove/)) Data are based on analysis of satellite imagery as of early 1992. An additional 500-700 ha in stands <20 m wide may also exist. *Legg in litt*.

Original source 1996: 1996 9 530 GOSL. 2000. *Forest Cover Mapping 2000*. Forest Inventory Division. Forest Department. Sri Lanka X Satellite imageries and aerial photos taken in 1996 and field checking.

Data for bamboo comes from the FRA 2005 Thematic study on bamboo (Sri Lanka country report)

GBRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Bamboo on forest land			
Monopodial bamboo area	1,221.32	989.4	742.45
Sympodial bamboo area			
<b>TOTAL</b>	<b>1,122.32</b>	<b>989.4</b>	<b>742.45</b>

Data sources:

1988 Neela de Zoysa, Upeksha Hettige and K.Vivekanandan 1988. Some Aspects of Bamboo and its Utilization in Sri Lanka.:6-11. Bamboo Current research, Proc. International Bamboo Workshop, India

1991 P.A.Swarnamali and K.Vivekanandan 1991. The Bamboo Resource in Sri Lanka.: 37-40. Proc. 4<sup>th</sup> International Bamboo Workshop

## 4.3 Analysis and processing of national data

### 4.3.1 Calibration

### 4.3.2 Estimation and forecasting

The linear interpolation and extrapolation method was used to estimate and forecast the area of primary forests using the original data for 1992 and 1996.

Variable	Area in 000 ha			
	1990	2000	2005	2010
Primary Forest	257	197	167	167

Due to lack of updated figures the estimated 2005 figure of primary forest has been used also for 2010.

For mangroves linear interpolation for 1990 and linear extrapolation for 2000 and 2005 has been used. For 2010 due to lack of updated figures same figure as 2005 has been used.

For bamboo linear interpolation for 1990 and linear extrapolation for 2000 and 2005 has been used. For 2010 due to lack of updated figures same figure as 2005 has been used.

#### 4.4 Data for Table T4

**Table 4a**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	257	197	167	167
Other naturally regenerated forest	1 851	1 664	1 571	1 508
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
Planted forest	242	221	195	185
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
<b>TOTAL</b>	<b>2 350</b>	<b>2 082</b>	<b>1 933</b>	<b>1 860</b>

**Table 4b**

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	183	157	129	117
Mangroves (Forest and OWL)	9.109	11.214	12.267	12.267
Bamboo (Forest and OWL)	1 221	989	742	742

#### 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		
Bamboo	It might also include forest areas where bamboo not the dominant species.	

Other general comments to the table

## **5 Table T5 – Forest establishment and reforestation**

Data not available

## 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
FSMP. 1995. Forestry Sector Mater Plan. Sri Lanka.	H	Volume	1992	
National Forestry Inventory - 1986	H	Volume	1982-85	
FSMP. 1995. Forestry Sector Mater Plan. Sri Lanka.	H	Volume	1992	
GOSL. 1995. A summary of the Methodology and results of the Indicative Inventory, 1993. J.H. Sandom. Forest Management and Plantation Project (GOSL/ODA). Forest Department, GOSL, Colombo.	H	Volume		
Legg and Jewell. 1995. A 1:50.000 scale Forest Map of Sri Lanka: The basis for National Geographic System. Christopher Legg and Nicholas Jewell. The Sri Lanka Forester. Special Issue 1995.	H	Volume	1992	
GOSL. 2000. Forest Cover Mapping 2000. Forest Inventory Division. Forest Department. Sri Lanka	H	Volume	1996	

## 6.2.2 Classification and definitions

National class	Definition
Not available	

## 6.2.3 Original data

Forest Type	1992 (Legg and Jwell, 1995) (Area in ha)	1996 (GOSL, 2000) (Area in ha)	1984 and 1993 (NFI, 1986) and (GOSL, 1995) (cubic meter/ha)
Montane Forest	3,108	3,099	9
Sub-montane Forest	68,838	65,792	9
Lowland Rain Forest	141,549	124,340	126
Moist Monsoon Forest	243,877	221,977	29
Dry Monsoon Forest	1,094,287	1,027,544	15
Riverine Dry Forest	22,411	18,352	15
Mangroves	8,687	9,530	10
Sparse Forest	463,842	471,583	5
Forest Plantations Excluding Rubber	72,340	79,940	40

## 6.3 Analysis and processing of national data

### 6.3.1 Calibration

### 6.3.2 Estimation and forecasting

#### A. Growing stock per hectare in Forests without Rubber Plantations

Following estimation of growing stock have been made assuming that the growing stock density of 1986 of different forest types also to hold good for 1992 and 1996.

