



**Forestry Department**

Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES  
ASSESSMENT 2010

COUNTRY REPORT

FINLAND

FRA2010/069

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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.

## Contents

INTRODUCTION.....	5
1 TABLE T1 – EXTENT OF FOREST AND OTHER WOODED LAND.....	8
2 TABLE T2 – FOREST OWNERSHIP AND MANAGEMENT RIGHTS.....	13
3 TABLE T3 – FOREST DESIGNATION AND MANAGEMENT.....	17
4 TABLE T4 – FOREST CHARACTERISTICS.....	23
5 TABLE T5 – FOREST ESTABLISHMENT AND REFORESTATION.....	26
6 TABLE T6 – GROWING STOCK.....	28
7 TABLE T7 – BIOMASS STOCK.....	31
8 TABLE T8 – CARBON STOCK.....	33
9 TABLE T9 – FOREST FIRES.....	36
10 TABLE T10 – OTHER DISTURBANCES AFFECTING FOREST HEALTH AND VITALITY.....	39
11 TABLE T11 – WOOD REMOVALS AND VALUE OF REMOVALS.....	42
12 TABLE T12 – NON-WOOD FOREST PRODUCTS REMOVALS AND VALUE OF REMOVALS...	44
13 TABLE T13 – EMPLOYMENT.....	46
14 TABLE T14 – POLICY AND LEGAL FRAMEWORK.....	48
15 TABLE T15 – INSTITUTIONAL FRAMEWORK.....	50
16 TABLE T16 – EDUCATION AND RESEARCH.....	52
17 TABLE T17 – PUBLIC REVENUE COLLECTION AND EXPENDITURE.....	54

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## **Introduction**

The most important data source for FRA 2010 is the Finnish National Forest Inventory (NFI) at the Finnish Forest Research Institute (Metla). Another significant information source for FRA 2010 is the official Finnish forestry statistics (at Metla). It collects information from several sources, in addition to NFI, from other units of Metla, Metsähallitus, Finnish Forest Industries, Finnish Ministry of Environment and from other research institutes, e.g., Finnish Game and Fisheries Research Institute.

## **National Forest Inventory of Finland**

The National Forest Inventory of Finland (METLA) has produced large-area forest resource information since 1921. So far (2004), 9 inventories have been completed (1:1921-1924, 2:1936-38, 3:1951-53, 4:1960-63, 5:1964-70, 6:1971-76, 7:1977-84, 8:1986-1994, 9:1996-2003). The tenth inventory began in 2004 and the field work was completed in 2008. The design of the 10<sup>th</sup> NFI was changed from the previous inventory so that each year one fifth of the plots of the entire plot grid was measured. The previous inventories were done by regions. The traditional role of the NFI has been to produce objective and up-to-date information on the Finland's forests resources, forest health conditions, forest biodiversity, forest carbon pools and their development for national and regional decision making.

The number of field plots in the entire country in one inventory since 1964 has been about 85 000 on land and about 70 000 on forestry land. Field plots cover all land use classes. The plot density in the country is adapted to the variability of forests. About one fifth of the field plots have been measured as permanent since 1992. PPS sampling is applied for selecting the tallied trees using a Bitterlich relascope with basal area factor of 2 (Southern part of the country) and 1.5 (Northern part of the country). FAO FRA land use class definitions have been applied in the field measurements since 1998, simultaneously with the national definitions.

## **National Data and Reclassification**

The information collected in the National Forest Inventory is stored into a database. Inventory results are published by regions and for the entire country in the specific publications and in the Finnish Statistical Yearbook of Forestry. National and international statistics are calculated for different purposes on the basis of definitions and requirements.

For the FRA 2010 reporting, there was no need for reclassification for 2000 and 2005 data due to the fact that FAO FRA definitions are applied in the field, parallel with national classifications. A reclassification was applied to 1990 data in area and growing stock tables.

## **The Finnish Forest Research Institute (METLA)**

Metla (Finnish Forest Research Institute) is an impartial state research institute, founded in 1917. Metla is subordinated to the Ministry of Agriculture and Forestry. Research work has

been organised into about 230 projects. Primary research problems have combined under problem-oriented research programmes, e.g. National Forest Inventory.

Metla's mission is to promote, through research, the ecologically, economically and socially sustainable development of the forests and forestry. Metla conducts research and generates research information about the forest nature and environment, the different uses of forests, and about forestry and the forest cluster. Metla's activities are characterised by customer- and problem-orientation. Metla has a staff of about 900 people, 330 of these being researchers.

## List of references

### NFI10 results

<http://www.metla.fi/metinfo/vmi/> [In Finnish]

Korhonen, K.T., Ihalainen, A., Heikkinen, J., Henttonen, H. & Pitkänen, J. 2007. Suomen metsävarat metsäkeskuksittain 2004 – 2006 ja metsävarojen kehitys 1996 – 2006. Metsätieteen Aikakauskirja 2B/2007.

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Korhonen, K.T., Tomppo, E., Henttonen, H., Ihalainen, A. & Tonteri, T. 2000a. Lounais-Suomen metsäkeskuksen alueen metsävarat ja niiden kehitys 1965–98. Metsätieteen aikakauskirja. 2B/2000: 337-411.

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- Tomppo, E., Korhonen, K.T., Ihalainen, A., Tonteri, T., Heikkinen, J. & Henttonen, H. 1999d. Ålands skogar och deras utveckling 1963-1997. Metsätieteen aikakauskirja. 4B/1999: -785-849.
- Tomppo, E., Korhonen, K.T., Ihalainen, A., Tonteri, T., Heikkinen, J. & Henttonen, H. 2000. Skogstillgångarna inom Kustens skogscentral och deras utveckling 1965-98. Metsätieteen aikakauskirja IB/2000:83-232.
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### **NFI methods etc.**

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- Tomppo, E., Varjo, J., Korhonen, K., Ahola, A., Ihalainen, A., Heikkinen, J., Hirvelä, H., Mikkilä, H., Mikkola, E., Salminen, S. & Tuomainen, T. 1997. Country report for Finland. In: Study on European Forestry Information and Communication Systems. Reports on forestry inventory and survey systems. Vol. 1. European Commission, p. 145-226.

