



Food and Agriculture  
Organization of the  
United Nations

# Global Forest Resources Assessment 2020

Report

**Bhutan**

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.

This document was generated automatically using the report made available as a contribution to the FAO Global Forest Resources Assessment 2020, and submitted to FAO as an official government document. The content and the views expressed in this report are the responsibility of the entity submitting the report to FAO. FAO cannot be held responsible for any use made of the information contained in this document.

## TABLE OF CONTENTS

### Introduction

1. Forest extent, characteristics and changes
2. Forest growing stock, biomass and carbon
3. Forest designation and management
4. Forest ownership and management rights
5. Forest disturbances
6. Forest policy and legislation
7. Employment, education and NWFP
8. Sustainable Development Goal 15

# Introduction

## Report preparation and contact persons

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

Name	Role	Email	Tables
Arun Rai	Alternate national correspondent	arunrai.ar@gmail.com	All
Kesang Yangden	Collaborator	kezangyangden@gmail.com	All
Lobzang Dorji	National correspondent	lobsangdoj@gmail.com	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

1995	References	RGOB, 1995. Land Cover Figures of Bhutan (National figures), Ministry of Agriculture, Royal Government of Bhutan
	Methods used	Sample-based remote sensing assessment
	Additional comments	
2010	References	MoAF. 2010. Technical report Bhutan Land Cover Assessment 2010 (LCMP 2010)
	Methods used	Sample-based remote sensing assessment
	Additional comments	
2016	References	Land Use and Land Cover 2016
	Methods used	National Forest Inventory, Full-cover forest/vegetation maps, Sample-based remote sensing assessment
	Additional comments	

#### Classifications and definitions

1995	National class	Definition
	Forest	No technically defined forest prior to 2011
	Shrub/Scrub	Scrub is woody plant characterized by stunted growth (height less than 5meter) due to harsh condition. They are found at higher elevation above 3500 meter asl. close to tree line. Predominant species includes dwarf rhododendrons and junipers.
	Agricultural Land	Cultivated agricultural land includes only those agricultural land that are cultivated at the time of land cover assessment.
	Water spread	This class includes both natural and artificially created water bodies.
	Others	Anything which is not reflected in the above categories.
2010	National class	Definition
	Forest	

		Forest means land with trees spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent. It does not include land that is predominantly under agriculture or urban land use.
	Shrub/Scrub	Scrub is woody plant characterized by stunted growth (height less than 5 meter) due to harsh condition. They are found at higher elevation above 3500 meter asl. close to tree line. Predominant species includes dwarf rhododendrons and junipers.
	Agriculture land	Cultivated agricultural land includes only those agricultural land that are cultivated at the time of land cover assessment.
	Water bodies	This class includes both natural and artificially created water bodies.
	Others	Anything which is not reflected in the above

	National class	Definition
2016	FORESTS	Forests means land with trees spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent. It does not include land that is predominantly under agricultural or urban land use (National Forest Policy of Bhutan, 2011).
	ALPINE SCRUB	Alpine scrub is woody plant characterized by stunted growth (height less than 5 meter) due to harsh condition. They are found at higher elevation above 3500 meter asl. close to tree line. Predominant species includes dwarf rhododendrons and junipers.
	SHRUBS	Shrubs are perennial plants with persistent and woody stem without any defined main stem with height less than 5 meter. It also includes abandoned agricultural fields with overgrown bushes and other regeneration in disturbed areas.
	MEADOWS	Meadows include any areas dominated by grasses or any herbaceous plant without or with few scattered trees or shrubs on it. It occurs at all elevations, but is relatively more common at higher elevations.
	CULTIVATED AGRICULTURAL LAND	Cultivated agricultural land includes only those agricultural land that are cultivated at the time of land cover assessment.
	BUILT UP AREAS	Built up areas includes artificial constructions covering the land with an impervious (e.g. concrete, CGI sheet, thatch) surface. It includes airport, rural settlements, urban areas, schools & institutes, industrial areas, hospital premises, sewage treatment plant, sports and leisure facilities and roads.
	NON BUILT UP AREAS	This class is defined by absence of the original (semi-) natural cover mainly due to anthropogenic factors. It includes waste dump sites, mines, stone quarries and other extraction sites.
	WATER BODIES	This class includes both natural and artificially created water bodies.
	SNOW AND GLACIERS	This class includes both perpetual and seasonal snow cover and glaciers.
	MORAINES	Moraines refers to a mass of rocks and sediments carried down and deposited by a glacier typically as ridges at its edges or extremity.
	LANDSLIDE	This class includes mass movement of soils debris due to gravitational force triggered by other factors such as rainfall and earthquakes.
	ROCKY OUTCROPS	Rocky outcrops refer to natural cliffs and rocky areas.

