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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 2005 (FRA 2005), which is the most comprehensive assessment to date. More than 800 people have been involved, including 172 national correspondents and their colleagues, an Advisory Group, international experts, FAO staff, consultants and volunteers. Information has been collated from 229 countries and territories for three points in time: 1990, 2000 and 2005.

The reporting framework for FRA 2005 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes more than 40 variables related to the extent, condition, uses and values of forest resources. More information on the FRA 2005 process and the results - including all the country reports - is available on the FRA 2005 Web site (www.fao.org/forestry/fra2005).

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2005 is:

Mette Løyche Wilkie
Senior Forestry Officer
FAO Forestry Department
Viale delle Terme di Caracalla
Rome 00100, Italy

E-mail: Mette.LoycheWilkie@fao.org

Readers can also use the following e-mail address: fra@fao.org

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The Global Forest Resources Assessment 2005 Country Report Series is designed to document and make available the information forming the basis for the FRA 2005 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.

Report preparation and contact person

This report has been prepared by:

Mati Valgepea (National Correspondent)
Centre of Forest Protection and Silviculture
Department of Forest Statistics
phone +372 7339944
e-mail mati.valgepea@metsad.ee

Other professionals involved in the reporting process:

Veiko Adermann
Centre of Forest Protection and Silviculture
Department of National Forest Inventory
phone +372 6671308
e-mail veikoa@emkk.ee

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Endla Asi
Centre of Forest Protection and Silviculture
The Bureau of Forest Monitoring
phone +372 7339397
e-mail endla.asi@metsad.ee

Tables 6, 7

Mati Valgepea
Centre of Forest Protection and Silviculture
Department of Forest Statistics
phone +372 7339944
e-mail mati.valgepea@metsad.ee

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Introduction

National Forest Inventory

Until the 1990-es the national account of forest resources was based on stand-wise forest inventories. Intensified forest management together with the land reform (privatisation of land) created a need for new inventory methods.

The first National Forest Inventory covering the whole country was commenced in 1999. NFI was conducted by Estonian Forest Survey Centre in 1999–2002; from 2003, the Government gave the Centre of Forest Protection and Silviculture (CFPS) the task to conduct the NFI.

Methodologically, the NFI is designed as an annual research, which, using optimal methods, has to ensure the continuous updating of information and the forest database. The statistical design for the Estonian NFI is a systematic sampling without pre-stratification. The network of sample plots covers the whole country.

The main objective of the NFI is to give a description forests, but NFI also gives information about, e.g., the distribution of land by land use classes, the afforestation and growing stock of non-forest land.

Three types of circular fixed-radius sample plots are used: (a) volume sample plots, (b) site category sample plots, (c) regeneration and felling sample plots. Plots that contain different land categories or stands of distinctly different parameters are divided into sections.

The method of sampling with partial replacement is used. Volume sample plots are divided into permanent sample plots with a radius of 10 m and temporary sample plots (radius = 7 m) according to the ratio of 1/1,25. All the permanent sample plots are re-measured in every 5 years. Altogether, about 5000 permanent sample plots have been established during the last 5 years, half of which are located on productive forest land.

Sample plots are clustered into tracts to increase the efficiency of the survey. The re-measuring of permanent sample plots started in 2004. Site category plots, regeneration and felling plots are always temporary plots with a radius of 7 m.

The area of forest land is calculated as follows: the ratio of the plots on forest land to the total number of plots is multiplied with the area of the corresponding administrative unit. To prevent errors, inventory results of the last five years are combined during data processing. The possibility of alterations in time is taken into consideration. The importance of earlier estimates smaller compared to the current data (i.e. the weight attributed to the data is reduced per each passing year). Some estimates are based only on the data of the last year. Volume is calculated over bark, from the 'stump height', excluding branches.

The results of the Estonian NFI are provided for the whole country, separately for forests administrated by the Estonian State Forest Management Centre and for other owners' forests (the owner category of all the sample plots are registered, but due to the current land reform it is not reasonable to differentiate results by other owner categories).

1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2005 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
1. “Eesti NSV metsade majandamise ja puidukasutuse arenduskava “Eesti mets 2010” (<i>Forest management and wood utilisation development plan until 2010</i>), Tallinn 1989	L	forest	1988	The combined stand-wise forest inventory data of 1979–1988
2. Yearbook “Forest 2004”, Tartu 2005; or “Eesti Metsad 2003”, Tallinn 2004 http://www.metsad.ee/trvkised07.html#EestiMetsad2003	H	forest, inland water bodies	2003	NFI 2003 (combined NFI-data from period 1999–2003)
3. Calculations for FRA 2005, unpublished	H	other wooded land, forest	OWL – 2000, 2003 forest – 2000	NFI 2003 (combined NFI-data from period 1999–2003)
4. FAOSTAT	H	Land area, Total area, Inland water	2000	

1.2.2 Classification and definitions

National class	Definition
Forest	Forest is defined as land (a) covered with trees with the minimum height of 1,3 m and minimum crown cover of 30%, or (b) managed for the purpose of timber production or the preservation of woody plant cover. The minimum area of forest is 5000 m ²
Other wooded land (OWL)	Land not classified as “Forest”, with tree groups growing in shrubs or on natural grassland. It does not include land that is predominantly under agricultural or urban land use.
Other land with trees	Urban parks, squares and gardens – no data.
Inland water bodies	According to used FRA 2005 definition.

1.2.3 Original data

FRA 2005 Categories	Area (1000 hectares)		
	1988	2000	2003
Forest	1916	2243	2267
Other wooded land	No data	94	88
Other land	2365	1944	1925
...of which with tree cover	No data	No data	No data
Inland water bodies	242	242	242
TOTAL	4523	4523	4523

1.3 Analysis and processing of national data

1.3.1 Calibration

National data and FAOSTAT data	1000 ha
National data Total land area (Total country area – Inland water bodies)	4281
FAOSTAT Total land area	4227
Difference	-54
National data Inland water	242
FAOSTAT Inland water	283
Difference	41

The national data is calibrated to tally with the official FAOSTAT figures. The difference in Total land area is subtracted from the category Other land. And the difference in Inland water is added to the national data of Inland water.