### **Other statistics**

Finnish Statistical Yearbook of Forestry 2008. Finnish Forest Research Institute.

National Land Survey of Finland (Suomen pinta-ala kunnittain)

# 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
10 <sup>th</sup> National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land with tree cover	2005 and 2010: 2004-2007	Data collected in the NFI10 last field season, 2008, has not been used in this report. The NFI10 data permit direct calculation of data according to the FRA categories and definitions for 2005 and 2010.
9 <sup>th</sup> National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land with tree cover	2000: 1996-2003 2005: Forecast	The NFI9 data permit direct calculation of data according to the FRA categories and definitions for 2000. These data were used also to re-classify the NFI8 data for FAO land use classes
8 <sup>th</sup> National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	forest land, scrub land, waste land, other forestry land, agricultural land, build up land, traffic lines, power lines	1990: 1986-1994	Reclassification to FRA categories for 1990 data applying 1996-2003 NFI9 data and the distribution of national classes in NFI9 data into FRA categories.



<b>NATIONAL LAND SURVEY OF FINLAND. SUOMEN PINTA-ALA KUNNITTAIN.</b>	H	Land area, Inland water bodies	1990: 1.1. 1990  2000: 1.1. 2004 2005 and 2010: 1.1.2008	Areas of inland waters by municipalities.
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### 1.2.2 Classification and definitions

For NFI10 data (reference years 2005 and 2010), definitions of Forest, Other wooded land, Other land, Other land with tree cover are according to the FRA2010 definitions. For NFI9 data (reference year 2000) there were slight differences as described in the table below:

National class	Definition
Forest	The FRA 2010 definition is " Land spanning more than 0.5 hectares...". NFI9 used a minimum area of "more than 0.25 ha..." and did not consider the width of the area. It was only defined that the shape of forest land is such that it can be considered <i>forestry land</i> *. <i>*Finnish definition.</i>
Other wooded land	The FRA 2010 definition is " Land not classified as "Forest", spanning more than 0.5 hectares...". NFI9 used a minimum area of 0.25 ha and did not consider the width of the area. It was only defined that the shape of forest land is such that it can be considered <i>forestry land</i> *. <i>*Finnish definition.</i>
Other land	According to used FRA 2010 definition.
Other land with tree cover	Information generated from NFI data base. The FRA 2010 definition is " 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 metres at maturity." Finland will use instead: a parcel with growing stock not belonging to <i>forestry land</i> *, e.g., a building site. The size of the land area can be less than 0.5 ha. <i>*Finnish definition.</i>
Inland water bodies	According to used FRA 2010 definition.

For the NFI8 data (reference year 1990) only national definitions for land use classes were applied. These classes were re-classified to FRA2010 classes as described later. The original national classes are described below.

National class	Definition
forest land	Land with potential mean annual increment under rotation at least 1m <sup>3</sup> /ha, minimum area 0.25 ha.
scrub land	Land where the potential mean annual increment is from 0.1 to 1m <sup>3</sup> /ha, minimum area 0.25 ha.
waste land	Waste land is a domain of forestry where the potential mean annual increment is less than 0.1m <sup>3</sup> /ha, minimum area 0.25 ha.
other forestry land	Other forestry land i.e. forestry roads, forest depots and camp lots, small gravel pits etc., minimum area 0.25 ha.
other land	agricultural land, build up land, traffic lines, power lines
fresh water	
<b>SALT WATER</b>	

### 1.2.3 Original data

Original national data for the reference years 2000, 2005, and 2010 are extracted according to FRA 2010 categories and definitions and originates from NFI9 from years 1996-2003 and NFI10 2004-2007.

Original national data for the reference year 1990 is extracted according national categories and definitions.

National classes	Area (1000 hectares)
	NFI8 (1986-1994)
forest land	20074
scrub land	2983
waste land	3093
other forestry land	151
other land	4158
Total land area	30459

## 1.3 Analysis and processing of national data

### 1.3.1 Calibration

In the FAOSTAT official statistics the land area of Finland is 30 459 000 hectares. This equals to the land area according to NFI8. However, this is an erroneous figure, the error in Finland's land area statistics was discovered in 1.1.2000 statistics. In this reporting we use the land area for 1.1.2007, i.e. 30 408 686 hectares and area for inland water bodies 3 433 000 hectares. For reference year 1990 this means a calibration coefficient 0.998348. Land area according to NFI9 was 30 447 200 hectares. For reference year 2000 this leads to a calibration factor 0.997835. Land area according to NFI10 (2004-2007) is 30 414 900 hectares. For reference years 2005 and 2010 this leads to calibration factor 0.999796. Calibration was done after reclassification for each class with the same reference year specific calibration factor.

### 1.3.2 Estimation and forecasting

The NFI8 data measured in 1986 – 1994 was regarded to represent the reference year 1990. The NFI9 data measured in 1996 – 2003 was regarded to represent the reference year 2000 and NFI10 data measured in 2004 – 2007 the reference year 2005. No forecasting was done for the year 2010. Thus the data measured in 2004-2007 represent the year 2010, also.

### 1.3.3 Reclassification into FRA 2010 categories

No reclassification was needed for reference years 2000, 2005 and 2010. For the reference year 1990 reclassification was done using partly aerial photographs and partly regression models.