Variables	Volume 1992	Volume 1996
Total Growing Stock	47,605.27	44,063.45
Total Forest Area (000 ha) excluding rubber	2,119	2,022
<b>Growing Stock/ha</b>	<b>22.47</b>	<b>21.79</b>

This leads to following estimates of growing stock per hectare in forests (excluding rubber plantations) in 1990, 2000 and 2005.

Variables	1990	2000	2005	2010
Growing Stock (m <sup>3</sup> /ha) in Forests Excluding Rubber	22.80	21.12	20.28	19.41

#### B. Growing Stock per ha in Rubber Plantations

It has been assumed that growing stock per hectare in Rubber plantations in 1990, 2000 and 2005 is similar to that (40 m<sup>3</sup>/ha) in Forest plantations in 1986.

### C. Total Growing Stock in 1990, 2000 , 2005 and 2010

Variable	Growing Stock in million m <sup>3</sup>			
	1990	2000	2005	2010
Forest Excluding Rubber	49.43	40.66	36.59	33.83
Rubber Plantations	7.32	6.28	5.16	4.68
Total Forests	56.75	46.94	41.75	38.51

#### 6.3.3 Reclassification into FRA 2010 categories

#### 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	56.75	46.94	41.75	38.51	n.a.	n.a.	n.a.	n.a.
... of which coniferous					n.a.	n.a.	n.a.	n.a.
... of which broadleaved					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>			n.a.	n.a.	n.a.
2 <sup>nd</sup>			n.a.	n.a.	n.a.
3 <sup>rd</sup>			n.a.	n.a.	n.a.
4 <sup>th</sup>			n.a.	n.a.	n.a.
5 <sup>th</sup>			n.a.	n.a.	n.a.
6 <sup>th</sup>			n.a.	n.a.	n.a.
7 <sup>th</sup>			n.a.	n.a.	n.a.
8 <sup>th</sup>			n.a.	n.a.	n.a.
9 <sup>th</sup>			n.a.	n.a.	n.a.
10 <sup>th</sup>			n.a.	n.a.	n.a.
Remaining			n.a.	n.a.	n.a.
<b>TOTAL</b>			n.a.	n.a.	n.a.

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)	10 cm	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	10 cm	
Minimum diameter (cm) of branches included in growing stock (W)	10 cm	
Volume refers to “above ground” (AG) or “above stump” (AS)	AS	

## 6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock	Since there were no new updated national forestry inventory to provide information on growing stock, the data of national forestry inventory – 1986 has been used. These estimates have been updated with the help of the indicative inventory of 1993 and the management plans of forest plantations.	
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

### Other general comments to the table

There has been only one complete National Forest Inventory in 1986. It was spread over four years period from 1982 to 1985. Its data on volume in forest has been assumed to be from 1984 (one of the two mid years - 1983 and 1984).

The 1986 figures for Low land Rain Forests, Monsoon Forests and Dry Monsoon Forests have been upgraded with the help of information from indicative inventory of 1993. The indicative inventory figures were conservative to the extent that it estimates volume from trees above 30 cm diameter only.

Similarly figures for growing stock of various species in plantations has been updated with the help of information coming from their respective management plans.

<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
FAO. 2008. Guidelines for Country Reporting to FRA 2005. Global Forest Resources Assessment 2010				Biomass conversion and expansion factor (BCEF) and root-shoot ratio from Appendix 5 FRA guidelines

#### 7.2.2 Classification and definitions

National class	Definition
Not available	

#### 7.2.3 Original data

No national data on biomass were available so IPCC default values were applied to the growing stock as in table 6.