## Original data and reclassification

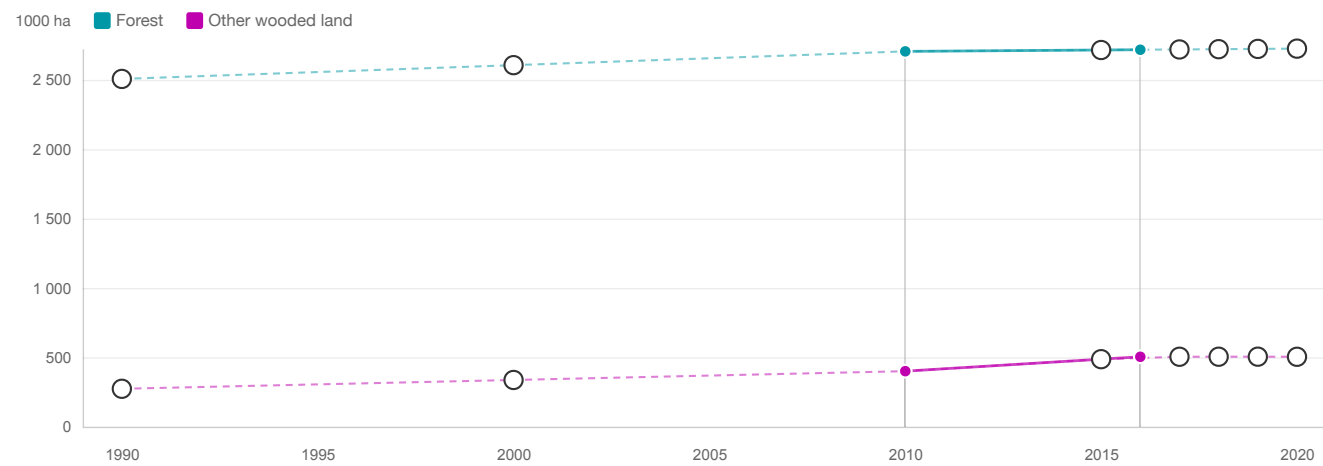
1995	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 556.36	100.00 %	0.00 %	0.00 %
	Shrub/Scrub	305.29	0.00 %	100.00 %	0.00 %
	Agricultural Land	312.99	0.00 %	0.00 %	100.00 %
	Water spread	28.39	0.00 %	0.00 %	100.00 %
	Others	636.37	0.00 %	0.00 %	100.00 %
	Total	3 839.40	2 556.36	305.29	977.75

2010	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forest	2 705.29	100.00 %	0.00 %	0.00 %
	Shrub/Scrub	400.52	0.00 %	100.00 %	0.00 %
	Agriculture land	112.56	0.00 %	0.00 %	100.00 %
	Water bodies	27.57	0.00 %	0.00 %	100.00 %
	Others	593.46	0.00 %	0.00 %	100.00 %
	Total	3 839.40	2 705.29	400.52	733.59

2016	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	FORESTS	2 717.16	100.00 %	0.00 %	0.00 %
	ALPINE SCRUB	130.10	0.00 %	100.00 %	0.00 %
	SHRUBS	374.05	0.00 %	100.00 %	0.00 %
	MEADOWS	96.26	0.00 %	0.00 %	100.00 %
	CULTIVATED AGRICULTURAL LAND	105.68	0.00 %	0.00 %	100.00 %
	BUILT UP AREAS	7.46	0.00 %	0.00 %	100.00 %