## 1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	21889	22459	22157	22157
Other wooded land	926	824	1112	1112
Other land	7593	7126	7140	7140
...of which with tree cover	183	183	183	183
Inland water bodies	3433	3433	3433	3433
<b>Total for country</b>	<b>33842</b>	<b>33842</b>	<b>33842</b>	<b>33842</b>

## 1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest		<p>The Forest area in Finland has increased during the past 50 years mainly due to peatland drainage and to some extent due to afforestation of low productive and abandoned farm land. Large areas of Other land and Other wooded land has been converted to Forest land by draining mires and open fens and bogs (by lowering groundwater level). An intensive drainage operation began in late 1950's and lasted until the mid of 1970's. Between 1990 and 2000 the forest area increased by 560 000 hectares and between 2000 and 2005 decreased slightly. Between 1990 and 2005 the increase was 260 000 ha. It is obvious that these changes have been largely caused by different interpretation of the FRA Forest definition.</p>
Other wooded land		
Other land		<p>The land area of Finland is still slightly increasing due to the postglacial crustal uplift. On the other hand, the construction of artificial lakes for generating hydro power has decreased the land area during the past 50 years. The land area of Finland is thus not constant. Furthermore, a significant error was discovered in the land area statistics on 1.1.2000, maintained by the National Land Survey of Finland. This erroneous area (30 459, 1000 ha) is also in the records by FAOSTAT. These are the reasons that the official land area by the National Land Survey</p>

		of Finland on 1.1. 2007 (30 408.7, 1000 ha) is used in this report, instead of that by FAOSTAT.
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	2009
Remote sensing survey / mapping	

## 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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
10 <sup>th</sup> National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land with tree cover, ownership	2005 and 2010: 2004-2007	Data collected in the NFI10 last field season, 2008, has not been used in this report. The NFI10 data permit direct calculation of data according to the FRA categories and definitions for 2005 and 2010.
9 <sup>th</sup> National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land with tree cover	2000:1996-2003	The NFI9 data permit direct calculation of data according to the FRA categories and definitions for 2000. These data were used also to re-classify the NFI8 data for FAO land use classes
8 <sup>th</sup> National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	forest land, scrub land, waste land, other forestry land, agricultural land, build up land, traffic lines, power lines	1990: 1986-1994	Reclassification to FRA categories for 1990 data applying 1996-2003 NFI9 data and the distribution of national classes in NFI9 data into FRA categories.

### 2.2.2 Original data

Extracted directly from the NFI database.

## 2.3 Analysis and processing of national data

### 2.3.1 Calibration

Similar to Table 1.

### 2.3.2 Reclassification into FRA 2010 categories

Public ownership includes Metsähallitus, other government organisations, municipalities, etc. Private individuals include private people and non-designated (jakamaton) land. Private business includes forestry companies, other companies (Ltd.) and joined ownership (yhteismetsä).

## 2.4 Data for Table T2

### Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	6726	7213	6988
Private ownership	15163	15245	15168
...of which owned by individuals	12981	12953	12765
...of which owned by private business entities and institutions	2182	2292	2404
...of which owned by local communities	0	0	0
...of which owned by indigenous / tribal communities	0	0	0
Other types of ownership	0	0	0
<b>TOTAL</b>	<b>21889</b>	<b>22459</b>	<b>22157</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	6726	7213	6988
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
<b>TOTAL</b>	<b>6726</b>	<b>7213</b>	<b>6988</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
Tapion vuositilastot	H	Forests with management plan	1990, 2002, 2005	
10 <sup>th</sup> National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land with	2005 and 2010: 2004-2007	Data collected in the NFI10 last field season, 2008, has not been used in this report. The NFI10 data permit direct calculation of data according to the FRA categories and definitions for 2005 and

		tree cover		2010.
9 <sup>th</sup> National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land with tree cover	2000: 1996-2003	The NFI9 data permit direct calculation of data according to the FRA categories and definitions for 2000. These data were used also to re-classify the NFI8 data for FAO land use classes
8 <sup>th</sup> National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	forest land, scrub land, waste land, other forestry land, agricultural land, build up land, traffic lines, power lines	1990: 1986-1994	Reclassification to FRA categories for 1990 data applying 1996-2003 NFI9 data and the distribution of national classes in NFI9 data into FRA categories.

### 3.2.2 Classification and definitions

A somewhat different terms and definitions were applied on one hand to 2000 data and on the other hand to 1990. The applied definitions are given in the two tables below.

The definitions used to extract the national data for years 2000, 2005 and 2010, according to FRA 2010 categories.

National class	Definition
Production	Areas not belonging to any category below.
Protection of soil and water	
Conservation of biodiversity	<p>National parks                      Strict nature reserves                      Mire conservation area                      Protected herb-rich forest areas                      Other nature reserves based on nature conservation law                      Biotopes protected by nature conservation law                      Protected old-growth forest areas</p> <p>Other by law protected areas                      Protection areas of Metsähallitus</p> <p>Wilderness reserves, strictly protected zones                      "Aarnialue", area protected, based on decision by the authority responsible of management                      Areas under the national parks and strict nature reserves development programme                      Areas under the mire conservation programme                      Areas under the Herb-rich forests conservation programme                      Areas under the old-growth natural forests conservation programme                      Shoreline areas conservation programme                      Waterfowl habitats conservation programme                      Other protection programmes                      Other protection areas established with government decision</p>

	<p>Areas protected in regional land use planning (seutukaava)</p> <p>Following forests of Metsähallitus where Metsähallitus has decided to exclude from production: Natura-regions, regions with special environment values, wilderness reserves, poorly productive land (scrub land).</p>
Social services	<p>Routes for recreation</p> <p>National hiking areas</p> <p>Archaeological remains</p> <p>Research forests and forests of seed stands</p> <p>Forests of Metsähallitus which Metsähallitus has reserved for research, recreation area, wilderness areas, hiking, recreation forest, building (taajama), tourism (loma- ja matkailualue),</p>
Multiple purpose	<p>Wilderness reserves, nature-imitating management zones</p> <p>"Luonnonhoitometsä", nature conservation forest, zones of restricted management</p> <p>Park forests</p> <p>Municipal near-recreation areas</p> <p>Other areas of special activities</p> <p>Areas under the Glacifluvial Esker formations conservation programme</p>
No or unknown function	

The definitions used to extract the national data for year 1990, according to FRA 2010 categories.

