



Food and Agriculture  
Organization of the  
United Nations

# Global Forest Resources Assessment 2020

Report

**Czechia**

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

## Report preparation and contact persons

The present report was prepared by the following person(s)

Name	Role	Email	Tables
Jaroslav Kubišta	National correspondent	kubista.jaroslav@uhul.cz	All
Michal Synek	Collaborator	synek.michal@uhul.cz	All
Tomáš Krejzar	Collaborator	tomas.krejzar@mze.cz	All

### Introductory text

Place an introductory text on the content of this report

# 1 Forest extent, characteristics and changes

## 1a Extent of forest and other wooded land

### National data

#### Data sources

1990	References	Land cadastre
	Methods used	Registers/questionnaires
	Additional comments	

2000	References	Land cadastre
	Methods used	Registers/questionnaires
	Additional comments	

2005	References	Land cadastre
	Methods used	Registers/questionnaires
	Additional comments	Forest: Original data comes from Land cadastre

2010	References	Land cadastre
	Methods used	Registers/questionnaires
	Additional comments	Forest: Original data comes from Land cadastre

2015	References	Land cadastre
	Methods used	Registers/questionnaires
	Additional comments	Forest: Original data comes from Land cadastre

2016	References	Land cadastre

	Methods used	Registers/questionnaires
	Additional comments	Forest: Original data comes from Land cadastre

2017	References	Land cadastre
	Methods used	Registers/questionnaires
	Additional comments	Forest: Original data comes from Land cadastre

Classifications and definitions

1990	National class	Definition
	Forest	

2000	National class	Definition
	Forest	

2005	National class	Definition
	Forest	

2010	National class	Definition
	Forest	

2015	National class	Definition
	Forest	

2016	National class	Definition
	Forest	

2017	National class	Definition
	Forest	

Original data and reclassification

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1990	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 629.42	100.00 %	0.00 %	0.00 %
	Total	2 629.42	2 629.42	0.00	0.00

2000	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 637.29	100.00 %	0.00 %	0.00 %
	Total	2 637.29	2 637.29	0.00	0.00

2005	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 647.42	100.00 %	0.00 %	0.00 %
	Total	2 647.42	2 647.42	0.00	0.00

2010	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 657.38	100.00 %	0.00 %	0.00 %
	Total	2 657.38	2 657.38	0.00	0.00

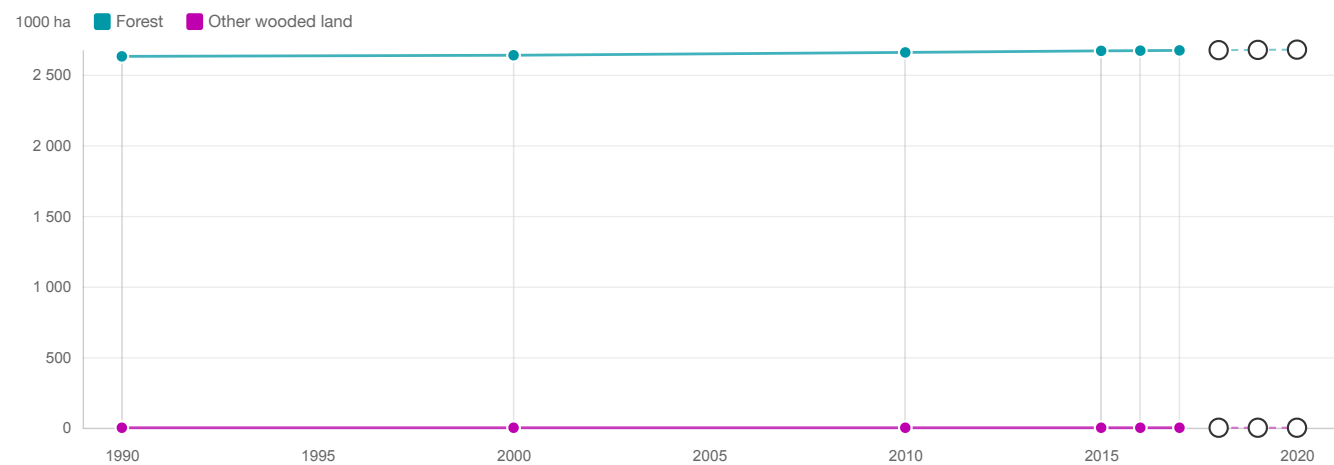
2015	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 668.39	100.00 %	0.00 %	0.00 %
	Total	2 668.39	2 668.39	0.00	0.00

2016	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 669.85	100.00 %	0.00 %	0.00 %

	Total	2 669.85	2 669.85	0.00	0.00
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2017	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 671.66	100.00 %	0.00 %	0.00 %
	Total	2 671.66	2 671.66	0.00	0.00





FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest (a)	2 629.42	2 637.29	2 657.38	2 668.39	2 669.85	2 671.66	2 673.47	2 675.28	2 677.09
Other wooded land (a)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other land (c-a-b)	5 091.58	5 083.71	5 063.62	5 052.61	5 051.15	5 049.34	5 047.53	5 045.72	5 043.91
Total land area (c)	7 721.00	7 721.00	7 721.00	7 721.00	7 721.00	7 721.00	7 721.00	7 721.00	7 721.00

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

# 1b Forest characteristics

## National Data

### Data sources + type of data source eg NFI, etc

Land cadastre is used as a total figure for forest category.

For estimation of naturally regenerated forests survey on natural and original forests (2012 The Silva Tarouca Research Institute for Landscape and Ornamental Gardening) was used as well as annual statistics on regeneration type (Czech statistical office)

### National classification and definitions

The origin of forest stands in terms of naturalenes is generally not known. Prevailing reforestation method in past was planting, natural regeneration was allways used as well, but the percentage is not known.

Special survey identifying natural forests was carried out in 2012 , which identified some 29 566 ha of near natural, natural or original forests. These forests where used as an estimate of naturally regenerated forests for reference year 1980  
Since 1985 data on annual regeneration is available, therefore annual figures on natural regeneration was used cumulatively to estimate origin of current stands. Resulting figures on naturally regenerated forests are still underestimating the reality as natural regeneration was used also before 1985 and outside of natural forests, but no data is available. This proxy approach was accepted mainly to highlight the increasing trend in natural regeneration.

The rest of the forest area is considered as a other planted forest

### Original data

	1980	1985	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Annual Natural regeneration		594			908	557	575	697	818	1 163	1 163	2 538	2 633	2 605	3 422	2 956	3 940	4 230	4 802	4 010	4 063	3 315	3 487	4 563	5 127	5 075	5 561	6 112	5 726	4 749	4 813	4 473
Naturally regenerated forests	29567	30 161	30 161	30 161	31 069	31 626	32 201	32 898	33 716	34 879	36 042	38 580	41 213	43 818	47 240	50 196	54 135	58 365	63 167	67 177	71 240	74 555	78 042	82 605	87 732	92 807	98 368	104 480	110 206	114 955	119 768	124 241

## Analysis and processing of national data

### Estimation and forecasting

Forecasting is done based on the last known figure on annual natural regeneration from 2017, this figure is used for estimation of naturally regenerated forest in 2018-2020.