	NON BUILT UP AREAS	0.60	0.00 %	0.00 %	100.00 %
	WATER BODIES	25.18	0.00 %	0.00 %	100.00 %
	SNOW AND GLACIERS	205.34	0.00 %	0.00 %	100.00 %
	MORAINES	14.39	0.00 %	0.00 %	100.00 %
	LANDSLIDE	3.73	0.00 %	0.00 %	100.00 %
	ROCKY OUTCROPS	159.45	0.00 %	0.00 %	100.00 %
	Total	3 839.40	2 717.16	504.15	618.09





FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest (a)	2 506.72	2 606.00	2 705.29	2 715.18	2 717.16	2 719.14	2 721.12	2 723.10	2 725.08
Other wooded land (a)	273.55	337.03	400.52	486.88	504.15	504.42	504.69	504.96	504.23
Other land (c-a-b)	1 031.73	868.97	706.19	609.94	590.69	588.44	586.19	583.94	582.69
Total land area (c)	3 812.00	3 812.00	3 812.00	3 812.00	3 812.00	3 812.00	3 812.00	3 812.00	3 812.00

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	0.00
Temperate	0.00	100.00
Sub-tropical	28.00	0.00
Tropical	72.00	0.00

Comments

The forest area for 2015 was the forecasted value while we have Landuse Land Cover map for 2016 and accordingly we have revised.

The increase in the other wooded land category is due to different classification system. In LULC 016, a new class was introduced so called "Alpine Scrub", these are small dwarf vegetation like rhododendron and Juniper found at high altitude. This class was included in the other wooded land category this time (FRA 2020).

Bhutan doesnot have tropical forest while we do have sub-tropical forest yet there is no qunatification as of date and we have clubbed all in Temperate forest.

1b Forest characteristics

National data

Data sources

1995	References	RGOB, 1995. Land Cover Figures of Bhutan (National figures), Ministry of Agriculture, Royal Government of Bhutan
	Methods used	Sample-based remote sensing assessment
	Additional comments	

2010	References	MoAF. 2010. Technical report Bhutan Land Cover Assessment 2010 (LCMP 2010)
	Methods used	Sample-based remote sensing assessment
	Additional comments	

2016	References	Land Use and Land Cover 2016
	Methods used	National Forest Inventory, Full-cover forest/vegetation maps, Sample-based remote sensing assessment
	Additional comments	

Classifications and definitions

1995	National class	Definition
	Forest	No technically defined forest prior to 2011
	Shrub/Scrub	Scrub is woody plant characterized by stunted growth (height less than 5meter) due to harsh condition. They are found at higher elevation above 3500 meter asl. close to tree line. Predominant species includes dwarf rhododendrons and junipers.
	Agricultural Land	Cultivated agricultural land includes only those agricultural land that are cultivated at the time of land cover assessment.
	Water spread	This class includes both natural and artificially created water bodies.
	Others	Anything which is not reflected in the above categories.

2010	National class	Definition
	Forest	Forest means land with trees spanning more than 0.5 hectareswith trees higher than 5 meters and a canopy cover of more than10 percent. It does not include land that is predominantly underagriculture or urban land use.

FRA 2020 report, Bhutan

	Shrub/Scrub	Scrub is woody plant characterized by stunted growth (height less than 5meter) due to harsh condition. They are found at higher elevation above 3500 meter asl. close to tree line. Predominant species includes dwarf rhododendrons and junipers.
	Agriculture land	Cultivated agricultural land includes only those agricultural land that are cultivated at the time of land cover assessment.
	Water bodies	This class includes both natural and artificially created water bodies.
	Others	Anything which is not reflected in the above