Class	Definition
Production	<p>No multiple use restrictions</p> <p>Area restricted by regional or local land use planning</p> <p><b>COASTAL AREAS IN LAND USE PLANNING</b></p> <p>Minor restrictions proposed by field crew leader</p> <p><b>AREAS WITH TEMPORAL CUTTING RESTRICTIONS (NORTHERN FINLAND)</b></p>
Protection of soil and water	
Conservation of biodiversity	<p>Strict nature reserve</p> <p>National park</p> <p>Nature reserves based on decision by the authority responsible of management</p> <p>Peatland reserves</p> <p>Areas under the mire conservation programme</p> <p>Mires where drainage is prohibited</p> <p>Wilderness reserves, strictly protected zones (northern Finland)</p> <p>Areas which have been decided to be protected but the protection hasn't yet been put into effect (northern Finland)</p>
Social services	
Multiple purpose	<p>Wilderness reserves, nature-imitating management zones</p> <p>Multiple use areas, e.g. "Luonnonhoitometsä", nature conservation forest, park forests, recreation areas. Zones of restricted management.</p> <p>Zones of restricted management based on law (northern Finland)</p>
No or unknown function	

### 3.2.3 Original data

Original national data for the reference years 2000 are extracted according to FRA 2010 categories and definitions and originates from NFI9 from years 1996-2003. The original national data and definitions from NFI8 (1986-1994) are used for year 1990 (cf. National reporting table T1).

FRA 2005 Categories / Designated function	Area (km <sup>2</sup> )			
	NFI9 (1996-2003)		NFI8 (1986-1994)	
	Forest	OWL	Forest land	Scrub land
Production	204974	4875	191891	22903
Protection of soil and water	0	0	0	0
Conservation of biodiversity	16110	3267	6941	6433
Social services	381	7	0	0
Multiple purpose	3393	109	1905	498
No or unknown function	0	0	0	0
<b>Total</b>	<b>224858</b>	<b>8258</b>	<b>200736</b>	<b>29834</b>

## 3.3 Analysis and processing of national data

### 3.3.1 Calibration

The calibration of land area is done as for T1.

### 3.3.2 Reclassification into FRA 2010 categories

Reclassification is done for forest and OWL, for year 1990, as presented in 2.4. for T1.

## 3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	20924	20447	19197	19197
Protection of soil and water	0	0	0	0
Conservation of biodiversity	756	1609	1925	1925
Social services	0	38	77	77
Multiple use	208	365	958	958
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
<b>TOTAL</b>	<b>21889</b>	<b>22459</b>	<b>22157</b>	<b>22157</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	756	1609	1925	1925
Forest area under sustainable forest management	<b>21889</b>	<b>22459</b>	<b>22157</b>	<b>22157</b>
Forest area with management plan	14793	14946	14497	14497

### 3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production	The area of this category is over-estimated since we do not know the management goals of private forest owners. All private forests outside protection and recreation areas were classified in this category.	
Protection of soil and water	Protection of soil and water are not recorded specifically in NFI. The area of forests whose primary function is soil or water protection is negligible,	
Conservation of biodiversity		Since 1990 area has clearly increased. This is partly due to classification problems in NFI8 data but mostly due to establishing new protection areas and due to decisions of Metsähallitus to increase protection of biodiversity.
Social services	Some recreation areas are classified in this category, most of them are in category Multiple use.	
Multiple use	Probably the area of this category is underestimated in our data. Forest owners may regard their lot for other purposes than timber production, but since we do not know the aims of the owner, most private forests are in category Production	
Other		
No / unknown designation		
Area of permanent forest estate	Concept is not applied in our legislation.	
Forest area within protected areas	Areas with primary function Biodiversity were classified as protected areas.	

Forest area under sustainable forest management	All forest area is protected by Forestry Act. Thus, forests can not be cut without a notice to Forestry Center. After regeneration cuttings, new forest must be established. Thinnings have to be done according to official regimes. Key biotopes must be protected when delineating the cutting area.	
Forest area with management plan	All public and company forests and appr. 45%,42%,40%,40% (for 1990,2000,2005,2010) of private forests have valid estate-specific management plan. Following the management plan is not obligatory in Finland.	

<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
10 <sup>th</sup> National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land with tree cover, stand age, accomplished cuttings and other operations	2005 and 2010: 2004-2007	Data collected in the NFI10 last field season, 2008, has not been used in this report. The NFI10 data permit direct calculation of data according to the FRA categories and definitions for 2005 and 2010.
9 <sup>th</sup> National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Forest, Other wooded land, Other land, Other land	2000: 1996-2003 2005:	The NFI9 data permit direct calculation of data according to the FRA categories and definitions for 2000. These data were used also to

		with tree cover	Forecast	re-classify the NFI8 data for FAO land use classes
8 <sup>th</sup> National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	forest land, scrub land, waste land, other forestry land, agricultural land, build up land, traffic lines, power lines	1990: 1986-1994	Reclassification to FRA categories for 1990 data applying 1996-2003 NFI9 data and the distribution of national classes in NFI9 data into FRA categories.

#### 4.2.2 Original data

Data extracted directly from the NFI database.

### 4.3 Analysis and processing of national data

#### 4.3.1 Estimation and forecasting

Other naturally regenerated forest is forest that are classified as naturally regenerated in the field or is primary forest. Planted forest is forest that is classified as planted in the field. Introduced species are species that have not naturally spread to Finland, Larch (*Larix* spp.) are regarded as introduced species as well.

### 4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	n.a.	n.a.	n.a.	n.a.
Other naturally regenerated forest	17496	17503	16252	16252
...of which of introduced species	0	0	0	0
Planted forest	4393	4956	5904	5904
...of which of introduced species	21	22	22	22
<b>TOTAL</b>	<b>21889</b>	<b>22459</b>	<b>22157</b>	<b>22157</b>

Table 4b

FRA 2010 Categories	Area (1000 hectares)
---------------------	----------------------



	1990	2000	2005	2010
Rubber plantations (Forest)	0	0	0	0
Mangroves (Forest and OWL)	0	0	0	0
Bamboo (Forest and OWL)	0	0	0	0

#### 4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	We do not have proper definition that could be applied in the field.	
Other naturally regenerating forest	Primary forests have been included in this category.	
Planted forest		
Rubber plantations	Not applicable	
Mangroves	Not applicable	
Bamboo	Not applicable	

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
10 <sup>th</sup> National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Afforestation, natural expansion of forests	2005 and 2010: 2004-2007	
9 <sup>th</sup> National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Afforestation, natural expansion of forests	2000: 1996-2003 2005: Forecast	
8 <sup>th</sup> National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	Afforestation, natural expansion of forests	1990: 1986-1994	

#### 5.2.2 Original data

Data extracted directly from the NFI database.

