

GLOBAL FOREST RESOURCES ASSESSMENT 2015

COUNTRY REPORT

Estonia

Rome, 2014

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Global Forest Resources Assessment (FRA). This country report is prepared as a contribution to the FAO publication, the Global Forest Resources Assessment 2015 (FRA 2015).

The content and the structure are in accordance with the recommendations and guidelines given by FAO in the document Guide for country reporting for FRA 2015 (<http://www.fao.org/3/a-au190e.pdf>). These reports were submitted to FAO as official government documents.

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Introductory Text

Place an introductory text on the content of this report

Estonian Environment Agency (ESTE) is responsible for the dissemination of forest sector statistics in Estonia. Data of forest resources is published annually in Forest statistical yearbook “Mets” (see http://www.keskkonnainfo.ee/failid/aastaraamat_METS_2011.pdf) and in NFI yearbook “Eesti metsad” (see http://www.keskkonnainfo.ee/failid/Eesti_metsad_2010.pdf). ESTEA is responsible for data collection about forest resources, forest utilisation and management, forest health, game management etc. Different other institutions provide statistics and information about forests and forestry as well – e.g. Estonian Statistical Office, Rescue Board, Environmental Inspectorate, University of Life Sciences, Land Board.

The main data source for estimates of forest resource parameters is National Forest Inventory.

National Forest Inventory – overview

Large-area forest resource information, based on selective sampling, was conducted in Estonia during the last decade of previous century. Until the 1990s the national account of forest resources was based on stand-wise forest inventories. After independence was regained in Estonia in 1991, the ownership reform program was started. Part of it was land reform. Intensified forest management together with the land reform created a need for new inventory methods.

The first National Forest Inventory (NFI) covering the whole country commenced in 1999. The main objective of the NFI is to give a description of Estonia’s forests, but the NFI also gives information about the distribution of land by land-use classes and the afforestation and growing stock of non-forest land, etc. The Estonian Forest

Survey Centre conducted the NFI in 1999–2002. After its liquidation in 2003, the department of NFI continued its work as a subunit of the administrative institution Centre of Forest Protection and Silviculture. The latter was reorganized into the Estonian Environment Information Centre in 2010, and once more, into the Estonian Environment Agency, in April 2013. Despite continuous restructuring, NFI department is responsible for the inventories, planning of the design and estimation methods, field measurements, as well as calculation and publication of the results.

Methodologically, the NFI is designed as an annual research effort, which, using optimal methods, must ensure continuous updating of information and the forest database. A network of sample plots, covering the whole country, has been planned for five years with 20% clusters measured each year. Results of the sampling inventory are taken from point estimates of the different parameters obtained using data obtained from the measured sample plots. Cluster sampling with partial replacement is used (that is – both permanent and temporary sample plots). Because all permanent sample plots are re-measured every 5 years, the history of NFI can be divided into 5-year cycles. In connection with the need for additional information the variables measured on sample plots have increased year by year.

The Estonian NFI covers all land use classes, including all forests and other wooded lands in all ownership groups, including protected forests. Assessments of the forest resource by the NFI have become the basis for national and international statistics in Estonia. Noticeable, but inevitable, is the change of several assessments during the period 1990–2000, when the drastic change from stand-wise inventory statistics to the NFI took place. Therefore the changes during that period may seem to be larger than they were in reality. Data for 1990 are derived from official statistics, combined with extrapolation of the NFI data and also special studies made for GHG inventory.

The basis of the assessment in this report is still the national forest definition. Starting from the 2005, GFRA forest criteria and OWL criteria were used in parallel with the national forest definition. The aim was to present more precise and internationally comparable assessments in the future. Forest, which is below the national criteria but meets the FRA criteria includes in other wooded land. Thus, the sum of the area of forest and OWL meets the criteria of the FRA definitions.

The statistical design for the Estonian NFI is a systematic sampling without pre-stratification. The network of sample plots covers the whole country and the sampling intensity is also the same throughout the country. The sample (cluster) distribution is based on a national 5 km x 5 km quadrangle grid, determined by the L-EST coordinates system. Three types of circular sample plots with fixed-radius are used: (a) volume sample plots, (b) site category sample plots, (c) regeneration and felling sample plots. Plots with multiple land categories or stands of distinctly different parameters are divided into sections according to detailed regulations.

Sample plots are organised into clusters to increase the efficiency of the survey – into permanent clusters and temporary clusters that form 800 x 800 metre squares. 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. Altogether, about 5000 permanent sample plots have been established since 1999, half of which are located on productive forest land. Site category plots, regeneration and felling plots are always temporary plots with a radius of 7 m.

All population units have equal probability of selection into the sample. The result is point estimates of multiple population parameters based on the measurement data. The area estimate of a land stratum is calculated as the product of the known land area of the administrative unit and the ratio of the number of sample plots in the stratum to the total number of plots. Area estimation is based on the total land area and inland water, Lake Peipsi, which is known and assumed to be error-free. To prevent errors, inventory results of the last five years are combined during data processing in general.

Volume is calculated over bark, from the ‘stump height’, excluding branches. The mean volume for a given stratum is the ratio of the sum of volumes for all trees on plots belonging to the stratum and the number of sample plots which belong to the stratum.

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 forest owners. Some estimates for the 15 Estonian counties are also provided. The inventory results are available in the annual report “Estonian Forests. Statistics of forest resources and conditions by National Forest Inventory”, and also: <http://www.keskkonnainfo.ee/main/index.php> .

The NFI will provide a baseline of where our forest resources are and how they are changing over time.

Desk Study?

Check "yes" if this survey is a Desk Study, "no" otherwise

Desk Study?

no

1. What is the area of forest and other wooded land and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

1.1 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as "Forest" spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of 5-10 percent or trees able to reach these thresholds ; 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".
...of which with tree cover (<i>sub-category</i>)	Land considered as "Other land", that is predominantly agricultural or urban lands use and has patches of tree cover that span 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. It includes bothe forest and non-forest tree species.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.
Forest expansion	Expansion of forest on land that, until then, was not defined as forest.
...of which afforestation (<i>sub-category</i>)	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not defined as forest.
...of which natural expansion of forest (<i>sub-category</i>)	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).
Deforestation	The conversion of forest to other land use or the longterm reduction of the tree canopy cover below the minimum 10 percent threshold.
...of which human induced (<i>sub-category</i>)	Human induced conversion of forest to other land use or the permanent reduction of the tree canopy cover below the minimum 10 percent threshold.
Reforestation	Natural regeneration or re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.
...of which artificial reforestation (<i>sub-category</i>)	Re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.

1.2 National data

1.2.1 Data sources

References to sources of information	Variables	Years	Additional comments

1	Eesti NSV metsade majandamise ja puidukasutuse arenduskava “Eesti mets 2010” (Forest management and wood utilisation development plan until 2010), Tallinn 1989	Forest	1988	The combined stand-wise forest inventory data of 1979–1988
2	FRA 2005 Country report (Calculations for FRA 2005, unpublished)	Forest	2000	NFI-data (combined) from period 1999–2003
3	FRA 2010 Country report (Calculations for FRA 2010, unpublished)	Forest	2005	NFI 2003–2007
4	“Eesti Metsad 2012” (Estonian Forests 2012), Tallinn 2014 http://www.keskkonnainfo.ee	Forest	2010, 2012	NFI 2008-2012
5	FAOSTAT	Total land area	all	N/A
6	FAOSTAT	Inland water bodies	all	N/A
7	Calculations for FRA 2015, unpublished	Forest, OWL	all	NFI 1999-2012
8	National Greenhouse Gases Inventory Report, Estonia, 2014 http://cdr.eionet.europa.eu/ee/eu/ghgmm	Afforestation, expansion of forestry	all	NFI, special studies for GHG inventory
9	Statistics Estonia http://www.stat.ee/forestry	Reforestation	all	N/A

1.2.2 Classification and definitions

National class	Definition
Forest	Forest is defined as land, spanning more than 0.1 ha (a) covered with trees with the minimum height of 1.3 m and the minimum crown cover of 30%, or (b) managed for the purpose of timber production or the preservation of woody plant cover.
Other wooded land (OWL)	According to FRA 2015 definition, plus extra: forest land, which is below the national criteria but meets the FRA forest criteria (i.e. forests less than 30% of canopy cover).
Other land with trees	Urban parks, squares and gardens – no data.
Inland water bodies	According to FAOSTAT
Afforestation	Comply with FRA definition and IPCC definition.
Reforestation, artificial reforestation	Comply with FRA definition.
Natural expansion of forest	Comply with FRA definition.

Deforestation	Comply with FRA definition and IPCC definition.
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1.2.3 Original data

Forest area				
FRA 2015 Categories	Area (1000 hectares)			
	1988	2000	2005	2010
Forest	1916	2243	2252	2234
Other wooded land	n.a.	208	213	219
Other land	2323	1830	1803	1809
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	284	242	255	261
TOTAL	4523	4523	4523	4523

Forest expansion, reforestation				
FRA 2015 Categories	Annual forest establishment(1000 hectares/year)			
	1990	2000	2005	2010
Afforestation	3.84	2.58	2.49	1.41
Reforestation	5.66	25.92	19.26	23.77
...of which on areas previously planted	n.a.	n.a.	n.a.	n.a.
Natural expansion of forest	2.09	1.23	1.52	0.95

1.3 Analysis and processing of national data

1.3.1 Adjustment

Forest area			
National data and FAOSTAT data	Area (1000 hectares)		
	2000	2005	2010
National data Total land area (Total country area – Inland water bodies)	4281	4268	4262
FAOSTAT Total land area	4239	4239	4239
Difference	-42	-29	-23
National data Inland water	242	255	261
FAOSTAT Inland water	284	284	284
Difference	42	29	23

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.

Forest expansion, reforestation

Not applied.

1.3.2 Estimation and forecasting

Forest area
The National Forest Inventory results of 1999–2012 are combined during data processing.
a) The 1990 estimate was derived by interpolation of forest area based on stand-wise forest inventory data 1979–1988, combined with extrapolation of the NFI data 1999–2003, and also using special studies made for GHG inventory.
b) Forest area for 2000 is derived by interpolation from NFI data 1999–2003.

- c) Estimations for 2005 are averages from NFI data 2003–2007.
- d) Estimations for 2010 are averages from NFI data 2008–2012.
- e) Forecasting for 2015 was made by linear extrapolation, using data reported for 2000, 2005, 2010, and the latest inventory – NFI 2012. Thus, the possibility of alterations in time is taken into consideration.

Forest expansion, afforestation and reforestation

Forest expansion and afforestation data backward till 1990s derived from special studies made for GHG inventory in the framework of the NFI.