### 7.3 Analysis and processing of national data

#### 7.3.1 Estimation and forecasting

Above ground biomass:

Following recommendations from FRA guidelines the following assumptions and calculations have been made:

From appendix 5, table 5.4 pag 6 of the FRA guidelines and considering an ecological zone corresponding to the humid tropical the biomass conversion and expansion factor (BCEF) of 2.8 have been applied to the growing stock:

Below ground biomass :

From appendix 5, table 5.3 pag 5 of the FRA guidelines, considering an above ground biomass > 20t/ha and a tropical dry forest biome, the root-shoot ratio of 0.20 has been chosen.

	1990	2000	2005	2010
Growing stock (million m3)	56.75	46.94	41.75	38.51
BCEF	2.8	2.8	2.8	2.8
Aboveground biomass (million tonnes)	158.9	131.4	116.9	107.87
Root-shoot ratio	0.20	0.20	0.20	0.20
Belowground biomass	31.8	26.3	23.4	21.6

#### 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	158.9	131.4	116.9	107.87	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	31.8	26.3	23.4	21.6	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
FAO. 2008. Guidelines for Country Reporting to FRA 2005. Global Forest Resources Assessment 2010				Carbon conversion factor of 0.47

#### 8.2.2 Classification and definitions

National class	Definition
Not available	

#### 8.2.3 Original data

No original data on carbon were available, so the carbon conversion factor of 0.47 recommended in the FRA guidelines has been applied to the biomass as coming from table 7.

Carbon in litter has been estimated using table 5.9 of Appendix 5 of the FRA 2010 Guidelines considering a default value of 2.1t/ha.

### 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	74.68	61.76	54.94	50.7	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	14.95	12.36	11	10.15	n.a.	n.a.	n.a.	n.a.
<b>Sub-total: Living biomass</b>	<b>89.63</b>	<b>74.12</b>	<b>65.94</b>	<b>60.85</b>	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	4.9	4.4	4	3.9	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.
<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
Reports from Field Staff & Annual Administration reports	H	<b>EXTENT DAMAGED BY FIRE</b>	1990 2000 2005	All forest fires in Sri Lanka are human originated. Fire is not used as a management tool.

#### 9.2.2 Classification and definitions

National class	Definition
Forest fire	Fire recorded within a boundary of a land administered by the Forest Department

#### 9.2.3 Original data

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire	0.032	0.026	0	0

### 9.3 Analysis and processing of national data

#### 9.3.1 Calibration

#### 9.3.2 Estimation and forecasting

### 9.3.3 Reclassification into FRA 2010 categories

## 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						
... of which on forest	0.032	n.a.	0.026	n.a.	n.a.	n.a.
... of which on other wooded land						
... of which on other land						

Table 9b

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

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	All forest fires recorded in Sri Lanka are due to the human activities. Fire is not used as a management tool in Sri Lanka	

Other general comments to the table

## 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
Reports from Field Staff & Annual Administration reports	H	<b>EXTENT DAMAGED DUE TO DROUGHT</b>		

#### 10.2.2 Classification and definitions

National class	Definition
Not available	

#### 10.2.3 Original data

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by drought	0.018	0.027	0.211	0.119

### 10.3 Analysis and processing of national data

#### 10.3.1 Reclassification into FRA 2010 categories

National Category	Disturbances by abiotic factors
	Disturbance by draught

### 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	0.084	0.065	n.a.
<b>Total area affected by disturbances</b>	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)
<i>Alstonia macrophylla</i>	No data available
<b>Total forest area affected by woody invasive species</b>	

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	Almost all mature teak plantations are subjected to Teak skeletornizer attack but it is not considered as a major problem in economic terms	
Disturbance by diseases		
Disturbance by other biotic agents		
Disturbance caused by abiotic factors		
Major outbreaks		
Invasive species	There are number of invasive species appearing in the forest edges but damage is not up to the assessable level.	

#### Other general comments to the table

Apart from some fire damages due to human interventions, some small extents of young plantations have been reported to be damaged due to drought conditions.

## 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
FAOSTAT. FAO, Rome	m	Removals	1988 to 2002	

#### 11.2.2 Classification and definitions

National class	Definition
	No national definitions are available.

