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Organization of the
United Nations

Global Forest Resources Assessment 2020

Report

Estonia

Rome, 2020



FAO has been monitoring the world's forests at 5 to 10 year intervals since 1946. The Global Forest Resources Assessments (FRA) are now produced every five years in an attempt to provide a consistent approach to describing the world's forests and how they are changing. The FRA is a country-driven process and the assessments are based on reports prepared by officially nominated National Correspondents. If a report is not available, the FRA Secretariat prepares a desk study using earlier reports, existing information and/or remote sensing based analysis.

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Introduction

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Introductory text

Estonian Environment Agency (ESTE) is responsible for the dissemination of forest sector statistics in Estonia. Data of forest resources are published annually in statistical yearbook “Forest” (see <https://www.keskkonnaagentuur.ee/sites/default/files/mets2017.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, State Forest Management Centre etc.

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

National Forest Inventory – overview

In Estonia the collection of large-area forest resource information, based on selective sampling, started in 1999. 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. In 2003 the department of NFI continued its work in the Centre of Forest Protection and Silviculture. Since 2010 work continued in the Estonian Environment Information Centre and from 2013 in the Forest department of the Estonian Environment Agency. Despite continuous institutional restructuring, NFI team is responsible for the inventories, planning of the design and estimation methods, field measurements, as well as for calculation 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 NFI database. A network of sample plots, covering the whole country, has been planned for every 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 of 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 if possible from official statistics, combined with extrapolation of the NFI data and also special studies made for GHG inventory.

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.

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 5500 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 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 calculation rules of NFI estimates were slightly changed in 2016 after the thorough analysis. As a result of this effort all time-series were recalculated. Therefore most of the NFI based-estimates in present report differ slightly from respective figures in previous similar reports. In some cases it was not possible to apply new calculation rules for earlier years and figures were updated to comply with total area or volume estimates.

1 Forest extent, characteristics and changes

1a Extent of forest and other wooded land

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	Forest, OWL	2000-2017	
FRA 2015 Country report (http://www.fao.org/3/a-az208e.pdf)	Forest, OWL	1990	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

National classification and definitions

According to Forest Act: 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.

NFI assigns the FRA forest and OWL class for every measured sample plot since 2005 and forest area according to national definitions were not used in FRA 2020 reporting

Original data

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Analysis and processing of national data

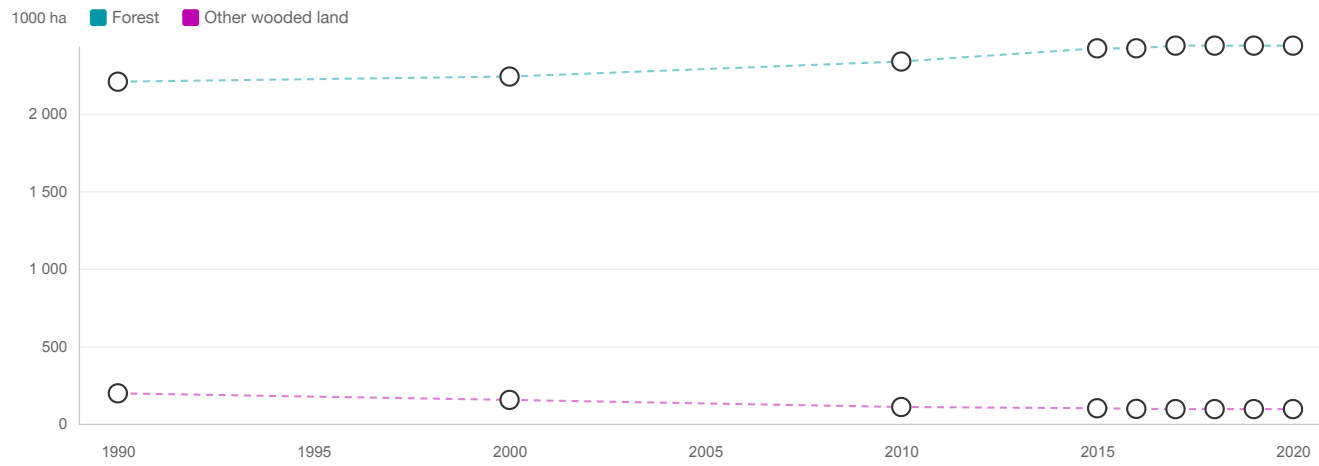
Estimation and forecasting

The year 2017 figure was repeated for 2018-2020.

The 1990 estimate was derived (in earlier reporting cycles) 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.

Reclassification into FRA 2020 categories

For the year 2000 (when FRA forest and other wooded land categories were not yet assigned to measured sample plots) forest and OWL estimates the share of forest and OWL from different land-use classes (average for period 2005-2017) were used for reclassification.



FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest (a)	2 205.90	2 238.89	2 336.02	2 421.01	2 421.25	2 438.40	2 438.40	2 438.40	2 438.40
Other wooded land (a)	196.23	153.71	108.04	99.90	95.94	94.44	94.44	94.44	94.44
Other land (c-a-b)	1 944.87	1 954.40	1 902.94	1 826.09	1 829.81	1 814.16	1 814.16	1 814.16	1 814.16
Total land area (c)	4 347.00	4 347.00	4 347.00	4 347.00	4 347.00	4 347.00	4 347.00	4 347.00	4 347.00

The FAOSTAT land area figure for the year 2015 is used for all reference years

Climatic domain	% of forest area 2015	Override value
Boreal	0.00	
Temperate	100.00	
Sub-tropical	0.00	
Tropical	0.00	

Comments

Forest	The total forest area has increased since 1950s in Estonia. During the last decade the area seems to be stabilised. Main reason for deforestation is conversion of forest land to the settlements and infrastructure. So far the expansion of forest land has exceeded the deforestation.
Other wooded land	The Land Reform (in 1990s) had two different influences on the other wooded land: a) former agricultural land became covered with trees, and b) OWL become covered with woods and classified as forest.