5-year averages are used for years 2000, 2005 and 2010; combined average for 1990.

Forecasting for 2015 was made by linear extrapolation.

1.3.3 Reclassification

Not applied.

1.4 Data

Table 1a

Categories		Area (000 hectares)				
		1990	2000	2005	2010	2015
	Forest	2206	2243	2252	2234	2232
	Other wooded land	196	208	213	219	224
	Other land	1837	1788	1774	1786	1783
	... of which with tree cover	N/A	N/A	N/A	N/A	N/A
	Inland water bodies	284	284	284	284	284
	TOTAL	4523.00	4523.00	4523.00	4523.00	4523.00

Table 1b

Categories		Annual forest establishment / loss (000 hectares per year)				...of which of introduced species (000 hectares per year)			
		1990	2000	2005	2010	1990	2000	2005	2010
	Forest expansion	3.84	2.58	2.49	1.41	0	0	0	0

CFRQ	... of which afforestation	1.75	1.35	0.97	0.46	0	0	0	0
CFRQ	... of which natural expansion of forest	2.09	1.23	1.52	0.95	0	0	0	0
CFRQ	Deforestation	0.18	0.43	1.74	1.58	0	0	0	0
CFRQ	... of which human induced	0.18	0.43	1.74	1.58	0	0	0	0
CFRQ	Reforestation	5.66	25.92	19.26	23.77	0	0	0	0
CFRQ	... of which artificial	5.07	5.97	6.84	8.01	0	0	0	0

Tiers

Category	Tier for status	Tier for reported trend
Forest	Tier 3	Tier 3
Other wooded land	Tier 3	Tier 3
Forest expansion	Tier 3	Tier 3
Deforestation	Tier 3	Tier 3
Reforestation	Tier 1	Tier 1

Tier criteria

Category	Tier for status	Tier for reported trend
<ul style="list-style-type: none"> • Forest • Other wooded land • Afforestation • Reforestation • Natural expansion of forest • Deforestation 	<p>Tier 3 : Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs</p> <p>Tier 2 : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago)</p> <p>Tier 1 : Other</p>	<p>Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status)</p> <p>Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status)</p> <p>Tier 1 : Other</p>

1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	Forested area below national criteria of forest that meets FRA forest definition (that is: with canopy cover 10 to 30%) includes in OWL estimation. Forest with area less than 0.1 ha is aggregated to nearest land use class.	The total forest area has increased since 1950s until 2005 in Estonia. During the last decade the area seems to be stable or slowly decreasing. Main reason for deforestation is conversion of forest land to the settlements. That was extremely high in years 2005-2009 (during "economic boom").

Other wooded land	Includes OWL according to the FRA definition, and additionally: forest land, which is below the national criteria (but meets the FRA forest criteria). The latter comprise 106 thousand ha (2,3% of total land area).	The Land Reform (in 90s) has two different influences on the other wooded land: a) former agricultural land become covered with trees, and b) OWL become covered with woods and classified as forest. The growing trend has slowed significantly.
Other land	N/A	N/A
Other land with tree cover	Insufficient data.	N/A
Inland water bodies	The national data is calibrated to tally with the official FAOSTAT figures.	N/A
Forest expansion	Forest expansion on abandoned agricultural land and grasslands was relatively high in 1990s in Estonia.	The trend has slowed down markedly in recent years.
Deforestation	All deforestation considered to be human-induced. Estimations of deforestation rates derived from (sample plots of) the National Forest Inventory and these correspond to the GHG national report (LULUCF sector).	N/A
Reforestation	Re-establishment of forest through natural succession included.	N/A

Other general comments to the table

N/A

2. What is the area of natural and planted forest and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

2.1 Categories and definitions

Term	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Naturalized introduced species	Other naturally regenerated forest where the tree species are predominantly non-native and do not need human help to reproduce/maintain populations over time.
Introduced species	A species, subspecies or lower taxon occurring <i>outside</i> 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).
Category	Definition
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.
...of which of introduced species (<i>sub-category</i>)	Other naturally regenerated forest where the trees are predominantly of introduced species.
...of which naturalized (<i>sub-sub category</i>)	Other naturally regenerated forest where the trees are predominantly of naturalized introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
...of which of introduced species (<i>sub-category</i>)	Planted forest where the planted/seeded trees are predominantly of introduced species.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
...of which planted (<i>sub-category</i>)	Mangroves predominantly composed of trees established through planting.

2.2 National data

2.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	“Eesti metsad 2012” (Estonian Forests 2012), Tallinn 2014 http://www.keskkonnainfo.ee	Forest area by categories	2010, 2012	NFI 2008–2012
2	Calculations for FRA 2015, unpublished	Forest area by categories	all	NFI (1999) 2006–2012
3	N/A	N/A	N/A	N/A

4	N/A	N/A	N/A	N/A
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2.2.2 Classification and definitions

National class	Definition
Primary forest	According to used FRA 2015 and ITTO definition. Comply with national “natural forest” class.
Other naturally regenerated forest	According to used FRA 2015 definition and ITTO definition.
Planted forest	Comply with FRA definition.
Introduced species, naturalized species	Comply with FRA definition.

2.2.3 Original data

FRA 2015 Categories	Forestarea(000 hectares)	
	2005	2010
Primary forest	52	55
Other naturally regenerated forest	2025	2005
...of which of introduced species	0	0
...of which naturalized	0	0
Planted forest	176	174
...of which of introduced species	2	2
TOTAL	2252	2234

2.3 Analysis and processing of national data

2.3.1 Adjustment

Not applied.

2.3.2 Estimation and forecasting

Naturalness has not been observed by NFI before year 2006. Therefore the extrapolated averages of categories of forest characteristics (2006–2012) were applied to the forest area for other reference years and forecast 2015.

2.3.3 Reclassification

2.4 Data

Table 2a

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Primary forest	40	48	52	55	58
	Other naturally regenerated forest	1994	2020	2024	2005	2000
	... of which of introduced species	0	0	0	0	0
	... of which naturalized	0	0	0	0	0
	Planted forest	172	175	176	174	174
	... of which of introduced species	2	2	2	2	2
TOTAL		2206.00	2243.00	2252.00	2234.00	2232.00

Table 2b

Primary forest converted to (000 ha)								
1990-2000			2000-2010			2010-2015		
Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land
0	0	0	0	0	0	0	0	0

Table 2c

Categories	Area (000 hectares)				
	1990	2000	2005	2010	2015
Mangroves (forest and OWL)	0	0	0	0	0

... of which planted	0	0	0	0	0
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Tiers

Category	Tier for status	Tier for reported trend
Primary forest	Tier 2	Tier 1
Other naturally regenerated forest	Tier 3	Tier 3
Planted forest	Tier 3	Tier 2
Mangroves	Tier 1	Tier 1

Tier Criteria

Category	Tier for status	Tier for reported trend
Primary forest/Other naturally regenerated forest/Planted forest	<p>Tier 3 : Data sources: Recent (less than 10 years) National Forest Inventory or remote sensing with ground truthing or data provided by official agencies or programme for repeated compatible NFIs</p> <p>Tier 2 : Data sources: Full cover mapping/ remote sensing or old NFI (more than 10 years) Tier 1 : Other</p>	<p>Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other</p>

2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	NFI 2006-2012	The area has increased steadily, mainly because there are more older forests and protected forests.
Other naturally regenerating forest	NFI 2006-2012	N/A
Planted forest	NFI 2006-2012	N/A
Mangroves	N/A	N/A

Other general comments to the table

N/A

3. What are the stocks and growth rates of the forests and how have they changed?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

3.1 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees with a minimum diameter of 10 cm at breast height (or above buttress if these are higher). Includes the stem from ground level up to a top diameter of 0 cm, excluding branches.
Net Annual Increment (NAI)	Average annual volume of gross increment over the given reference period less that of natural losses on all trees, measured to minimum diameters as defined for "Growing stock".
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 2 mm 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.
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 soil depth of 30 cm.

3.2 National data

3.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989.	Growing stock on forest land	1988	The combined stand-wise forest inventory data of 1979–1988
2	"Eesti Metsad 2007" (Estonian Forests 2007), Tallinn 2008 http://www.keskkonnainfo.ee	Growing stock, growing stock composition	2007	NFI 2007 (combined NFI-data from period 2003–2007)

3	Calculations for FRA 2010, unpublished	Growing stock (by species) on forest land	2000, 2005	NFI 1999–2007
4	“Eesti metsad 2012” (Estonian Forests 2012), Tallinn 2014 http://www.keskkonnainfo.ee	Growing stock, growing stock composition, deadwood	2010, 2012	NFI 2008–2012
5	Calculations for FRA 2015, unpublished	Growing stock (by species) on forest land and OWL; deadwood; net annual increment	all	NFI 1999–2012
6	Kõlli R., Asi E., Köster T., “Organic carbon pools in Estonian forest soils”, Baltic forestry, 2004 Vol. 10, No 1, p 19-26	Forest soil groups, thickness of soil cover (SC) and pools of soil organic carbon (SOC) in Estonian forest soils	1991	Shares of forest soil groups from total forest area in 1991 were used to calculate forest and other wooded land soil group areas in 1990, 2000, 2005, 2010, 2015
7	Question 1, present report	Area of forest and other wooded land	all	Data for calculation of soil carbon
8	IPCC 2006, Guidelines for National Greenhouse Gas Inventories	BCEFs, root-shoot ratio	all	Factors for calculation of biomass stocks and carbon
9	National Greenhouse Gases Inventory Report, Estonia, 2014 http://cdr.eionet.europa.eu/ee/eu/ghgmm	Biomass stock, deadwood stock, carbon stock	all	National Forest Inventory; special studies for GHG inventory
10	Biomass conversion factors by decay classes for dead wood /.../ in boreal forests of Sweden. Sandström et al, 2007	Deadwood	all	Deadwood density and carbon concentration

3.2.2 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.
Net annual increment (NAI)	Comply with FRA 2015 definitions. Measured to criteria as defined for “Growing stock”.
Above/below-ground biomass	Comply with FRA 2015 and IPCC 2006 definitions.
Deadwood	Comply with FRA 2015 definitions.
Carbon stock	Comply with FRA 2015 and IPCC 2006 definitions.