2016	National class	Definition
	FORESTS	Forests means land with trees spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent. It does not include land that is predominantly under agricultural or urban land use (National Forest Policy of Bhutan, 2011).
	ALPINE SCRUB	Alpine scrub is woody plant characterized by stunted growth (height less than 5meter) due to harsh condition. They are found at higher elevation above 3500 meter asl. close to tree line. Predominant species includes dwarf rhododendrons and junipers.
	SHRUBS	Shrubs are perennial plants with persistent and woody stem without any defined main stem with height less than 5 meter. It also includes abandoned agricultural fields with overgrown bushes and other regeneration in disturbed areas.
	MEADOWS	Meadows include any areas dominated by grasses or any herbaceous plant without or with few scattered trees or shrubs on it. It occurs at all elevations, but is relatively more common at higher elevations.
	CULTIVATED AGRICULTURAL LAND	Cultivated agricultural land includes only those agricultural land that are cultivated at the time of land cover assessment.
	BUILT UP AREAS	Built up areas includes artificial constructions covering the land with an impervious (e.g. concrete, CGI sheet, thatch) surface. It includes airport, rural settlements, urban areas, schools & institutes, industrial areas, hospital premises, sewage treatment plant, sports and leisure facilities and roads.
	NON BUILT UP AREAS	This class is defined by absence of the original (semi-) natural cover mainly due to anthropogenic factors. It includes waste dump sites, mines, stone quarries and other extraction sites.
	WATER BODIES	This class includes both natural and artificially created water bodies.
	SNOW AND GLACIERS	This class includes both perpetual and seasonal snow cover and glaciers.
	MORAINES	Moraines refers to a mass of rocks and sediments carried down and deposited by a glacier typically as ridges at its edges or extremity.
	LANDSLIDE	This class includes mass movement of soils debris due to gravitational force triggered by other factors such as rainfall and earthquakes.
	ROCKY OUTCROPS	Rocky outcrops refer to natural cliffs and rocky areas.

Original data and reclassification

1995	Classifications and definitions		FRA classes		

	Class	Area (1000 ha)	Naturally regenerating forest	Plantation forest	Other planted forest
	Forest	2 556.36	99.24 %	0.76 %	0.00 %
	<b>Total</b>	<b>2 556.36</b>	<b>2 536.93</b>	<b>19.43</b>	<b>0.00</b>

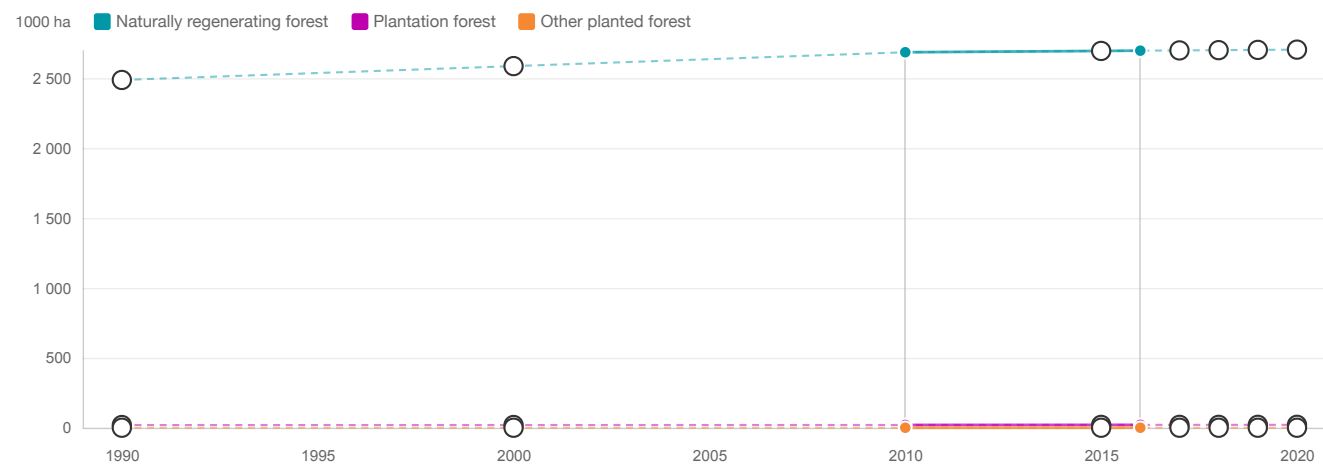
Plantation forest	Area (1000 ha)	...of which introduced
Forest	19.43	%
<b>Total</b>	<b>19.43</b>	—

2010	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Naturally regenerating forest	Plantation forest	Other planted forest
	Forest	2 705.29	99.27 %	0.73 %	0.00 %
	<b>Total</b>	<b>2 705.29</b>	<b>2 685.54</b>	<b>19.75</b>	<b>0.00</b>