1b Forest characteristics

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	all categories	2000-2020	

National classification and definitions

Comply with FRA definition.

Original data

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Analysis and processing of national data

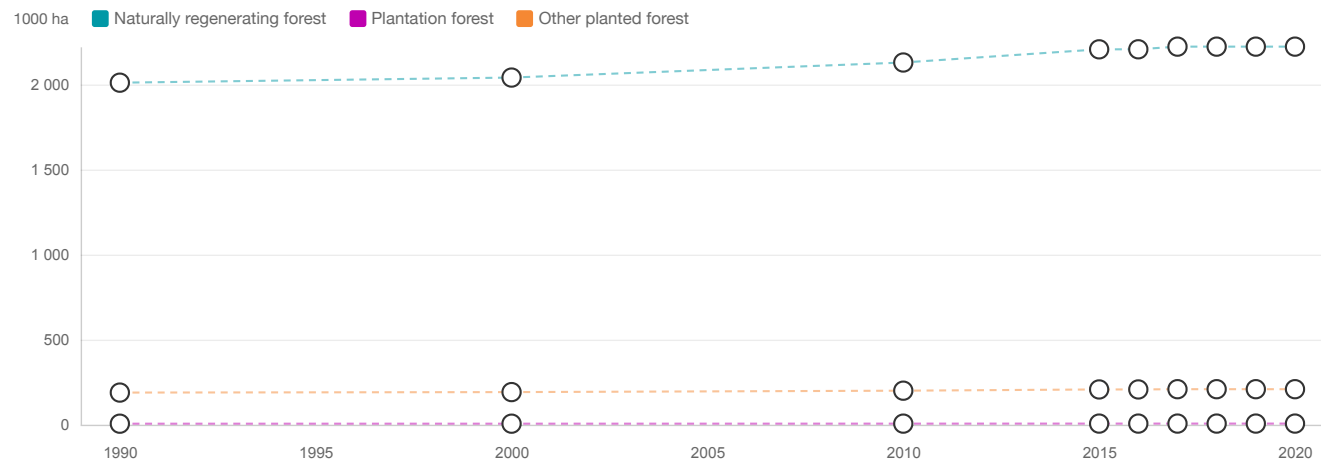
Estimation and forecasting

The year 2017 figure was repeated for 2018-2020.

Forest characteristics have been recorded in NFI since 2013. Therefore the average shares of categories of forest characteristics (from period of 2013-2017) were applied to the total forest area of reported years (for all categories in 1990-2017).

Reclassification into FRA 2020 categories

Not applied



FRA categories	Forest area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest (a)	2 010.73	2 040.80	2 129.34	2 206.80	2 207.02	2 222.66	2 222.66	2 222.66	2 222.66
Planted forest (b)	195.17	198.09	206.68	214.20	214.22	215.74	215.74	215.74	215.74
Plantation forest	6.14	6.23	6.50	6.74	6.74	6.79	6.79	6.79	6.79
...of which introduced species	1.92	1.95	2.03	2.11	2.11	2.12	2.12	2.12	2.12
Other planted forest	189.03	191.86	200.18	207.46	207.48	208.95	208.95	208.95	208.95
Total (a+b)	2 205.90	2 238.89	2 336.02	2 421.00	2 421.24	2 438.40	2 438.40	2 438.40	2 438.40
Total forest area	2 205.90	2 238.89	2 336.02	2 421.01	2 421.25	2 438.40	2 438.40	2 438.40	2 438.40

Comments

1c Primary forest and special forest categories

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	Primary forest, temporarily unstocked and/or recently regenerated	2000-2017	
FRA 2015 Country report (http://www.fao.org/3/a-az208e.pdf)	Primary forest	1990	
Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	Temporarily unstocked and/or recently regenerated	1988	Basis for the calculation of 1990 estimate

National classification and definitions

Comply with FRA definition. Bamboos, mangroves and rubber woods do not exist in Estonia.

Category 'Temporarily unstocked and/or recently regenerated' include national forest land development classes 'bare areas' (forest storey is not existing and the number of cultivated and/or naturally regenerated forest plants is less than 500 per ha) and 'unclear areas' (forest storey is not existing and the number of cultivated and/or naturally regenerated forest plants is more than 500 per ha but less than 1500 plants per/ha or the number of plants with height more than 1,3 m is less than 1500 plants per ha).

Original data

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Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was used for 2020.

Year 1990 estimate for category 'Temporarily unstocked and/or recently regenerated' was calculated using the relative share of the temporarily unstocked areas in 1988.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Primary forest	39.60	56.70	59.16	51.43	52.09
Temporarily unstocked and/or recently regenerated	117.44	160.72	148.32	171.39	181.24
Bamboos	0.00	0.00	0.00	0.00	0.00
Mangroves	0.00	0.00	0.00	0.00	0.00
Rubber wood	0.00	0.00	0.00	0.00	0.00

Comments

1d Annual forest expansion, deforestation and net change

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	Forest, OWL	1990-2020	

National classification and definitions

Comply with FRA definitions

Original data

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Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was repeated for 2018-2020.

Calculations based on NFI sample plot grid where every sample plot is assigned with land-use class at present and in past up to the year 1990 if the change has taken place. Same data and approach is also used in LULUCF reporting

Reclassification into FRA 2020 categories

Not applied

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Forest expansion (a)	3.49	16.05	28.23	8.49
...of which afforestation	0.70	3.21	5.64	1.70
...of which natural expansion	2.79	12.84	22.58	6.79
Deforestation (b)	0.19	6.34	11.23	5.01
Forest area net change (a-b)	3.30	9.71	17.00	3.48

Comments

Deforestation and natural expansion figures for the period 2010-2015 are abnormally high due to obvious overestimation deforestation figure which can be attributed to the sampling method of NFI (small-scale phenomena have high relative errors and can deviate substantially). Estonia decided not to smooth the trendline as the same land-use change figures are used in LULUCF reporting, thus to keep the consistency between different reporting lines.

