



Desk Study

North Macedonia

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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8. Sustainable Development Goal 15

Introduction

Introductory text

No official report has been received from North Macedonia. This report is the result of a desk study prepared by the UNECE/FAO Forestry and Timber Section, which is based on the existing available information.

1 Forest extent, characteristics and changes

1a Extent of forest and other wooded land

National data

Data sources

1990	References	FRA 2015
	Methods used	Other (specify in comments)
	Additional comments	
2000	References	FOREST: Republic of Macedonia State Statistical Office; Statisticar review: Agriculture; Forestry 2000-2007; http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18 OWL: FRA 2015
	Methods used	Other (specify in comments)
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2008	References	FOREST: Republic of Macedonia State Statistical Office; Statistical review: Agriculture; Forestry 2008; http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18 OWL: FRA 2015
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2009	References	FOREST: Republic of Macedonia State Statistical Office; Statistical review: Agriculture; Forestry 2009; http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18 OWL: FRA 2015
	Methods used	Other (specify in comments)
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2010	References	FOREST: Republic of Macedonia State Statistical Office; Statistical review: Agriculture; Forestry 2010; http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18 OWL: FRA 2015
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2011	References	FOREST: Republic of Macedonia State Statistical Office; Statistical review: Agriculture; Forestry 2011; http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18 OWL: FRA 2015
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2012	References	FOREST: Republic of Macedonia State Statistical Office; Statistical review: Agriculture; Forestry 2012; http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18 OWL: FRA 2015
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2017	References	FOREST: Republic of Macedonia State Statistical Office; http://www.stat.gov.mk/IndikatorITS_en.aspx?id=18 OWL: FRA 2015
	Methods used	Other (specify in comments)
	Additional comments	

Classifications and definitions

1990	National class	Definition
	Forest	Forest, as defined in Macedonian law, is forest ecosystem spanning on forest land with forest types of trees and bushes, forest moor lands and meadows, forest roads, forest nurseries, forest fire breaks, wind breaks and other areas closely related to forests, on area larger than 0,2 hectares including forest in protected areas.
	Other wooded land	As defined in the Law, alleys, plantations with fast-growing types of trees, parks with populated areas, field protection belts, protective vegetation in the coastal belts of the water flows outside from the forests, isolated groups of forest trees on area of maximum 2 acres, and border trees between agricultural land are not considered forests.

2000	National class	Definition
	Forest	A forest is every area over 5 ares covered with forest trees in the form of stands having protective function and is used for production of forest assortments or has a special purpose. Forest is considered of all the trees grown by sowing and planting with seed of forest species trees, which are older than 3 years, and areas which are equally overgrown with young species trees older than 5 or more years. Alleys, the parks in urban areas, forest plantations and tree areas less than 5 ares, are not considered as forests.
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2008	National class	Definition
	Forest	A forest is every area over 500 m2 covered with forest trees in the form of stands having a protective function and is used for production of forest assortments or has a special purpose.
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2013	National class	Definition
	Forest	Forest represents a forest ecosystem spanning on forest land with forest types of trees and bushes, bare lands near forests and other bare lands and meadows within forest, forest nurseries, forest roads, seed plantations, forest fire breaks, wind protection breaks/belts on area larger than 2 a, including forests in protected areas.
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	Other wooded land	

Original data and reclassification

1990	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	912.00	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 055.00	912.00	143.00	0.00

2000	Classifications and definitions	FRA classes
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	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	957.55	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 100.55	957.55	143.00	0.00

2001	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	997.37	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 140.37	997.37	143.00	0.00

2002	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	989.05	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 132.05	989.05	143.00	0.00

2003	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	955.29	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 098.29	955.29	143.00	0.00

2004	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	947.65	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%

	Total	1 090.65	947.65	143.00	0.00
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2005	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	955.23	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 098.23	955.23	143.00	0.00

2006	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	959.26	100.00 %	%	%
	Other wooded Land	143.00	%	100.00 %	%
	Total	1 102.26	959.26	143.00	0.00

2007	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	941.97	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 084.97	941.97	143.00	0.00

2008	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	943.05	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 086.05	943.05	143.00	0.00

2009	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land

	Forest	949.33	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 092.33	949.33	143.00	0.00

2010	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	960.43	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 103.43	960.43	143.00	0.00