1.3.2 Estimation and forecasting

The 1990 estimate was derived by extrapolation of forest area based on data of the NFI 1999–2003. National Forest Inventory results of 1999–2003 are combined during data processing. Forest area for 2000 is derived by interpolation and forecasting for 2005 was made by extrapolation from data of 1999–2003. The possibility of alterations in time is taken into consideration.

Insufficient Data (ID) is reported for the Other wooded land 1990. The Land Reform (in 90-ties) has two different influences on the other wooded land:

- former agricultural land become covered with trees,
- OWL become covered with woods and classified as forest.

It is difficult to say, which of them had stronger effect.

1.4 Reclassification into FRA 2005 classes

Not applied.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	2163	2243	2284
Other wooded land	ID	94	82
Other land	2064	1890	1861
...of which with tree cover	No data	No data	No data
Inland water bodies	283	283	283
TOTAL	4523	4523	4523

1.6 Comments to National reporting table T1

Forested areas below limit of forest according to the Forest Act (i.e. in size of 0,05–0,5 ha) comprise approximately 8000 ha.

The 1990 estimate was derived by extrapolation of forest area based on data of the NFI 1999–2003. National Forest Inventory results of 1999–2003 are combined during data processing. Forest area for 2000 is derived by interpolation and forecasting for 2005 was made by extrapolation from data of 1999–2003. The possibility of alterations in time is taken into consideration.

Insufficient Data (ID) is reported for the Other wooded land 1990. The Land Reform (in 90-ties) has two different influences on the other wooded land:

- a) former agricultural land become covered with trees,
- b) OWL become covered with woods and classified as forest.

It is difficult to say, which of them had stronger effect. Thus, the Other land figure for 1990 includes all Other wooded land.

2 Table T2 – Ownership of Forest and Other wooded land

2.1 FRA 2005 Categories and definitions

Category	Definition
Private ownership	Land owned by individuals, families, private co-operatives, corporations, industries, religious and educational institutions, pension or investment funds, and other private institutions.
Public ownership	Land owned by the State (national, state and regional governments) or government-owned institutions or corporations or other public bodies including cities, municipalities, villages and communes.
Other ownership	Land that is not classified either as “Public ownership” or as “Private ownership”.

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. “Eesti NSV metsade majandamise ja puidukasutuse arenduskava “Eesti mets 2010” (<i>Forest management and wood utilisation development plan until 2010</i>), Tallinn 1989	L	forest	1988	The combined stand-wise forest inventory data of 1979-1988
2. “Eesti Metsad 2001” (<i>Estonian forests 2001</i>), Tallinn 2002	M	forest and other wooded land in public ownership	2000	Estimations of ownership during the NFI works were based on cadastral data (as from the beginning of year 2000)
3. Calculations for FRA 2005, unpublished	M	forest and other wooded land in private and other ownership	2000	Estimations of ownership during the NFI works were based on cadastral data (as from the beginning of year 2000)

2.2.2 Classification and definitions

Comply with FRA 2005 definitions.

2.2.3 Original data

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1988	2000	1988	2000
Private ownership	0	503	No data	35
Public ownership	1916	842	No data	8
Other ownership	0	898	No data	51
TOTAL	1916	2243	No data	94

2.3 Analysis and processing of national data

2.3.1 Calibration

Not applied.

2.3.2 Estimation and forecasting

The 1990 forest area figure is imported for T1

2.4 Reclassification into FRA 2005 classes

Not applied.

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	0	503	No data	35
Public ownership	2163	842	No data	8
Other ownership	0	898	No data	51
TOTAL	2163	2243	No data	94

2.6 Comments to National reporting table T2

Private forest ownership in Estonia was absent during the Soviet occupation until the land reform started in 1993. The land owned by private owners before World War II will be restituted or privatised.

Other ownership – the land under restitution and privatisation (until the land is registered in Land Cadastral Book and Land Title Book).

3 Table T3 – Designated function of Forest and Other wooded land

3.1 FRA 2005 Categories and definitions

Types of designation

Category	Definition
Primary function	A designated function is considered to be primary when it is significantly more important than other functions. This includes areas that are legally or voluntarily set-aside for specific purposes.
Total area with function	Total area where a specific function has been designated, regardless whether it is primary or not.

Designation categories

Category / Designated function	Definition
Production	Forest / Other wooded land designated for production and extraction of forest goods, including both wood and non-wood forest products.
Protection of soil and water	Forest / Other wooded land designated for protection of soil and water.
Conservation of biodiversity	Forest / Other wooded land designated for conservation of biological diversity.
Social services	Forest / Other wooded land designated for the provision of social services.
Multiple purpose	Forest / Other wooded land designated to any combination of: production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others.
No or unknown function	Forest / Other wooded land for which a specific function has not been designated or where designated function is unknown.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. “Eesti NSV metsade majandamise ja puidukasutuse arenduskava “Eesti mets 2010” (<i>Forest management and wood utilisation development plan until 2010</i>), Tallinn 1989	L	designated functions of forest	1988	The combined stand-wise forest inventory data of 1979-1988
2. Yearbook “Forest 2004”, Tartu 2005; or “Eesti Metsad 2003”, Tallinn 2004 http://www.metsad.ee/trykised07.html#EestiMetsad2003	M	designated functions of forest	2003	NFI 2003 (combined NFI-data from period 1999–2003)
3. “Eesti Metsad 2001” (<i>Estonian forests 2001</i>), Tallinn 2002	M	designated functions of forest	2000	NFI 2001 (combined NFI-data from period 1999–2001)
4. Calculations for FRA 2005, unpublished	M	designated functions of other wooded land	2000, 2003	NFI 2003, NFI 2001

3.2.2 Classification and definitions

National class	Definition
Production forest	Forests designated for production and extraction of wood forest products.
Protection forest	Forests and OWL designated for protection of soil and water, forests of protective zones for other objects.
Conservation forest	National parks, nature reserves, habitat protection areas, other strictly protected forests and OWL.
Social services forest	All forests and OWL not strictly protected under management of State Forest Management Centre have public access for social services by law.
Multiple purpose forest	According to used FRA 2005 definition.