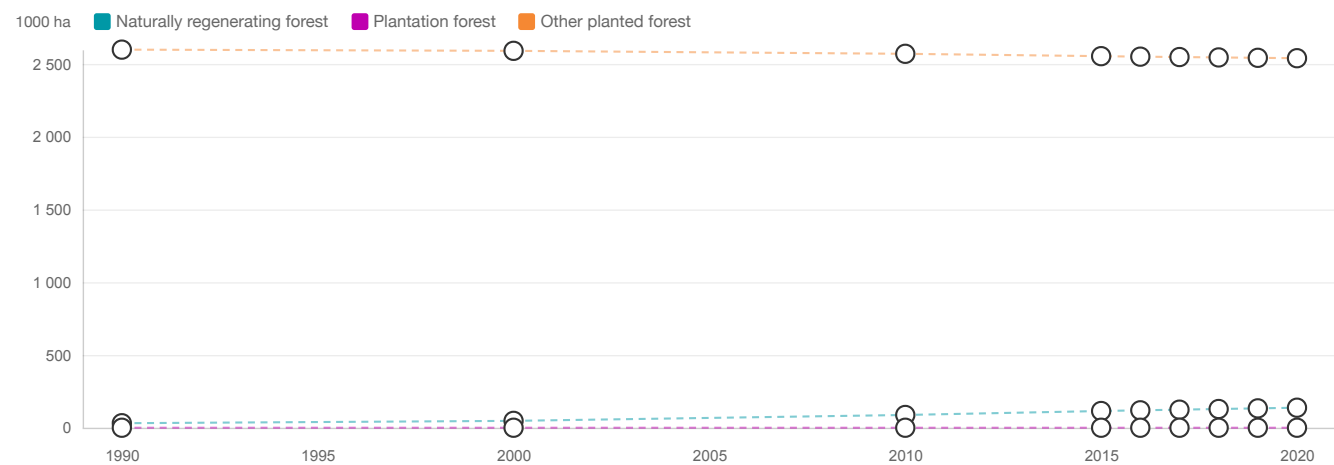
For total forest area figure FRA platform linear forecast is used

### Reclassification into FRA 2020 categories

In attempt to estimate the share of naturally regenerated forests following reclasification was used:

1980 - 29 566 ha of near natural, natural or original forests identified by spesial study in 2012. This is definitely underestimating figure.

since 1985 data on annual natural regeneration is available, these data are used cummulatively to estimate naturally regenerated forests



FRA categories	Forest area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest (a)	31.07	47.24	87.73	114.96	119.77	124.24	128.71	133.19	137.66
<b>Planted forest (b)</b>	<b>2 598.35</b>	<b>2 590.05</b>	<b>2 569.64</b>	<b>2 553.44</b>	<b>2 550.08</b>	<b>2 547.42</b>	<b>2 544.76</b>	<b>2 542.09</b>	<b>2 539.43</b>
Plantation forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
...of which introduced species	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other planted forest	2 598.35	2 590.05	2 569.64	2 553.44	2 550.08	2 547.42	2 544.76	2 542.09	2 539.43
<b>Total (a+b)</b>	<b>2 629.42</b>	<b>2 637.29</b>	<b>2 657.37</b>	<b>2 668.40</b>	<b>2 669.85</b>	<b>2 671.66</b>	<b>2 673.47</b>	<b>2 675.28</b>	<b>2 677.09</b>
<b>Total forest area</b>	<b>2 629.42</b>	<b>2 637.29</b>	<b>2 657.38</b>	<b>2 668.39</b>	<b>2 669.85</b>	<b>2 671.66</b>	<b>2 673.47</b>	<b>2 675.28</b>	<b>2 677.09</b>

## Comments

There are some poplar plantations in the Czech republic, however, they are not considered forests. Therefore, no FMP is elaborated for them and there are no relevant information on their area.

# 1c Primary forest and special forest categories

## National Data

### Data sources + type of data source eg NFI, etc

Data on temporarily unstocked areas comes from Forest management plans summary (Forest management Institute)

Special survey identifying natural forests was carried out in 2012 , which identified some 29 566 ha of near natural, natural or original forests (The Silva Tarouca Research Institute for Landscape and Ornamental Gardening).

### National classification and definitions

Temporarily unstocked areas - Forest management plans summary (Forest management institute)

Near natural forests, Natural forests and Original forests as identified in study by The Silva Tarouca Research Institute for Landscape and Ornamental Gardening

### Original data

Forest management plans summary

	1990	2000	2010	2015	2016	2017
Temp.unstocked (1000ha)	40.548	30.96088	28.12197	31.39974	30.97045	31.08858

Special survey on natural forests

	Original forests	Natural forests	Near natural forests	Total
2012 Area (ha)	2466.81	7525.19	19574.55	29566.55

## Analysis and processing of national data

### Estimation and forecasting

2020 value is based on last known value (2017) of temporarily unstocked areas

All the values on primary forests are estimated based on the latest results (2012) of special study on natural forests

### Reclassification into FRA 2020 categories

Temporarily unstocked areas are considered as Temporarily unstocked and/or recently regenerated

Original and Natural forests national categories are considered as Primary forests

No Mangroves or Bamboo exists in the Czech republic

FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Primary forest	9.99	9.99	9.99	9.99	9.99
Temporarily unstocked and/or recently regenerated	40.55	30.96	28.12	31.40	31.09
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**

-

**National classification and definitions**

-

**Original data**

-

### **Analysis and processing of national data**

**Estimation and forecasting**

-

**Reclassification into FRA 2020 categories**

-



FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Forest expansion (a)				
...of which afforestation				
...of which natural expansion				
Deforestation (b)				
Forest area net change (a-b)	0.79	2.01	2.20	1.74

Comments

# 1e Annual reforestation

## National Data

### Data sources + type of data source eg NFI, etc

Statistics on Annual reforestation (Czech statistical office)

### National classification and definitions

Only data on annual artificial afforestation were used

### Original data

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Annual Artificial regeneration (ha)	33615	31516	29600	27698	26897	30128	28426	24038	24257	23165	21867	19109	18120	17164	19042	18318	18445	18804	19888	20900	21859	21755	19903	19920	20203	18797	19929	19973

## Analysis and processing of national data

### Estimation and forecasting

average of 2015 to 2017 was used for period 2015-2020

### Reclassification into FRA 2020 categories

Annual artificial reforestation = FRA Reforestation

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Reforestation	27.93	19.17	20.73	19.57

Comments

# 1f Other land with tree cover

## National Data

### Data sources + type of data source eg NFI, etc

Data on tree orchards is available in Land cadastre

No data on trees in urban settings which definitely exists

No data on agroforestry, which is estimated as a very low extent in the Czech republic

Approximately 5 th. hectars (0.18% of forest area) of Pinus Mugo should be considered as a OLWTC, but is included in the national category of forest and is included in all official data on forests in the Czech republic.

### National classification and definitions

Tree orchards according to land cadastre

### Original data

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tree orchards (ha)	49 006	48 803	48 373	47 593	47 300	46 994	46 726	46 537	46 231	46 511	46 556	46 390	46 393	46 172	45 920	45 613	45390	45 245

## Analysis and processing of national data

### Estimation and forecasting

2020 orchards value was estimated based on last known (2017) value

### Reclassification into FRA 2020 categories

Tree orchards = Tree orchards

FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Palms (a)					
Tree orchards (b)		49.00	46.56	45.61	45.25
Agroforestry (c)					
Trees in urban settings (d)					
Other (specify in comments) (e)					
Total (a+b+c+d+e)	–	49.00	46.56	45.61	45.25
Other land area	5 091.58	5 083.71	5 063.62	5 052.61	5 043.91

Comments

## 2 Forest growing stock, biomass and carbon

### 2a Growing stock

#### National Data

**Data sources + type of data source eg NFI, etc**

Forest management plans summary (Forest management institute)

**National classification and definitions**

Figures on the area of naturally regenerated forests in 1b were estimated based on other information sources (annual natural regeneration), there is not any direct information on the forest stand origin, therefore no data on the growing stock of these categories is available.

**Original data**

mil m3 under bark	1990	2000	2005	2010	2015	2016	2017
Total growing stock	564.11	630.48	663.17	680.59	692.59	695.84	699.03
... of which coniferous	485.94	527.53	551.46	561.42	566.62	568.72	570.43
... of which broadleaved	78.17	102.95	111.72	119.17	125.97	127.12	128.61

#### Analysis and processing of national data

**Estimation and forecasting**

Forecasting for 2018-2020 years was done by excel forecast formula based on data 2000,2005,2010,2015,2016,2017

**Reclassification into FRA 2020 categories**

National data on growing stock are reported under bark.

following under to over bark coefficients were used for recalculation:

Coniferous: 1.1000011

Broadleaved: 1.1500069

FRA categories	Growing stock m³/ha (over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest									
Planted forest									
...of which plantation forest									
...of which other planted forest									
Forest	237.48	264.92	283.97	287.87	289.07	290.22	292.60	293.98	295.35
Other wooded land									

FRA categories	Total growing stock (million m³ over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest									
Planted forest									
...of which plantation forest									
...of which other planted forest									
Forest	624.43	698.68	754.61	768.15	771.78	775.37	782.25	786.47	790.68
Other wooded land									

## Comments

## 2b Growing stock composition

### National Data

#### Data sources + type of data source eg NFI, etc

Forest management plans summary (Forest management institute)

#### National classification and definitions

Larix decidua is considered as an introduced in some parts of the country for the purpose of this reporting, it was considered as native at all country.