3.2.3 Original data

Growing stock

FRA2015 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	2000	2005	2010	2012	2000	2005	2010	2012
Total growing stock	458.3	455.0	470.3	473.6	6.6	6.8	7.0	7.0
... of which coniferous	242.3	246.9	252.0	253.8	3.1	3.2	3.3	3.3
... of which broadleaved	215.9	208.1	218.3	218.9	3.5	3.6	3.7	3.7

Biomass stock

Common name	Scientific name	Growing stock volume (000 m3)		
		Forest		
		2000	2005	2010
Scots pine	<i>Pinus sylvestris</i>	127 720	138 436	139 238
Norway spruce	<i>Picea abies</i>	114 107	108 241	112 750
Common silver birch, Downy birch	<i>Betula pendula</i> , <i>Betula pubescens</i>	102 673	100 349	106 443
European aspen	<i>Populus tremula</i>	37 581	34 936	35 809
White alder	<i>Alnus incana</i>	37 115	32 619	33 647
European black alder	<i>Alnus glutinosa</i>	21 032	21 808	23 693
Willow species	<i>Salix species</i>	4 468	4 750	4 636
European ash	<i>Fraxinus excelsior</i>	5 906	5 887	5 435

Pedunculate oak	<i>Quercus robur</i>	2 725	2 823	2 664
European bird cherry	<i>Padus avium</i>	1 188	1 121	1 255
<i>Other</i>		3 763	4 016	4 742
Total		458 278	454 986	470 311

Carbon stock

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	RendzicLP & Sceletic & Gleyic Leptosols	rz	sk	gl	0.8	24	+	3.6	102	16.1	1642
II	CalcaricCM & Endosceletic Cambisols	ca	skn		1.9	56	+	18.9	109	38.3	4175
III	Mollic CM & Endogleyic Cambisols	mo	gln		3.3	47	+	8.1	76	66.5	5054
IV	SceleticCM Cambisols	gls			1.3	43	+	9.8	96	26.2	2515

V	CutanicLV & Endogleyic Luvisols	ct	gln		2.4	70	+	18.8	95	48.4	4590	
VI	Glossic AB & Gleyiglossic Albeluvisols	gs	gls		3.6	92	+	18.7	64	72.6	4646	
VII	Haplic AB Albeluvisols	ha			2.7	86	+	13.9	88	54.4	4787	
VIII	Endogleyic Albeluvisols	gln			1.6	72	+	19.4	65	32.2	2093	
IX	Haplic PZ Podzols	ha			3.8	67	+	25.0	45	76.6	3447	
X	Endogleyic Podzols	gln			2.2	62	+	16.7	44	44.3	1949	
XI	Mollic GL & Calcic & Eutric Gleysols	mo	cc	eu	12.1	39	+	12.6	120	243.9	29268	
XII	Luvic GL & Epidystric Gleysols	lv	dye		8.0	55	+	21.0	126	161.3	20324	
XIII	Spodic GL & Umbric & Dystric Gleysols	sd	um	dy	9.2	70	+	14.6	113	185.4	20950	
XIV	Saprihisic Gleysols	his			5.3	51	+	11.9	209	106.8	22321	
XV	Fibrihisic Podzols	hif			3.1	76	+	18.0	114	62.5	7125	
XVI	Eutric & Salic Fluvisols	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.

3.3 Analysis and processing of national data

3.3.1 Adjustment

Not applied.

3.3.2 Estimation and forecasting

Growing stock

The National Forest Inventory results of 1999–2012 are combined during data processing for growing stock estimates and for growing stock composition.

- Growing stock for 1990 is combined assessment of stand-wise inventory and extrapolated NFI data.
- Growing stock for 2000 is derived by interpolation from NFI data 1999–2003.
- Estimates for 2005 and 2010 are averages of NFI data 2003–2007 and 2008–2012, respectively.
- Forecasting for 2015 was made by linear extrapolation, using data reported for 2005, 2010 and the latest inventory – NFI 2012. Thus, the possibility of alterations in time is taken into consideration.
- Stock assessment for other wooded land has made by using average NFI data 2006–2012.

Biomass stock, deadwood

Growing stock and deadwood of forest land and other wooded land by tree species was used to calculate biomass stock. Biomass conversion and expansion factors – BCEF_s (expansion of merchantable growing stock volume to above-ground biomass) were used according to IPCC 2006 (p 4.50). Below-ground to aboveground biomass ratio (> 75 t/ha – boreal coniferous forest, 75-150 t/ha – temperate other broadleaf) is obtained from IPCC 2006 (Table 4.4, p.4.49)

Carbon stock

Carbon stock in living biomass and deadwood on forest land and other wooded land was calculated using biomass stock figures. Default factor 50% of carbon content in biomass was used for calculations.

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.

Areas of forest land and other wooded land were obtained from Question 1. Distribution of soil groups by area and SOC pools in 1991 were applied to the area of forest and other wooded land.

3.3.3 Reclassification

Not applied.

3.4 Data

Table 3a

Category		Growing stock volume (million m ³ over bark)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Total growing stock	393.3	458.3	455	470.3	476.3	6.3	6.6	6.8	7	7.2
	... of which coniferous	208.3	242.3	246.9	252	256.6	3	3.1	3.2	3.3	3.4
	... of which broadleaved	185	215.9	208.1	218.3	219.7	3.3	3.5	3.6	3.7	3.8

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010

1 st	Pinus sylvestris	Scots pine	111.4	127.7	138.5	139.3
2 nd	Picea abies	Norway spruce	96.8	114.1	108.2	112.8
3 rd	Betula pendula, Betula pubescens	Common silver birch, Downy birch	87.5	102.7	100.3	106.4
4 th	Populus tremula	European aspen	32.2	37.6	34.9	35.8
5 th	Alnus incana	White alder	31.8	37.1	32.6	33.6
6 th	Alnus glutinosa	European black alder	17.6	21	21.8	23.7
7 th	Fraxinus excelsior	European ash	5.3	5.9	5.9	5.4
8 th	Salix caprea	Goat willow	4.1	4.5	4.8	4.6
9 th	Quercus robur	Pedunculate oak	2.4	2.7	2.8	2.7
10 th	Padus avium	European bird cherry	1	1.2	1.1	1.3
Remaining			3.2	3.8	4.1	4.7
TOTAL			393.30	458.30	455.00	470.30

THE PRE-FILLED VALUES FOR GROWING STOCK REFER TO THE FOLLOWING THRESHOLD VALUES (SEE TABLE BELOW)

Item	Value	Complementary information
Minimum diameter (cm) at breast height of trees included in growing stock (X)	0	DBH measured at a height of 1.30 m above stump height
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	0	N/A
Minimum diameter (cm) of branches included in growing stock (W)	N/A	Excluded
Volume refers to above ground (AG) or above stump (AS)	AS	N/A

PLEASE NOTE THAT THE DEFINITION OF GROWING STOCK HAS CHANGED AND SHOULD BE REPORTED AS GROWING STOCK DBH 10 CM INCLUDING THE STEM FROM GROUND LEVEL UP TO A DIAMETER OF 0 CM, EXCLUDING BRANCHES.

Table 3c

Category	Net annual increment (m ³ per hectare and year)				
	Forest				
	1990	2000	2005	2010	2015

	Net annual increment	5.1	5.53	5.41	5.56	5.57
	... of which coniferous	4.99	5.7	5.59	5.74	5.73
	... of which broadleaved	5.23	5.36	5.21	5.38	5.4

Table 3d

Category		Biomass (million metric tonnes oven-dry weight)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Above ground biomass	228.29	256.21	253.97	264.16	267.3	4.35	4.61	4.73	4.86	4.96
	Below ground biomass	53.76	60.34	59.81	62.21	62.95	1.91	2.02	2.07	2.13	2.18
	Dead wood	5.74	6.46	8.05	10.63	12.27	0.67	0.75	0.95	1.25	1.42
TOTAL		287.79	323.01	321.83	337.00	342.52	6.93	7.38	7.75	8.24	8.56

Table 3e

Category		Carbon (Million metric tonnes)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Carbon in above ground biomass	114.15	128.1	126.99	132.08	133.65	2.18	2.3	2.36	2.43	2.48
	Carbon in below ground biomass	26.88	30.17	29.9	31.1	31.47	0.96	1.01	1.04	1.07	1.09
	<i>Subtotal Living biomass</i>	141.03	158.27	156.89	163.19	165.13	3.13	3.32	3.4	3.5	3.57
	Carbon in dead wood	2.87	3.23	4.02	5.31	6.13	0.34	0.38	0.47	0.62	0.71
	Carbon in litter	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	<i>Subtotal Dead wood and litter</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Soil carbon	344.01	349.74	351.22	348.39	348.07	30.6	32.39	33.21	34.16	34.86
TOTAL		487.91	511.24	512.13	516.88	519.32	34.08	36.08	37.08	38.28	39.14

Tiers

Variable/category	Tier for status	Tier for trend
Total growing stock	Tier 3	Tier 3
Net annual increment	Tier 2	Tier 2
Above ground biomass	Tier 2	Tier 2
Below ground biomass	Tier 2	Tier 2
Dead wood	Tier 2	Tier 2
Carbon in above-ground biomass	Tier 2	Tier 2
Carbon in below ground biomass	Tier 2	Tier 2
Carbon in dead wood and litter	Tier 2	Tier 2
Soil carbon	Tier 1	Tier 1

Tier criteria

Category	Tier for status	Tier for reported trend
Total growing stock	Tier 3: Data sources Recent 10 years National Forest Inventory or remote sensing with ground truthing or programme for repeated compatible NFI 10 years Domestic volume functions Tier 2: Data sources/registers and statistics modelling or old NFI 10 years or partial field inventory Tier 1: Other data sources	Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Domestic growth functions Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 tier for status Tier 1: Other
Net annual increment	Tier 3: Scientifically tested national volume and growth functions Tier 2: Selection of volume and growth functions as relevant as possible Tier 1: Other	Tier 3: Confirmation/adjustment of functions used through scientific work Tier 2: Review work done to seek alternative functions Tier: 1 Other

Biomass	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied or other domestic or otherwise nationally relevant biomass studies Tier 2: Application of country specific national or sub-national biomass conversion factors from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other
<ul style="list-style-type: none"> • Carbon in above ground biomass • Carbon in below ground biomass • Carbon in dead wood and litter • Soil carbon 	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied Tier 2: Application of country specific national or sub-national biomass conversion factors form from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other

3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
Total growing stock	Minimum DBH 0.1 cm, including the stem from stump up to a diameter of 0 cm, excluding branches.	Growing stock has been decreased during 2000-2005 due to extremely high harvest rates in 1999-2003 (see table 4c). To a certain extent decrease has been caused by the storms in 2001, 2002 and 2005.
Growing stock of broadleaved coniferous	N/A	N/A
Growing stock composition	N/A	N/A
Net annual increment	According to “growing stock” reported	N/A
Above-ground biomass	Forest understorey is excluded.	N/A
Below-ground biomass	N/A	N/A
Dead wood	Deadwood includes all standing and lying dead wood larger than or equal to 8 cm in diameter, useful at least for woodfuel. Includes dead roots.	The amount of dead wood has increased significantly and consistently
Carbon in above-ground biomass	N/A	N/A
Carbon in below-ground biomass	N/A	N/A
Carbon in dead wood	N/A	N/A
Carbon in litter	Data is insufficient	N/A
Soil carbon	The reported soil depth is of 55 cm	N/A

Other general comments to the table

Estonia does not report growing stock according to the changed definition FRA 2015, mainly due to keep stable assessments and time-series, also in order to avoid the plurality of estimates in publications.