3.2.3 Original data

FRA 2005 CATEGORIES / DESIGNATED FUNCTION	Area (1000 hectares)					
	Primary function			Total area with function		
	1988	2000	2003	1988	2000	2003
Forest						
Production forest	1268	1746	1681	1694	1746	1681
Protection forest	254	360	446	426	360	446
Conservation forest	121	137	140	121	137	140
Social services forest	172	-	-	172		
Multiple purpose forest	-	-	-	not appl.	not appl.	not appl.
No or unknown function	-	-	-	not appl.	not appl.	not appl.
Total - Forest	1815	2243	2267	not appl.	not appl.	not appl.
Other wooded land						
Production OWL	No data	-	-	No data	-	-
Protection OWL	5	5	5	No data	5	5
Conservation OWL	2	2	2	No data	2	2
Social services OWL	No data	-	-	No data	1	1
Multiple purpose OWL	Rest	87	81	not appl.	not appl.	not appl.
No or unknown function	No data	-	-	not appl.	not appl.	not appl.
Total – OWL	118	94	88	not appl.	not appl.	not appl.

3.3 Analysis and processing of national data

3.3.1 Calibration

Not applied.

3.3.2 Estimation and forecasting

The percentage of: Production forest, Protection forest, Conservation forest and Social services forest were applied to the forest area of T1 for 1990. Forecasting for 2005 was made by extrapolation from data of 2000 and 2003. The possibility of alterations in time is taken into consideration.

3.4 Reclassification into FRA 2005 classes

Not applied.

3.5 Data for National reporting table T3

FRA 2005 Categories / Designated function	Area (1000 hectares)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	1514	1746	1639	1514	1746	1639
Protection of soil and water	303	360	503	303	360	503
Conservation of biodiversity	151	137	142	151	137	142
Social services	195	0	0	195	ID	ID
Multiple purpose	0	0	0	not appl.	not appl.	not appl.
No or unknown function	0	0	0	not appl.	not appl.	not appl.
Total - Forest	2163	2243	2284	not appl.	not appl.	not appl.
Other wooded land						
Production	No data	-	-	No data	-	-
Protection of soil and water	No data	5	5	No data	5	5
Conservation of biodiversity	No data	2	2	No data	2	2
Social services	No data	-	-	No data	1	1
Multiple purpose	No data	87	75	not appl.	not appl.	not appl.
No or unknown function	No data	-	-	not appl.	not appl.	not appl.
Total – Other wooded land	No data	94	82	not appl.	not appl.	not appl.

3.6 Comments to National reporting table T3

4 Table T4 – Characteristics of Forest and Other wooded land

4.1 FRA 2005 Categories and definitions

Category	Definition
Primary	Forest / Other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Modified natural	Forest / Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities.
Semi-natural	Forest / Other wooded land of native species, established through planting, seeding or assisted natural regeneration.
Productive plantation	Forest / Other wooded land of introduced species, and in some cases native species, established through planting or seeding mainly for production of wood or non wood goods.
Protective plantation	Forest / Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. 2. Yearbook “Forest 2004”, Tartu 2005; or “Eesti Metsad 2003”, Tallinn 2004 http://www.metsad.ee/trykised07.html#EestiMetsad2003	H	forest	2003	NFI 2003 (combined NFI-data from period 1999–2003)
2. Calculations for FRA 2005, unpublished	H	forest, other wooded land	forest – 2000; OWL – 2000, 2003	NFI 2003 (combined NFI-data from period 1999–2003) Data of the stand-wise forest inventory database was used for the calibration purposes
3. Calculations for FRA 2005, unpublished	L	modified natural, semi-natural	2000, 2003	

4.2.2 Classification and definitions

National class	Definition
Primary	Conservation forests
Modified natural	Forest of native species where there are indications of human activities
Semi-natural	Forest of native species, established through planting or seeding where there are clearly visible indications of human activities
Productive plantation	Forest of introduced species (100% artificially regenerated)
Protective plantation	Forest established mainly for provision of services

4.2.3 Original data

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	2000	2003	2000	2003
Primary	137	140	0	0
Modified natural	1418	1401	94	88
Semi-natural	687	725	0	0
Productive plantation	1	1	0	0
Protective plantation	0	0	0	0
TOTAL	2243	2267	94	88

4.3 Analysis and processing of national data

4.3.1 Calibration

Not applied.

4.3.2 Estimation and forecasting

The forecast for the 2005 was derived by linear extrapolation from data of 2000 and 2003. The latest area (2003) is used for reporting on Primary forest for reference years 2000 and 2005.

4.4 Reclassification into FRA 2005 classes

Not needed

4.5 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	No data	140	140	No data	0	0
Modified natural	No data	1415	1392	No data	94	82
Semi-natural	No data	687	751	No data	0	0
Productive plantation	No data	1	1	No data	0	0
Protective plantation	No data	0	0	No data	0	0
TOTAL	2163	2243	2284	No data	94	82

4.6 Comments to National reporting table T4

Forests of strict reserves are assigned to group of primary forests, as forest activities have not been carried out there for decades. According to the expert estimation “other wooded land” was assigned to “modified natural” group.

The latest area (2003) is used for reporting on Primary forest for reference years 2000 and 2005.

5 Table T5 – Growing stock

5.1 FRA 2005 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.
Commercial growing stock	The part of the growing stock of species that are considered as commercial or potentially commercial under current market conditions, and with a diameter at breast height of Z cm or more.

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. "Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (<i>Forest management and wood utilisation development plan until 2010</i>), Tallinn 1989	L	growing stock on forest land	1988	The combined stand-wise forest inventory data of 1979–1988
2. Yearbook "Forest 2004", Tartu 2005; or "Eesti Metsad 2003", Tallinn 2004 http://www.metsad.ee/trykised07.html#EestiMetsad2003	H	growing stock on forest land	2003	NFI 2003 (combined NFI-data from period 1999–2003)
3. Calculations for FRA 2005, unpublished	H	growing stock on other wooded land and forest	OWL – 2000, 2003 forest – 2000	NFI 2003 (combined NFI-data from period 1999–2003)

5.2.2 Classification and definitions

National class	Definition
Growing stock	Volume over bark of all living trees (more than 0 cm in diameter at breast height). Includes the stem from stump height up to a top of tree, excludes branches.
Commercial growing stock	Growing stock in forest available for wood supply.