1e Annual reforestation

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Forest Statistics yearbook "Forest 2013" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/failid/Mets_2013.pdf	reforestation	1991-2013	
Forest Statistics yearbook "Forest 2017" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/02_metsaomand.pdf	reforestation in state forests	2014-2017	
Implementation reports of the Estonian Forestry Development Plan until 2020 by the Estonian Ministry of Environment available at https://www.envir.ee/et/metsanduse-arengukava-2011-2020	reforestation in private forests	2014-2017	Expert estimate by Estonian Environment Board. For 2017 preliminary estimate is used.

National classification and definitions

Comply with FRA definitions. Includes the areas of planting, seeding and contribution to natural regeneration (soil scarification, beating up).

Original data

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Analysis and processing of national data

Estimation and forecasting

Average yearly area of reforestation in 2015-2017 is used for 2015-2020 average yearly reforestation.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Reforestation	6.20	9.16	11.61	14.79

Comments

There was a high fluctuation in clear fellings (areas to be reforested or regenerated naturally) in 2000-2010. Clear-felling area was almost the same at the beginning and at the end of the period but almost 2 times lower in the middle of the period. Therefore the reforestation figures have increased in later periods.

1f Other land with tree cover

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Statistical observation AG06 'Orchards and berry plantations*' by Estonian Statistical Office available at http://pub.stat.ee/	tree orchards	1980-2017	The basis for the calculation of time-series of orchards
NFI, calculations for LULUCF reporting	tree orchards	1990-2020	

National classification and definitions

Comply with FRA definitions

Original data

-

Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was repeated for 2020.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Palms (a)	0.00	0.00	0.00	0.00	0.00
Tree orchards (b)	9.20	8.46	4.58	3.60	3.60
Agroforestry (c)					
Trees in urban settings (d)					
Other (specify in comments) (e)					
Total (a+b+c+d+e)	9.20	8.46	4.58	3.60	3.60
Other land area	1 944.87	1 954.40	1 902.94	1 826.09	1 814.16

Comments

2 Forest growing stock, biomass and carbon

2a Growing stock

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	all categories	all years	
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	total growing stock	1990	

National classification and definitions

Comply with FRA definitions

Original data

-

Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was repeated for 2018-2020. Average relative shares of growing stock categories from NFI were applied to total growing stock in 1990.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Growing stock m ³ /ha (over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	180.88	197.74	201.54	209.67	210.00	209.18	209.18	209.18	209.18
Planted forest	150.54	126.76	130.44	135.71	135.94	135.39	135.39	135.39	135.39
...of which plantation forest	99.35	105.94	107.69	112.76	112.76	111.93	111.93	111.93	111.93
...of which other planted forest	152.67	127.44	131.18	136.46	136.69	136.16	136.16	136.16	136.16
Forest	178.29	191.46	195.25	203.13	203.45	202.65	202.65	202.65	202.65
Other wooded land	32.11	44.50	40.63	44.24	42.21	42.14	42.14	42.14	42.14

FRA categories	Total growing stock (million m ³ over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	363.70	403.55	429.14	462.71	463.48	464.94	464.94	464.94	464.94
Planted forest	29.38	25.11	26.96	29.07	29.12	29.21	29.21	29.21	29.21
...of which plantation forest	0.61	0.66	0.70	0.76	0.76	0.76	0.76	0.76	0.76
...of which other planted forest	28.86	24.45	26.26	28.31	28.36	28.45	28.45	28.45	28.45
Forest	393.30	428.66	456.10	491.78	492.60	494.15	494.15	494.15	494.15
Other wooded land	6.30	6.84	4.39	4.42	4.05	3.98	3.98	3.98	3.98

Comments

Approach to reporting on the growing stock: Minimum DBH 0.1 cm, including the stem from stump up to a diameter of 0 cm, excluding branches

2b Growing stock composition

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	all categories	2000-2017	
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	all categories	1990	

National classification and definitions

Comply with FRA definitions

Original data

-

Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was repeated for 2018-2020.

Reclassification into FRA 2020 categories

Not applied

FRA categories	Scientific name	Common name	Growing stock in forest (million m ³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#1 Ranked in terms of volume	Pinus sylvestris	Scots pine	111.40	129.44	144.62	153.22	150.95
#2 Ranked in terms of volume	Betula pendula, Betula pubescens	Silver birch, Downy birch	87.50	110.87	117.17	126.43	127.26
#3 Ranked in terms of volume	Picea abies	Norway spruce	96.80	93.74	98.87	110.31	112.07
#4 Ranked in terms of volume	Alnus incana	Grey alder	31.80	34.56	34.50	34.30	32.93
#5 Ranked in terms of volume	Populus tremula	European aspen	32.20	32.60	30.19	31.51	32.91
#6 Ranked in terms of volume	Alnus glutinosa	European alder	17.60	17.78	18.92	21.98	22.37
#7 Ranked in terms of volume	Fraxinus excelsior	European ash	5.30	3.48	3.90	4.04	4.07
#8 Ranked in terms of volume	Salix species	Willow species	4.10	1.58	2.49	3.21	3.27
#9 Ranked in terms of volume	Quercus robur	Common oak	2.40	1.44	2.22	2.55	2.89
#10 Ranked in terms of volume	Prunus padus	Bird cherry	1.00	0.43	0.87	0.82	0.91
Remaining native tree species			2.78	2.32	1.85	2.99	4.15
Total volume of native tree species			392.88	428.24	455.60	491.36	493.78
Introduced tree species							
#1 Ranked in terms of volume	Larix sp	Larch species	0.39	0.39	0.39	0.31	0.24
#2 Ranked in terms of volume	Populus sp. (excl. Populus tremula)	Poplar (excl. aspen)	0.03	0.03	0.11	0.11	0.13
#3 Ranked in terms of volume							