4. What is the status of forest production and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

4.1 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.
Non wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Commercial value of NWFP	For the purpose of this table, value is defined as the commercial market value at the forest gate.
Category	Definition
Production forest	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Multiple use forest	Forest area designated for more than one purpose and where none of these alone is considered as the predominant designated function.
Total wood removals	The total of industrial round wood removals and woodfuel removals.
...of which woodfuel	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

4.2 National data

4.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	Designated functions of forest	1988	The combined stand-wise forest inventory data of 1979–1988
2	FRA 2010 Country report	Production forest	2000, 2005	NFI-data, average from periods 1999–2003 and 2003–2007
3	"Eesti Metsad 2012" (Estonian Forests 2012), Tallinn 2014 http://www.keskkonnainfo.ee/	Designated functions of forest	2010, 2012	NFI 2012 (combined NFI-data from period 2008–2012)
4	Calculations for FRA 2015, unpublished	Designated functions of forest	all	NFI 1999–2012
5	Statistics Estonia http://www.stat.ee/	Total wood removals	1991-1997	N/A

6	Calculations for FRA 2015, unpublished	Wood removals	all	NFI 1999–2012
7	FRA 2010 Country report Estonia, Table T12 , available at http://www.fao.org/docrep/013/a1500E/a1500E.pdf	Number of Christmas trees used in Estonia	2010	N/A
8	Estonian Statistical Office on-line database, available at http://pub.stat.ee/px-web.2001/I_Databas/Economy/16Hunting/16Hunting.asp	Number of hunted animals	2010	N/A

4.2.2 Classification and definitions

National class	Definition
Production forest	According to used FRA 2015 definition
Multiple purpose forest	According to used FRA 2015 definition.
Wood removals	Comply with FRA 2015 definition: under bark, except woodfuel. Removals from other wooded land included.
N/A	N/A

4.2.3 Original data

FRA2015Categories	Forestarea(000 hectares)			
	2000	2005	2010	2012
Production	1746	1556	1668	1664
Multiple use	360	517	340	339
... of which Protection of soil and water	256	208	139	139
Conservation of biodiversity	137	179	226	231
TOTAL	2243	2252	2234	2234

Hunting of game animals in Estonia in 2010

Hunted in 2010	Number
Roe Deer	5075
Wild Boar	17028
Red Deer	497
Elk	4255

4.3 Analysis and processing of national data

4.3.1 Adjustment

Not applied.

4.3.2 Estimation and forecasting

The percentages of categories of designated functions (1988) were applied to the forest area for 1990.

The National Forest Inventory results of 1999–2012 are combined during data processing for categories of designated functions.

- Forest area of categories for 2000 is derived by interpolation from NFI data 1999–2003.
- Estimations for 2005 and 2010 are 5-year averages from NFI data.
- Forecasting for 2015 was made by linear extrapolation, using NFI data 2006–2012.

4.3.3 Reclassification

Not applied.

4.4 Data

Table 4a

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Production forest	1629	1746	1556	1668	1657

	Multiple use forest	297	104	309	201	199
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Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	Christmas trees	Norway spruce (Picea abies)	45000	6
2 nd	Wild meat	Wild boar (Sus scrofa)	27244.8	12
3 rd	Wild meat	Moose (Alces alces)	22300	12
4 th	Wild meat	Roe deer (Capreolus capreolus)	2436	12
5 th	Wild meat	Red deer (Cervus elaphus)	1192.8	12
6 th	N/A	N/A	N/A	N/A
7 th	N/A	N/A	N/A	N/A
8 th	N/A	N/A	N/A	N/A
9 th	N/A	N/A	N/A	N/A
10 th	N/A	N/A	N/A	N/A
TOTAL			98173.60	

2010	
Name of local currency	EEK

Category
Plant products / raw material
1 Food
2 Fodder
3 Raw material for medicine and aromatic products
4 Raw material for colorants and dyes
5 Raw material for utensils handicrafts construction
6 Ornamental plants

7 Exudates
8 Other plant products
Animal products / raw material
9 Living animals
10 Hides skins and trophies
11 Wild honey and beeswax
12 Wild meat
13 Raw material for medicine
14 Raw material for colorants
15 Other edible animal products
16 Other non-edible animal products

Table 4c Pre-filled data from FAOSTAT

Year	FRA 2015 category (1000 m ³ u.b.)	
	Total wood removals	...of which woodfuel
1990	2340.8	514.5
1991	3496.5	757.1
1992	2437.4	522.1
1993	2773.2	590.2
1994	4138.7	878.9
1995	4555.7	969.5
1996	5054.6	1082.6
1997	7386.1	1598.8
1998	8028.8	1763.6
1999	10395.5	2326.1
2000	10439.2	2388.3
2001	9804.8	2301.5
2002	9430.9	2278.5

2003	8136.6	2029.3
2004	5724.8	1477.9
2005	5200.6	1393.1
2006	4320.3	1203.5
2007	4276.2	1241.1
2008	4778.9	1447.7
2009	5325.3	1686.3
2010	6828.9	2263.3
2011	6622.7	2300.1

Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 3	Tier 3
Multiple use forest	Tier 3	Tier 3

Tier Criteria

Category	Tier for status	Tier for reported trend
Production forest Multiple use forest	Tier 3: Updated including field verifications national forest maps including functions Tier 2: Forest maps older than 6 years including forest functions Tier 1: Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other

4.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Production forest	N/A	Changes in area of production forest are mainly dependent on the protection of forests regulated by legislation
Multiple use forest	Strictly protected forest excluded. Multiple use means generally forest where production of wood and protectional functions exist in parallel.	N/A
Total wood removals	Sources: NFI (1998–2012), official statistics 1991–1997 combined with NFI data. Woodfuel is accounted over bark. OWL included.	The relative share of woodfuel has increased over the past decade

Commercial value of NWFP	Price for bush meat is expert estimate (40 EEK/kg). For total commercial value (theoretical, most of meat is not marketed) of wild meat by species the number of hunted animals was multiplied with average weight of animal and average price (EEK/kg). The price of Christmas trees is expert estimate.(150 EEK/m). For value of Christmas trees the number of trees was multiplied with average height and average price (EEK/m) of tree.	N/A
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Other general comments to the table

N/A

5. How much forest area is managed for protection of soil and water and ecosystem services?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

5.1 Categories and definitions

Category	Definition
Protection of soil and water	Forest area designated or managed for protection of soil and water
...of which production of clean water (<i>sub-category</i>)	Forest area primarily designated or managed for water production, where most human uses are excluded or heavily modified to protect water quality.
...of which coastal stabilization (<i>sub-category</i>)	Forest area primarily designated or managed for coastal stabilization.
...of which desertification control (<i>sub-category</i>)	Forest area primarily designated or managed for desertification control.
...of which avalanche control (<i>sub-category</i>)	Forest area primarily designated or managed to prevent the development or impact of avalanches on human life assets or infrastructure.
...of which erosion, flood protection or reducing flood risk (<i>sub-category</i>)	Forest area primarily designated or managed for protecting communities or assets from the impacts of erosion riparian floods and landslides or for providing flood plain services.
...of which other (<i>sub-category</i>)	Forest area primarily designated or managed for other protective functions.
Ecosystem services, cultural or spiritual values	Forest area primarily designated or managed for selected ecosystem services or cultural or spiritual values.
...of which public recreation (<i>sub-category</i>)	Forest area designated or managed for public recreation.
...of which carbon storage or sequestration (<i>sub-category</i>)	Forest area designated or managed for carbon storage or sequestration.
...of which spiritual or cultural services (<i>sub-category</i>)	Forest area designated or managed for spiritual or cultural services.
...of which other (<i>sub-category</i>)	Forest area designated or managed for other ecosystem services.

5.2 National data

5.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments

1	Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	Protective functions of forest	1988	The combined stand-wise forest inventory data of 1979–1988
2	Calculations for FRA 2015, unpublished	Protective functions of forest	all	NFI 1999–2012
3	State Forest Management Centre, query made for present report, unpublished	Ecosystem services, cultural or spiritual values ...of which public recreation	2012, 2014	N/A
4	N/A	N/A	N/A	N/A

5.2.2 Classification and definitions

National class	Definition
Protection of soil and water	Comply with FRA 2015 definitions (in general)
Water protection forest	Forest designated or managed for water production, coastal stabilization, or for any other coastal and shore protection purpose
Ecosystem services, cultural or spiritual values ...of which public recreation	Forest land designated and managed for public recreation by State Forest Management Centre.
N/A	N/A

5.2.3 Original data

Protection of soil and water	
- see Table 4.2.3.	
Ecosystem services	
Forest land designated and managed for public recreation by State Forest Management Centre:	
year	ha
2012	5995
2014	7470

5.3 Analysis and processing of national data

5.3.1 Adjustment

Not applied

5.3.2 Estimation and forecasting

The percentages of categories of protective functions (1988) were applied to the forest area for 1990.

The National Forest Inventory results of 1999–2012 are combined during data processing for categories of designated functions.

- Forest area of categories for 2000 is derived by interpolation from NFI data 1999–2003.
- Estimations for 2005 and 2010 are 5-year averages from NFI data.
- Forecasting for 2015 was made by linear extrapolation, using NFI data 2006–2012.

Forest land designated and managed for public recreation:

- year 2012 figure was used for 2010 figure and
- year 2014 figure was used for 2015 figure

5.3.3 Reclassification

Water protection forest, that includes areas with different purposes of protection ecosystem services, has been reclassified into sub-category “...of which production of clean water” (that is dominant goal for protection among sub-categories).