Plantation forest	Area (1000 ha)	...of which introduced
Forest	19.75	%
<b>Total</b>	<b>19.75</b>	—

2016	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Naturally regenerating forest	Plantation forest	Other planted forest
	FORESTS	2 717.16	99.25 %	0.75 %	0.00 %
	<b>Total</b>	<b>2 717.16</b>	<b>2 696.78</b>	<b>20.38</b>	<b>0.00</b>

Plantation forest	Area (1000 ha)	...of which introduced
FORESTS	20.38	%
<b>Total</b>	<b>20.38</b>	—



FRA categories	Forest area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest (a)	2 487.40	2 586.47	2 685.54	2 694.91	2 696.78	2 698.65	2 700.52	2 702.39	2 704.26
<b>Planted forest (b)</b>	<b>19.32</b>	<b>19.54</b>	<b>19.75</b>	<b>20.27</b>	<b>20.38</b>	<b>20.49</b>	<b>20.60</b>	<b>20.71</b>	<b>20.82</b>
Plantation forest	19.32	19.54	19.75	20.27	20.38	20.49	20.60	20.71	20.82
...of which introduced species									
Other planted forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total (a+b)</b>	<b>2 506.72</b>	<b>2 606.01</b>	<b>2 705.29</b>	<b>2 715.18</b>	<b>2 717.16</b>	<b>2 719.14</b>	<b>2 721.12</b>	<b>2 723.10</b>	<b>2 725.08</b>
<b>Total forest area</b>	<b>2 506.72</b>	<b>2 606.00</b>	<b>2 705.29</b>	<b>2 715.18</b>	<b>2 717.16</b>	<b>2 719.14</b>	<b>2 721.12</b>	<b>2 723.10</b>	<b>2 725.08</b>

## 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

-



FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Primary forest	413.00	413.00	413.00	413.00	413.00
Temporarily unstocked and/or recently regenerated					
Bamboos					
Mangroves	0.00	0.00	0.00	0.00	0.00
Rubber wood	0.00	0.00	0.00	0.00	0.00

Comments

Bhutan doesnot have as such bamboos as single identity while the same is found mixed with trees and no Mangrove and Rubber wood are avialable, rest everything is clubed under primary forest.

Primary forest includes 50% of the Protected Area and is assumed to remain constant.

## 1d Annual forest expansion, deforestation and net change

### National Data

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

Forest Facts and Figures, FREL/FRL report

#### National classification and definitions

No classification

#### Original data

Original data of Forest Facts and Figure and FREL/FRL are directly used.

### Analysis and processing of national data

#### Estimation and forecasting

Forest Facts and Figures, FREL/FRL report

#### Reclassification into FRA 2020 categories

No reclassification

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Forest expansion (a)	9.93	10.12	2.32	2.41
...of which afforestation	0.02	0.16	0.20	0.20
...of which natural expansion	9.91	9.96	2.12	2.21
Deforestation (b)	0.00	0.19	0.34	0.43
Forest area net change (a-b)	9.93	9.93	1.98	1.98

Comments

The figure is revised based on FREL/FRL calculations.

# 1e Annual reforestation

## National Data

Data sources + type of data source eg NFI, etc

Forest Facts and Figures

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
Reforestation	0.02	0.16	0.20	0.20

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)	0.00	0.00	0.00	0.00	0.00
Tree orchards (b)					
Agroforestry (c)					
Trees in urban settings (d)	0.00	0.00	0.00	0.00	0.00
Other (specify in comments) (e)	0.00	0.00	0.00	0.00	0.00
Total (a+b+c+d+e)	0.00	0.00	0.00	0.00	0.00
Other land area	1 031.73	868.97	706.19	609.94	582.69

Comments

We donot have Plams and trees in urban setting as of now while no data is avilable on tree orchards and agroforestry.

## 2 Forest growing stock, biomass and carbon

### 2a Growing stock

#### National Data

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

National Inventory Report Volume II

##### National classification and definitions

No National classification

##### Original data

The National Data from PIS and National Inventory Report Vol II.

#### Analysis and processing of national data

##### Estimation and forecasting

The National Data from PIS and National Inventory Report Vol II datas are directly used.