FRA categories	Scientific name	Common name	Growing stock in forest (million m ³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#4 Ranked in terms of volume							
#5 Ranked in terms of volume							
Remaining introduced tree species							
Total volume of introduced tree species			0.42	0.42	0.50	0.42	0.37
Total growing stock			393.30	428.66	456.10	491.78	494.15

Comments

2c Biomass stock

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	growing stock, forest area, dead wood	2000-2020	
Köster, K., Metslaid, M., Engelhart, J., Köster E. (2015). Dead wood basic density, and concentration of carbon and nitrogen for main tree species in managed hemiboreal forests. Forest Ecology and Management, 354, 35–42	dead wood basic density	all years	
IPCC 2006, Guidelines for National Greenhouse Gas Inventories	BCEFs, root-shoot ratio	all years	
Kõlli R., Asi E., Köster T., "Organic carbon pools in Estonian forest soils", Baltic forestry, 2004 Vol. 10, No 1, p 19-26	soil carbon	all years	

National classification and definitions

Comply with FRA definitions.

Original data

Implemented values of BCEFs

Boreal	Growing stock level (m ³)			
	< 20	21–50	51–100	> 100
Forest type				
pin	1.20	0.68	0.57	0.50
firs and spruces	1.16	0.66	0.58	0.53
hardwoods	0.90	0.70	0.62	0.55

Default values of root-to-shoot ratio

	Above-ground biomass, t/ha	Root-shoot ratio (R)
Boreal coniferous forest	> 75	0.24
Temperate, other broadleaf forest	75–150	0.23

Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was repeated for 2018-2020.

The 1990 estimate for forest area was derived (in earlier reporting cycles) 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.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Forest biomass (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass	101.94	109.47	111.64	116.14	116.32	115.87	115.87	115.87	115.87
Below-ground biomass	24.02	25.79	26.30	27.36	27.41	27.30	27.30	27.30	27.30
Dead wood	2.41	2.43	3.65	4.05	3.99	3.98	3.98	3.98	3.98

Comments

2d Carbon stock

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	growing stock, forest area, dead wood	2000-2020	
Köster, K., Metslaid, M., Engelhart, J., Köster E. (2015). Dead wood basic density, and concentration of carbon and nitrogen for main tree species in managed hemiboreal forests. Forest Ecology and Management, 354, 35–42	dead wood basic density, carbon fraction	all years	
IPCC 2006, Guidelines for National Greenhouse Gas Inventories	BCEFs, root-shoot ratio	all years	
Kõlli R., Asi E., Köster T., “Organic carbon pools in Estonian forest soils”, Baltic forestry, 2004 Vol. 10, No 1, p 19-26	soil carbon	all years	

National classification and definitions

Comply with FRA definitions.

Original data

Carbon fraction of dry matter (default = 0.47) of above-ground and below-ground biomass, tonnes C (tonne d.m.)⁻¹

Carbon fraction of dry matter in deadwood (default = 0.487), tonnes C (tonne d.m.)⁻¹

Analysis and processing of national data

Estimation and forecasting

The year 2017 figure was repeated for 2018-2020.

The 1990 estimate for forest area was derived (in earlier reporting cycles) 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.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Forest carbon (tonnes/ha)									
	1990	2000	2010	2015	2016	2017	2018	2019	2020	
Carbon in above-ground biomass	47.91	50.98	52.47	54.59	54.67	54.46	54.46	54.46	54.46	54.46
Carbon in below-ground biomass	11.29	12.01	12.36	12.86	12.88	12.83	12.83	12.83	12.83	12.83
Carbon in dead wood	1.13	1.14	1.71	1.91	1.87	1.87	1.87	1.87	1.87	1.87
Carbon in litter										
Soil carbon	155.97	155.97	155.97	155.97	155.97	155.97	155.97	155.97	155.97	155.97

Soil depth (cm) used for soil carbon estimates	55.00
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Comments

3 Forest designation and management

3a Designated management objective

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	all categories	1990, 2000	
NFI (Calculations for the present report by the Estonian Environment Agency, unpublished)	all categories	2010, 2015, 2017	Data of protected/protection areas from Estonian Nature Information System (EELIS) is combined with NFI simple plot data

National classification and definitions

Comply with FRA definitions.

PRIMARY DESIGNATED MANAGEMENT OBJECTIVE:

- category 'conservation of biodiversity' (strictly protected forests) includes forest areas on conservation zones, strict nature reserves, protected woodland key habitats and I category protected animal and plant species.
- category 'multiple use' includes forest areas on limited management zones where forest management is restricted according to the protection regulations but not forbidden; other forest functions are also fulfilled and use of forest land for recreation, harvesting of non-wood products etc is possible.
- category 'protection of soil and water' includes mostly forest areas designated or managed for water production, coastal stabilization, or for any other coastal and shore protection purpose.
- category 'production forests' include all remaining forest land; it also includes areas of II category protected animals and plants and woodland key habitats (WKH) without legal protection. All woodland key habitats (WKH) are protected in state forests and partly (with conservation contracts) in private forests. A big share of WKH in private forests are dependent on owners' decision on management objectives.

TOTAL AREA WITH DESIGNATED MANAGEMENT OBJECTIVE:

- category 'production forests' includes forest areas of production, soil and water protection and multiple use categories i.e all forest area where forest management is not forbidden (i.e. forest available for wood supply).
- category 'conservation of biodiversity' includes forest areas of soil and water protection, multiple use and conservation of biodiversity categories.