5.4 Data

Table 5a

Categories		Forest area (1000 hectares)				
		1990	2000	2005	2010	2015
	Protection of soil and water	153	256	208	139	138
	... of which production of clean water	41	190	142	139	138

	... of which coastal stabilization	0	0	0	0	0
	... of which desertification control	0	0	0	0	0
	... of which avalanche control	0	0	0	0	0
	... of which erosion, flood protection or reducing flood risk	0	0	0	0	0
	... of which other (please specify in comments below the table)	112	66	66	0	0

Other

Forest area designated or managed for soil protective functions (mainly – alvars)

Table 5b

Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	N/A	N/A	N/A	5.995	7.47
...of which public recreation	N/A	N/A	N/A	N/A	N/A
...of which carbon storage or sequestration	0	0	0	0	0
...of which spiritual or cultural services	N/A	N/A	N/A	N/A	N/A
...of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	Tier 3	Tier 3
Ecosystem services, cultural or spiritual values	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend
Protection of soil and water	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations or legislation relating to soil and water protection. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other
<ul style="list-style-type: none"> • Cultural or spiritual values • Public recreation • Spiritual or cultural services • Other 	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other

5.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Protection of soil and water	N/A	Meantime of reference years 2005 and 2010 changes in legislations took place: – the width of protective belt of coast/shores is reduced approx. twice; – the extra protection of alvars has been waived (a reasoned cases, the protected area will be formed)
Production of clean water	Resulting from reclassification, this sub-category also includes forest designated for coastal stabilization and any other shore protection purpose	N/A
Coastal stabilization	Forest area designated for coastal stabilization included in sub-category of “Production of clean water”	N/A
Desertification control	No need for control desertification in Estonia	N/A
Avalanche control	Avalanches are missing in Estonia	N/A
Erosion, flood protection or reducing flood risk	Not applicable on forest areas in Estonia	N/A
Other protective functions	Soil protective functions, mainly – alvars	N/A

Ecosystem services, cultural or spiritual values	The area of forest land reported for this variable included area where State Forest Management Centre has assigned recreation as primary goal of management.	N/A
Public recreation	N/A	N/A
Carbon storage or sequestration	There is no forestt land classified with primary designation for carbon storage or sequestration.	N/A
Spiritual or cultural services	There are 4129 cultural heritage objects on forest land and other wooded land (including parks). Data was obtained from GIS analyses by Estonian Environment Agency. Cultural heritage objectcs' layer (data from National Registry of Cultural Monument) was compared with the layer of "woody vegetation" of vectoral basic map of Estonia. Overlapping areas were considered situating in forests.	N/A
Other ecosystem services	N/A	N/A

Other general comments to the table

N/A

6. How much forest area is protected and designated for the conservation of biodiversity and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

6.1 Categories and definitions

Category	Definition
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.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.

6.2 National data

6.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	Designated functions of forest	1988	The combined stand-wise forest inventory data of 1979–1988
2	FRA 2010 Country report (Calculations for FRA 2010, unpublished)	Designated functions of forest	2000, 2005	NFI-data, combined from periods 1999–2003 and 2003–2007
3	"Eesti Metsad 2012" (Estonian Forests 2012), Tallinn 2014 http://www.keskkonnainfo.ee/	Designated functions of forest	2010, 2012	NFI 2012 (combined NFI-data from period 2008–2012)
4	Calculations for FRA 2015, unpublished	Designated functions of forest	2010, 2015	NFI 2008–2012

6.2.2 Classification and definitions

National class	Definition
Conservation of biodiversity	According to used FRA 2015 definition, strictly protected forest.
Forest area within protected areas	Comply with FRA 2015 definitions
N/A	N/A
N/A	N/A

6.2.3 Original data

See Table 4.2.3.

6.3 Analysis and processing of national data

6.3.1 Adjustment

Not applied

6.3.2 Estimation and forecasting

See 4.3.2.

6.3.3 Reclassification

Not applied.

6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Conservation of biodiversity	127	137	179	226	238
	Forest area within protected areas	127	141	185	228	239

Tiers

Category	Tier for status	Tier for reported trend
Conservation of biodiversity	Tier 3	Tier 3
Forest area within protected areas	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend
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<ul style="list-style-type: none"> • Conservation of biodiversity • Forests within protected areas 	<p>Tier 3: Data obtained from national or state agencies responsible for conservation and protected area or legislation relating to area protection. Tier 2: Studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates Tier 1 Other</p>	<p>Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other</p>
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6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	NFI 1999–2012; strictly protected forest	Continually increasing. Covering 10% of total forest area by conservation of biodiversity has been one of the goals of the Forest Development Plan, the purpose of which is actually already met.
Forest area within protected areas	NFI 1999–2012; (IUCN I...IV protected area management categories)	Continually increasing.

Other general comments to the table

N/A

7. What is the area of forest affected by woody invasive species?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

7.1 Categories and definitions

Category	Definition
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.

7.2 National data

7.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Communication with Department of Botany of Institute of Agricultural and Environmental Sciences (Estonian University of Life Sciences)	List of woody invasive species and forest area affected by woody invasive species	2005, 2010	N/A
2	Communication with Department of Silviculture of Institute of Forestry and Rural Engineering (Estonian University of Life Sciences)	List of woody invasive species and forest area affected by woody invasive species	2005, 2010	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

7.2.2 Classification and definitions

National class	Definition
N/A	N/A

7.2.3 Original data

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Invasive species	Tier 3: Systematic assessment in forest inventory or other survey (e.g. by conservation department) within the last 5 years) Tier 2: Systematic assessment in forest inventory or other survey (e.g. by conservation department conducted more than 5 years ago) Tier 1: Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other
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7.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	Several woody species (Populus balsamifera, Amelanchier spicata, Cotoneaster lucidus, Rosa rugosa, Sambucus racemosa, Sambucus nigra, Larix decidua, Larix sibirica, Quercus rubra, Acer negundo etc) are considered as possible threat to local ecosystems. There is no data that mentioned species have caused considerable socio-cultural, economic or environmental harm or harm to human health. Extensive and uncontrolled spreading of listed species has not been registered so far.	N/A

Other general comments to the table

N/A

8. How much forest area is damaged each year?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

8.1 Categories and definitions

Category	Definition
Number of fires	Number of fires per year
Burned area	Area burned per year
Outbreaks of insects	A detectable reduction in forest health caused by a sudden increase in numbers of harmful insects.
Outbreaks of diseases	A detectable reduction in forest health caused by a sudden increase in numbers of harmful pathogens, such as bacteria, fungi, phytoplasma or virus.
Severe weather events	Damage caused severe weather events, such as snow, storm, drought, etc.

8.2 National data

8.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Voolma, K., Pilt, E., Õunap, H. 2009. Nõmmevõrgendivaablase (Acantholyda posticalis (Mats.), Hymenoptera: Pamphiliidae) esmakordne hulgisigimine Eestis. – Metsanduslikud uurimused Forestry Studies 50. Tartu, p. 115–122. The first reported outbreak of the great web-spinning pine-sawfly, <i>Acantholyda posticalis</i> (Mats.) (Hymenoptera, Pamphiliidae), in Estonia. AND Voolma, K., Pilt, E., Õunap, H. 2009. Nõmmevõrgendivaablase ründas Saaremaa männikuid. – Estonian Forestry Journal	<i>Acantholyda posticalis</i> outbreaks	2008-2009	N/A
2	Õunap, H. 2012. Liblika järelepõlv sõi kuuse okkad ära. – Metsaleht nr. 9 (152) 29. september, lk. 8–9. (Weekly newspaper)	<i>Lymanthria monacha</i> outbreak	2012	N/A

3	Voolma, K. 1992. Männivaksik sööb metsa raagu. – Eesti Maa, N. 33, 19. aug. 1992, p. 10. AND Voolma, K., Luik, A. 2001. Outbreaks of <i>Bupalus piniaria</i> (L.) (Lepidoptera, Geometridae) and <i>Pissodes piniphilus</i> (Herbst) (Coleoptera, Curculionidae) in Estonia. – Journal of Forest Science 47 (special issue 2): 171–173. AND Läänelaid, A., Lille, P., Voolma, K. 2008. Männivaksiku kahetine roll. (Journal Eesti Loodus N10)	Bupalus piniarius outbreaks	1990-1993	N/A
4	Communication with Forest Department of the Estonian Environment Agency, query of outbreaks and damages for present report	outbreaks	1990-2013	N/A
5	Forestry Statistical yearbook	area and number of forest fires	2003-2011	N/A
6	Estonian Rescue Board, query made for present report, unpublished	total land area burned (number of fires)	2010-2012	number of vegetation fires
7	Estonian Environment Agency, query made for present report, unpublished	total land area burned (number of fires)	2006-2009	number of vegetation fires
8	Forestry Statistical yearbooks	storm damages	2001, 2002, 2005, 2010	N/A
9	Estonian Environment Agency, query made for present report, unpublished	area and number of forest fires	2012	N/A

8.2.2 Classification and definitions

National class	Definition
N/A	N/A

8.2.3 Original data

Forest fires in Estonia in 2003-2011

Year	Forest fires		
	Number	Total	Average
		area (ha)	area (ha)
2003	111	206,6	1,9
2004	89	378,9	4,3
2005	65	86,5	1,3
2006	250	3 095,6	12,4
2007	64	292,4	4,6
2008	71	1279,8	18,0
2009	47	59,3	1,3
2010	30	24,8	0,8
2011	24	19,3	0,8

8.3 Analysis and processing of national data

8.3.1 Adjustment

Total maximum outbreak area was used when outbreak stretched over several years,

8.3.2 Estimation and forecasting

Not applied

8.3.3 Reclassification

Not applied.

8.4 Data

Table 8a

Category		000 ha, number of fires									
		2003		2004		2005		2006		2007	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
CFRQ	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6783	N/A	2055
CFRQ	... of which forest area burned	0.2066	111	0.3798	89	0.0865	65	3.0956	250	0.2924	64
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
CFRQ	Total land area burned	N/A	1991	N/A	2045	N/A	1737	N/A	1396	N/A	790
CFRQ	... of which forest area burned	1.2798	71	0.0593	47	0.0248	30	0.0193	24	0.0033	8

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
1	Bupalus piniaria	1990-1993	5
1	Calliteara pudibunda	2004, 2005	0.4
1	Acantholyda posticalis	2008-2013	0.8
1	Lymanthria monacha	2012, 2013	0.02
3	Storm damage	2001	14.4
3	Storm damage	2002	16
3	Storm damage	2005	39.9
3	Storm damage	2010	7.9
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Outbreak category

1 Insects
2 Diseases
3 Severe weather events

Tiers

Category	Tier for status	Tier for trend
Area affected by fire	Tier 3	Tier 3
<ul style="list-style-type: none"> Insects Diseases Severe weather events 	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend
Burned area	Tier 3 : National fire monitoring routines Tier 2 : Remote sensing surveys Tier 1 : Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other
<ul style="list-style-type: none"> Insects Diseases Severe weather events 	Tier 3 : Systematic survey (e.g. via inventory or aerial damage assessment) Tier 2 : Management records Tier 1 : Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other

8.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Burned area	Area of vegetation (landscape) fires is not registered (only initial area when accident is registered). Area of burned forest lands has been identified after fires via communication with forest managers or assessment of areas	N/A
Insects	Area of damage recorded by forest damage assessment procedure	N/A
Diseases	N/A	N/A
Severe weather events	Area of damage recorded by forest damage assessment procedure	N/A

Other general comments to the table

N/A

9. What is the forest area with reduced canopy cover?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

Category	Definition
Reduction in canopy cover	Forest that has undergone a reduction of canopy cover of more than 20% between the years 2000 and 2010 within the forest canopy cover range of 30-80% as detected by the MODIS VCF sensor.