2011	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	981.81	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 124.81	981.81	143.00	0.00

2012	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	988.84	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 131.84	988.84	143.00	0.00

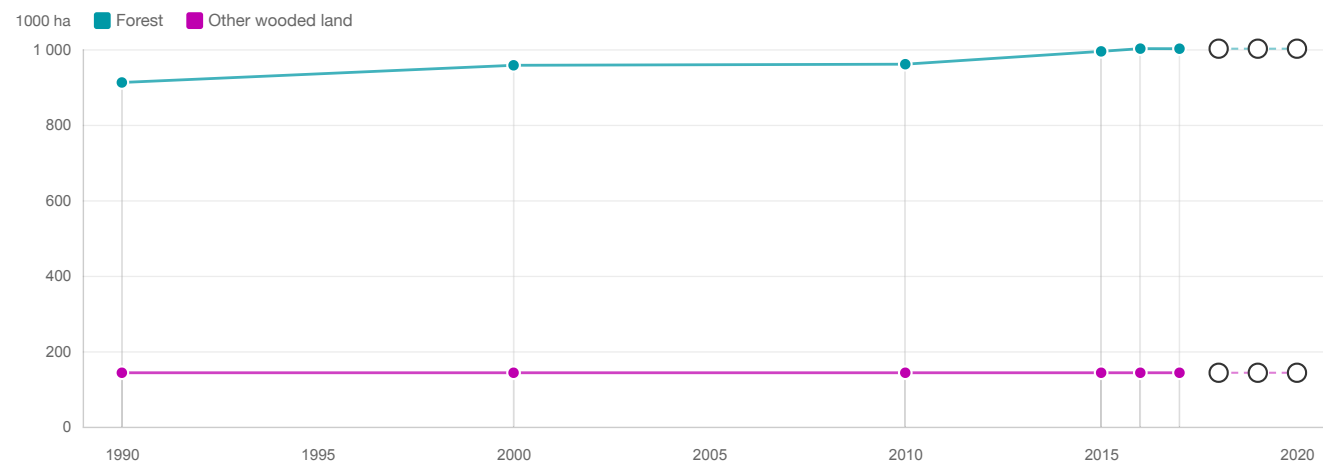
2013	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	987.55	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 130.55	987.55	143.00	0.00

2014	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	983.39	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 126.39	983.39	143.00	0.00

2015	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	994.40	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 137.40	994.40	143.00	0.00

2016	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	1 001.67	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 144.67	1 001.67	143.00	0.00

2017	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	1 001.49	100.00 %	%	%
	Other wooded land	143.00	%	100.00 %	%
	Total	1 144.49	1 001.49	143.00	0.00



FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest (a)	912.00	957.55	960.43	994.40	1 001.67	1 001.49	1 001.49	1 001.49	1 001.49
Other wooded land (a)	143.00	143.00	143.00	143.00	143.00	143.00	143.00	143.00	143.00
Other land (c-a-b)	1 467.00	1 421.45	1 418.57	1 384.60	1 377.33	1 377.51	1 377.51	1 377.51	1 377.51
Total land area (c)	2 522.00	2 522.00	2 522.00	2 522.00	2 522.00	2 522.00	2 522.00	2 522.00	2 522.00

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	59.00	
Sub-tropical	41.00	
Tropical	0.00	

Comments

All the figures for Forest area are taken from State Statistical Office publications. Values for 2018, 2019 and 2020 are repeated from 2017.

Forest area represents the total area under broad-leaved, coniferous, mixed and degraded stands.

OWL area is taken from FRA 2015 and assumend to be constant.

"Total forest area obtained by Collect Earth survey evaluation in Macedonia is 1093Kha and confidence interval with a Lower endpoint of 1068Kha and Upper endpoint of 1117Kha with confidence level of 95%. Thus, according to National Statistic (Statistical Yearbook – (SYB) 2018, state 2017) forests cover area is 1001Kha and it is out of confidence interval.

The data shows that the biggest share (43.0%) at the state level is covered by forests, and together with other forest lands (16.5%) they occupy almost 60% (59.8%), while the smallest part (2.2%) occupies Inland water bodies.

At the state level, with a share of 75.4% broadleaved forests are the most abundant type of forests in Macedonia and coniferous forests take 4.6%. Young forests take only 1.0% of forest cover area.