#### 11.2.3 Original data

The following data has been taken from FAOSTAT.

##### A. Industrial Wood (under bark)

1988	1989	1990	1991	1992	1998	1999	2000	2001	2002
695	711	658	637	656	631	636	676	694	694

2003	2004	2005	2006
694	694	694	694

##### B. Wood fuel (under bark)

1988	1989	1990	1991	1992	1998	1999	2000	2001	2002
6360	6380	6349	9226	9002	6004	5955	5907	5840	5774

2003	2004	2005	2006
5710	5646	5584	5584

Variables	Values SLR per cubic meter		
	1990	2000	2005
Industrial roundwood	4023	5369	5998
Woodfuel	402	580	603

### 11.3 Analysis and processing of national data

#### 11.3.1 Estimation and forecasting

The five year average has been developed after converting the under bark figures to over bark figures using a multiplier (1.15) as suggested in FRA 2005 guidelines. The forecast for 2005 has been made using linear-extrapolation method.

#### 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.)	772	766	763	8 583	6 780	6 476
... of which from forest	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unit value (local currency / m <sup>3</sup> o.b.)	4023	5369	5998	402	580	603
Total value (1000 local currency)	3 105 756	4 112 654	4 576 474	3 450 366	3 932 400	3 905 028

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	Sri Lankan Rupees	Sri Lankan Rupees	Sri Lankan Rupees

#### 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		

Other general comments to the table

## 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
<b><u>Plant products / raw material</u></b>
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
<b><u>Animal products / raw material</u></b>
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

The quantitative information available on traditional non-wood forest products in Sri Lanka is very limited. Unlike in many other countries in the region, peoples' dependency on NWFP is found to be minimal. Availability of other income sources and less market demand is the main reasons which discourage people engaging in collection of NWFPs. Although there had been number of studies carried out, they were found to be confined to specific sites, and no quantitative data available.

The given information was extracted from available studies which are confined to some selected forest types.

Surprisingly, resin produced from exotic Pines has become the most valuable NWFP in the country. Pinus was introduced to Sri Lanka in the middle of the last century as a plantation species suitable for highly degraded lands.

### 12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Sri Lanka Non-Wood Forest Products in 15 countries of Tropical Asia – An Overview. September 2002. 153-162 EC-FAO Partnership Programme (2000 – 2002)	M	Forest Types Different NWFPs	1995	Information available are based on different studies but confined to selected geographical areas.
Bandaratilleke, H.M. 1995 Use of non-wood forest products by village communities in Sri Lanka. Beyond Timber: Social, Economic and Cultural Dimensions of Non-Wood Forest Products in Asia and the Pacific. Proceedings of a Regional Expert Consultation FAO/RAP, Bangkok: 291- 306	M	Forest Types Different NWFPs	1995	Information available are based on different studies but confined to selected geographical areas.

### 12.2.2 Classification and definitions

The Forest Ordinance of Sri Lanka has defined following materials as non-wood forest products:

National class	Definition
Plant Products	Leaves, Flowers and Fruits, Seeds, Juice, Catechu, Wood Oil, Resin, Natural Varnish, Bark, Lac, Gum and Myrabolants
Plants	Plants that are not trees, including grass, creepers, reed, moss and all parts or produce of such plants
Animal Products	Tusk horns, shed horns, and edible bird nests
Others	Peat, Surface soil, rocks and minerals including limestone, laterite, bitumen, bituminous shale, asphalt, mineral oils and all products of mines and quarries

### 12.2.3 Original data

According to the available information, it is rather difficult to draw up a national level conclusion on traditional NWFP in Sri Lanka. The data available are very much confined to the interest of different researchers and are highly localised. No periodic studies have been carried out in order to study the trends. Since there is no sufficient quantitative information is available, it is not possible to meet the requirements of T12 of the FRA 2010.

The most important traditional non-wood forest products in Sri Lanka are rattan, bamboo, medicinal plants and treacle and jaggery made of Kitul plant (*Caryota urens*) etc.

### 12.3 Analysis and processing of national data

Quantitative figures are given only for Resin production, which is a non-traditional NWFP for Sri Lanka.