5.2.3 Original data

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest			Other wooded land		
	1988	2000	2003	1988	2000	2003
Growing stock	260	457,6	451,5	No data	4,7	4,5
Commercial growing stock	243	426,9	421,9	No data	-	-

5.3 Analysis and processing of national data

5.3.1 Calibration

Not applied.

5.3.2 Estimation and forecasting

The data for the 1990 were derived by extrapolation from data of 1979–1988.

National Forest Inventory results of 1999–2003 are combined during data processing. Forest area for 2000 is derived by interpolation and forecasting for 2005 was made by extrapolation from data of 1999–2003.

5.4 Reclassification into FRA 2005 classes

Not applied.

5.5 Data for National reporting table T5

FRA 2005 Categories	Volume (million m ³ over bark)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock	ID	457,6	447,0	No data	4,7	4,4
Commercial growing stock	ID	426,9	419,0	No data	0	0

Insufficient Data is reported for 1990 in the final reporting table due to inconsistencies in data for the period 1979 to 1988 compared with 1999–2003 period.

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included into Growing stock (X)	cm	0	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	0	
3. Minimum diameter of branches included in Growing stock (W)	cm	-	Branches are excluded in growing stock
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	0	
5. Volume refers to “Above ground” (AG) or “Above stump” (AS)	AG/AS	AS	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No	
7. If yes, then attach a separate note giving details of the change	Attachment		

5.6 Comments to National reporting table T5

6 Table T6 – Biomass stock

6.1 FRA 2005 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 living 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 biomass	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.

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. "Eesti Metsad 2003" (Estonian forests, NFI results"), Tallinn 2004 http://www.metsad.ee/trykised07.html#EestiMetsad2003	H	Growing stock by tree species of forest, volume of deadwood on forest land	2003	NFI 2003 (combined NFI-data from period 1999–2003)
2. Calculations for FRA 2005, unpublished	H	Growing stock by tree species of forest and other wooded land, volume of deadwood on forest land and OWL	Forest: 2000 OWL: 2000, 2003	NFI 2003 (combined NFI-data from period 1999–2003)
3. "GFRA – guidelines for country reporting to FRA2005", Rome 2004, appendix 5		Wood densities of stemwood, BEF, root-shoot ratio	2000, 2003, 2005	Factors for calculation of biomass stocks

6.2.2 Classification and definitions

Comply with FRA 2005 definitions

6.2.3 Original data

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2003	1990	2000	2003
Above-ground biomass	No data	264,832	261,584	No data	2,897	2,778
Below-ground biomass	No data	76,903	75,872	No data	0,786	0,752
Sub-total: Total living biomass	No data	341,735	337,456	No data	3,683	3,530
Dead wood biomass	No data	15,454	16,224	No data	0,068	0,065
TOTAL	No data	357,189	353,680	No data	3,751	3,595

6.3 Analysis and processing of national data

6.3.1 Calibration

Not applied.

6.3.2 Estimation and forecasting

National Forest Inventory results of 1999–2003 are combined during data processing. Forecasting for 2005 of growing stock was made by extrapolation from data of 1999–2003, results of the forecast were used for the calculation of biomass stock.

6.4 Reclassification into FRA 2005 classes

Not applied.

6.5 Data for National reporting table T6

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	No data	264.832	259.193	No data	2.897	2.727
Below-ground biomass	No data	76.903	75.121	No data	0.786	0.737
Sub-total: Total living biomass	No data	341,735	334,314	No data	3,683	3,464
Dead wood biomass	No data	15.454	16.415	No data	0.068	0.064
TOTAL	No data	357,189	350,729	No data	3,751	3,528

6.6 Comments to National reporting table T6

Deadwood includes all standing and lying deadwood larger than or equal to 8cm in diameter.

Growing stock of forest land and other wooded land by tree species from NFI2003 was used to calculate biomass stock. Basic wood densities for boreal and temperate species from the appendix 5 table 5.2 (“GFRA – guidelines for country reporting to FRA2005”) were used to calculate stemwood biomass for different tree species. Default values of biomass expansion factors for boreal zone (the appendix 5 table 5.4 “GFRA – guidelines for country reporting to FRA2005”) were used to calculate above-ground biomass. Average below-ground to aboveground biomass ratio (conifer forest – AGBM 50–150 t/ha, temperate other broadleaf forest – AGBM 75–150 t/ha) the appendix 5 table 5.5 “GFRA – guidelines for country reporting to FRA2005”) were used to calculate below-ground biomass.

7 Table T7 – Carbon stock

7.1 FRA 2005 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 living 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 biomass	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 a minimum diameter chose by the country for lying dead (for example 10 cm), in various states of decomposition above the mineral or organic soil. This includes the litter, fomic, and humic layers.
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.

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. Table T6 Biomass stock, present report	M	Biomass stocks	2000, 2003, 2005	See table 6.2.1
2. Kõlli R., Asi E., Köster T., “Organic carbon pools in Estonian forest soils”, Baltic forestry, 2004 Vol. 10, No 1, p 19-26	M	Forest soil groups, thickness of soil cover (SC) and pools of soil organic carbon (SOC) in Estonian forest soils	2000, 2003, 2005	Shares of forest soil groups from total forest area in 1991 were used to calculate forest soil group areas in 2000, 2003 and 2005
3. Yearbook “Forest 2004”, Tartu 2005; or “Eesti Metsad 2003”, Tallinn 2004 http://www.metsad.ee/trykised07.html#EestiMetsad2003	H	forest area	2003	NFI 2003 (combined NFI-data from period 1999–2003)
4. Calculations for FRA 2005, unpublished	H	area of other wooded land and forest	OWL – 2000, 2003 forest – 2000	NFI 2003 (combined NFI-data from period 1999–2003)

7.2.2 Classification and definitions

Comply with FRA 2005 definitions.