#### Original data

FRA categories	Scientific name	Common name	Growing stock in forest (m³ under bark)						
Native tree species			1990	2000	2005	2010	2015	2016	2017
#1 Ranked in terms of volume	Picea abies	Norway spruce	366 603 500	399 452 360	414 864 613	420 164 542	419 708 262	421 018 562	421 917 804
#2 Ranked in terms of volume	Pinus sylvestris	Scots pine	91 957 100	94 799 830	98 713 413	100 439 957	102 794 619	103 123 837	103 535 242
#3 Ranked in terms of volume	Fagus sylvatica	European beach	29 860 500	37 339 673	40 775 731	43 216 783	45 690 876	46 111 693	46 521 804
#4 Ranked in terms of volume	Larix decidua	European larch	17 038 100	22 952 168	26 819 757	29 266 519	31 521 311	31 770 222	32 113 739
#5 Ranked in terms of volume	Quercus robur	Common opak	24 295 300	27 932 186	27 280 724	24 106 223	20 758 388	19 898 705	19 539 277
#6 Ranked in terms of volume	Quercus petrea	Sessile oak *)			3 005 624	8 240 951	13 108 870	14 284 334	15 051 491
#7 Ranked in terms of volume	Betula pendula	Silver birch	5 139 100	8 277 279	8 437 100	8 650 601	8 921 409	8 875 154	8 932 445
#8 Ranked in terms of volume	Abies alba	Sliver fir	9 765 200	7 711 741	7 868 642	8 009 638	8 199 070	8 265 387	8 309 419
#9 Ranked in terms of volume	Tilia cordata	Small-leaved lime	2 950 300	4 779 168	5 327 173	5 813 858	6 220 530	6 296 428	6 399 643
#10 Ranked in terms of volume	Fraxinus excelsior	European ash	3 274 800	4 537 531	5 165 345	5 722 279	6 213 622	6 294 915	6 420 328
Remaining native tree species			11 310 800	16 021 494	17 702 624	19 161 559	21 103 795	21 457 236	21 778 226
Total volume of native tree species			562 194 700	623 803 430	655 960 746	672 792 910	684 240 752	687 396 473	690 519 418
Introduced tree species									
#1 Ranked in terms of volume	Robinia pseudoacacia	Black locust	1364300	1 765 367	1 805 831	1 828 683	1 794 898	1 745 857	1 757 551
#2 Ranked in terms of volume	Pseudotsuga menziesii	Douglas fir	344800	786 737	1 034 809	1 282 615	1 545 150	1 599 036	1 625 866
#3 Ranked in terms of volume	Quercus rubra	Northern red oak	152900	527 920	692 337	917 474	1 085 123	1 137 721	1 188 053
#4 Ranked in terms of volume	Pinus strobus	White pine*)		735 129	781 810	790 413	802 915	799 339	767 682
#5 Ranked in terms of volume	Pinus nigra	Austrian pine*)		763 093	802 974	808 255	800 462	801 201	803 213
Remaining introduced tree species			53 400	2 063 828	2 093 706	2 173 852	2 320 273	2 357 200	2 369 656
Total volume of introduced tree species			1 915 400	6 642 074	7 211 467	7 801 292	8 348 821	8 440 354	8 512 021
Total growing stock			564 110 100	630 445 504	663 172 213	680 594 202	692 589 573	695 836 827	699 031 439

\*) - these species were not reported individually in 1990

### Analysis and processing of national data



### **Estimation and forecasting**

Forecasting for 2020 year was done by excel forecast formula based on data 2000-2017

### **Reclassification into FRA 2020 categories**

National data on growing stock are reported under bark.

following under to over bark coefficients were used for recalculation:

Coniferous: 1.1000011

Broadleaved: 1.1500069

Common: 1.1082967 - weighted average of main species composition, used when mixed forest type.

FRA categories	Scientific name	Common name	Growing stock in forest (million m³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#1 Ranked in terms of volume	Picea abies	Norway spruce	403.26	439.40	462.18	461.68	469.47
#2 Ranked in terms of volume	Pinus sylvestris	Scots pine	101.15	104.28	110.48	113.07	115.74
#3 Ranked in terms of volume	Fagus sylvatica	European beach	34.34	42.94	49.70	52.54	55.55
#4 Ranked in terms of volume	Larix decidua	European larch	18.74	25.25	32.19	34.67	37.45
#5 Ranked in terms of volume	Quercus robur	Common opak	27.94	32.12	27.72	23.87	20.87
#6 Ranked in terms of volume	Quercus petraea	Sessile oak			9.48	15.08	20.93
#7 Ranked in terms of volume	Betula pendula	Silver birch	5.91	9.52	9.95	10.26	10.42

FRA categories	Scientific name	Common name	Growing stock in forest (million m³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#8 Ranked in terms of volume	Abies alba	Sliver fir	10.74	8.48	8.81	9.02	9.23
#9 Ranked in terms of volume	Tilia cordata	Small-leaved lime	3.39	5.50	6.69	7.15	7.70
#10 Ranked in terms of volume	Fraxinus excelsior	European ash	3.77	5.22	6.58	7.15	7.77
Remaining native tree species			13.07	18.61	22.18	24.41	25.70
Total volume of native tree species			622.31	691.32	745.96	758.90	780.83
Introduced tree species							
#1 Ranked in terms of volume	Robinia pseudoacacia	Black locust	1.55	2.03	2.10	2.06	2.04
#2 Ranked in terms of volume	Pseudotsuga menziesii	Douglas fir	0.38	0.87	1.41	1.70	1.57
#3 Ranked in terms of volume	Quercus rubra	Northern red oak	0.18	0.61	1.06	1.25	1.16

FRA categories	Scientific name	Common name	Growing stock in forest (million m³ over bark)				
			1990	2000	2010	2015	2020
Native tree species							
#4 Ranked in terms of volume	Pinus strobus	White pine		0.81	0.87	0.88	0.87
#5 Ranked in terms of volume	Pinus nigra	Austrian pine		0.84	0.89	0.88	0.88
Remaining introduced tree species			0.01	2.20	2.32	2.48	3.33
Total volume of introduced tree species			2.12	7.36	8.65	9.25	9.85
Total growing stock			624.43	698.68	754.61	768.15	790.68

Comments

2c Biomass stock

National Data

Data sources + type of data source eg NFI, etc

Data on biomass are not available from the main source of information on forests used so far (Summary of forest management plans SFMP - Forest management institute)

1. National forest inventory estimated the amount of **living above-ground biomass**. These estimates are available from the second cycle of NFI 2011-2015.

As the other estimates (forest area, growing stock etc.) of NFI are much higher than data from SFMP we decided to use the info on biomass from NFI and recalculate it to the growing stock from SFMP to keep the whole data in report consistent

2. For estimation of **bellow-ground biomass** previous studies were used.

a. Belowground biomass coniferous: growing stock coniferous\*0,2\*0,64( coniferous roots volume - project “Expert activity in founding and evaluating of biomass accumulation in forest ecosystems”, Forestry and Game Management Institute VULHM: 0,2; volume to weight coefficient – project “Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process”, Forest Management Institute UHUL 2008: 0,64)

b. Below ground biomass broadleaved: growing stock broadleaved\*0,42\*0,64(broadleaved roots volume- project “Expert activity in founding and evaluating of biomass accumulation in forest ecosystems”, Forestry and Game Management Institute VULHM : 0,42; volume to weight coefficient – project “Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process”, Forest Management Institute UHUL 2008: 0,64)

below ground biomass = a+b

3. **Deadwood** - estimates of deadwood volume per hectar of timberland from second cycle of NFI 2011-2015 were used for all reference years as no other consistent info is available.

**Biomass volume to weight coefficient** was used based on Project: Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process, Forest Management Institute (ÚHÚL) 2008

National classification and definitions

Living above-ground biomass includes all living trees and bushes, including stem, stump, branches and foliage and also cones in case of pine.