Table 9

Category	Area of forest with reduced canopy cover (000 ha)
Reduction in canopy cover	N/A

Tiers

Category	Tier for reported trend
Reduction in canopy cover	N/A

Tier criteria

Category	Tier for reported trend
Reduction in canopy cover	Tier 3 : Remote sensing with ground truthing and/or Landsat imagery Tier 2 : Remote sensing using Modis (using pre-filled data provided by FAO) Tier 1 : Expert opinion

Comments

Category	Comments related to data definitions etc
Reduction in canopy cover	N/A

Other general comments

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10. What forest policy and regulatory framework exists to support implementation of sustainable forest management SFM?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

10.1 Categories and definitions

Category	Definition
Policies supporting sustainable forest management	Policies or strategies that explicitly encourage sustainable forest management.
Legislation and regulations supporting sustainable forest management	Legislation and regulations that govern and guide sustainable forest management, operations and use.

10.2 National data

10.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Development plan of State Forest Management Centre 2011–2014 and RMK Development Plan Supplement Nature Conservation, available at http://www.rmkee/files/RMK_Arengukava_ENG_20110622.pdf and http://www.rmkee/files/RMK_arengukava_lisa_20130708_EN.pdf	Policies supporting sustainable forest management, ... of which, in publicly owned forests	2011-2014	State Forest Management Centre manages majority of state owned forests
2	Sihtasutuse Erametsakeskus ja Erametsanduse Tugisüsteemi Arengukava 2009 kuni 2013 (Development Program for The Foundation Private Forest Centre and private forest support system in 2009-2013), available at http://www.eramets.ee/static/files/705.EMK_arengukava_2009-2013.pdf	Policies supporting sustainable forest management, ... of which, in privately owned forests	2009-2013	The Foundation Private Forest Centre (PFC) ensures meeting of the responsibilities of the state towards private forest owners providing advice, trainings and facilitating the application for state support.
3	Eesti Erametsaliidu arengukava 2014-2020 (Development Program of The Estonian Private Forest Union for 2014-2020), available at http://www.erametsaliit.ee/documents/2013/12/eeml-i-arengukava-2014-2020.pdf	Policies supporting sustainable forest management, ... of which, in privately owned forests	2014-2020	The Estonian Private Forest Union (EPFU) is an umbrella organisation for the local organisations of private forest owners

4	Eesti metsapoliitika (Estonian Forest Policy), available at https://www.riigiteataja.ee/akt/73663	Policies supporting sustainable forest management	1997-...	adopted by Parliament in 1997 valid till now
5	Eesti Metsanduse Arengukava aastani 2020 (Estonian Forestry Development Program (EFDP) until 2020), available at https://www.riigiteataja.ee/akt/3180/2201/1003/Eesti_%20metsanduse_arengukava.pdf	Policies supporting sustainable forest management	2011-20120	EFDP is implementation program for national forest policy
6	Metsaseadus (Forest Act), available at https://www.riigiteataja.ee/akt/MS (english translation available at https://www.riigiteataja.ee/en/eli/524032014004/consolide)	Legislation and regulations supporting sustainable forest management, in publicly and privately owned forests	2007-...	Forest Act is in force since 1 January 2007 and has been several times amended

10.2.2 Classification and definitions

National class	Definition
N/A	N/A

10.2.3 Original data

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10.3 Data

Table 10

Category				
	National	Sub-national		
		Regional	Provincial/State	Local
Policies supporting sustainable forest management	yes	no	no	no
... of which, in publicly owned forests	yes	no	no	no

... of which, in <u>privately</u> owned forests	yes	no	no	no
Legislation and regulations supporting sustainable forest management	yes	no	no	no
... of which, in <u>publicly</u> owned forests	yes	no	no	no
... of which, in <u>privately</u> owned forests	yes	no	no	no

10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	Estonian National Forest Policy and its implementation program Estonian Forest Development Program until 2020 consider both private and public forests. There is no separate overall policies for public and private forestry but specific policy documents exist for main state forest managing company (Development Plan of State Forest Management Centre 2011–2014 and Development Plan Supplement Nature Conservation) and for private forestry umbrella and support organisations (Development Program of The Estonian Private Forest Union for 2014-2020 and Development Program for The Foundation Private Forest Centre and private forest support system in 2009-2013)
Legislation and regulations supporting sustainable forest management	Forest Act and several connected regulations are the main legislative basis for sustainable forest management in Estonia. Legislation is uniform for all forest owners if not stated otherwise in specific cases. There is no general legislative acts for private forestry and public forestry. Several specific regulations are valid for state forests (e.g. Statutes of State Forest Management Centre, Regulation for stumping and timber sales from state forests) and private forests (regulations which consider support and subsidies for private forest owners).

Other general comments

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11. Is there a national platform that promotes stakeholder participation in forest policy development?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

11.1 Categories and definitions

Category	Definition
National stakeholder platform	A recognized procedure that a broad range of stakeholders can use to provide opinions, suggestions, analysis, recommendations and other input into the development of national forest policy.

11.2 National data

11.2.1 Data sources

	References to sources of information	Years	Additional comments
1	Ministry of Environment, information about the formation of Forestry Council, available at http://www.envir.ee/992316	2012	N/A
2	Eesti metsanduse arengukava aastani 2020 (Estonian Forestry Development Program 2020) available at https://www.riigiteataja.ee/akti/3180/2201/1003/Eesti_%20metsanduse_arengukava.pdf	2011-2020	Program section 4.2 Intersectoral cooperation foresees the establishment and tasks of the Forestry Council
3	Metsaseadus (Forest Act), available at State Gazette website https://www.riigiteataja.ee/en/eli/524032014004/consolide	N/A	Establishment of working group for forestry development program compilation, stakeholder participation
4	N/A	N/A	N/A

Table 11

Is there a national platform that promotes or allows for stakeholder participation in forest policy development?	yes
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11.3 Comments

Category	Comments related to data definitions etc
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National stakeholder platform	The highest level of stakeholder involvement is Forestry Council. Present Forestry Council was formed with the Directive of the Minister of Environment No 44 in 11.01.2012. Main aim of the Forestry Council is to support the implementation of the Forestry Development Program until 2020 and to include different stakeholders in solving the strategic problems in forestry. Council includes representatives from Estonian University of Life Sciences, Estonian Environment Agency; Estonian Private Forest Union; Tartu University; Estonian Council of Environmental NGOs; Estonian Forest and Wood Industries Association; State Forest Management Centre; Foundation Private Forest Centre; Ministry of Economic Affairs and Communications; Parliament; Ministry of Agriculture; Ministry of Environment.
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Other general comments

Forest sector takeholders are also involved in compilation and drafting of the Forestry Development Program, Forest Act and other forest-related policy and legislation formulation processes.

Forest Act states the inclusion of stakeholders in Forest Development Program compilation process:

Forest Act:

§ 7. *Development plan of field covering forestry*

(4) The Minister of the Environment will establish a working group for the preparation of the forestry development plan and the research institutions engaged in forestry and other relevant interest groups related to forestry will be involved in the activities of the group.

12. What is the forest area intended to be in permanent forest land use and how has it changed over time?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

12.1 Categories and definitions

Category	Definition
Forest area intended to be in permanent forest land use	Forest area that is designated or expected to be retained as forest and is highly unlikely to be converted to other land use.
...of which permanent forest estate (<i>sub-category</i>)	Forest area that is designated by law or regulation to be retained as forest and may not be converted to other land use.

12.2 National data

12.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Forest Act, available at State Gazette web-site: https://www.riigiteataja.ee/en/eli/524032014004/consolide	...of which permanent forest estate (sub-category)	2010	Act provides share of mainland to be retained as public forest land
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

12.2.2 Classification and definitions

National class	Definition
Area of permanent forest estate	Forest area that is designated by law or regulation to be retained as forest land and may not be converted to other land use.
N/A	N/A
N/A	N/A
N/A	N/A

12.2.3 Original data

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12.3 Analysis and processing of national data

12.3.1 Adjustment

Not applied

12.3.2 Estimation and forecasting

Not applied

12.3.3 Reclassification

Not applied.

12.4 Data

Table 12

Categories		Forest area 2010 (000 ha)
	Forest area intended to be in permanent forest land use	
	... of which permanent forest estate	905

Tiers

Category	Tier for status
Forest area intended to be in permanent forest land use	Tier 1
Permanent forest estate	Tier 1

Tier Criteria

Category	Tier for status
Forest area intended to be in permanent forest land use	Tier 3 : National or sub-national land use plans strategy documents or other reports within the past 10 years Tier 2 : National or sub-national land use plans strategy documents or other reports within the past 20 years Tier 1 : Other
Permanent forest estate	Tier 3 : National or sub-national land use plans strategy documents or other reports within the past 10 years Tier 2 : National or sub-national land use plans strategy documents or other reports within the past 20 years Tier 1 : Other

12.5 Comments

Category	Comments related to data definitions etc
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Forest area intended to be in permanent forest land use	There is no fixed forest land area to be in permanent forest land use in Estonia.
Permanent forest estate	Forest Act: § 5. State forest land (1) In order to ensure the stable state of the environment and multiple uses of forest, the area of state forest land must be at least 20 per cent of the area of the mainland of the Republic of Estonia.

Other general comments

<p>According to Forest Act deforestation is allowed in specific when certain legal procedures have been carried out:</p> <p>§ 32. Deforestation</p> <p>(1) Deforestation means the cutting that is done in order to enable the use of land for purposes other than silviculture.</p> <p>(2) Deforestation is carried out:</p> <p>2) on the basis of building design documentation conforming to the provisions of the Building Act or Land Improvement Act, or on the basis of an operational plan of the electrical installation conforming to the provisions of the Electrical Safety Act if the preparation of a detailed plan is not mandatory;</p> <p>4) on the basis of other valid design documentation, maintenance schedule or document arising from legislation which serves as the basis for the use of land for purposes other than forest management.</p>

13. How does your country measure and report progress towards SFM at the national level?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

13.1 Categories and definitions

Category	Definition
Forest area monitored under a national forest monitoring framework	Forest area monitored by a national monitoring framework or systems that provide measurement based periodic monitoring of forest extent and quality.
Forest reporting at national scale	National reporting of forest extent and characteristics that includes some measure of progress toward sustainable forest management.