Original data

-

Analysis and processing of national data

Estimation and forecasting

Year 2017 estimates are used to report on 2020.

Primary designated management objective production category estimate for 2010 was adjusted to match with total forest land area in 2010.

Reclassification into FRA 2020 categories

Data of protected/protection areas from Estonian Nature Information System (EELIS) is combined with NFI simple plot data to obtain estimates about designated management functions for years 2000, 2010, 2015 and 2017.

Primary designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production (a)	1 628.71	1 741.85	1 702.97	1 777.09	1 776.35
Protection of soil and water (b)	153.29	256.04	136.38	113.88	110.88
Conservation of biodiversity (c)	126.90	137.00	260.21	310.52	332.36
Social Services (d)	0.00	0.00	0.00	0.00	0.00
Multiple use (e)	297.00	104.00	236.46	219.52	218.81
Other (specify in comments) (f)	0.00	0.00	0.00	0.00	0.00
None/unknown (g)	0.00	0.00	0.00	0.00	0.00
Total forest area	2 205.90	2 238.89	2 336.02	2 421.01	2 438.40

Total area with designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production	2 079.00	2 101.89	2 075.81	2 110.49	2 106.04
Protection of soil and water	153.29	256.04	162.25	136.99	137.47
Conservation of biodiversity	576.90	497.00	633.05	643.92	662.05
Social Services					
Other (specify in comments)					

Comments

Category 'Protection of soil and water': Between the reference years 2000 and 2010 changes in legislation took place: – the width of 'protective belt of coast/ shores is reduced approx. twice; – the extra protection of alvars has been waived (on a reasoned case the protected area will be formed).

Category 'Conservation of biodiversity' has continually increasing trend as the target of 10% of total forest area for conservation of biodiversity has been one of the main goals in the National Forest Development Plans. The target has been achieved and efforts were made to guarantee the typological representativity of different forest site types.

3b Forest area within protected areas and forest area with long-term management plans

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	forest area within protected areas	1990, 2000	
NFI (Calculations for the present report by the Estonian Environment Agency, unpublished)	forest area within protected areas	2010, 2015, 2016, 2017	Data of protected/protection areas from Estonian Nature Information System (EELIS) is combined with NFI simple plot data
State of Europe's Forests 2015, Estonian national report to Forest Europe process available at https://www.foresteuropa.org/docs/SoeF2015/NR-quantitative/Estonia.xls	forest area with long-term management plan, .. of which in protected areas	1990, 2000, 2010	
Calculations by Estonian Environment Agency for the present report, unpublished	forest area with long-term management plan, .. of which in protected areas	2015, 2016, 2019	Data from National register for accounting the forest resources (standwise forest inventory data)
Forest Statistics yearbook "Forest 2017" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/01_metsavarud.pdf and Forest Statistics yearbook "Forest 2016" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/mets2016_08.09.pdf	forest area with long-term management plan	2017, 2018	Data based on National register for accounting the forest resources (standwise forest inventory data)
Eesti NSV metsade majandamise ja puidukasutuse arenduskava "Eesti mets 2010" (Forest management and wood utilisation development plan until 2010), Tallinn 1989	forest area with long-term management plan, .. of which in protected areas	1988	Basis for the 1990 estimates, The combined stand-wise forest inventory data of 1979–1988

National classification and definitions

Category 'forest area within protected areas' estimates for years 2010-2017 include forest area on conservation zones of species' protection sites, limited-conservation areas, protected areas, protection zones of the protected nature monuments. Estimates for the years 1990 and 2000 are not straightly comparable with later years.

Forest area with long-term forest management plans:

Stand-wise forest inventory: mostly visual assessment in the forest with a compilation of Forest Management Plan as final output for the owner; inventory data are kept in a national register for accounting the forest resources (Estonian Environment Agency, Forest Register <http://register.metsad.ee/avalik>). 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. Forest inventory data in the national register is a 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.

State Forest Management Centre carries out continuous inventory but other forest owners use periodic inventory. Majority of state forest land (managed by the State Forest Management Centre) has long-term management plans. As Centre uses the continuous inventory then not all the sub-compartments are re-assessed after 10 years and can have data older than 10 years. So the estimates of the forest area with long-term management plan for years 2015-2019 exclude those area (underestimation on forest area with management plans in state forests).

Original data

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Analysis and processing of national data

Estimation and forecasting

Year 2017 estimate of category 'forest area within protected areas' is repeated for 2018-2020.

Year 2019 estimate of category 'forest area with long-term forest management plan' is repeated for 2020.

Reclassification into FRA 2020 categories

Category 'forest area within protected areas' estimates for years 2010-2017 include forest area on conservation zones of species' protection sites, limited-conservation areas, protected areas, protection zones of the protected nature monuments. There are other areas which provide protection status in forest but mentioned areas form the category *legally established protected areas* in Estonia. Estimates for the years 1990 and 2000 are not straightly comparable with later years.

FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest area within protected areas	127.00	141.00	486.09	498.34	512.98	532.41	532.41	532.41	532.41
Forest area with long-term forest management plan	1 916.00	1 230.00	1 650.90	1 544.16	1 629.72	1 666.18	1 719.54	1 690.02	1 690.02
...of which in protected areas	127.00		157.60					284.64	284.64

Comments

4 Forest ownership and management rights

4a Forest ownership

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	all categories	1990, 2000	basis for calculations
NFI (Calculations for present report, unpublished)	all categories	2000, 2010, 2015	
Forest Statistics yearbook "Forest 2017" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/02_metsaomand.pdf	all categories	2005-2017	area of forest land by ownership categories (according to the national definition of forest area), a basis for calculations

National classification and definitions

Comply with FRA definitions.