Deadwood includes standing dead trees (including branches), lying dead trees, stumps and lying branches

Original data

**Living above ground biomass** - source National forest inventory 2011-2015 (Forest management institute)

	NFI 2011-2015		
	Living above-ground biomass	Growing stock	Biomass to growing stock ratio
	mil.t.	mil.m3.u.b	t/m3 u.b.
Coniferous	392.6	689.8	0.56915048
Broadleaved	197.1	245.9	0.80154534
Total	589.7	935.8	0.63015602

**Growing stock** - source Summary of Forest management plans (Forest management institute)

Growing stock (m3 u.b.)	1990	2000	2010	2015	2016	2017
Coniferous	485 938 200	527 529 194	561 422 348	566 624 580	568 716 860	570 425 953
Broadleaved	78 171 900	102 953 684	119 171 854	125 965 000	127 119 970	128 605 486
Total	564 110 100	630 482 878	680 594 202	692 589 580	695 836 830	699 031 439

**Deadwood** - source National forest inventora 2011-2015 (Forest management institute)

doplnit upřesněné info o hektarových objemech mrtvého dřeva z NIL

**Timberland** - source Summary of forest management plans (Forest management institute)

	1990	2000	2010	2015	2016	2017
Timberland SFMP (ha)	2582780	2582833.9	2594938.03	2604629.42	2606010.07	2607840.75

## Analysis and processing of national data

### Estimation and forecasting

For estimation of **living above ground biomass** information from two sources was used:

NFI estimates of Living above-ground biomass and growing stock. These estimates were used to calculate Biomass to Growing stock ratio for coniferous and broadleaved trees

This ratio was later on used together with SFMP Growing stock (coniferous and broadleaved) data for particular years

**Bellow-ground biomass** estimates was based on root/shoot ratio 0.2 for coniferous and 0.42 for broadleaved growing stock

**Deadwood** was estimated based on NFI data recalculated to the extent of timberland in particular years

**Biomass volume to weight coefficient** 0.64 based on project “Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process”, Forest Management Institute UHUL 2008:

**Forecasting** of 2018-2020 figures was done by excel Forecast formula based on the 2000-2017 data

### Reclassification into FRA 2020 categories

Total figures on biomass were recalculated to per hectar figures based on total forest area

FRA categories	Forest biomass (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass	129.01	145.14	156.19	158.70	159.40	160.10	161.49	162.36	163.23
Below-ground biomass	31.65	36.10	39.10	39.87	40.06	40.27	40.64	40.88	41.12
Dead wood	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74

Comments

## 2d Carbon stock

### National Data

#### Data sources + type of data source eg NFI, etc

Figures on biomass from FRA 2c table were used

No data on **carbon in litter and soil** is available, therefore previous expert estimates were used.

**Litter** - estimation is based on the assumption, that previous year foliage is more or less present as litter. Foliage estimate is based on growing stock to foliage volume coefficient by Pařez, Źlábek, Kopřiva( Lesnictví 1990).

**Soil** - estimation based on Project “Expert activity in founding and evaluating of biomass accumulation in forest ecosystems” Forest and game management research institute

#### National classification and definitions

Carbon in litter - Carbon in litter layer without any humification.

Soil carbon - Carbon in mineral and organic soil to a 30 cm depth

#### Original data

Growing stock to foliage volume estimate - 0,06 ratio. Pařez, Źlábek, Kopřiva( Lesnictví 1990)

Growing stock - FRA 2a table

Carbon in soil 64t/ha. Project “Expert activity in founding and evaluating of biomass accumulation in forest ecosystems” Forest and game management research institute

Forest area - FRA 1a table

### Analysis and processing of national data

#### Estimation and forecasting

Carbon in AG, BG biomass and dead wood was recalculated based on FRA 2c table using 0,47 biomass stock to carbon stock coefficient

Carbon in litter = foliage biomass \*0,47 coefficient (assuming that previous years foliage is present as litter)

Carbon in soil = 64t/ha based on outcomes of project “Expert activity in founding and evaluating of biomass accumulation in forest ecosystems” by Forest and game management research institute

2018-2020 estimated based on excel forecast formula for growing stock, biomass and forest area

#### Reclassification into FRA 2020 categories

Total figures on carbon were recalculated to per hectare figures based on total timberland area (Forest area excluding roads etc.)



FRA categories	Forest carbon (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Carbon in above-ground biomass	60.64	68.21	73.41	74.59	74.92	75.25	75.90	76.31	76.72
Carbon in below-ground biomass	14.87	16.97	18.38	18.74	18.83	18.93	19.10	19.21	19.33
Carbon in dead wood	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40
Carbon in litter	3.87	4.31	4.62	4.68	4.70	4.72	4.76	4.79	4.81
Soil carbon	64.00	64.00	64.00	64.00	64.00	64.00	64.00	64.00	64.00

Soil depth (cm) used for soil carbon estimates	
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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**

Summary of forest management plans (SFMP) Forest management institute

**National classification and definitions**

prior to 1995 according to Decree 13/1976 Coll

FRA class	National class	Description
Production	1	Production of timber and other goods
Protection of soil and water	3a	protective zones of water sources, strictly controlled
	3b	protective zones of natural curative resources and forest in spas
	2a	on extraordinary unfavourable sites
	2d	needed for soil protection
Conservation of biodiversity	2b	alpine forest below tree line
	2c	in the zone of dwarf pine
	3c	game preserves and pheasantries
	3d	national parks and protected landscape regions
	3g	other social demands ( gene preserves etc.)
Social services	3f	forestry research
	3g	other social demands (military, recreation, gene preserves etc.)
Multiple purpose	3e	affected by air pollution

**Since 1995 according to Forest Act 289/1995 Coll**

National class	Definition	Description
1.Production forest	11	production of timber and other goods
2. Protection forest	21	extremely unfavourable sites
	22	in high mountains below tree line, protecting forest stands down slopes
	23	in dwarf pine vegetation zone
3. Special purpose forest	31	protective zones of water sources
	32	protective zones of curative and mineral water sources
	33	national parks and national nature reserves
	41	1st zones of protected landscape regions and natural reserves

	42	Spa forests
	43	forest in outskirts of cities and recreation forest
	44	forestry research and education
	45	soil and water protective and landscape creative
	46	biodiversity protective
	47	game preserves and pheasantries
	48	other society needs (other public interest)

Original data

National class	Description		1990
			ha of timberland
1.Production forest		Production of timber and other goods	1 507 418
2. Protection forest	a)	on extraordinary unfavourable sites	44 931
	b)	alpine forest below tree line	13 377
	c)	in the zone of dwarf pine	4 026
	d)	needed for soil protection	1 275
3. Special purpose forest	a)	protective zones of water sources, strictly controlled	10 640
	b)	protective zones of natural curative resources and forest in spas	7 595
	c)	game preserves and pheasantries	41 321
	d)	national parks and protected landscape regions	8 046
	e)	affected by air pollution	734 094
	f)	forestry research	3 449
	g)	other social demands (military, recreation, gene preserves etc.)	206 610
Total timberland (t)			2 582 780

National class		Description	2000	2010	2015
			ha of timberland		
1.Production forest	11	production of timber and other goods	1 981 885	1 947 186	1 938 797
2. Protection forest	21	extremely unfavourable sites	67 224	49 326	46 318
	22	in high mountains below tree line, protecting forest stands down slopes	17 736	16 937	7 669
	23	in dwarf pine vegetation zone	4 462	4 254	563
3. Special purpose forest	31	protective zones of water sources	12 565	10 234	9 691
	32	protective zones of curative and mineral water sources	39 822	64 398	72 972
	33	national parks and national nature reserves	99 118	96 330	108 530

	41	1st zones of protected landscape regions and natural reserves	7 252	51 113	53 315
	42	Spa forests	207	1 662	1 623
	43	forest in outskirts of cities and recreation forest	9 217	27 554	30 275
	44	forestry research and education	25 212	18 479	18 871
	45	soil and water protective and landscape creative	25 022	100 275	115 088
	46	biodiversity protective	38 785	84 399	80 912
	47	game preserves and pheasantries	33 772	33 109	29 834
	48	other society needs (other public interest)	220 557	89 681	90 170
total timberland (t)			2 582 836	2 594 938	2 604 629

## Analysis and processing of national data

### Estimation and forecasting

Forecasting of 2020 reference year was done based on the 2015 categories proportions and estimate of forest area in 2020