13.2 National data

13.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	National Forest Inventory, see introduction to present report, annual publication	Forest Inventory	1999-2012	N/A
2	Standwise forest inventory data in State Register for Accounting of Forest Resources, data accessible at public web-service (http://register.metsad.ee/avalik/) and statistics in forestry statistics yearbook	Other field assessments	continuous	at 10-year interval
3	Sustainable forest management in Estonia", 2003, Centre of Forest Protection and Silviculture, http://www.keskkonnainfo.ee/publications/16285_PDF.pdf	Criteria and Indicators reporting	2003	Report to MCPFE conference
4	National Forest Inventory yearbook "Eesti metsad", http://www.keskkonnainfo.ee/main/index.php/et/vaeljaanded-ja-uelevaated/vaeljaanded-ja-uelevaated available at	Other type of forest reporting	2004-2010	N/A

5	Statistical Yearbook of Forestry "Mets", available at http://www.keskkonnainfo.ee/main/index.php/et/vaeljaanded-ja-uelevaated/vaeljaanded-ja-uelevaated	Other type of forest reporting	2002-2011	N/A
6	Forestry sector overviews "Estonian Forests", available at http://www.keskkonnainfo.ee/failid/forestry2011/EstonianForestry.swf	Periodic national state of the forest report	2009, 2011	Initially published for World Forest Congress in Buenos Aires

13.2.2 Classification and definitions

National class	Definition
N/A	N/A

13.3 Data

Table 13a

Category	% of total forest area	Most recent year	Check all boxes that apply					
			Continuous	Periodic	Permanent ground plots	Temporary ground plots	Aerial/remote sensing sample based	Aerial/remote sensing full coverage
Forest inventory	100	2013	yes	no	yes	yes	no	no
Other field assessments	75	2013	yes	yes	no	no	no	yes
Updates to other sources	N/A	N/A						
Expert estimate	N/A	N/A						

Table 13b

Type of forest reporting used at national scale	Check boxes that apply
1 Criteria and Indicators reporting	yes

2 Periodic national state of the forest report	yes
3 Other (please document)	yes
4 None	

Other type of forest reporting

Other type of forest reporting include Forestry Statistical Yearbook "Mets" and NFI yearbook "Eesti metsad". Several international reporting processes include Estonian national reports (FRA, MCPFE, GHG reporting)

13.4 Comments

Category	Comments
Criteria and indicators reporting	National reports have been compiled for MCPFE (Forest Europe) conferences at irregular interval. Most of the data for MCPFE SFM criteria and indicators can be found (although not presented in C&I framework) in Forestry Statistical Yearbook "Mets" or for forest resources in NFI Yearbook "Eesti metsad"
Periodic national state of the forest report	Ministry of the Environment has compiled the implementation reports for National Forestry Development Programme until 2020 in recent years. Several forest sector overviews have been compiled in recent years ("Estonian forestry") but not with regular periodicity.
Other field assessments:	Stand-wise forest inventory, mostly visual assessment in forest with compilation of Forest Management Plan as final output for owner; inventory data are kept in national register. Aerial photographs are used in inventory process for delineation of subcompartments and assessment of stand composition. State Forest Management Centre carries out continuous inventory but other forest owners use periodic inventory (data cannot be older than 10 years). Forest inventory data in national register is precondition for regeneration fellings, thinnings and selection felling. For private physical forest owners with forest land less than 5 hectares per holding (2 hectares for other owners) the existence of standwise forest inventory is not compulsory.

Other general comments

14. What is the area of forest under a forest management plan and how is this monitored?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

14.1 Categories and definitions

Category	Definition
Forest area with management plan	Forest area that has a long-term documented management plan, aiming at defined management goals which is periodically revised
...of which for production (<i>sub-category</i>)	Forest management plan mainly focused on production
...of which for conservation (<i>sub-category</i>)	Forest management plan mainly focused on conservation
Monitoring of forest management plans	Government monitoring of forest management plan implementation conducted through field visits or audits of forest management plan performance

14.2 National data

14.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Estonian Environment Agency, Forest Register http://register.metsad.ee/avalik/ , calculations made for present report	Forest with management plan, .. of which for production, .. of which for conservation	as of 01.01.2013	Register contains stand-wise forest inventory data for all ownership categories.
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	1650.9
... of which for production	1493.3
... of which for conservation	157.6

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country

1 Soil and water management	yes
2 High conservation value forest delineation	yes
3 Social considerations community involvement	yes

Table 14c

Percent of area under forest management plan that is monitored annually	N/A
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Tiers

Category	Tier for status
Forest area with management plan	Tier 3
Percent of area under forest management plan that is monitored annually	N/A

Tier criteria

Category	Tier for status
Forest area with management plan	Tier 3 : Reports that describe national records 5 years old or less that contain long-term forest monitoring plans Tier 2 : Industry or other records indicating the presence of a long-term forest management plan Tier 1 : Other
Percent of area under forest management plan that is monitored annually	Tier 3 : Government documentation of monitoring extent Tier 2 : Reports from forest managers or other documental sources Tier 1 : Other

14.4 Comments

Category	Comments
Forest area with management plan	Data in table 14.a refers to situation at 1. January 2013. Query from the Forest Register, forest area with valid (– not older than 10 years) management plans. Forest management plan is not compulsory from year 2009, instead the standwise forest inventory data not older than 10 years which has been registered in Forest Register is pre-requisite for most of forest management activities.
Soil and water management	Stand-wise forest inventory data include status of and possible suggestions for melioration. Detailed forest site type classifications is connected to soil types and and water regime, site type is compulsory indicator in inventory data.
High conservation value forest delineation	Forest inventory data for every sub-compartment (as basic unit of standwise forest inventory) include reason of protection (if exists) and possibility to register indicators of high biological value. There is no specific protection and production plans. Forest inventory data (and forest management plan) are compiled at property unit level; it may include both production and protection forests.

Other general comments

Social considerations community involvement: . In private forests the forest owner is entitled to participate in compilation of forest management plan (licenced companies have to consider the wishes of owner). All valid forest inventory data (not older than 10 years) and forest notifications (document sent prior to the forest management activity by forest owner for approval to forest authority) are made public in limited extent on public web service (<http://register.metsad.ee/avalik/>) . So every forest owner can follow the forest management activities of other forest owners. State forest management Centre (manager of majority of state forests) informs local stakeholders after FMP compilation process and displays plans for public in special events and on web-site.

Percent of area under forest management plan that is monitored annually: There is no fixed system of monitoring of FMP-s. Next round of stand-wise forest inventory describes activities performed during previous period. Most of the attention of authorities is focussed on legality of planned and performed management activities. FMP is not compulsory and has more advisory character. Several inventories (including NFI) estimate the amount and quality of performed activities.

15. How are stakeholders involved in the management decision making for publicly owned forests?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

15.1 Categories and definitions

Category	Definition
Stakeholder involvement	Stakeholder involvement is defined as significant inputs into at least one aspect of forest management at the operational scale

Table 15

Please indicate the type of stakeholder involvement in forest management decision making required in your country	
1. Planning phase	no
2. Operations phase	no
3. Review of operations	no

Tiers

Category	Tier for status
Type of stakeholder inputs	Tier 1

Tier criteria

Category	Tier for status
Type of stakeholder inputs	Tier 3 : Government (national or sub-national) documentation of stakeholder inputs Tier 2 : Government (national or subnational) requirement but stakeholder inputs not documented Tier 1 : Other

15.2 Comments

Category	Comments
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

There is no official stakeholder process in planning, operational or review phase in public forests. Stakeholders are informed but not actively involved in management decision making for publicly owned forests. Stakeholders are actively involved in national forestry round-table (Forestry Council), policy formulation processes (Forest Development Plan, RDP, other national policies) and

legislation formulation processes i.e. indirect influence on forest management via policies and legislation. Forest management plans are publicly available from forest managing institutions and in State Register for Accounting of Forest Resources. All public forest owners with forest area more than 1000 ha must submit for approval every year the area of stands for regeneration fellings (by dominant tree species of stands) for next 5 years. Optimum regeneration felling area is analysed by Estonian Environment Agency and approved by regulation of the Minister of Environment. Majority of public forest land is managed by State Forest Management Centre (SFMC, state profit institution). SFMC informs local stakeholders after compiling new FMP-s, public event where all stakeholders are welcome. SFMC publishes list of possible regeneration felling areas for next 3 years on their website. Forest notification (document sent to authorities prior to operations in forest and approved by Estonian Environment Board) information about planned fellings and occurred severe forest damages is available at public GIS web-service (<http://register.metsad.ee/avalik/>).

16. What is the area of forest under an independently verified forest certification scheme?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

16.1 Categories and definitions

Category	Definition
FSC certification	Forest area certified under the Forest Stewardship Council certification scheme
PEFC certification	Forest area certified under the Programme for the Endorsement of Forest Certification scheme
Other international forest management certification	Forest area certified under an international forest management certification scheme with published standards and is independently verified by a third-party, excluding FSC and PEFC certification.
Certified forest area using a domestic forest management certification scheme	Area certified under a forest management certification scheme with published standards that are nationally recognized and independently verified by a thirdparty

16.2 Data

Table 16a

International forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	FSC	0	0	1082.6	1082.6	1082.6	1083.05	1083.36
	PEFC	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0
		2007	2008	2009	2010	2011	2012	
	FSC	1063.91	1083.23	1082.92	1081.96	1086.94	1106.5	
	PEFC	0	0	0	51.468	878.468	897.688	
	Other	0	0	0	0	0	0	

Table 16b

Domestic forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	N/A	0	0	0	0	0	0	0
	N/A	0	0	0	0	0	0	0
	N/A	0	0	0	0	0	0	0

		2007	2008	2009	2010	2011	2012	
		0	0	0	0	0	0	
		0	0	0	0	0	0	
		0	0	0	0	0	0	

Tier criteria

Category	Tier for status
International forest management certification	Tier 3: International forest management scheme records maintained by the certifying organization for the reporting year Tier 2: International forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other
Domestic forest management certification	Tier 3: National registry reports for domestic forest management certification maintained by the certifying organization for the reporting year Tier 2: Domestic forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other

Tiers

Category	Tier for status
International forest management certification	Tier 3
Domestic forest management certification	N/A

16.3 Comments

Category	Comments related to data definitions etc
Certified forest area using an international forest management certification scheme	Estonian PEFC certification scheme was endorsed in 2008. There is no other FM certification schemes available except FSC and PEFC
Domestic forest management certification	There is no domestic forest management certification schemes in Estonia.