7.2.3 Original data

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2003	1990	2000	2003
Carbon in above-ground biomass	No data	132,416	130,792	No data	1,4485	1,389
Carbon in below-ground biomass	No data	38,452	37,936	No data	0,393	0,376
Sub-total: Carbon in living biomass	No data	170,868	168,728	No data	1,842	1,765
Carbon in dead wood	No data	7,727	8,112	No data	0,034	0,0325
Carbon in litter	No data	No data	No data	No data	No data	No data
Sub-total: Carbon in dead wood and litter	No data	7,727	8,112	No data	0,034	0,033
Soil carbon in soil cover*	No data	349,820	353,563	No data	14,66	13,725
TOTAL CARBON	No data	528,415	530,403	No data	16,536	15,523

7.3 Analysis and processing of national data

7.3.1 Calibration

Not applied.

7.3.2 Estimation and forecasting

National Forest Inventory results of 1999–2003 are combined during data processing. Forecasting for 2005 of growing stock was made by extrapolation from data of 1999–2003, results of the forecast were used for the calculation of biomass stock and carbon stock.

7.4 Reclassification into FRA 2005 classes

Not applied.

7.5 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	No data	132.416	129.597	No data	1.4485	1.3635
Carbon in below-ground biomass	No data	38.452	37.561	No data	0.393	0.3685
Sub-total: Carbon in living biomass	No data	170,868	167,157	No data	1,842	1,732
Carbon in dead wood	No data	7.727	8.208	No data	0.034	0.032
Carbon in litter	No data	No data	No data	No data	No data	No data
Sub-total: Carbon in dead wood and litter	No data	7,727	8,208	No data	0.034	0.032
Soil carbon in soil cover*	No data	349.820	356.214	No data	14.66	12.789
TOTAL CARBON	No data	528,415	531,579	No data	16,536	14,553

7.6 Comments to National reporting table T 7

For the calculation of soil carbon in soil cover on forest and other wooded land the following data were used:

- soil organic carbon pools of soil cover
- share of soil groups from total forest land area in 1991.

Area of forest land and other wooded land for years 2000, 2003 and 2005 were obtained from NFI2003 results (see T1). Distribution of soil groups by area and SOC pools in 1991 were applied to the area of forest and other wooded land in 2000, 2003, 2005.

Forest soil groups, thickness of soil cover* (SC) and pools of soil organic carbon (SOC) in Estonian forest soils in 1991

Group No	Soil or soil association	Soil code by WRB	% from forest land	Thickness of soil cover (SC) mean (M) + standard deviation (SD)		SOC pools of soil cover Mg ha ⁻¹	Forest land area in 1991 (1000 ha)	Sum of SOC pools of soil cover in Gg
				M	SD			
I	Rendzic & Sceleitic & Gleyic Leptosols	LP rz sk gl	0,8	24	3,6	102	16,1	1642
II	Calcaric & Endosceleitic Cambisols	CM ca skn	1,9	56	18,9	109	38,3	4175
III	Mollic & Endogleyic Cambisols	CM mo gln	3,3	47	8,1	76	66,5	5054
IV	Sceleitigleyic Cambisols	CM gls	1,3	43	9,8	96	26,2	2515
V	Cutanic & Endogleyic Luvisols	LV ct gln	2,4	70	18,8	95	48,4	4590
VI	Glossic & Gleyiglossic Albeluvisols	AB gs gls	3,6	92	18,7	64	72,6	4646
VII	Haplic Albeluvisols	AB ha	2,7	86	13,9	88	54,4	4787
VIII	Endogleyic Albeluvisols	AB gln	1,6	72	19,4	65	32,2	2093
IX	Haplic Podzols	PZ ha	3,8	67	25,0	45	76,6	3447
X	Endogleyic Podzols	PZ gln	2,2	62	16,7	44	44,3	1949
XI	Mollic & Calcic & Eutric Gleysols	GL mo cc eu	12,1	39	12,6	120	243,9	29268
XII	Luvic & Epidystric Gleysols	GL lv dye	8,0	55	21,0	126	161,3	20324
XIII	Spodic & Umbric & Dystric Gleysols	GL sd um dy	9,2	70	14,6	113	185,4	20950
XIV	Saprihistic Gleysols	GL his	5,3	51	11,9	209	106,8	22321
XV	Fibrihistic Podzols	PZ hif	3,1	76	18,0	114	62,5	7125
XVI	Eutric & Salic Fluvisols	FL eu sz	1,1	26	5,7	84	22,2	1865
XVII	Eutric & Sapric Histosols	HS eu sa	16,3	50	0	333	328,6	109424
XVIII	Dystric Histosols	HS dy	6,9	50	0	210	139,1	29211
XIX	Fibric Histosols	HS fi	13,7	50	0	139	276,2	38392
XX	Protic & Spolic Regosols	RG pr sp	0,7	<25		43	14,1	619
Total			100				2016	314397

* Soil cover or solum as a whole, whose depth reaches from the surface to the unchanged parent material or C horizon.

Carbon stock in living biomass and deadwood on forest land and other wooded land was calculated using biomass stock figures (see T6). Factor 50% of carbon content in biomass was used for calculations

8 Table T8 – Disturbances affecting health and vitality

8.1 FRA 2005 Categories and definitions

Category	Definition
Disturbance by fire	Disturbance caused by wildfire, independently whether it broke out inside or outside the forest/OWL.
Disturbance by insects	Disturbance caused by insect pests that are detrimental to tree health.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Other disturbance	Disturbance caused by other factors than fire, insects or diseases.