The forests in the Republic of Macedonia are characterized with a high degree of canopy cover i.e. canopy cover on 71.2% of the forests is greater than 75%, and together with forests whose canopy cover is between 50% and 75%, which occupy 20.7% of the forests, they occupy 91.9%. The share of forest by extremely low canopy cover is insignificant (0.1%) and such forests are represented only on Northeastern and Pelagonia region. "

Source: TCP/MKD/3604/C3 ,Technical report on Collect Earth Survey: Estimation of Land-use Classes and their Changes in North Macedonia, 2018.

1b Forest characteristics

National Data

Data sources + type of data source eg NFI, etc

SoEF 2015

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Forest area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest (a)									
Planted forest (b)	–	–	–	–	–	–	–	–	–
Plantation forest									
...of which introduced species									
Other planted forest									
Total (a+b)	–	–	–	–	–	–	–	–	–
Total forest area	912.00	957.55	960.43	994.40	1 001.67	1 001.49	1 001.49	1 001.49	1 001.49

Comments

1c Primary forest and special forest categories

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

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FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Primary forest					
Temporarily unstocked and/or recently regenerated					
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

State Statistical Office publications:

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=34&rbrObl=37

National classification and definitions

Artificial afforestation consider planting of forest nursery or sowing with forest seed on a rocky and bare ground, with an aim to reestablish that area to growing forest, or to grow forest on a ground where previously there wasn't any wood.

Original data

Afforestation outside of forests (Rocky and bare ground, Eroded ground, Agricultural and other types of ground)

2000: 763 ha

2001: 551

2002: 290

2003: 446

2004: 399

2005: 596

2006: 882

2007: 385

2008: 896

2009: 1882

2010: 1358

2011: 1070

2012: 407

2013: 533

2014: 452

2015: 508

2016: 437

2017: 257

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		0.71	0.76	0.40
...of which natural expansion				
Deforestation (b)				
Forest area net change (a-b)	4.56	0.29	6.79	1.42

Comments

1e Annual reforestation

National Data

Data sources + type of data source eg NFI, etc

State Statistical Office publications:

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=34&rbrObl=37

National classification and definitions

-

Original data

Afforestation in forest (Cleared areas, Bare ground)

2000: 1607 ha

2001: 1328

2002: 1689

2003: 2433

2004: 1579

2005: 1467

2006: 1224

2007: 1419

2008: 1970

2009: 2094

2010: 1511

2011: 1011

2012: 971

2013: 887

2014: 612

2015: 703

2016: 607

2017: 296

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
Reforestation		1.68	1.00	0.54

Comments

1f Other land with tree cover

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)				
	1990	2000	2010	2015	2020
Palms (a)					
Tree orchards (b)					
Agroforestry (c)					
Trees in urban settings (d)					
Other (specify in comments) (e)					
Total (a+b+c+d+e)	–	–	–	–	–
Other land area	1 467.00	1 421.45	1 418.57	1 384.60	1 377.51

Comments

2 Forest growing stock, biomass and carbon

2a Growing stock

National Data

Data sources + type of data source eg NFI, etc

FRA 2015 and SoEF 2015 for Total growing stock (million m³ over bark)

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

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	83.65	82.39	79.56	76.84	76.28	76.30	76.30	76.30	76.30
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	76.29	78.89	76.41	76.41	76.41	76.41	76.41	76.41	76.41
Other wooded land									

Comments

According to the data of the Special plans of woods management which are for commercial use (statement,2008), Total forest reserve amounts to 75.939.573 m3, that is 91 m3/ha. Total annual growth amounts to 1.616.782 m3, that is 1.93 m3/ha.

Total anticipated growth for 10 years amounts to 10.948.149 m3, or annually 1.094.815m3. Its exploitation amounts to 75%.