Other general comments

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17. How much money do governments collect from and spend on forests?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

17.1 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include: <ul style="list-style-type: none"> • Goods : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products. • Services : including concession fees and royalties, stumpage payments, public timber sales revenue taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.
Public expenditure on forestry	All government expenditure on forest related activities.

17.2 National data

17.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Estonian Statistical Office, query made for present report	Public expenditure on forestry	2005, 2010	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	2005	2010
Forest revenue	N/A	N/A	N/A
Public expenditure on forestry	N/A	46279	72762

	2000	2005	2010
Name of Local Currency	EEK	EEK	EEK

17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	No published data available for years 2000, 2005 and 2010. Data are located in different datasets e.g. Estonian Statistical Office is able to provide from National Accounts the Employers' social contributions (D.121) and Other taxes on production (taxes on land, pollution resulting from production activities, charge for special exploitation of water, tax on use of motor vehicles, etc - D.29): relevant figures for year 2000 are 528,3 and 60,8 million EEK and for year 2005 1 006,4 and 86,6 million EEK (including data for NACE 02, 20, 21, 361). For the reference years Tax and Customs Board cannot provide relevant figures for VAT and other taxes according to same categories. On the revenue side the functional classification is not used in system of public sector financial statements (see comments below).
Public expenditure on forestry	Starting from 2004 government finance statistics are based on the detailed data from the Ministry of Finance's information system of public sector financial statements (PSFS). Reports presented in PSFS include the functional classification of expenditure. Government expenditure on forestry are allocated to function 04220 "Forestry" (according to the COFOG-il. - Classification of the Functions of Government) and include operating costs, expenditure on fixed assets, transfers and subsidies to support forest activities.
Other general comments	N/A

Other general comments

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18. Who owns and manages the forests and how has this changed?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

18.1 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.
...of which owned by the state at national scale (<i>sub-category</i>)	Forest owned by the State at the national scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at the sub-national government scale (<i>sub-category</i>)	Forest owned by the State at the sub-national government scale 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 cooperatives corporations and other business entities, private, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
...of which individuals (<i>sub-category</i>)	Forest owned by individuals and families.
...of which private business entities and institutions (<i>sub-category</i>)	Forest owned by private corporations cooperatives companies and other business entities as well as private nonprofit organizations such as NGOs nature conservation associations, and private religious and educational institutions etc.
...of which local tribal and indigenous communities (<i>sub-category</i>)	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people The community members are coowners that share exclusive rights and duties and benefits contribute to the community development.
Unknown ownership	Forest area where ownership is unknown includes areas where ownership is unclear or disputed.
Categories related to management rights of public forests	Definition
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 companies	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities private cooperatives, private nonprofit 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.

18.2 National data

18.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Land Title Book https://kinnistusraamat.rik.ee	Ownership categories	2000, 2005, 2010	N/A
2	Land cadastre (Land Board) http://xgis.maaamet.ee	Forest area registered in land cadastre	2000, 2005, 2010	N/A
3	“Eesti Metsad 2012” (Estonian Forests 2012), Tallinn 2014 http://www.keskkonnainfo.ee/	Forest area by ownership categories	2010, 2012	NFI 2012
4	Calculations for FRA 2015, unpublished	Forest area by ownership categories	2000, 2005, 2010	NFI data (combined) from period 2000–2012

18.2.2 Classification and definitions

National class	Definition
Public ownership	According to used FRA 2015 definition.
Private ownership	According to used FRA 2015 definition.
...of which owned by individuals	According to used FRA 2015 definition.
...of which owned by private business entities and institutions	According to used FRA 2015 definition.
Land left for privatization	According to law (– Ownership Reform program): land, which had been unlawfully expropriated in 1940, was due to be returned to its initial owners or to their descendants. In case, there is no subjects of ownership reform – land left for privatization. Sub-category of public ownership, classified as ‘Unknown ownership’.

18.2.3 Original data

FRA2015 Categories	Forest area (000 hectares)			
	1988	2000	2005	2010
Public ownership	1916	899	894	923
Private ownership	0	953	978	1038
...of which owned by individuals	0	793	783	746

...of which owned by private business entities and institutions	0	160	195	292
Other types of ownership	0	391	380	273
TOTAL	1916	2243	2252	2234

18.3 Analysis and processing of national data

18.3.1 Adjustment

Not applied.

18.3.2 Estimation and forecasting

In 1990, under the Soviet occupation, the only ownership category was public ownership.

The National Forest Inventory results of 2000–2012 are combined during data processing using data of the Land Cadastre and the Land Title Book:

- Year 2000 is calculated using the NFI data from 2000–2003;
- Estimations for 2005 and 2010 – average values of the NFI data from 2003–2007 and 2008–2012, respectively.

18.3.3 Reclassification

National class 'Land left for privatization' classified as 'Unknown ownership'.

18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	2000	2005	2010
	Public ownership	2206	899	894	923
	... of which owned by the state at national scale	N/A	N/A	N/A	N/A

	... of which owned by the state at the sub-national government scale	N/A	N/A	N/A	N/A
	Private ownership	0	953	978	1038
	... of which owned by individuals	0	793	783	746
	... of which owned by private business entities and institutions	0	160	195	292
	... of which owned by local, tribal and indigenous communities	0	0	0	0
	Unknown ownership	0	391	380	273
TOTAL		2206.00	2243.00	2252.00	2234.00

Tiers

Category	Tier for status	Tier for reported trend
Public ownership	Tier 3	Tier 3
Private ownership	Tier 3	Tier 3
Unknown ownership	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend
Ownership	Tier 3: National forestry statistics registers of land titles or maps on land ownership or all forest area under one ownership category that is five years old or less. Tier 2: National forestry statistics registers of land titles or maps on land ownership or questionnaires that are more than five years old. Tier 1: Other	Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status) Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1 : Other

Table 18b - Holder of management rights of public forests

Categories	Forest area (000 hectares)			
	1990	2000	2005	2010
Public Administration	2206	898	893	922
Individuals	0	1	1	1
Private companies	0	0	0	0

Communities	0	0	0	0
Other	0	0	0	0
TOTAL	2206.00	899.00	894.00	923.00

Category	Tier for reported trend	Tier for status
Public Administration	Tier 3	Tier 3
Individuals	Tier 3	Tier 3
Private companies	Tier 3	Tier 3
Communities	Tier 3	Tier 3
Other	Tier 3	Tier 3

18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	NFI 2000–2012, Land Cadastre, Land Title Book	Forest land, bounded by the "land left for privatization", shall be owned by the state (State Forest Management Centre) in general politics.
Private ownership	NFI 2000–2012, Land Cadastre, Land Title Book	In 1990, private forest ownership was absent, until the land reform started in 1993 in Estonia. The latest trend shows that private ownership owned by individuals goes slightly downwards due to increasing area of land owned by private business entities.
Unknown ownership	Land left for privatization (sub-category of public ownership). NFI 2000–2012, Land Cadastre	Decreasing trend - until the finish of the land reform program.
Management rights	By default, holder of management rights of public forest is public administration. Individuals could hold management rights by law: a) on hereditary farm land https://www.riigiteataja.ee/ert/act.jsp?id=22203 b) by usufruct of agricultural land https://www.riigiteataja.ee/ert/act.jsp?id=13183713	N/A

Other general comments to the table

N/A

19. How many people are directly employed in forestry?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

19.1 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment in forestry	Employment in activities related to production of goods derived from forests. This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

19.2 National data

19.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Estonian Labor Force Survey results, Estonian Statistical Office on-line database available at http://pub.stat.ee/px-web.2001/I_Databas/Social_life/09Labour_market/04Employed_persons/02Annual_statistics/02Annual_statistics.asp ; Statistical observation: ML0201: EMPLOYED PERSONS by Indicator, Economic activity (EMTAK 2008), Sex and Year	Employment in forestry, .. of which female	1990, 2000, 2005, 2010	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

19.2.2 Classification and definitions

National class	Definition
Employment in forestry	According to FRA 2015 definition: Estonian Classification of Economic Activities (EMTAK 2008) is based on NACE, Rev. 2
N/A	N/A
N/A	N/A
N/A	N/A

19.2.3 Original data

Employed*	Employed persons, thousands			
..forestry and logging	1990	2000	2005	2010
Males and females	9,8	9,1	6,1	5,8
Females	2	0,8	0,5	0,7
annual average *				
1990: employed persons aged 15-69;				
2000, 2005, 2010: employed persons aged 15-74.				

19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
	Employment in forestry	9.8	9.1	6.1	5.8
	... of which female	2	0.8	0.5	0.7

19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	Number of employed persons include for 1990 employed persons aged 15-69 and for 2000, 2005, 2010 persons aged 15-74.	N/A

Other general comments to the table
N/A

20. What is the contribution of forestry to Gross Domestic Product (GDP)?

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

20.1 Categories and definitions

Category	Definition
Gross value added from forestry (at basic prices)	This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

20.2 Data

Table 20 (Pre-filled data from UNdata/EUROSTAT)

Category	Million	Currency	Year for latest available information
Gross value added from forestry (at basic prices)	269.25	EURO	2013

20.3 Comments

Category	Comments
Gross value added from forestry (at basic prices)	Source: On-line database of the Estonian Statistical Office at http://pub.stat.ee/px-web.2001/I_Databas/Economy/23National_accounts/01Gross_domestic_product_(GDP)/11Gr Statistical observation NAA046: VALUE ADDED by Economic activity (EMTAK 2008)

Other general comments

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21. What is forest area likely to be in the future

Documents for this question:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

21.1 Categories and definitions

Category	Definition
Government target/aspiration for forest area	Government target/aspiration for forest area for a specific year.
Forests earmarked for conversion	Forest area that is allocated/classified or scheduled to be converted into non-forest uses.

21.2 National data

21.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	Forest Act, English translation available at http://www.legaltext.ee/et/andmebaas/tekst.asp?loc=text&dok=XX00045K3&keel=en&pg=1&ptyyp=RT&tyyp=X&query=metsaseadus	Government target/aspiration for forest area	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

21.3 Data

Table 21a

Category	Forest area (000 ha)	
	2020	2030
Government target/aspiration for forest area	N/A	N/A

Table 21b

Category	Forest area (000 ha)
	2013
Forests earmarked for conversion	N/A

21.4 Comments

Category	Comments
Government target/aspiration for forest area	There is no government target for forest area
Forests earmarked for conversion	Deforestation rules are described in Forest Act. There is no earmarked forest lands allocated for conversion. Deforestation rates: see table 1b.

Other general comments

Only government target for forest area is set for state forest land in Forest Act

§ 5. State forest land

(1) In order to ensure the stable state of the environment and multiple uses of forest, the area of state forest land shall be at least 20 percent of the area of the mainland of the Republic of Estonia.