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Aastaraamat Mets 2002, (<i>Yearbook Forest 2002</i>), Centre of Forest Protection and Silviculture, Estonia, 2004.	H	forest fires: burnt forest area (ha)	1990, 1991, 1992, 1993, 2000	Registered area of forest fires during the year
Online database of the Statistical Office of Estonia (http://pub.stat.ee/px-web.2001/1_Databas/Environment/04Natural_resources_and_their_use/06Forest_resources/06Forest_resources.asp); or Aastaraamat Mets 2002, (<i>Yearbook Forest 2002</i>), Centre of Forest Protection and Silviculture, Estonia, 2004.	M	Other T8 categories	1991, 1992, 1993, 2000	Disturbed area at the end of the year

8.2.2 Classification and definitions

National class	Definition
Other disturbance	Forest areas damaged by wind, snow, affected by flood and human activities (excessive cuttings not corresponding the Forest Act)

8.2.3 Original data

FRA-2005 Categories	Average annual area affected (1000 hectares)				
	Forests				
	1990	1991	1992	1993	2000
Disturbance by fire	0,194	0,058	1,787	0,647	0,684
Disturbance by insects	No data	1,330	1,871	2,468	0,645
Disturbance by diseases	No data	3,697	3,341	2,797	2,665
Disturbances by game	No data	33,125	31,818	19,695	8,674
Other disturbance	No data	1,057	1,436	1,076	4,503

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

The average for 1990 is obtained, using the data for years 1990–1993 for fires (average). For all other disturbances, the 2000 figure is used directly due to lack of other information.

8.4 Reclassification into FRA 2005 classes

National disturbance classes	FRA 2005 disturbance classes			
	Fire	Insects	Disease	Other
Fire	100%			
Games				100%
Insects		100%		
Fungi			100%	
Other				100%

8.5 Data for National reporting table T8

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire	0.672	0.684	No data	No data
Disturbance by insects	1.89	0.645	No data	No data
Disturbance by diseases	3.28	2.67	No data	No data
Other disturbance	29.4	13.2	No data	No data

8.6 Comments to National reporting table T8

9 Table T9 – Diversity of tree species

9.1 FRA 2005 Categories and definitions

Category	Definition
Number of native tree species	The total number of native tree species that have been identified within the country.
Number of critically endangered tree species	The number of native tree species that are classified as “Critically endangered” in the IUCN red list.
Number of endangered tree species	The number of native tree species that are classified as “Endangered” in the IUCN red list.
Number of vulnerable tree species	The number of native tree species that are classified as “Vulnerable” in the IUCN red list.

9.2 National data

9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
“EESTI NSV FLOORA” (FLORA OF THE ESTONIAN SSR), 1960-1979, EESTI NSV TEADUSTE AKADEEMIA ZOOLOOGIA JA BOTAANIKA INSTITUUT	H	Native tree species	2000	
IUCN	H	Vulnerable, Endangered and Critically endangered	2000	

9.2.2 Classification and definitions

A tree is defined as a woody perennial species which can achieve up to 8 or more metres height in local natural conditions.

9.2.3 Original data

FRA 2005 Categories	Number of species (year 2000)
Native tree species	27
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	0

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	27
Critically endangered tree species	0
Endangered tree species	0

Vulnerable tree species	0
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9.4 Comments to National reporting table T9

Native tree species of Estonia are:

1. *Acer platanoides*
2. *Alnus glutinosa*
3. *Alnus incana*
4. *Betula pendula*
5. *Betula pubescens*
6. *Crataegus rhipidophylla*
7. *Frangula alnus*
8. *Fraxinus excelsior*
9. *Juniperus communis*
10. *Malus sylvestris*
11. *Padus avium*
12. *Picea abies*
13. *Pinus sylvestris*
14. *Populus tremula*
15. *Quercus robur*
16. *Rhamnus catharticus*
17. *Salix alba*
18. *Salix caprea*
19. *Salix fragilis*
20. *Salix pentandra*
21. *Sorbus aucuparia*
22. *Sorbus intermedia*
23. *Sorbus rupicola*
24. *Taxus baccata*
25. *Tilia cordata*
26. *Ulmus glabra*
27. *Ulmus laevis*

10 Table T10 – Growing stock composition

10.1 FRA 2005 Categories and definitions

List of ten most common species (common and scientific names).

Common name	Scientific name
Scots pine	<i>Pinus sylvestris</i>
Norway spruce	<i>Picea abies</i>
Common silver birch, Downy birch	<i>Betula pendula</i> , <i>Betula pubescens</i>
European aspen	<i>Populus tremula</i>
White alder	<i>Alnus incana</i>
European black alder	<i>Alnus glutinosa</i>
European ash	<i>Fraxinus excelsior</i>
Goat willow	<i>Salix caprea</i>
Pedunculate oak	<i>Quercus robur</i>
European bird cherry	<i>Padus avium</i>

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. "Eesti NSV metsade majandamise ja puudukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	L	Growing stock composition	1988	The combined stand-wise forest inventory data of 1979–1988, expert estimates were used for calibration purposes
2. Calculations for FRA 2005, unpublished	H	Growing stock composition	2000	NFI 2003 (combined NFI-data from period 1999–2003)

10.2.2 Original data 1988 jaotatud SMI-at tulenevaid suhteid, arvestades tolleaegseid, pane 1988 1990. aasta suhtega

FRA 2005 Categories / Species name		Growing Stock in Forests (million m ³)	
Common name	Scientific name	1988	2000
Scots pine	<i>Pinus sylvestris</i>	80	127,5
Norway spruce	<i>Picea abies</i>	77	113,9
Common silver birch, Downy birch	<i>Betula pendula</i> , <i>Betula pubescens</i>	55	102,5
European aspen	<i>Populus tremula</i>	15	37,5
White alder	<i>Alnus incana</i>	16	37,1
European black alder	<i>Alnus glutinosa</i>	9	21,0
European ash	<i>Fraxinus excelsior</i>	-	5,9
Goat willow	<i>Salix caprea</i>	-	4,5
Pedunculate oak	<i>Quercus robur</i>	-	2,7
European bird cherry	<i>Padus avium</i>	-	1,2
Other species		7	3,8
TOTAL		260	457,6

10.3 Analysis and processing of national data

10.3.1 Calibration

Not applied.

10.3.2 Estimation and forecasting

Expert estimation was used to calculate distribution of growing stock by tree species. NFI 2003 results of distribution of growing stock were used for calibration purposes. The data for the 1990 derived by extrapolation from stand-wise forest inventory data of 1979–1988.