Source: Public enterprise Makedonski sumi: http://www.mkdsumi.com.mk/zasumite_en.php?s=1&page=3

2b Growing stock composition

National Data

Data sources + type of data source eg NFI, etc

FRA 2015

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

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	Fagus sylvatica	Beech					
#2 Ranked in terms of volume	Quercus spp.	Oaks					
#3 Ranked in terms of volume	Pinus spp.	Pines					
#4 Ranked in terms of volume	Abies alba	Fir					
#5 Ranked in terms of volume							
#6 Ranked in terms of volume							
#7 Ranked in terms of volume							
#8 Ranked in terms of volume							
#9 Ranked in terms of volume							
#10 Ranked in terms of volume							
Remaining native tree species							
Total volume of native tree species			–	–	–	–	–
Introduced tree species							
#1 Ranked in terms of volume							
#2 Ranked in terms of volume							
#3 Ranked in terms of volume							
#4 Ranked in terms of volume							
#5 Ranked in terms of volume							
Remaining introduced tree species							
Total volume of introduced tree species			–	–	–	–	–
Total growing stock			–	–	–	–	–

Comments

2c Biomass stock

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

Expert estimate based on the following assumptions:

For FRA 2010 the area of planted forest was reported to be 105 thousand ha for all reporting years (1990, 2000 and 2010) the area of Naturally regenerated forest was calculated as the difference total fores area less planted forest. The growing stocking level was assumed to be the same for planted and naturally regenerated forest. The biomass calculator was used to derrive biomass and carbon estimates.

Insert the percentages of Growing stock by IPCC forest type for each of the FRA forest categories									
IPCC forest types	FRA forest categories								
	Naturally regenerating forest	Plantation forest	Other planted forest						
	% of Growing stock								
Broadleaved	33%	33%	33%						
Pine	33%	33%	33%						
Other coniferous	33%	33%	33%						
	100%	100%	100%	Must add up to 100%					
Insert Carbon fraction used by country (IPCC default = 0.47)									
Carbon Fraction	47%								
Biomass conversion and expansion factors (BCEF)									
Naturally regenerating forest	1990	2000	2010	2015	2016	2017	2018	2019	2020

Broadleaved	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Pine	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Other coniferous	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Plantation forest									
Broadleaved									
Pine									
Other coniferous									
Other planted forest									
Broadleaved									
Pine									
Other coniferous									
Weighted BCEF									
Naturally regenerating forest	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Plantation forest									
Other planted forest									
Root-shoot ratios									
Naturally regenerating forest	1990	2000	2010	2015	2016	2017	2018	2019	2020
Broadleaved	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Pine	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Other coniferous	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Plantation forest									
Broadleaved									
Pine									
Other coniferous									
Other planted forest									
Broadleaved									
Pine									
Other coniferous									
Weighted RS ratio									

Naturally regenerating forest	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Plantation forest									
Other planted forest									
Above-ground biomass (t/ha)									
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	87.74	86.42	83.45	80.60	80.01	80.03	80.03	80.03	80.03
Plantation forest									
Other planted forest									
Total	77.64	76.95	74.33	72.09	71.63	71.64	71.64	71.64	71.64
Below-ground biomass (t/ha)									
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	23.67	23.31	22.51	21.74	21.58	21.59	21.59	21.59	21.59
Plantation forest									
Other planted forest									
Total	20.94	20.75	20.05	19.44	19.32	19.32	19.32	19.32	19.32

Reclassification into FRA 2020 categories

-

FRA categories	Forest biomass (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass	77.64	76.95	74.33	72.09	71.63	71.64	71.64	71.64	71.64
Below-ground biomass	20.94	20.75	20.05	19.44	19.32	19.32	19.32	19.32	19.32
Dead wood									

Comments

2d Carbon stock

National Data

Data sources + type of data source eg NFI, etc

SoEF 2015

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

FRA categories	Forest carbon (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Carbon in above-ground biomass	36.49	36.16	34.94	33.88	33.66	33.67	33.67	33.67	33.67
Carbon in below-ground biomass	9.84	9.75	9.42	9.14	9.08	9.08	9.08	9.08	9.08
Carbon in dead wood									
Carbon in litter									
Soil carbon									

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

-

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

Primary designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production (a)					
Protection of soil and water (b)					
Conservation of biodiversity (c)					
Social Services (d)					
Multiple use (e)					
Other (specify in comments) (f)					
None/unknown (g)	912.00	957.55	960.43	994.40	1 001.49
Total forest area	912.00	957.55	960.43	994.40	1 001.49

Total area with designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production			835.06		
Protection of soil and water					
Conservation of biodiversity					
Social Services					
Other (specify in comments)					

Comments

According to the data of the Special plans of woods management which are for commercial use (statement,2008), total forest area amounts to 1.091.857,59 ha, from which 835.055,82 ha are totally forest covered area and 256.801,77 ha of the forest is non-covered forest area (bare lands). It should be mentioned that there are still 80.000 ha or 7,32% forest and forest land with small commercial importance for which are no processed Forest-commercial bases.