### Reclassification into FRA 2020 categories

prior to 1995

FRA class	National class	Description
Production	1	Production of timber and other goods
	3c	game preserves and pheasantries
Protection of soil and water	3a	protective zones of water sources, strictly controlled
	3b	protective zones of natural curative resources and forest in spas
	2a	on extraordinary unfavourable sites
	2b	alpine forest below tree line
	2c	in the zone of dwarf pine
	2d	needed for soil protection
Conservation of biodiversity	3d	national parks and protected landscape regions
	3g	other social demands ( gene preserves etc.)
Social services	3f	forestry research
	3g	other social demands (military, recreation, gene preserves etc.)
Other	3e	affected by air pollution

### Since 1995

FRA categ.	National class
Production	10 Production forest

	47 game reserves
Protection of soil and water	21 unfavourable sites
	22 high mountains
	23 dwarf pine zone
	31 water sources
	32 mineral water
	45 soil and water protection
Conservation of biodiversity	33 natl. parks and reserves
	41 1 <sup>st</sup> zones protected landscape regs. and reserves
	46 biodiversity protection
Social services	42 spas
	43 recreation
	44 research and education
	48 public interests

#### Timberland vs Forest area

According to Czech legislation, mostly only timberland (area with trees) is categorised. Remaining areas (small forest roads etc.) are therefore considered as None (g) FRA category.

Primary designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production (a)	1 548.74	2 015.66	1 980.30	1 968.63	1 975.05
Protection of soil and water (b)	81.84	166.83	245.42	252.30	253.12
Conservation of biodiversity (c)	132.91	145.15	231.84	242.76	243.55
Social Services (d)	85.20	255.19	137.38	140.94	141.40
Multiple use (e)					
Other (specify in comments) (f)	734.09				
None/unknown (g)	46.64	54.46	62.44	63.76	63.97
Total forest area	2 629.42	2 637.29	2 657.38	2 668.39	2 677.09

Total area with designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production					
Protection of soil and water					
Conservation of biodiversity					
Social Services					
Other (specify in comments)					

Comments

Data on area etc. is basically available only on primary (or the most important) category although there are overlaps (one piece of forest with more categories)

### 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**

Data on protected areas, including IUCN classification, were obtained from the state agency (Nature Conservation Agency of the Czech Republic) responsible for conservation and management of protected areas. For the year 2000, an estimation of forest area within protected areas from this state agency was used. For the years 2010, 2015, 2016 and 2017, a spatial intersection with forest land from Forest Management Plans and Guidelines was done and evaluated.

**National classification and definitions**

Large-scale protected areas: 4 National parks ( 3 of them IUCN II, 1 of them IUCN V), 26 Protected landscape areas (IUCN V)

Small-scale protected areas (IUCN Ia - IV): National nature monuments, National nature preserves, Nature monuments, Nature preserves

Areas conserved on contract (not classified under IUCN classification)

**Original data**

Nature Conservation Agency of the Czech Republic - data on protected areas

Forest Management Institute Czech Republic - data on Forest Management Plans and Guidelines

	IUCN II	IUCN I_III_IV	Total
2000	63.99	57.28	121.27
2010	70.97	58.80	129.77
2015	72.32	74.36	146.68
2016	71.48	74.70	146.18
2017	71.37	74.92	146.29

#### Analysis and processing of national data

**Estimation and forecasting**

No significant changes are anticipated in the near future, so data for 2017 were replicated for 2018-2020.

**Reclassification into FRA 2020 categories**

National parks (IUCN II) and small-scale protected areas (IUCN Ia-IV), including overlapping, were taken into account. Overlapping areas were counted just once.

The National park (IUCN V) and Protected landscape areas (IUCN V) were not included in the analysis. However, they were taken into account in FRA 2015, so the forest area within protected areas for FRA 2020 is significantly lower compared to FRA 2015.

FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest area within protected areas		121.27	129.77	146.68	146.18	146.29	146.29	146.29	146.29
Forest area with long-term forest management plan	2 629.42	2 637.29	2 657.38	2 668.39	2 669.85	2 671.66	2 673.47	2 675.28	2 677.09
...of which in protected areas		121.27	129.77	146.68	146.18	146.29	146.29	146.29	146.29

Comments



## 4 Forest ownership and management rights

### 4a Forest ownership

#### National Data

**Data sources + type of data source eg NFI, etc**

Annual report on the state of forests and forestry, Ministry of agriculture, Prague

1990 and 2000 data - Land cadastre

2010 and 2015 data - Summary of forest management plans

**National classification and definitions**

**1990,2000 data**

State	Forest owned by the State (national, state and regional governments) or government-owned institutions or corporations
Municipalities	forest owned by cities, towns, municipalities, communities and villages.
Regions	Forest owned by regional government
Church	Forest owned by churches
Forest cooperatives	forest owned by individuals joined in co-operatives or similar organisations
private	Forest owned by individuals
Corporate bodies	Forest owned by corporations
JZD - agriculture cooperatives	Forest owned by former agriculture co-operatives

**2010, 2015 data**

10	Forests of the Czech Republic, State Enterprise	
11	Military Forests and Farms, State Enterprise	
12	Ministry of the Environment (National Parks)	
13	regional forests (secondary schools and other)	
14	other state forests	
15	Ministry of the Environment (Nature Conservation Agency)	
19	originally state forests(*)	
30	Legal persons	
40	Communal and municipal forests	
50	Forests owned by church and other religious entities	
60	Forest cooperatives	
70	Forest owned by individuals	
90	Other forests(not listed elsewhere)	

Original data

National class	1990	2000	2001	2002	2003	2004	2005
	%						
State	95.8	63.1	61.5	60.7	60.5	60	59.8
Municipalities	0	13.6	14.4	15	15.1	15.4	15.5
Regions			0.2	0.2	0.2	0.2	0.2
Church							
Forest cooperatives	0	0.9	0.9	1	1	1	1
Other private	0.1	22.4	23	23.1	23.2	23.4	23.5
Agriculture cooperatives	4.1	0	0	0	0	0	0

Rem.: there was a significant change in methodology of reporting starting in 2006 data. Previous dataset is not continued

kód	description	2010	2015
1x	State forests	1 559 522,15	1 528 739,67
10	LČR, s. p. <i>Forests of the Czech Republic, State Enterprise</i>	1 308 806,17	1 282 672,75
11	Vojenské lesy a statky ČR, s. p. <i>Military Forests and Farms, State Enterprise</i>	124 306,12	123 588,85
12	MŽP (NP) <i>Ministry of the Environment (National Parks)</i>	94 880,13	95 610,54
13	krajské lesy (střední školy aj.) <i>regional forests (secondary schools and other)</i>	3 794,02	1 649,02
14	ostatní státní <i>other state forests</i>	22 522,06	22 664,28
15	MŽP (AOPK) <i>Ministry of the Environment (Nature Conservation Agency)</i>	1 177,80	1 292,68
19	původní státní (*) <i>originally state forests(*)</i>	4 035,85	1 261,55
30	Právnícké osoby <i>Legal persons</i>	68 519,21	78 502,96
40	Obecní a městské lesy <i>Communal and municipal forests</i>	429 336,82	441 733,36
50	Lesy církevní a náboženské společnosti <i>Forests owned by church and other religious entities</i>	1 391,75	22 771,32
60	Lesní družstva <i>Forest cooperatives</i>	30 605,52	30 738,15
70	Lesy ve vlastnictví fyzických osob	505 560,17	502 140,08

	Forest owned by individuals		
90	Ostatní (nezařazené) lesy Other forests(not listed elsewhere)	2,40	3,88
	CELKEM Total timberland	2 594 938,03	2 604 629,42
	Total forest area	2 657 376,00	2 668 392,00

(\*)original large FMPs owned by state – validity from 1981–1996, partly from 1997; private owners and municipalities manage their forests under an abstract from FMP and will have new FMPs upon their renewal.

## Analysis and processing of national data

### Estimation and forecasting

Since 2006 data are reported based on the summary of forest management plans, where info on the ownership relates to timberland only, therefore recalculation to the total forest area was done based on the percentage of different ownership categories.