10.4 Data for National reporting table T10

FRA 2005 Categories / Species name		Growing Stock in Forests (million m ³)	
Common name	Scientific name	1990	2000
Scots pine	<i>Pinus sylvestris</i>	ID	127.5
Norway spruce	<i>Picea abies</i>	ID	113.9
Common silver birch, Downy birch	<i>Betula pendula</i> , <i>Betula pubescens</i>	ID	102.5
European aspen	<i>Populus tremula</i>	ID	37.5
White alder	<i>Alnus incana</i>	ID	37.1
European black alder	<i>Alnus glutinosa</i>	ID	21.0
European ash	<i>Fraxinus excelsior</i>	ID	5.9
Goat willow	<i>Salix caprea</i>	ID	4.5
Pedunculate oak	<i>Quercus robur</i>	ID	2.7
European bird cherry	<i>Padus avium</i>	ID	1.2
Other species		ID	3.8
TOTAL		ID	457,6

10.5 Comments to National reporting table T10

No separate data for European silver birch *Betula pendula* and downy birch *Betula pubescens*.

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

Category	Definition
Industrial wood removal	The wood removed (volume of round wood over bark) for production of goods and services other than energy production (wood fuel).
Woodfuel removal	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
1. "Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	M	Wood removal from forest land	1988	
2. Calculations for FRA 2005, unpublished	H	Wood removal from forest and other wooded land	2000, 2002	NFI 2003 (combined NFI-data from period 1999–2003), theoretical assortmentation of the felling volume
3. Felling volumes available at web-site of the Estonian Statistical Office (on-line database at http://pub.stat.ee/px-web.2001/1_Databas/Economy/12Forestry/12Forestry.asp)	M	Wood removal from forest	1991	

11.2.2 Classification and definitions

Comply with FRA 2005 definitions.

11.2.3 Original data

FRA 2005 Categories	Volume in 1000 cubic meters of roundwood over bark							
	Forest				Other wooded land			
	1988	1991	2000	2002	1988	1991	2000	2002
Industrial roundwood	2540	1991	8 974	8 554	No data	No data	1	1
Woodfuel	1065	1016	2 190	1 975	No data	No data	4	4
TOTAL for Country	3605	3007	11 164	10 529	No data	No data	5	5

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

The data for the 1990 were calculated using interpolation from data of 1988 and 1991
The data for 2005 were calculated using extrapolation of the NFI data from 1999–2002.

11.4 Reclassification into FRA 2005 classes

Not applied.

11.5 Data for National reporting table T11

FRA 2005 Categories	Volume in 1000 cubic meters of roundwood over bark					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	2174	8974	7502	No data	1	1
Woodfuel	1032	2190	2100	No data	4	5
TOTAL for country	3206	11164	9577	No data	5	6

11.6 Comments to National reporting table T11

Estimations for years 2000 and 2002 are based on theoretical assortmentation of the felling volume. Conversion factor 1.14 was used to calculate sawlogs' from volume under bark to volume over bark.

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (wood fuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. "Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (<i>Forest management and wood utilisation development plan until 2010</i>), Tallinn 1989	M	Wood removal from forest land	1988	Prices of state forest roundwood on the roadside, without VAT
2. Yearbook "Forest 2004", Tartu 2005	H	Prices of roundwood	2003	Prices of roundwood by timber assortments sold from State Forest Management Centre (average roadside prices excl. VAT)
3. Calculations for FRA 2005, unpublished	H	Wood removal from forest and other wooded land	2000, 2002	NFI 2003 (combined NFI-data from period 1999–2003), theoretical assortment of the felling volume

12.2.2 Classification and definitions

Comply with FRA 2005 definitions.

12.2.3 Original data

Assortment of stemwood	Volume in 1000 cubic meters of roundwood over bark					
	Forest			Other wooded land		
	1988	2000	2002	1988	2000	2002
Sawlogs	1497	6 036	6 084	No data	0	0
Pulp wood	1044	2 938	2 470	No data	1	1
Woodfuel of stem wood	1064	2 190	1 975	No data	4	4
Removals total	3605	11 164	10 529	No data	5	5

Assortment of stemwood	Value of roundwood (million EEK)					
	Forest			Other wooded land		
	1988	2000	2002	1988	2000	2002
Sawlogs	933	3 264	3 328	No data	0,0	0,0

Pulp wood	314	939	766	No data	0,3	0,3
Woodfuel of stem wood	155	282	256	No data	0,4	0,5
Removals total	1402	4 485	4 350	No data	0,7	0,8

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

Estimation of roundwood based on theoretical assortment of the felling volume.

The value of roundwood was calculated, using the exchange rate of 2003, which was 1 USD = 13,85522 EEK. Forecasting for 2005 was made taking into account trends and rounding off figures. Exchange rate for 2005 = 2003 exchange rate.

12.4 Reclassification into FRA 2005 classes

Not applied.

12.5 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (1000 USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	80009	303351	268576	No data	21	27
Woodfuel	9976	20353	19601	No data	28	52
TOTAL for country	89 985	323 705	299 346	No data	49	79

12.6 Comments to National reporting table T12

Estimations based on theoretical assortment of the felling volume.

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
<u>Plant products / raw material</u>
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
<u>Animal products / raw material</u>
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. Yearbook "Forest 2004", Tartu 2005	M	Hides, skins	1990, 2000	Assuming that hides and skins are used from all killed animals
2. Online database of the Statistical Office of Estonia http://pub.stat.ee/px-web.2001/I_Databas/Economy/16Hunting/16Hunting.asp	M	Hides, skins	2004	Assuming that hides and skins are used from all killed animals
3. "Forest Management and Protection in Estonia", April 2003, Tartu Estonia, 58 p; ISBN 9949-10-040-2	L	Christmas trees	2003	Expert estimate

13.2.2 Classification and definitions

Comply with FRA 2005 definitions.