Land left for privatization is sub-category of public ownership, classified as 'Unknown ownership'. According to the 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.

Original data

-

Analysis and processing of national data

Estimation and forecasting

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

For the year 2015, only the total forest area and forest area managed by the State Forest Management Centre were known. Other categories were calculated and adjusted as an average of estimates of 2014 and 2016.

As total forest area estimates according to NFI for the years 2000-2016 were recalculated in 2016 the estimates of ownership categories for years 2000, 2010 and 2015 had to be recalculated to match the total forest area (according to the relative share of the category in the respective year)

Reclassification into FRA 2020 categories

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

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Private ownership (a)	0.00	951.25	1 058.50	1 133.33
...of which owned by individuals	0.00	791.55	799.76	732.62
...of which owned by private business entities and institutions	0.00	159.71	258.74	400.71
...of which owned by local, tribal and indigenous communities	0.00	0.00	0.00	0.00
Public ownership (b)	2 205.90	897.35	931.24	1 176.85
Unknown/other (specify in comments) (c)	0.00	390.29	346.28	110.83
Total forest area	2 205.90	2 238.89	2 336.02	2 421.01

Comments

Public forest - Majority of the state forest land is managed by single state profit enterprise (State Forest Management Centre). Figures in table include area of forest land of other state institutions and municipal forests.

Private forest - 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 downwards due to the increasing area of land owned by private business entities.

Unknown ownership - Land left for privatization (a sub-category of public ownership) has a decreasing trend until the finish of the land reform program. In 2017 only 28 600 ha of forest land remained in this category

4b Holder of management rights of public forests

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	all categories	1990	
GFRA 2015 country report Estonia, available at http://www.fao.org/3/a-az208e.pdf	individuals	1990, 2000, 2010	
NFI (Calculations for present report, unpublished)	public administration	all years	

National classification and definitions

Comply with FRA definitions.

By default, holder of management rights of a 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>.

Original data

-

Analysis and processing of national data

Estimation and forecasting

The estimate for public forest land managed by individuals is repeated for 2015 from earlier years. The estimate for public administration is a difference between total public ownership minus public forest land managed by individuals.

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Public Administration (a)	2 205.90	896.35	930.24	1 175.85
Individuals (b)	0.00	1.00	1.00	1.00
Private business entities and institutions (c)	0.00	0.00	0.00	0.00
Local, tribal and indigenous communities (d)	0.00	0.00	0.00	0.00
Unknown/other (specify in comments) (e)	0.00	0.00	0.00	0.00
Total public ownership	2 205.90	897.35	931.24	1 176.85

Comments

In 1990, under the Soviet occupation, the only ownership category was public ownership managed by public administration. In 1990, private forest ownership was absent, until the land reform started in 1993 in Estonia.

By default, holder of management rights of a 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>.

5 Forest disturbances

5a Disturbances

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Data and calculations for the present report by the Estonian Environment Agency, unpublished	all categories	2000-2017	According to the data of registered forest damages during the year reported by forest owners. Several calculations were made to reclassify the national data.
Forest Statistics Yearbook "Forest 2017" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/05_metsade_tervislik_seisund.pdf	all categories	2000-2017	Data of registered forest damages during the year reported by forest owners

National classification and definitions

Comply with FRA definitions.

The reported damaged areas according to primary/major disturbing agent/event and the areas reported are exclusive.

Original data

-

Analysis and processing of national data

Estimation and forecasting

data for 1991 was used to report on 1990.

Reclassification into FRA 2020 categories

Average shares of different damages in 2011-2017 classified under category "other" in national statistics were applied to the category "other" in 2000-2010 to match with FRA categories.

FRA categories	Area (1000 ha)																	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Insects (a)	0.85	0.23	0.87	0.78	0.37	0.61	0.53	1.24	1.09	1.37	1.13	1.96	2.10	1.80	1.38	0.95	0.80	0.32
Diseases (b)	2.66	2.61	1.99	4.28	3.76	3.76	2.65	2.82	4.39	2.10	1.98	1.88	2.09	2.02	1.40	0.92	0.76	0.59
Severe weather events (c)	4.05	9.62	16.31	5.64	4.29	33.60	10.82	5.44	4.03	3.94	8.32	6.73	11.93	6.15	8.95	2.99	5.91	1.74
Other (specify in comments) (d)	8.93	7.86	2.06	2.80	2.65	1.93	2.28	3.55	2.95	2.74	2.24	2.40	2.97	4.09	8.54	5.14	3.61	2.44
Total (a+b+c+d)	16.49	20.32	21.23	13.50	11.07	39.90	16.28	13.05	12.46	10.15	13.67	12.97	19.09	14.06	20.27	10.00	11.08	5.09
Total forest area	2 238.89	–	–	–	–	–	–	–	–	–	2 336.02	–	–	–	–	2 421.01	2 421.25	2 438.40

Comments

Mixed sources have been used to report forest damages in Estonia: according to registered forest damages by owners, forest protection expertize reports (assessment of damaged areas), forest fire statistics. In the present table, only the data according to registered forest damages by owners are reported.

Forest damage statistics' sources underestimate total area of damages. Damages are often not recorded if there is no economic interest or forest stand parameters allow to cut area with normal felling procedures. Reported data is exclusive (according to the primary disturbing agent) i.e. the total area of damage category is higher in most cases compared to reported figures.

Severe weather events include storm, snow and water (overflowing) damages and excludes forest fires.

Category "Other" includes game damages, human-induced damages and partly also areas damaged by insects and diseases which were not reported separately in national statistics.

5b Area affected by fire

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Forest Statistics yearbook "Forest 2017" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/06_metsatulekahjud.pdf	number of forest fires	2000-2017	

National classification and definitions

Comply with FRA definitions.