No forecasting

### Reclassification into FRA 2020 categories

1990,2000

National category	FRA category	
State	of which owned by the state at national scale	Public ownership
Municipalities	...of which owned by the state at the sub-national government scale	
Regions		
Forest cooperatives	Private business entities and institutions	Private ownership
Corporate bodies		
Agriculture cooperatives		
Individuals	Individuals	

2010,2015

National category		FRA category	
10	Forests of the Czech Republic, State Enterprise	State	
11	Military Forests and Farms, State Enterprise		
12	Ministry of the Environment (National Parks)		
13	regional forests (secondary schools and other)		
14	other state forests		
15	Ministry of the Environment (Nature Conservation Agency)		
40	Communal and municipal forests		
19	originally state forests(*)		

70	Forest owned by individuals	Private	...of which owned by individuals
30	Legal persons		...of which owned by private business entities and institutions
50	Forests owned by church and other religious entities		
60	Forest cooperatives		
90	Other forests(not listed elsewhere)		

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Private ownership (a)	110.44	606.58	620.66	649.68
...of which owned by individuals			517.72	514.43
...of which owned by private business entities and institutions			102.94	135.25
...of which owned by local, tribal and indigenous communities	0.00	0.00	0.00	0.00
Public ownership (b)	2 518.98	2 030.71	2 036.72	2 018.71
Unknown/other (specify in comments) (c)	0.00	0.00	0.00	0.00
Total forest area	2 629.42	2 637.29	2 657.38	2 668.39

## Comments

## 4b Holder of management rights of public forests

### National Data

#### Data sources + type of data source eg NFI, etc

not needed

#### National classification and definitions

The lease of state owned forest is prohibited by Act on forests.

All state-owned forests in the Czechia are managed either by Public Administration directly (National Parks and Nature Conservation Agency of the Czech Republic) or by specific state-owned corporation (Lesy ČR, Vojenské lesy a statky ČR...)

Municipal forests are managed usually by corporations owned by municipality.

Therefore all public forests are considered as managed by Public administration.

#### Original data

not needed

### Analysis and processing of national data

#### Estimation and forecasting

not needed

#### Reclassification into FRA 2020 categories

All public forests are considered as managed by Public administration. See the National classification and definitions part.

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Public Administration (a)	2 518.98	2 030.71	2 036.72	2 018.71
Individuals (b)	0.00	0.00	0.00	0.00
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	2 518.98	2 030.71	2 036.72	2 018.71

Comments

## 5 Forest disturbances

### 5a Disturbances

#### National Data

**Data sources + type of data source eg NFI, etc**

Report on forest pest conditions, Forest Protection Service, Forestry and Game Management Research Institute

Summary of forest management plans, forest management institute - average growing stock per hectar

**National classification and definitions**

In national monitoring system following data is available:

**Abiotic agents**

wind+snow+icing
drought
emisions
others

**Biotic agents**

**Insects**

Cephalcia spp. On spruce
Tenthredinidae on spruce
Tortricidae and Geometridae on oaks
Hyllobius abietis
Lymantria monacha
Ips Typographus, Ips Imatinus, Pityogenes Chalcographus
Ips Duplicatus
Polygraphus Poligraphus
Pityophtorus Pityographus
Ips Acuminatus
Tomicus Piniperda, T. Minor
Ips Sexdentatus
Phaenops Cyanea
Pityokteines spp.
Ips and orthotomicus on Larch
Scolytus Intricatus



Scolytus Ratzeburgii
Hylesinus spp.

Others

Microsphaera alphitoides and others
Lophodermium spp.
Armillaria spp.
rodents in forest plantations

Original data

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
average stock volume (cubic meters per hectar)	244	247	249	251	254	256	258	259	260	264	262	263.1	264.0	264.4	265.0	266.42	267.53	268.57
percentage of data sources	0.75	0.71	0.75	0.75	0.75	0.75	0.75	0.70	0.70	0.70	0.70	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Abiotic

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
wind+snow+icing	m3	1 660 871	1 039 449	2 594 777	4 071 472	1 792 702	1 530 198	4 191 067	9 042 776	4 950 963	2 130 474	2 700 480	1 438 637	1 121 130	1 468 188	1 435 134	2 239 502	1 076 231	2 132 006
drought	m3	196 298	157 349	113 282	292 458	457 380	378 044	294 564	243 415	255 607	203 242	126 835	140 333	172 857	205 549	318 928	473 959	1 401 956	1 242 361
emisions	m3	56 166	33 095	24 004	27 850	27 185	17 465	14 320	27 358	27 338	29 005	13 413	12 762	14 081	17 085	12 389	14 593	15 580	16 199
others	m3	73 341	42 281	22 703	79 493	75 603	33 550	43 570	29 991	35 542	28 042	26 582	14 842	21 118	15 988	15 051	80 104	45 435	14 297
Total abiotic	m3	1 986 676	1 272 174	2 754 766	4 471 273	2 352 870	1 959 257	4 543 521	9 343 540	5 269 450	2 390 763	2 867 310	1 606 574	1 329 186	1 706 810	1 781 502	2 808 158	2 539 202	3 404 863

Insects

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cephalcia spp. On spruce	ha	708	424	1 172	1 214	415	421	1 747	112	504	896	459	314	385	227	200	18	249	23
Tenthredinidae on spruce	ha	3 387	3 240	2 611	1 355	942	1 090	482	133	93	72	73	72	23	11	27	8	32	21
Tortricidae and Geometridae on oaks	ha	1 462	1 280	1 125	974	3 733	2 743	1 125	356	326	540	160	33	10	185	143	28	72	451
Hylobius abietis	ha	2 149	1 901	2 028	2 064	1 470	1 981	1 785	1 472	1 501	1 282	1 940	2 280	2 447	1 831	2 367	1 254	1 825	1 937
Lymantria monacha	ha	210	222	5 991	901	946	1 025	952	500	1 024	753	776	1 164	436	262	9	1	55	552

Insects (Bark borers)

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ips Typographus, Ips Imatinus, Pityogenes Chalcographus	m3	285 262	165 468	169 651	856 828	836 094	587 764	607 225	1 085 160	1 436 471	1 711 148	1 196 883	730 545	514 328	589 300	635 790	1 085 100	2 214 209	2 889 154
Ips Duplicatus	m3	7 167	5 448	8 919	132 554	83 547	38 051	93 014	199 921	209 320	147 020	78 224	80 306	112 689	221 051	257 173	388 578	782 993	848 010
Polygraphus Poligraphus	m3	3 738	7 676	12 988	12 331	14 386	9 049	8 000	6 857	6 440	5 143	3 556	3 456	6 155	6 023	3 135	3 225	4 833	4 286

Pityophtorus Pityographus	m3						7	10											
Ips Acuminatus	m3	712	719	1 224	4 630	5 212	5 732	2 962	1 878	2 248	1 860	636	381	608	705	770	2 896	2 804	43 596
Tomicus Piniperda, T. Minor	m3	1 490	1 060	1 586	2 463	651	5 301	4 735	2 073	3 706	4 826	2 735	1 754	1 708	2 678	1 970	3 569	5 367	10 655
Ips Sexdentatus	m3	191	156	153	407	4 629	711	903	703	1 004	360	490	343	229	292	262	1 333	1 207	1 418
Phaenops Cyanea	m3	522	416	535	922	7 263	10 305	1 231	703	1 647	2 867	1 091	554	617	565	1 067	1 502	1 189	1 415
Pityokteines spp.	m3	86	84	38	138	233	304	63	294	146	306	428	143	286	375	479	1 017	3 030	2 184
Ips and orthotomicus on Larch	m3	195	290	191	600	549	424	1 415	1 149	640	393	157	172	186	973	555	103	3 124	3 052
Scolytus Intricatus	m3	274	131		41	48	18	8	133	279	31	31	68	139	115	134	70	166	144
Scolytus Ratzeburgii	m3	20	18		16	15	56	23	44	86	18	129	101	29	138	187	42	216	218
Hylesinus spp.	m3	3 405	6		5	50	43	47	34	180	260	97	30	55	196	260	330	384	4 543

Other agents

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Microsphaera alphitoides and others	ha		258	250		95	154	140	143	148	164	360		710	501	762	508	1 038	469
Lophodermium spp.	ha	325	1 481	1 505	1 808	1 688	1 826	2 420	1 086	1 279	1 747	1 763	1 734	1 528	2 063	1 450	1 185	1 438	1 624
Armillaria spp.	ha	86	1 060	1 671	4 082	2 421	2 258	3 207	4 085	2 548	4 510	4 273	2 188	3 927	3 824	10 653	5 897	11 276	4 791
Dying of ash															2 169	3 310	2 511	2 805	2 825
rodents in forest plantations	ha	1 299	1 148	837	843	649	1 222	959	790	614	436	923	992	570	444	1 427	1 191	1 107	365

Analysis and processing of national data

Estimation and forecasting

Part of the data is reported through cubic meters of salvage fellings caused by relevant agent. These figures were recalculated to area by average growing stock volume. See Reclassification part for units.