13.2.3 Original data

NWF products	Unit	1990	2003
Christmas trees	1000	No data	200
Sum. 6 Ornamental plants	1000	No data	200

NWF products		Unit	1990	2000	2004
1. Moose	<i>Alces alces</i>	Number (pcs)	5400	2384	4075
2. Red deer	<i>Cervus elaphus</i>		70	200	123
3. Roe deer	<i>Capreolus capreolus</i>		9600	3615	7669
4. Wild boar	<i>Sus scrofa</i>		7000	3952	8122
5. Brown bear	<i>Ursus arctos</i>		55	20	12

6. Wolf	<i>Canis lupus</i>		85	56	37
7. Lynx	<i>Lynx lynx</i>		60	120	84
8. Red fox	<i>Vulpes vulpes</i>		1100	5022	6184
9. Raccoon dog	<i>Nyctereutes procyonoides</i>		3000	2222	3516
10. Mountain hare	<i>Lepus timidus</i>		1100	663	391
11. European hare	<i>Lepus europaeus</i>		2100	1621	1306
12. Marten	<i>Martes martes</i>		700	912	1195
13. Badger	<i>Meles meles</i>		No data	46	69
14. Beaver	<i>Castor fiber</i>		200	2195	4384
15. Polecat	<i>Mustela putorius</i>		400	158	140
16. Mink	<i>Mustela vison</i>		300	343	224
Sum. 10 Skins and hides			31170	23529	37531

NWF products		Unit	1990	2000	2004
1. Moose	<i>Alces alces</i>	1000 kg	648	286	489
2. Red deer	<i>Cervus elaphus</i>		4	12	7
3. Roe deer	<i>Capreolus capreolus</i>		115	43	92
4. Wild boar	<i>Sus scrofa</i>		280	158	325
Sum. 12 Bush meat			1047	500	913

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

Number of skins and hides of Mountain hare, Polecat and Mink in 1990 are expert estimates.

13.4 Reclassification into FRA 2005 classes

1 Christmas tree = 10 kg

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
<u>Plant products / raw material</u>					
1. Food					
2. Fodder					
3. Raw material for medicine and aromatic products					
4. Raw material for colorants and dyes					
5. Raw material for utensils, handicrafts & construction					
6. Ornamental plants		1000 kg	2000	2000	2000
7. Exudates					
8. Other plant products					
<u>Animal products / raw material</u>					
9. Living animals					
10. Hides, skins and trophies		1000 pcs	31.2	23.5	37.5
11. Wild honey and bee-wax					
12. Bush meat		1000 kg	1047	500	913
13. Raw material for medicine					
14. Raw material for colorants					
15. Other edible animal products					
16. Other non-edible animal products					

13.6 Comments to National reporting table T13

The amounts for 2005 are repeated figures of 2004. For the bush meat calculation the following average meat production figures per animal were used: Moose – 120 kg, Red deer – 60 kg, Roe deer – 12 kg, Wild boar – 40 kg. 1 Christmas tree = 10 kg.

14 Table T14 – Value of non-wood forest product removal

14.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
<u>Plant products / raw material</u>
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
<u>Animal products / raw material</u>
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

14.2 National data

14.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. "Forest Management and Protection in Estonia", April 2003, Tartu Estonia, 58 p; ISBN 9949-10-040-2	L	Market value of Christmas trees	2003	Expert estimate

14.2.2 Classification and definitions

Comply with FRA 2005, definitions.

14.2.3 Original data

FRA 2005 Categories	Value of the NWFP removed (1000 USD)			
	1990	2000	2003	2004
<u>Plant products / raw material</u>				
6. Ornamental plants	No data		2165	
<u>Animal products / raw material</u>				
12. Bush meat	No data	1442		2637

14.3 Analysis and processing of national data

14.3.1 Estimation and forecasting

The amounts for 2005 are repeated figures of 2004.

14.4 Reclassification into FRA 2005 classes

Not applied.

14.5 Data for National reporting table T14

FRA 2005 Categories	Value of the NWFP removed (1000 USD)		
	1990	2000	2005
<u>Plant products / raw material</u>			
1. Food			
2. Fodder			
3. Raw material for medicine and aromatic products			
4. Raw material for colorants and dyes			
5. Raw material for utensils, handicrafts & construction			
6. Ornamental plants	No data	2165	2165
7. Exudates			
8. Other plant products			
<u>Animal products / raw material</u>			
9. Living animals			
10. Hides, skins and trophies			
11. Wild honey and bee-wax			
12. Bush meat	No data	1442	2637
13. Raw material for medicine			
14. Raw material for colorants			
15. Other edible animal products			
16. Other non-edible animal products			
TOTAL	No data	3607	4802

14.6 Comments to National reporting table T14

Prices for bush meat are the prices of year 2004 (expert estimate 40 EEK/kg).
The price of Christmas trees is for year 2003 (expert estimate).

The value of NWFP was calculated, using the exchange rate of 2003, which was 1 USD = 13,85522 EEK. Exchange rate for 2000–2005 = 2003 exchange rate.

15 Table T15 – Employment in forestry

15.1 FRA 2005 Categories and definitions

Category	Definition
Primary production of goods	Employment in activities related to primary production of goods, like industrial round wood, wood fuel and non-wood forest products.
Provision of services	Employment in activities directly related to services from forests and woodlands.
Unspecified forestry activities	Employment in unspecified forestry activities.

15.2 National data

15.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. Results of the Estonian Labour Force Survey, available at web-site of the Estonian Statistical Office (on-line database at http://pub.stat.ee/px-web.2001/1_Databas/Social_life/09Labour_market/02Employment/02Employment.asp); or "Forest Management and Protection in Estonia", April 2003, Tartu Estonia, 58 p; ISBN 9949-10-040-2	H	Employment in forestry	1990, 2000	The data of the ELFS are coded by economic activity (NACE Rev. 1; Forestry – NACE A02: Forestry, logging and related service activities). Figure for year 1990 stands for the employed persons in forestry aged 15-69 and in year 2000 for the employed persons in forestry aged 15-74.

15.2.2 Classification and definitions

Comply with FRA 2005 definitions.

15.2.3 Original data

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	n.a.	n.a.
Provision of services	n.a.	n.a.
Unspecified forestry activities	n.a.	n.a.
TOTAL	11.0	9.4

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

Not applied.

15.4 Reclassification into FRA 2005 classes

Not applied.

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	n.a.	n.a.
Provision of services	n.a.	n.a.
Unspecified forestry activities	11.0	9.4
TOTAL	11.0	9.4

15.6 Comments to National reporting table T15

The available statistics on employment in forestry are not divided into categories according to primary activities.