The 2008 value of 835.055,82 ha of commercial use forests is reported as production management objective for 2010.

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

-

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)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest area within protected areas									
Forest area with long-term forest management plan									
...of which in protected areas									

Comments

4 Forest ownership and management rights

4a Forest ownership

National Data

Data sources + type of data source eg NFI, etc

State Statistical Office publications (for 2000, 2010 and 2015 values):

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=34&rbrObl=37

FRA 2015 for 1990 values.

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

Original data are used.

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Private ownership (a)	94.00	109.20	80.88	111.93
...of which owned by individuals				
...of which owned by private business entities and institutions				
...of which owned by local, tribal and indigenous communities				
Public ownership (b)	818.00	848.35	879.55	882.47
Unknown/other (specify in comments) (c)	0.00	0.00	0.00	0.00
Total forest area	912.00	957.55	960.43	994.40

Comments

According to the new Law on Forests (2009) there are only two types of ownership: public and private. The forests on public ownership are managed by PE Macedonian forests, except for forests within protected areas which are managed by the Public Institutions for Protected Areas. Private forests are also managed by the PE because they need to issue permit from the PE for any activity that should be taken in their forest, due to the fact that private forest owners do not have management plans for their forests. Out of the total area of the forest, state owned is 89,1%, while their part of the total wood mass is 92, 2%. Private owned forests are 10,9% (State Statistical Office of RM, 2015). The private forests are small scaled and fragmented. The average size of the private forests is 0,6 ha. (Trendafilov et al 2008).

Source: <http://www.china-ceecforestry.org/country/macedonia/>

4b Holder of management rights of public forests

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	Forest area (1000 ha)			
	1990	2000	2010	2015
Public Administration (a)	818.00	848.35	879.55	882.47
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	818.00	848.35	879.55	882.47

Comments

Public enterprise Macedonian Forests (PEMF) mkdsumi.com.mk. The public enterprise for managing state forests, as the legal successor to the former enterprises for forest management has the following core activities: silviculture, protection and utilisation of forests through the restoration, nurture, protection, afforestation and utilisation of forests and forest land, and other activities for the maintenance and improvement of forest functions.

5 Forest disturbances

5a Disturbances

National Data

Data sources + type of data source eg NFI, etc

State Statistical Office publications:

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=34&rbrObl=37

National classification and definitions

-

Original data

Year	Damage by insects (m³)	Damage by plant diseases (m³)	Damage by natural disasters (m³)
2000	364	-	-
2001	-	110	110
2002	-	-	-
2003	2997	270	270
2004	932	140	140
2005	4920	26	26
2006	4663	862	852
2007	1523	300	300
2008	1643	62	42717
2009	12	108	13597
2010	3513	200	1743
2011	327	-	2211
2012	-	-	20584
2013	300	177	870
2014	618	649	1063
2015	1274	259	
2016	549	88	
2017	1331	-	

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 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)																		
Diseases (b)																		
Severe weather events (c)																		
Other (specify in comments) (d)																		
Total (a+b+c+d)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Total forest area	957.55	997.37	989.05	955.29	947.65	955.23	959.26	941.97	943.05	949.33	960.43	981.81	988.84	987.55	983.39	994.40	1 001.67	1 001.49

Comments

Damages by insects, plant diseases and natural disasters are shown in cubic metres in the original data part of the report.

5b Area affected by fire

National Data

Data sources + type of data source eg NFI, etc

State Statistical Office publications:

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18

<http://www.stat.gov.mk/Publikacii/SG2018/10-Zemjodelstvo-Agriculture.pdf>

National classification and definitions

-

Original data

Original data for forest fires are shown in the table below.

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA 2020 categories

-

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	4.81	5.26	5.48	1.92	1.80	3.09	3.59	34.44	15.05	1.03	3.28	8.70	19.31	2.84	1.15	3.17	2.17	13.41

Comments

5c Degraded forest

Does your country monitor area of degraded forest		Yes
If "yes"	What is the national definition of "Degraded forest"?	Degraded forest is a forest which has, to a considerable extent, lost its quality and ability to increase due to the adverse impact of biotic, abiotic and anthropogenic factors.
	Describe the monitoring process and results	Area of degraded forests is shown in State Statistical Office publications.