All the data on harmful agents is reported only from part of the country, coverage differs throughout the years slightly (0.7 to 0.75), estimation to total area was made based on the known coverage of monitoring.

Example of recalculation:

10 000m3 of salvage fellings caused by Ips typographus reported

Average stock volume 250 m3/ha

Data coverage 0.75 (data is reported only from 75% of forests in the country)

10 000m3 / 250m3per ha / 0.75 = 53.333 ha affected by Ips Typographus

No forecasting

growing stock to area recalculation, total area estimation

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
wind+snow+icing	ha	9 072	5 932	13 879	21 625	9 419	7 971	21 696	49 820	27 163	11 529	14 709	7 811	6 067	7 933	7 737	12 008	5 747	11 341

drought	ha	1 072	898	606	1 553	2 403	1 969	1 525	1 341	1 402	1 100	691	762	935	1 111	1 719	2 541	7 486	6 608
emisions	ha	307	189	128	148	143	91	74	151	150	157	73	69	76	92	67	78	83	86
others abiotic	ha	401	241	121	422	397	175	226	165	195	152	145	81	114	86	81	430	243	76
Total abiotic	ha	10 851	7 260	14 735	23 749	12 362	10 206	23 521	51 477	28 911	12 937	15 617	8 723	7 193	9 223	9 604	15 058	13 559	18 111

growing stock to area recalculation, total area estimation

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ips Typographus, Ips Imatinus, Pityogenes Chalcographus	ha	1 558	944	907	4 551	4 393	3 062	3 143	5 979	7 881	9 259	6 519	3 967	2 783	3 184	3 427	5 818	11 824	15 368
Ips Duplicatus	ha	39	31	48	704	439	198	482	1 101	1 148	796	426	436	610	1 194	1 386	2 084	4 181	4 511
Polygraphus Poligraphus	ha	20	44	69	65	76	47	41	38	35	28	19	19	33	33	17	17	26	23
Pityophtorus Pityographus	ha	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ips Acuminatus	ha	4	4	7	25	27	30	15	10	12	10	3	2	3	4	4	16	15	232
Tomicus Piniperda, T. Minor	ha	8	6	8	13	3	28	25	11	20	26	15	10	9	14	11	19	29	57
Ips Sexdentatus	ha	1	1	1	2	24	4	5	4	6	2	3	2	1	2	1	7	6	8
Phaenops Cyanea	ha	3	2	3	5	38	54	6	4	9	16	6	3	3	3	6	8	6	8
Pityokteines spp.	ha	0	0	0	1	1	2	0	2	1	2	2	1	2	2	3	5	16	12
Ips and orthotomicus on Larch	ha	1	2	1	3	3	2	7	6	4	2	1	1	1	5	3	1	17	16
Scolytus Intricatus	ha	1	1	0	0	0	0	0	1	2	0	0	0	1	1	1	0	1	1
Scolytus Ratzeburgii	ha	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1
Hylesinus spp.	ha	19	0	0	0	0	0	0	0	1	1	1	0	0	1	1	2	2	24

total area estimation

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cephalcia spp. On spruce	ha	944	597	1 563	1 619	553	561	2 329	160	720	1 281	656	449	550	324	286	25	356	33
Tenthredinidae on spruce	ha	4 516	4 564	3 481	1 807	1 256	1 453	643	190	132	103	105	102	32	15	39	12	46	29
Tortricidae and Geometridae on oaks	ha	1 949	1 803	1 501	1 299	4 977	3 657	1 500	509	465	772	228	46	15	264	204	40	103	645
Hylobius abietis	ha	2 866	2 677	2 704	2 752	1 960	2 641	2 380	2 103	2 145	1 832	2 772	3 258	3 496	2 616	3 382	1 792	2 608	2 767
Lymantria monacha	ha	280	313	7 988	1 202	1 261	1 367	1 269	714	1 463	1 075	1 109	1 662	623	374	13	2	79	789

total area estimation

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Microsphaera alphitoides and others	ha	0	363	333	0	127	206	186	204	211	234	515	0	1 015	716	1 089	726	1 483	670
Lophodermium spp.	ha	433	2 086	2 006	2 410	2 251	2 435	3 226	1 552	1 828	2 496	2 519	2 478	2 183	2 947	2 071	1 692	2 055	2 319
Armillaria spp.	ha	115	1 493	2 228	5 442	3 228	3 011	4 276	5 836	3 640	6 443	6 104	3 126	5 610	5 462	15 219	8 424	16 108	6 844

rodents in forest plantations	ha	1 732	1 617	1 116	1 124	865	1 629	1 279	1 129	878	623	1 319	1 417	814	634	2 038	1 702	1 581	521
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Reclassification into FRA 2020 categories

National category	reporting units	FRA category
wind+snow+icing	m3	Severe weather events
drought	m3	
emisions	m3	
others abiotic	m3	
Cephalcia spp. On spruce	ha	Insects
Tenthredinidae on spruce	ha	
Tortricidae and Geometridae on oaks	ha	
Hylobius abietis	ha	
Lymantria monacha	ha	
Ips Typographus, Ips Imatinus, Pityogenes Chalcographus	m3	
Ips Duplicatus	m3	
Polygraphus Poligraphus	m3	
Pityophtorus Pityographus	m3	
Ips Acuminatus	m3	
Tomicus Piniperda, T. Minor	m3	
Ips Sexdentatus	m3	
Phaenops Cyanea	m3	
Pityokteines spp.	m3	
Ips and orthotomicus on Larch	m3	
Scolytus Intricatus	m3	
Scolytus Ratzeburgii	m3	
Hylesinus spp.	m3	
Microsphaera alphitoides and others	ha	Diseases
Lophodermium spp.	ha	
Armillaria spp.	ha	
rodents in forest plantations	ha	Other

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)	12.21	10.99	18.28	14.05	15.01	13.11	11.85	10.83	14.05	15.20	11.87	9.96	8.16	8.04	8.78	9.85	19.31	24.52
Diseases (b)	0.55	3.94	4.57	7.85	5.61	5.65	7.69	7.59	5.68	9.17	9.14	5.60	8.81	9.13	18.38	10.84	19.65	9.83
Severe weather events (c)	10.85	7.26	14.74	23.75	12.36	10.21	23.52	51.48	28.91	12.94	15.62	8.72	7.19	9.22	9.60	15.06	13.56	18.11
Other (specify in comments) (d)	1.73	1.62	1.12	1.12	0.87	1.63	1.28	1.13	0.88	0.62	1.32	1.42	0.81	0.63	2.04	1.70	1.58	0.52
Total (a+b+c+d)	25.34	23.81	38.71	46.77	33.85	30.60	44.34	71.03	49.52	37.93	37.95	25.70	24.97	27.02	38.80	37.45	54.10	52.98
Total forest area	2 637.29	—	—	—	—	2 647.42	—	—	—	—	2 657.38	—	—	—	—	2 668.39	2 669.85	2 671.66

Comments

## 5b Area affected by fire

### National Data

**Data sources + type of data source eg NFI, etc**

Data on forest fires are published annually in the Annual report on the state of forests and forestry, Ministry of agriculture. The source of the data is Ministry of Interior – Directorate General of Fire Rescue Service of the CR

**National classification and definitions**

In terms of area, only data on forest fires is available. No data on total area, as the main part of the fires in the Czechia is not related to area, but buildings etc.