### 5.3 Analysis and processing of national data

#### 5.3.1 Reclassification into FRA 2010 categories

For 1990, past 10 year average was used due to data.

## 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	3300	8400	3000	0	60	750
Reforestation	127 200	112 460	133 680	1000	760	80
...of which on areas previously planted	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Natural expansion of forest	2000	1800	600	0	0	0

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

## 5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation		Afforestation is mainly on arable land. Highest figures were on early 90's, since then afforestation has decreased and is around 3 000 hectares annually.
Reforestation	In Finland, 30 - 40 % of regeneration is done using natural regeneration with seed trees. Therefore, reporting reforestation as defined in FRA2010 gives wrong information on re-establishment of forests in Finland	
Natural expansion of forest		

Other general comments to the table

## 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
10 <sup>th</sup> Finnish National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Growing stock and Commercial growing stock	2005, 2010: 2004-2007	The NFI10 data permit direct calculation of data according to the FRA categories and definitions for 2005.
9 <sup>th</sup> Finnish National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Growing stock and Commercial growing stock	2000: 1996-2003	The NFI9 data permit direct calculation of data according to the FRA categories and definitions for 2005.
8 <sup>th</sup> Finnish National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	Growing stock and Commercial growing stock	1986-1994	Land use classes forest and OWL for 1990 are reclassified using national classes and additional information, see Table 1.

#### 6.2.2 Classification and definitions

National class	Definition
Growing stock	All living trees on all Forest areas (see T1) and all living trees on all Other wooded land areas; Growing stock according to terms and definitions FRA 2010. Stem volume above stump of living trees includes bark, excludes branches with breast height diameter > 0 cm and until top of the three (0 cm).

#### 6.2.3 Original data

Data extracted directly from the NFI database.

### 6.3 Analysis and processing of national data

#### 6.3.1 Calibration

Calibration to correct the total land area was done with the same correction factors as for Table 1. Same correction factors were used for Forest and Other wooded land.

#### 6.3.2 Reclassification into FRA 2010 categories

No reclassification was needed for growing stock definitions. For land use class definitions, see Table 1.

### 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	1877.893	2082.112	2189.146	2189.146	6.988	5.266	10.245	10.245
... of which coniferous	1545.243	1687.008	1756.130	1756.130	5.990	4.340	8.774	8.774
... of which broadleaved	332.650	395.104	433.016	433.016	0.998	0.927	1.472	1.472
Growing stock of commercial species	1844.245	2043.040	2150.210	2150.210	6.871	5.238	10.162	10.162

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>	<i>Pinus sylvestris</i>	Scots pine	855.8439	992.8315	1085.543
2 <sup>nd</sup>	<i>Picea abies</i>	Norway spruce	688.5907	693.228	668.7044
3 <sup>rd</sup>	<i>Betula pubescens</i>	Downy birch	211.6478	248.4633	264.102
4 <sup>th</sup>	<i>Betula pendula</i>	Silver birch	63.5798	75.12585	96.66725
5 <sup>th</sup>	<i>Populus tremula</i>	European aspen	23.76069	32.44291	33.31019
6 <sup>th</sup>	<i>Alnus incana</i>	Grey alder	20.56597	21.93722	19.12509
7 <sup>th</sup>	<i>Salix caprea</i>	Goat willow	n.a.	6.115255	6.651641
8 <sup>th</sup>	<i>Sorbus aucuparia</i>	European mountain-ash	n.a.	5.080565	5.661843
9 <sup>th</sup>	<i>Alnus glutinosa</i>	Black alder	3.993393	4.791931	6.202732
10 <sup>th</sup>	<i>Prunus padus</i>	European Bird Cherry	n.a.	0.431454	0.505897
Remaining			10.2111	1.664891	2.671454
<b>TOTAL</b>			1878.278	2082.112	2189.146

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)	0	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	0	
Minimum diameter (cm) of branches included in growing stock (W)	-1	Not included
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		We did not do extrapolation over time. Therefore 2010 growing stock equals to the 2005 growing stock. In recent years, cuttings have been less than increment, thus the 2010 figure is probably an underestimate.
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
10 <sup>th</sup> Finnish National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Growing stock and dead wood	2005, 2010: 2004-2007	The NFI10 data permit direct calculation of data according to the FRA categories and definitions
9 <sup>th</sup> Finnish National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Growing stock and dead wood	2000: 1996-2003	The NFI9 data permit direct calculation of data according to the FRA categories and definitions
8 <sup>th</sup> Finnish National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	Growing stock	1986-1994	Land use classes forest and OWL for 1990 were reclassified using national classes and additional information, see Table 1
Mäkinen, H., Hynynen, J., Siitonen, J. & Sievänen, R. 2006. Predicting the decomposition of Scots pine, Norway spruce and birch stems in Finland. Ecological Applications 16(5): 1865-1879.	H	Conversion of dead wood volume to biomass.		

#### 7.2.2 Original data

Data were extracted directly from the NFI database. The biomass components were estimated with the Swedish Marklund's models.

### 7.3 Analysis and processing of national data

#### 7.3.1 Calibration

Calibration to correct the total land area was done with the same correction factors as for Table 1. Same correction factors were used for Forest and Other wooded land.

#### 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	1231.6	1374.2	1427.9	1427.9	5.82	4.15	7.42	7.42
Below-ground biomass	210.0	230.5	236.8	236.8	0.892	0.637	1.19	1.19
Dead wood	n.a.	30.2	31.8	31.8	n.a.	0.259	0.486	0.486
<b>TOTAL</b>	n.a.	<b>1634.9</b>	<b>1696.5</b>	<b>1696.5</b>	<b>n.a.</b>	<b>5.05</b>	<b>9.10</b>	<b>9.10</b>

#### 7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass		We did not do extrapolation over time. Therefore 2010 growing stock equals to the 2005 growing stock. In recent years, cuttings have been less than increment, thus the 2010 figure is probably an underestimate.
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
10 <sup>th</sup> Finnish National Forest Inventory (NFI10). Finnish Forest Research Institute.	H	Growing stock and dead wood	2005, 2010: 2004-2007	The NFI10 data permit direct calculation of data according to the FRA categories and definitions for 2005. Biomass converted to carbon by dividing by 2.
9 <sup>th</sup> Finnish National Forest Inventory (NFI9). Finnish Forest Research Institute.	H	Growing stock and dead wood	2000: 1996-2003	The NFI9 data permit direct calculation of data according to the FRA categories and definitions for 2005. Biomass converted to carbon by dividing by 2.
8 <sup>th</sup> Finnish National Forest Inventory (NFI8). Finnish Forest Research Institute.	H	Growing stock	1986-1994	Land use classes forest and OWL for 1990 were reclassified using national classes and additional information, see Table 1. No data on dead wood. Biomass converted to carbon by dividing by 2.