Original data

-

Analysis and processing of national data

Estimation and forecasting

Not applied

Reclassification into FRA 2020 categories

Not applied.

FRA categories	Area (1000 ha)																	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total land area affected by fire																		
...of which on forest	0.68	0.06	2.08	0.21	0.38	0.09	3.10	0.29	1.28	0.06	0.02	0.02	0.00	0.08	0.08	0.08	0.12	0.03

Comments

Area of vegetation (landscape) fires is not registered (only initial area when the accident is registered). Area of burned forest lands has been identified after fires via communication with forest managers or assessment of burnt forest areas by the Estonian Environment Agency.

5c Degraded forest

Does your country monitor area of degraded forest		No
If "yes"	What is the national definition of "Degraded forest"?	
	Describe the monitoring process and results	

Comments

6 Forest policy and legislation

6a Policies, Legislation and national platform for stakeholder participation in forest policy

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Ministry of Environment website available at https://www.envir.ee/et/metsanduse-arengukava-2011-2020	Platform that promotes or allows for stakeholder participation in forest policy development	2011-2020	Information about the formation of Forestry Council and Forestry Development Program until 2020
Forest Act (in English), available at State Gazette website: https://www.riigiteataja.ee/en/eli/509012019007/consolide	Legislations and regulations supporting SFM	2006	Present Forest Act was adopted in 2006 and amended later several times
Ministry of Environment website available at https://www.envir.ee/et/metsanduse-oigusaktid	Legislations and regulations supporting SFM	2019	Links to all by-laws of Forest Act (in Estonian) as of the year 2019
Forest Policy (in Estonian), available at State Gazette website: https://www.riigiteataja.ee/akt/73663	Policies supporting SFM	1997	Forest Policy was adopted by Parliament in 11.06.1997

National classification and definitions

Comply with FRA definitions.

Original data

-

Indicate the existence of	Boolean (Yes/No)	
	National	Sub-national
Policies supporting SFM	Yes	No
Legislations and regulations supporting SFM	Yes	No
Platform that promotes or allows for stakeholder participation in forest policy development	Yes	No
Traceability system(s) for wood products	Yes	No

Comments

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. The main aim of the Forestry Council is to support the implementation of the Forestry Development Programs 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; Parliament; Ministry of Agriculture; Ministry of Environment.

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

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

Forest Act: § 7. Development plan of field covering forestry

(4) The minister responsible for the field establishes 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. The working group must contain representatives of ecological, social, cultural and economic interests.

6b Area of permanent forest estate

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
NFI (Calculations for present report, unpublished)	Area of the permanent forest estate	1990, 2000, 2010, 2015, 2017	
Forest Act, available at State Gazette website: https://www.riigiteataja.ee/en/eli/509012019007/consolide	The share of the mainland to be retained as state forest land	all years	The act provides the share of the mainland to be retained as public forest land.

National classification and definitions

Comply with FRA definition.

There is no fixed forest land area to be in permanent forest land use in Estonia.

For state forests, Forest Act states

§ 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.

According to the Forest Act deforestation is allowed in specific cases when certain legal procedures have been carried out:

§ 32. Deforestation

(1) Deforestation means the cutting that is done in order to enable the use of land for purposes other than silviculture.

(2) Deforestation is carried out:

2) for the purpose of compliance with the requirements established for the maintenance of a construction works having a protection zone and maintenance of the protection zone of the construction works on the basis of building design documentation or on the basis of an operational plan of the electrical installation if the preparation of a detailed plan is not mandatory;

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.

Original data

-

FRA 2020 categories	Forest area (1000 ha)					
	Applicable?	1990	2000	2010	2015	2020
Area of permanent forest estate	Yes	907.00	907.00	907.00	907.00	907.00

Comments

There is no fixed forest land area to be in permanent forest land use in Estonia.

For state forests, Forest Act states

§ 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.

7 Employment, education and NWFP

7a Employment in forestry and logging

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Labour Force Survey data received from Estonian Statistical Office for the present report, partly published in the online database of ESO at pub.stat.ee	all categories	1989-2017	

National classification and definitions

Comply with FRA definition.

Original data

-

FRA 2020 categories	Full-time equivalents (1000 FTE)											
	1990			2000			2010			2015		
	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male
Employment in forestry and logging	10.00	2.08	7.92	9.17	1.00	8.17	5.60	0.58	5.02	7.09	1.01	6.08
...of which silviculture and other forestry activities												
...of which logging												
...of which gathering of non wood forest products												
...of which support services to forestry												

Comments

All data according to the Labor Force Survey (3-years average):

1990: average of 1989-1991

2000: average of 1999-2001

2010: average of 2009-2011

2015: average of 2014-2016

The Estonian Labour Force Survey is based on the definitions devised by the International Labour Organisation. ELFS is sample-based survey. Starting from the year 2000 the survey is a continuous survey providing quarterly and annual results. The reference weeks for the households in the sample are spread uniformly throughout the whole year, e.g. for every week of the year, the same number of interviews is done. The target population of the survey are the working-age residents of Estonia (aged 15–74). The estimates that are based on less than 20 persons of the sample are not published.

7b Graduation of students in forest-related education

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Data from Estonian University of Life Sciences and Luua Forestry School for present report	number of graduates	1990, 2000, 2010, 2015	Data is partly published yearly in forest statistical yearbook "Forest" see https://www.keskkonnaagentuur.ee/et/metsandusevaljaanded

National classification and definitions

National classification complies with FRA definitions and classification since 2000. Students who graduated in the 1990s the 5- or 4-year course received the Diploma, this level was later recognised as a Master's degree. In the table the figures for a Bachelor's degree in 1990 equal to a Master's degree in legal terms.