### 12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1 <sup>st</sup>	Resin	<i>Pinus caribaea</i>	Metric Tons	2228	192,990*	4
2 <sup>nd</sup>	Rattan	<i>Calamus spp</i>	m	n/a		5
3 <sup>rd</sup>	Bamboo		m	n/a		5
4 <sup>th</sup>	Wild fruits & Edible plants		kg	n/a		1
5 <sup>th</sup>	Medicinal Plants		kg	n/a		3
6 <sup>th</sup>	Treacle & Juggery	<i>Caryota urens</i>	kg	n/a		1
7 <sup>th</sup>	Bee Honey		lt	n/a		11
8 <sup>th</sup>	Bush meat		kg	n/a		12
9 <sup>th</sup>	Ornamental Plants		no			
10 <sup>th</sup>						
All other plant products						
All other animal products						
<b>TOTAL</b>						

\* Amount earned by private companies by exporting raw material (resin)

	2005
Name of local currency	Sri Lankan Rupee

### 12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	
Other plant products	
Other animal products	
Value by product	
Total value	

Other general comments to the table
As mentioned earlier lack of sufficient data is the main constraint in reporting for table T12

## 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
Annual Records – Forest Department	H	No of employees	1990 & 2000	Includes staff categories belonging to all three categories defined above
Annual Records – Department of Wild Life Conservation	H	No of employees	1990 & 2000	Includes staff categories belonging to two categories (2 & 3) defined above
Annual Records – State Timber Corporation	H	No of employees	1990 & 2000	Includes staff categories belonging to two categories (1 & 3) defined above

#### 13.2.2 Classification and definitions

There are no national definitions that match FRA definitions. Therefore following classification was used:

National class	Definition
Forestry Field Staff	Forest Department field staff involved in establishment, maintenance and management of forest plantations and protection of natural forests
Wild Life Field Staff	Staff of the Department of Wild Life Conservation assigned to the duties at Protected areas administered by the Department of Wild Life Conservation
Field Staff of the State Timber Corporation	Staff of the State Timber Corporation assigned to the duties at felling areas of forest plantations

#### 13.2.3 Original data

Organization	1990	2000
Forest Department	1280	2400
State Timber Corporation	1200	2432

### 13.3 Analysis and processing of national data

#### 13.3.1 Calibration

No calibration is needed as direct information is available

#### 13.3.2 Estimation and forecasting

Organization	1990	2000	2005
Forest Department	1280	2400	2319
State Timber Corporation	1200	2432	2386
Department of Wildlife Conservation	480	564	792

#### 13.3.3 Reclassification into FRA 2010 categories

Organization	Primary production of goods
Forest Department	100
State Timber Corporation	100

### 13.4 Data for Table T13

FRA Category	Full Time Employment (1000 person-years)		
	1990	2000	2005
<b>Employment in primary production of goods</b>	2.48	4.8	4.6
...of which paid employment	2.48	4.8	4.6
... of which self-employment	0	0	0
<b>Employment in management of protected areas</b>	0.48	0.56	0.79

### 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		
Paid employment / self-employment		
Employment in management of protected areas		

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)			
<b>Forest policy statement with national scope</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement	1995	
	Reference to document	National Forestry Policy	
<b>National forest programme (nfp)</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country		
	Starting year		
	Current status	<input type="checkbox"/>	In formulation
		<input type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
<input type="checkbox"/>		Process temporarily suspended	
Reference to document or web site			
<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	1907	
	Year of latest amendment	1995	
	Reference to document	<b>Forest Ordinance 1907 (No. 16 of 1907).</b>	

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
	X	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
	X	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	
National forest programme (nfp)	
Law (Act or Code) on forest with national scope	
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	<b>Minister of Environment &amp; Natural Resources</b>	
Level of subordination of Head of Forestry within the Ministry		1 <sup>st</sup> level subordination to Minister
	<b>X</b>	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	<b>Department of Wildlife Conservation</b>	
Institution(s) responsible for forest law enforcement	<b>Forest Department</b> <b>State Timber Corporation*</b> <b>Sri Lanka Police Department</b> <b>District Secretaries* – Administrative Head at District</b> <b>Divisional Secretaries* – Administrative Head at administrative Division</b> <b>Grama Niladhari* – Administrative Head at Village – smallest administrative unit</b>	