### 8.3 Analysis and processing of national data

#### *Carbon in biomass*

Biomass from Table T7 were used as input and converted to carbon by dividing by 2.

#### *Carbon in litter*

Carbon in litter was estimated with the Yasso model (Liski, J., Palosuo, T., Peltoniemi, M. & Sievänen, R. 2005<sup>2</sup>). See also Greenhouse gas emissions in Finland 1990-2007. National inventory report under the UNFCCC and the Kyoto Protocol. 8 April 2009. Statistics Finland.

#### *Soil carbon*

Carbon in soil was estimated separately for mineral soils and peatlands. Area of mineral soils and peatland was taken from NFI10 (2004-2007) data. For mineral soils the Yasso model was applied. For peatlands the area of thin peatlands (less than 30 cm peat layer) and area of thick peatlands (at least 30 cm peat layer) was estimated. Carbon per peatland area was taken from Kauppi, P.E., Posch, M., Hänninen, P., Henttonen, H.M., Ihalainen, A., Lappalainen, E., Starr, M. & Tamminen, P. 1997<sup>3</sup>, different figures for thin and thick peatlands (8 kg/m<sup>2</sup> and 72 kg/m<sup>2</sup>, respectively).

### 8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	615.8	687.1	714	714	2.91	2.08	3.71	3.71
Carbon in below-ground biomass	105	115.3	118.4	118.4	0.446	0.319	0.595	0.595
<b>Sub-total: Living biomass</b>	<b>720.8</b>	<b>802.4</b>	<b>832.4</b>	<b>832.4</b>	<b>3.356</b>	<b>2.399</b>	<b>4.305</b>	<b>4.305</b>
Carbon in dead wood	15.1	15.1	15.9	15.9	n.a.	0.13	0.243	0.243
Carbon in litter	221	246	251	258	7	8	11	12
<b>Sub-total: Dead wood and litter</b>	<b>236.1</b>	<b>261.1</b>	<b>266.9</b>	<b>273.9</b>	<b>7</b>	<b>8.13</b>	<b>11.243</b>	<b>12.243</b>
Soil carbon	3623	3954	3848	3853	493	331	453	453
<b>TOTAL</b>	<b>4579.9</b>	<b>5017.5</b>	<b>4947.3</b>	<b>4959.3</b>	<b>503.36</b>	<b>341.529</b>	<b>468.548</b>	<b>469.548</b>

<sup>2</sup> Liski, J., Palosuo, T., Peltoniemi, M. & Sievänen, R., 2005. Carbon and decomposition model Yasso for forest soils. *Ecol. Model.* 189 (2005):168–182

<sup>3</sup> Kauppi, P.E., Posch, M., Hänninen, P., Henttonen, H.M., Ihalainen, A., Lappalainen, E., Starr, M. & Tamminen, P., 1997. Carbon reservoirs in peatlands and forests in boreal regions of Finland. *Silva Fennica* 31(1): 13-25.)

Soil depth (cm) used for soil carbon estimates	100
--	-----

### 8.5 Comments to Table T8

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

Other general comments to the table
Dead wood data for 1990 not available – result from 2000 used instead.

## 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
Finnish Statistical Yearbook of Forestry 2003. METLA, Finland. Original source: Ministry of Interior.	H	Forest fires: burnt area (ha)	1988-2007	Disturbances on forest land. The values for 1990 and 2000 are an average of years 1988-1992 and 1998-2002, respectively.

#### 9.2.2 Classification and definitions

National class	Definition
Forest	The potential increment of the growing stock is at least 1.0 m <sup>3</sup> /ha/a.

#### 9.2.3 Original data

The area burnt by forest fires and number of fires is from the Finnish Statistical Yearbook of Forestry, where the original source is Ministry of Interior. The original data are in the table below.

Year	Burnt area, hectares	Number of fires
1988	289	621
1989	518	617
1990	434	559
1991	226	287
1992	1081	852
1998	95	231
1999	623	1543
<b>2000</b>	374	825
2001	187	822

2002	590	2522
2003	720	1734
2004	351	783
2005	478	1041
2006	1595	2992
2007	570	1153

### 9.3 Analysis and processing of national data

#### 9.3.1 Calibration

Not needed.

#### 9.3.2 Estimation and forecasting

The averages of 1988-1992, 1998-2002 and 2003 - 2007 are used for 1990, 2000, and 2005, 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	0.51	587	0.37	1189	0.74	1541
... of which on forest	0.51	587	0.37	1189	0.74	1541
... of which on other wooded land	0	0	0	0	0	0
... of which on other land	0	0	0	0	0	0

Table 9b

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

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

## 9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire		
Number of fires		
Wildfire / planned fire	We have prescribed burning on regeneration site, typically appr. 1000 hectares per year. These fires were not included because burnt areas are non-stocked clear cut areas.	

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
8 <sup>th</sup> Finnish National Forest Inventory. Finnish Forest Research Institute	H	Insects, diseases, other biotic and abiotic factors	1986-1994	Disturbances on forest land, national definition. The values for 1990 are based on the NFI8 carried out region by region in years 1986 - 1994.
9 <sup>th</sup> Finnish National Forest Inventory. Finnish Forest Research Institute	H	Insects, diseases, other biotic and abiotic factors	1996-2003	Disturbances on forest land, national definition. The values for 2000 are based on the NFI9 carried out region by region in years 1996 - 2003.
10 <sup>th</sup> Finnish National Forest Inventory. Finnish Forest Research Institute	H	Insects, diseases, other biotic and abiotic factors	2004-2007	Disturbances on forest land, national definition.