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

http://illegallogging.rec.org/publications/FYROM_IL%20Fact%20Finding_Final.pdf

National classification and definitions

-

Original data

-

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

Comments

Sustainable management of the forests is an obligation of the Republic of North Macedonia according to the Strategy for Sustainable Development of Forestry in the FYRoM, which was approved by the Government in July 2006, in line with other relevant documents from world organizations and EU.

In the Law of Forests ("Official Gazette" No 64/09), sustainable management of the forests is defined as a purpose/goal of the law. Involvement of public and all interested parties in decision making process in forestry is also stipulated with this law (article 38). This is first time that in a forest law is recognized the role of other stakeholders in the decision making processes.

6b Area of permanent forest estate

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

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

Comments

7 Employment, education and NWFP

7a Employment in forestry and logging

National Data

Data sources + type of data source eg NFI, etc

State Statistical Office publications:

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=7&rbrObl=18

http://www.stat.gov.mk/PublikaciiPoOblast_en.aspx?id=34&rbrObl=37

National classification and definitions

"Employees in forestry" are considered to be all officially employed persons by forest enterprises regardless of whether the position is for definite or indefinite time.

Original data

Employees in forestry:

1996: 4145

1997: 3703

1998: 3448

1999: 3301

2000: 3006

2001: 2680

2002: 2980

2003: 2376

2004: 2250

2005: 2184

2006: 2242

2007: 2250

2008: 2408

2009: 2504

2010: 2576

2011: 2436

2012: 2324

2013: 2298

2014: 2376

2015: 2450

2016: 2414

2017: 2238

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				3.00			2.51			2.41		
...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

Only persons employed by forestry enterprises are shown.

For 2000 - the 2000 and 2001 average is calculated.

7b Graduation of students in forest-related education

National Data

Data sources + type of data source eg NFI, etc

-

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

Saints Cyril and Methodius University of Skopje, Faculty of Forestry sf.ukim.edu.mk. The Faculty of Forestry in Skopje was established in 1947. Today, the faculty offers three undergraduate academic programmes, 10 postgraduate academic programmes, and doctoral studies with a tutoring system. The main mission of the faculty is education and the establishment of a highly educated and scientific staff in the field of forestry, landscape design, eco-engineering and eco-management. There are 4 forestry secondary schools located in Kavadarci, Skopje and Demir Hisar and in Tetovo. The secondary school produce forest and landscape technicians and the Faculty has three types of engineers: foresters, landscape architects and eco-engineers.

Source: <http://www.china-ceecforestry.org/country/macedonia/>

7c Non wood forest products removals and value 2015

National Data

Data sources + type of data source eg NFI, etc

SoEF 2015

National classification and definitions

-

Original data

-

	Name of NWFP product	Key species	Quantity	Unit	Value (1000 local currency)	NWFP category
#1	Fungi	Boletus, Chanterelles, Lactarius, Morchela etc.				1 Food
#2	Medicinal and aromatic plants	Adonis, Gentiana, Hypericum, Juniper, Thymus, Veratrum, Ramonda, Salvia etc.				3 Raw material for medicine and aromatic products
#3	Berries	Blackberries, Blueberries, Raspberries, Cranberries etc.				1 Food
#4	Lichens	Evernia, Centraria				6 Ornamental plants
#5						
#6						
#7						
#8						
#9						
#10						
All other plant products						
All other animal products						
Total					—	

Name of currency	Macedonian Denar (MKD)
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Comments

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	37.97	38.08	39.43	39.72	39.71	39.71	39.71	39.71

Name of agency responsible	
----------------------------	--

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	0.03	0.70	0.73	-0.02	0.00	0.00	0.00

Name of agency responsible	
----------------------------	--

Sub-Indicator 2	Forest biomass (tonnes/ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass stock in forest	76.95	74.33	72.09	71.63	71.64	71.64	71.64	71.64

Name of agency responsible	
----------------------------	--

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	–	–	–	–	–	–	–	–

Name of agency responsible	
----------------------------	--

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	–	–	–	–	–	–	–	–

Name of agency responsible	
----------------------------	--

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	0.00	0.00	0.00	0.00	0.00	–	–