\* - relevant chapters of the Forest Law

**Table 15b – Human resources**

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	2418	12	2319	10	2483	10
...of which with university degree or equivalent	22	40	24	40	26	40

## 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	There are organizations under the ministry of Environment and Natural Resources. They are: 1.Forest Department 2.Department of Wildlife Conservation 3.Central Environmental Authority 4.State Timber Corporation 5.Geological Survey & Mining Bureau 6.Marine Pollution Prevention Bureau	
Level of subordination of Head of Forestry within the Ministry	Secretary to the Ministry is superior to the heads of the institutions	
Other public forest agencies at national level	Department of Wildlife Conservation is responsible for administration of about 40% total forest land in the country. This includes Wildlife Parks and Sanctuaries.	
Institution(s) responsible for forest law enforcement	Legal provisions related to timber transport and forest encroachments etc have given to local administrative heads in order to ensure the smooth implementation of law.	
Human resources within public forest institutions	Only forestry field staff is included	

**Other general comments to the table**

Staff attached to supporting services are not considered.

## 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 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
Administration Report of the Director – Sri Lanka Forestry Institute	H			
Annual Reports of University of Peradeniya	H	No of graduates	2000	
Annual Reports of University of Sri Jayawardanapura	H			
Same as above	H	No of graduates	2005	
Same as above	H	No of graduates	2008	

### 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*	10	60	10	40	10	50
Bachelor's degree (BSc) or equivalent*	33	50	35	60	34	62
Forest technician certificate / diploma#	35	0	34	0	0	0

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)	1	0	1	0	2	0
Master's degree (MSc) or equivalent	2	0	2	0	3	50
Bachelor's degree (BSc) or equivalent	4	0	3	0	1	0

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.

#### 16.4 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	There is only one University of Sri Lanka which offers BSc and MSc in Forestry and Environmental Science	*- MSc & BSc in Forestry & Environmental Science #-Graduates from Sri Lanka Forestry Institute
Professionals working in public forest research centres		There are two research stations functioning under the Forest department. At present, 2 PhD holders 3 MSc holders and 1 BSc graduate are employed as Research Officers.

#### Other general comments to the table

Graduates employed in supporting services are not considered for the reporting.

## 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
1. Annual Budgets	H	I. Category II. Allocation (SL Rupees)	2000 2005	Allocation indicated under each budget category considered
1. Administration Reports 2. Reports to the Treasury	H	I. Category II. Revenue (SL Rupees)	2000 2005	Revenue collected under each category considered

#### 17.2.2 Classification and definitions

National class	Definition
Forest revenue (As defined in the Forest Ordinance)	Revenue collected from issuing permits for timber depots, sale of planting material, sale of leaflets and other forest extension material, visitor charges to protected areas, royalty paid on plantation harvesting, maintenance of quarries etc within the forest boundary

### 17.3 Data for Table T17

**Table 17a - Forest revenues**

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	238,499	312,897

**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	205,000	362,270	81,000	394,567	311,000	770,834
Transfer payments	0	0	25,000	14,000	25,000	14,000
<b>Total public expenditure</b>	205,000	362,270	106,000	408,567	336,000	784,834
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input checked="" type="checkbox"/>	Reforestation				
	<input checked="" type="checkbox"/>	Afforestation				
	<input type="checkbox"/>	Forest inventory and/or planning				
	<input checked="" type="checkbox"/>	Conservation of forest biodiversity				
	<input checked="" type="checkbox"/>	Protection of soil and water				
	<input type="checkbox"/>	Forest stand improvement				
	<input checked="" 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		Revenue to the state is reported. The total income earned by private sector (eg. Tourism activities etc) is not reflected here.
Operational expenditure		Include expenditure on supporting staff (salaries and wages) employed in Forestry institutions
Transfer payments		Incentives paid to the communities and community organizations for involvement of Forestry related activities

Other general comments to the table