**Original data**

**Forest fires**

year	ha of fires	number of fires
2000	375	1 499
2001	87	483
2002	179	569
2003	1 236	1 712
2004	335	846
2005	226	626
2006	405	679
2007	316	847
2008	86	504
2009	178	514
2010	205	732
2011	337	1 337
2012	634	1 549
2013	92	666
2014	536	865
2015	344	1 748
2016	141	892
2017	170	966

### Analysis and processing of national data

**Estimation and forecasting**

no forecasting was needed

**Reclassification into FRA 2020 categories**

No reclassification was needed

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	0.38	0.09	0.18	1.24	0.34	0.23	0.41	0.32	0.09	0.18	0.21	0.34	0.63	0.09	0.54	0.34	0.14	0.17

Comments

Data on total land area affected by fire is not available

5c Degraded forest

Does your country monitor area of degraded forest		Yes
If "yes"	What is the national definition of "Degraded forest"?	Forests, that were in past affected by large dying due to the acidification (industrial air pollution) are still monitored (and considered degraded)
	Describe the monitoring process and results	Samples (soil,leaves and needles) from monitored areas are analysed and liming is applied where necessary according to long-term project.

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**

**Policies:**

At national level - State forest policy as a main strategic document supporting SFM.

At the regional level, regional strategies (concepts) of forest management with SFM as a overarching goal.

**Legislation:**

National level: Forest act with SFM as a main goal.

Regional level: Each region supports sustainable forest management inter alia by financial means according to the Principles for providing financial contributions to forest management.

**Platform:**

National Forest Programme at the national level.

At the sub-national level, each legal or private person, whose rights or duties might be influenced by forest management plans as well as state administration may raise its requirements and comments during preparation of forest management plan or guidelines.

**National classification and definitions**

not needed

**Original data**

not needed

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

### Comments

Traceability system(s) for wood products - Czech republic, as a member of EU is implementing EUTR

## 6b Area of permanent forest estate

### National Data

#### Data sources + type of data source eg NFI, etc

According to Forest act, each forest should remain forest. There is a procedure how to change the land use from forest to other land use, but this procedure is subject to approval by state forest service authorities and is used rather exceptionally.

Therefore 100% of forest area is considered as a PFE

#### National classification and definitions

not needed

#### Original data

100% of forest area is considered as a PFE. Therefore figures from 1a are used.

FRA 2020 categories	Forest area (1000 ha)					
	Applicable?	1990	2000	2010	2015	2020
Area of permanent forest estate	Yes	2 629.42	2 637.29	2 647.42	2 668.39	2 677.09

Comments

## 7 Employment, education and NWFP

### 7a Employment in forestry and logging

#### National Data

**Data sources + type of data source eg NFI, etc**

Czech statistical office - Forestry - Tab. 1.1 Employees and wages in forestry

Labour Force Survey was used to divide total figures by gender

**National classification and definitions**

Only data on total employees in forestry is available, without splitting to particular activities or gender.

Available years:1990, 1999-2016

Since 2000 both actual and full-time equivalents data is available. For 1990 and 1999 year average ratio from 2000-2016 was used to estimate Full time equivalents based on actual persons

**Original data**

Year	1990	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total forestry - actual persons	57 700	33 314	32 264	29 804	26 968	24 893	23 996	21 835	20 342	19 398	17 959	16 041	15 150	14 138	13 792	13 339	13 320	13125	13 132
Full-time equivalents			30 758	28 437	25 702	22 782	22 982	21 069	19 853	18 811	17 294	15 532	14 766	13 820	13 490	13 043	13 053	12863	12 892
ratio			1.049	1.048	1.049	1.093	1.044	1.036	1.025	1.031	1.038	1.033	1.026	1.023	1.022	1.023	1.020	1.020	1.019

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	55.73			30.32	6.23	24.09	14.71	2.16	12.56	12.94	1.87	11.08
...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

## 7b Graduation of students in forest-related education

### National Data

**Data sources + type of data source eg NFI, etc**

Unfortunately only partial data are available (not for all schools and universities), therefore it was decided not to report this table

**National classification and definitions**

-

**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												
Master's degree												
Bachelor's degree												
Technician certificate / diploma												
Total												

Comments



# 7c Non wood forest products removals and value 2015

## National Data

### Data sources + type of data source eg NFI, etc

**Plant products:** Report on the state of forests and forestry in the Czech republic 2015 (Czech University of Life Sciences Prague)

### Animal products:

Amount: Game management statistics (procesed at Forest management institute)

Price: Case study - questionnaire (procesed at Forest management institute)

### National classification and definitions

Plant products: Mushrooms and most frequent forest fruits (berries). Data is gathered by questionnaire in households annually since 1994. Value of mushrooms and berries is estimated and includes major part of goods collected for own domestic consumption. Collection for this purpose is right of every citizen of the Czech Republic according to Forest actPrice is equal to market prices, but is not paid (mushrooms and forest fruits are collected for free by private persons for domestic use

Animal products: Only game, not any other products such as honey etc. is considered. It is not possible to distinguish game hunted at forest and agriculture fields. However only forest related game species are included.

### Original data

#### Plant products

	mil kg	thousands CZK
Mushrooms	21.4	3 523 000
Blueberries	10.1	1 227 000
Raspberries	3.1	419 000
Blackberries	2.4	344 000
Cranberries	0.6	111 000
Elderberries	2.5	268 000
total	40.1	5 892 000

#### Animal products

	Pieces	Price CZK/piece	Price thousands. CZK
Wild Boar	186148	1500	279 222
Roe Deer	99861	1000	99 861
Red Deer	23990	4000	95 960
Fallow Deer	19033	2500	47 583
Sika deer	14571	2500	36 428
Pheasant	465704	50	23 285
Moufflon	9688	2000	19 376
Mallard	255195	50	12 760
Red fox	83932	100	8 393

Brown hare	36515	100	3 652
<i>Badger</i>	3477	200	695
Marten	12354	50	618
Wood pidgeon	18590	25	465
<i>Wild goose</i>	1700	200	340
<i>Rock partridge</i>	2519	50	126
<i>White tailed deer</i>	68	1500	102
<i>Collared dove</i>	3507	25	88
<i>Muskrat</i>	402	150	60
<i>Chamois</i>	22	2500	55
Eurasian coot	905	50	45
<i>Common pochard</i>	771	50	39
Wild turkey	100	300	30
<i>Wild rabbit</i>	259	100	26
<i>Helmeted guineafowl</i>	178	50	9
<i>Wild goat</i>	4	1500	6
Total			629 222

	Name of NWFP product	Key species	Quantity	Unit	Value (1000 local currency)	NWFP category
#1	Mushrooms	Edible mushrooms	21	mil.kg	3 523 000	1 Food
#2	Blueberries	Vaccinium myrtillus	10	mil.kg	1 227 000	1 Food
#3	Raspberries	Rubus ideaus	3	mil.kg	419 000	1 Food
#4	Blackberries	Rubus fruticosus	2	mil.kg	344 000	1 Food
#5	wild boar	Sus scrofa	186	th.pieces	279 222	12 Wild meat
#6	Elderberries	Sambucus nigra	3	mil.kg	268 000	3 Raw material for medicine and aromatic products
#7	Cranberries	Vaccinium vitis-idaea	1	mil.kg	111 000	3 Raw material for medicine and aromatic products
#8	roe deer	Capreolus capreolus	100	th.pieces	99 861	12 Wild meat
#9	red deer	Cervus elaphus	24	th.pieces	95 960	12 Wild meat
#10	fallow deer	Dama dama	19	th.pieces	47 583	12 Wild meat
All other plant products					0	
All other animal products					106 597	
Total					6 521 223	

Name of currency	CZK Czech crown
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## Comments

All the game is reported as FRA category 12 wild meat, although the value includes other such as skins...

## 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	34.16	34.42	34.56	34.58	34.60	34.63	34.65	34.67

Name of agency responsible	Forest management institute
----------------------------	-----------------------------

#### 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	0.08	0.08	0.05	0.07	0.07	0.07	0.07

Name of agency responsible	Forest management institute
----------------------------	-----------------------------

Sub-Indicator 2	Forest biomass (tonnes/ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass stock in forest	145.14	156.19	158.70	159.40	160.10	161.49	162.36	163.23

Name of agency responsible	Forest management institute
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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	4.54	4.86	5.50	5.48	5.48	5.48	5.48	5.48

Name of agency responsible	Forest management institute
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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	98.83	99.59	100.00	100.00	100.00	100.00	100.00	100.00

Name of agency responsible	Forest management institute
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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	11.34	1 883.85	1 816.35	1 774.82	1 796.75	1 834.70	–	–