#### 10.2.2 Classification and definitions

National class	Definition
Forest	The potential increment of the growing stock is at least 1.0 m <sup>3</sup> /ha/a

### 10.2.3 Original data

Data extracted directly from the NFI database.

## 10.3 Analysis and processing of national data

### 10.3.1 Reclassification into FRA 2010 categories

Only serious and complete damages hit during the past 5 years before inventory are included. The cumulative area is converted to annual by dividing by 5. Serious damages in NFI classification are damages that have markedly reduced the production capacity and/or quality of the growing stock. Complete damages are damages that are causing a need to regenerate the stand immediately.

## 10.4 Data for Table T10

**Table 10a – Disturbances**

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	0.8	0.3	0.9
Disturbance by diseases	7.2	2.4	1.5
Disturbance by other biotic agents	5.8	5.7	9.9
Disturbance caused by abiotic factors	10.2	1.8	5.5
<b>Total area affected by disturbances</b>	<b>24.0</b>	<b>10.1</b>	<b>17.7</b>

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)
Heterobasidion sp.	<i>mostly Picea abies</i>			
Gremmeniella (fungi)	<i>Pinus sylvestris</i>			
Cronartium sp. (fungi)	<i>Pinus sylvestris</i>			
Tomicus sp. (insect)	<i>Pinus sylvestris</i>			

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)
<b>Total forest area affected by woody invasive species</b>	<b>0</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		
Disturbance by diseases		
Disturbance by other biotic agents		
Disturbance caused by abiotic factors		
Major outbreaks		
Invasive species		

#### Other general comments to the table

In the NFI field measurements, disturbances are assessed from stands belonging to forest land. National forest land definition is applied (i.e., minimum stand size is 0.25 ha and potential increment of the growing stock is at least 1.0 m<sup>3</sup>/ha/a). Information on disturbances are not assessed on scrub land (increment of the growing stock is 0.1 - 0.99 m<sup>3</sup>/ha/a).

Damages that have started 0-5 years before the field observation are used in this table. The areas are converted to annual by dividing the cumulative area by 5. This procedure probably causes underestimation of fungi damages (diseases) because dating of these damages is often impossible and they are classified as old damages.

Damages caused by unknown factors are not reported here. The area of unknown damages is 6.6, 3.3, and 2.8 thousand hectares for the years 1990, 2000, and 2005, respectively.

## 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
Roundwood Removals and Drain by Region, published by Metla.	H	Industrial roundwood removals		
Survey on fuelwood consumption in dwellings, published by Metla.  Wood in Energy Generation, published by Metla	M	Fuelwood removals		Last update on fuelwood used in dwellings concerns the heating period 2000/01. Updated figures will be available in 2009.  Wood in energy generation statistics (use of fuelwood in heating and power plants), available starting from 2000.
Volumes and Prices in Roundwood Trade, published by Metla	H	Unit value (Industrial roundwood removals)		Unit values are calculated using roadside prices.

#### 11.2.2 Classification and definitions

National class	Definition
Roadside price	The unit price in delivery sales, in which the seller is responsible for the harvesting of the roundwood lot and hauling it to a storage point along forest roadside, ready for long-distance transportation by road.

### 11.3 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.)	43840	55721	55152	3371	5112	5933
... of which from forest	43840	55721	55152	3371	5112	5933
Unit value (local currency / m <sup>3</sup> o.b.)	34.71	36.29	38.38	12.75	13.15	11.88
Total value (1000 local currency)	1521686	2022122	2116734	42975	67228	70484

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	Euro	Euro	Euro

### 11.4 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	We do not have exact information on what is the proportion of OL and OWL from removals, but the proportion is negligible.	
Total volume of woodfuel removals	Consists mainly of fuelwood used for heating in dwellings.  Starting from 2000, the figures also include data from yearly survey on use of fuelwood in heating and power plants.	
Unit value	Calculation of unit value: The average roadside prices are weighted with the roundwood assortments' proportional share of the total industrial removals of the period.  Unit value for fuelwood is estimated at 90% of the average birch pulpwood stumpage price.	
Total value		

#### Other general comments to the table

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

### 12.1 FRA 2010 Categories and definitions

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

### NWFP categories

Category
<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

#### 12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistical yearbook of Finland 2006	M		2005	

#### 12.2.2 Original data

See final reporting table

### 12.3 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>	Bags of game	Alces alces	1000 kg	11 993	71 000	Wild meat, includes skins
2 <sup>nd</sup>	Wild berries	Vaccinium vitis-idaea		n.a.	10 800	Food
3 <sup>rd</sup>	Christmas trees	Picea abies		n.a.	10 000	Ornamental plants
4 <sup>th</sup>	Mushrooms			n.a.	9 000	Food
5 <sup>th</sup>	Medicine and aromatic plants (yrtit)			n.a.	5 000	Raw material for medicine and aromatic products
7 <sup>th</sup>	Lichens	Cladina spp.		n.a.	1 000	Ornamental plants
8 <sup>th</sup>						
9 <sup>th</sup>						
10 <sup>th</sup>						
All other plant products						
All other animal products						
<b>TOTAL</b>					<b>106 800</b>	

	2005
Name of local currency	Euro

### 12.4 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	Value defined as market value of the products except that for berries is defined as 9 times the picking incomes and for mushrooms 6 times the picking incomes. These factors (9 and 6) has been estimated to describe the value of products used by house holds (never coming to markets).
Total value	

Other general comments to the table
All NWFP are on forest, scrub, and waste land according to national land use classification.

## 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
Labour Force Surveys (by Statistics Finland) <a href="http://www.stat.fi/til/tyti/index_en.html">http://www.stat.fi/til/tyti/index_en.html</a>	H	Employment in primary production	1990 2000 2005	
Expert estimates (2 experts) 1)	M	Employment in management of protected areas	1990 2000 2005	

#### 13.2.2 Original data

See final reporting table.

### 13.3 Analysis and processing of national data

Re-classification is not needed for employment figures, as national data correspond to FRA2010 definitions.