Original data

-

FRA 2020 categories	Number of graduated students											
	1990			2000			2010			2015		
	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male
Doctoral degree				1.00		1.00	3.00	1.00	2.00	3.00	1.00	2.00
Master's degree				2.00	1.00	1.00	22.00	4.00	18.00	19.00	3.00	16.00
Bachelor's degree	34.00	12.00	22.00	27.00	5.00	22.00	50.00	4.00	46.00	33.00	4.00	29.00
Technician certificate / diploma	71.00	9.00	62.00	64.00	2.00	62.00	38.00	2.00	36.00	35.00	6.00	29.00
Total	105.00	21.00	84.00	94.00	8.00	86.00	113.00	11.00	102.00	90.00	14.00	76.00

Comments

7c Non wood forest products removals and value 2015

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Variables	Year	Comment
Calculations for the present report by the Estonian Environment Agency, unpublished	all categories	2015	Based on expert estimation about Christmas trees and number of hunted game animals
Forest Statistics yearbook "Forest 2017" by Estonian Environment Agency, available at https://www.keskkonnaagentuur.ee/sites/default/files/08_jahindus.pdf	number of hunted animals	2015	
FRA 2010 Country report Estonia, Table T12	number of Christmas trees used in Estonia	2010	

National classification and definitions

Comply with FRA definitions.

Original data

Number of hunted animals in 2015

Species	Number	Average weight of carcase (kg)
Moose (<i>Alces alces</i>)	6873	130
Wild boar (<i>Sus scrofa</i>)	32580	40
Roe deer (<i>Capreolus capreolus</i>)	6264	12
Red deer (<i>Cervus elaphus</i>)	1252	60

	Name of NWFP product	Key species	Quantity	Unit	Value (1000 local currency)	NWFP category
#1	Christmas trees	Norway spruce (Picea abies)	200	Number (1000 pcs)	4 500	6 Ornamental plants
#2	Wild meat	Moose (Alces alces)	893	1000 kg	2 680	12 Wild meat
#3	Wild meat	Wild boar (Sus scrofa)	1 303	1000 kg	3 910	12 Wild meat
#4	Wild meat	Roe deer (Capreolus capreolus)	75	1000 kg	226	12 Wild meat
#5	Wild meat	Red deer (Cervus elaphus)	75	1000 kg	225	12 Wild meat
#6						
#7						
#8						
#9						
#10						
All other plant products						
All other animal products						
Total					11 541	

Name of currency	euro
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Comments

Product (group of products)	Comments related to data, definitions, etc.	Comments on trend(s)*
1 st : Christmas trees	The price of Christmas trees is an expert estimate (15 EUR/m). For the value of Christmas trees, the number of trees was multiplied with average height and the average price per meter of the tree.	
2 nd : Wild meat	Price for bushmeat is an expert estimate (3 EUR/kg). For total commercial value (theoretical, most of the meat is not marketed) of wild meat by species, the number of hunted animals was multiplied with an average weight of animal and average price (EUR/kg).	The hunting of moose has increased from 4255 animals in 2010 to level of 7000 in recent years.
3 rd : Wild meat	Price for bushmeat is an expert estimate (3 EUR/kg). For total commercial value (theoretical, most of the meat is not marketed) of wild meat by species, the number of hunted animals was multiplied with an average weight of animal and	The average number of hunted wild boars has been at 20 000 animals level during the present decade. Hunting figure of 32580 in 2015 was exceptionally high as drastic measures were taken to limit the spread of African swine

		average price (EUR/kg).	fever virus.
4 th :	Wild meat	Price for bushmeat is an expert estimate (3 EUR/kg). For total commercial value (theoretical, most of the meat is not marketed) of wild meat by species, the number of hunted animals was multiplied with an average weight of animal and average price (EUR/kg).	The hunting of Roe deer has increased in recent years as population has nearly tripled since 2012 (which was low point in population figure)
5 th :	Wild meat	Price for bushmeat is an expert estimate (3 EUR/kg). For total commercial value (theoretical, most of the meat is not marketed) of wild meat by species, the number of hunted animals was multiplied with average weight of animal and average price (EUR/kg).	The hunting of Red deer has increased continuously over the last decade.

8 Sustainable Development Goal 15

8a Sustainable Development Goal 15

SDG Indicator 15.1.1 Forest area as proportion of total land area 2015

Indicator	Percent							
	2000	2010	2015	2016	2017	2018	2019	2020
Forest area as proportion of total land area 2015	51.50	53.74	55.69	55.70	56.09	56.09	56.09	56.09

Name of agency responsible	Estonian Environment Agency
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SDG Indicator 15.2.1 Progress towards sustainable forest management

Sub-Indicator 1	Percent						
	2000-2010	2010-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Forest area annual net change rate	0.43	0.72	0.01	0.70	0.00	0.00	0.00

Name of agency responsible	Estonian Environment Agency
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Sub-Indicator 2	Forest biomass (tonnes/ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass stock in forest	109.47	111.64	116.14	116.32	115.87	115.87	115.87	115.87

Name of agency responsible	Estonian Environment Agency
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Sub-Indicator 3	Percent (2015 forest area baseline)							
	2000	2010	2015	2016	2017	2018	2019	2020
Proportion of forest area located within legally established protected areas	5.82	20.08	20.58	21.19	21.99	21.99	21.99	21.99

Name of agency responsible	Estonian Environment Agency
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Sub-Indicator 4	Percent (2015 forest area baseline)							
	2000	2010	2015	2016	2017	2018	2019	2020
Proportion of forest area under long-term forest management plan	50.81	68.19	63.78	67.32	68.82	71.03	69.81	69.81

Name of agency responsible	Estonian Environment Agency
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Sub-Indicator 5	Forest area (1000 ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Forest area under independently verified forest management certification schemes	0.00	1 133.43	1 267.93	1 384.72	1 525.36	1 602.17	–	–