#### 13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	38.9	24.2	22.7
...of which paid employment	21.3	16.9	15.9
...of which self-employment	17.6	7.3	6.8
Employment in management of protected areas	0.03	0.02	0.05

### 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	For definition of "forestry", see <a href="http://www.stat.fi/meta/luokitukset/toimiala/001-2002/02_en.html">http://www.stat.fi/meta/luokitukset/toimiala/001-2002/02_en.html</a> The data from Labour Force Surveys (LFSs) are utilised, the assumption being that the average annual worktime is 1800 hours per person. LFS is a part of Official Statistics of Finland.	The downward trend is mostly due to rapid mechanization in the harvesting of roundwood. During recent years, however, employment in forestry has remained relatively stable.
Paid employment / self-employment	Paid employment refers to a LFS category entitled "employees", that is: wage earners and salaried employees. Self-employment refers to "self-employed and unpaid family workers", see <a href="http://www.stat.fi/til/tyti/index_en.html">http://www.stat.fi/til/tyti/index_en.html</a>	Stumpage sales dominate in Finland; the share of delivery sales has decreased to less than 20% of harvested volumes in private forests (1990: 29%, 2000: 19%, 2005: 19%). In delivery sales, the seller is responsible for felling and forest haulage to a storage point alongside forest road, ready for long-distance transportation by the buyer.
Employment in management of protected areas	These are expert estimates by Metsähallitus which, as of 2008, administers <u>all</u> state-owned forests. In 1990, 1995 and 2000 the Koli National Park was administered by Metla. Both are included in T13, whereas private protected areas are excluded. The labourforce employed directly by Metsähallitus and Metla is well-known, external contractors is an estimate. For Metsähallitus activities, see <a href="http://www.metsa.fi/sivustot/metsa/en/Sivut/Home.aspx">http://www.metsa.fi/sivustot/metsa/en/Sivut/Home.aspx</a>	Marginal so far, but in this area work opportunities have increased a lot, and this trend is expected to continue.

#### Other general comments to the table

For future surveys, more efforts are needed to harmonise concepts and definitions, and to make them unambiguous. This comment refers to labour force in protected areas only.  
See Finnish Forest Statistical Yearbook of Forestry 2009, especially Chapters 7 (Forest sector labour force) and 4 (Roundwood markets):  
<http://www.metla.fi/julkaisut/metsatilastollinenvsk/index-en.htm>  
Labour Force Surveys by Statistics Finland:  
[http://www.stat.fi/til/tyti/index\\_en.html](http://www.stat.fi/til/tyti/index_en.html)

## 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	2008	
	Reference to document	<a href="http://www.mmm.fi/en/index/frontpage/forests/nfp/documents_reports.html">http://www.mmm.fi/en/index/frontpage/forests/nfp/documents_reports.html</a>	
<b>National forest programme (nfp)</b>	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country	Finland's National Forest Programme 2015	
	Starting year	2008	
	Current status	<input type="checkbox"/>	In formulation
		<input checked="" type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
Reference to document or web site	<a href="http://www.mmm.fi/en/index/frontpage/forests/nfp/documents_reports.html">http://www.mmm.fi/en/index/frontpage/forests/nfp/documents_reports.html</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	1996	
	Year of latest amendment	1996	
	Reference to document	<a href="http://www.finlex.fi/fi/laki/ajantasa/1996/19961093">http://www.finlex.fi/fi/laki/ajantasa/1996/19961093</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>	<input checked="" type="checkbox"/> Yes
	<input type="checkbox"/> No
If Yes above, indicate the number of regions/states/provinces with forest policy statements	14
<b>Sub-national Laws (Acts or Codes) on forest</b>	<input checked="" type="checkbox"/> Yes
	<input type="checkbox"/> No
If Yes above, indicate the number of regions/states/provinces with Laws on forests	1

### 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	14 regional forest programmes, 13 in Forestry Centres and 1 in Åland Island
Sub-national Laws (Acts or Codes) on forest	Åland Islands have autonomy and legislation is different from the continental Finland. <a href="http://www.regeringen.ax/naringsavd/skogsbruksbyran/Lagstiftning.pbs">http://www.regeringen.ax/naringsavd/skogsbruksbyran/Lagstiftning.pbs</a>

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	Ms Sirkka-Liisa Anttila Minister of Agriculture and Forestry	
Level of subordination of Head of Forestry within the Ministry	x	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	Forestry Centres Forestry Development Centre Tapio Finnish Forest Research Institute Metsähallitus	
Institution(s) responsible for forest law enforcement	Forestry Centres	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	n.a.	n.a.	n.a.	n.a.	1587	n.a.
...of which with university degree or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

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		
Human resources within public forest institutions	Includes personnel of Forest Centers, Forestry Development Centre Tapio, and Metsähallitus. Because Metsähallitus is a state-owned enterprise with many public administration duties the human resources in the business operations are not included in this report.	

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
Education; Statistics Finland	H	Graduation of students	-	-
Professionals working in public forest research centres; Finnish Forest Research Institute	H	Professionals working at the Finnish Forest Research Institute	-	-

#### 16.2.2 Original data

See final reporting table.

## 16.4 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	113	38	91	45	114	47
Bachelor's degree (BSc) or equivalent	224	29	274	28	313	35
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.	190	33	197	33
Master's degree (MSc) or equivalent	n.a.	n.a.	194	36	160	38
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	102	26	94	31

Notes:

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

## 16.5 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	Includes graduation of students in forestry education, excluding that in education for forest industries.  Year 2008 = year 2007; data for 2008 are available at the end of the year 2009.  Education for forest technicians (lowest tertiary education) has ceased in the latter part of 1990's.	
Professionals working in public forest research centres	Data consists of professionals working at the Finnish Forest Research Institute on 31.12.2005 and 31.12.2008 (data quality = H). Data for 2000 are not available. Finnish Forest Research Institute is the most important employer in this sector; other organizations of minor importance are excluded. Number of professionals with Doctor's degree covers also professionals with Licentiate's degree.	

## Other general comments to the table

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## **17 Table T17 – Public revenue collection and expenditure**

No data available for reporting on this table.