##### Reclassification into FRA 2020 categories

No reclassification



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	346.08	346.08	346.08	346.08	346.08	346.08	346.08	346.08	346.08
Other wooded land	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00

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	867.53	901.88	936.25	939.67	940.35	941.04	941.73	942.41	943.10
Other wooded land	13.95	17.19	20.43	24.83	25.71	25.73	25.74	25.75	25.72

Comments

For 1990 and 2000 the PIS data was used but while report for 2015, the National Correspondent made the calculation mistake with Biomass Emission Factor and Wood density, in this report the same stands corrected. For 2010 onwards the National Forest Inventory report Vol II is used assuming not much of change has occurred and do not expect massive changes in future too.

## 2b Growing stock composition

### National Data

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

National Forest Inventory Report Volume I, 2017

**National classification and definitions**

No National clasification

**Original data**

Original data are provided in the table below

### Analysis and processing of national data

**Estimation and forecasting**

Used the NFI report data directly.

**Reclassification into FRA 2020 categories**

No reclassification.

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	Abies densa					142.00	142.00
#2 Ranked in terms of volume	Terminalia bellirica					53.00	53.00
#3 Ranked in terms of volume	Sloanea decicarpus					47.00	47.00
#4 Ranked in terms of volume	Talauma hodgsonii					39.00	39.00
#5 Ranked in terms of volume	Sapindus rarak					37.00	37.00
#6 Ranked in terms of volume	Trewia nudiflora					27.00	27.00
#7 Ranked in terms of volume	Cinnamomum impressinervium					24.00	24.00
#8 Ranked in terms of volume	Tamarindus indica					22.00	22.00
#9 Ranked in terms of volume	Syzygium formosum					21.00	21.00
#10 Ranked in terms of volume	Sigesbeckia orientalis					20.00	20.00
Remaining native tree species						506.32	509.75
Total volume of native tree species			–	–	–	938.32	941.75
Introduced tree species							
#1 Ranked in terms of volume	Tectona grandis					1.00	1.00
#2 Ranked in terms of volume	Eucalyptus sp					0.32	0.32
#3 Ranked in terms of volume	Cryptomeria japonica					0.03	0.03

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							
#5 Ranked in terms of volume							
Remaining introduced tree species							
Total volume of introduced tree species			–	–	–	1.35	1.35
Total growing stock			–	–	–	939.67	943.10

Comments

The National Forest Inventory Report I & II are used for filling the table while the data pertains to 2015 and the report was published in 2017 and 2018. Data for earlier years are not avialable.

## 2c Biomass stock

### National Data

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

National Forest Inventory Vol II

#### National classification and definitions

No National Classification.

#### Original data

National Forest Inventory Vol II data

### Analysis and processing of national data

#### Estimation and forecasting

National Forest Inventory Vol II data is directly used.

#### Reclassification into FRA 2020 categories

No reclassification.

FRA categories	Forest biomass (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass	269.32	269.32	269.32	269.32	269.32	269.32	269.32	269.32	269.32
Below-ground biomass	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
Dead wood	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44

Comments

In the earlier report from 1990 till 2015, it was basically based on the PIS report and had used the default Biomass Expansion Factor and Wood density were wrongly used. We do have our own BEF and this was used for calculation backward and forward too.

## 2d Carbon stock

### National Data

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

National Inventory Report vol II

**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	127.05	127.05	127.05	127.05	127.05	127.05	127.05	127.05	127.05
Carbon in below-ground biomass	54.52	54.52	54.52	54.52	54.52	54.52	54.52	54.52	54.52
Carbon in dead wood	3.03	3.03	3.03	3.03	3.03	3.03	3.03	3.03	3.03
Carbon in litter	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23
Soil carbon	64.05	64.05	64.05	64.05	64.05	64.05	64.05	64.05	64.05

Soil depth (cm) used for soil carbon estimates	30.00
--	-------

Comments



### 3 Forest designation and management

#### 3a Designated management objective

##### National Data

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

Forest Manangement Unit plans, Conservation plans and community Forest Managment Plans.

**National classification and definitions**

**Production Forests:** Area suitable for production of timber and other forest products as per the Technical Guidelines specified in the forest management code. Production forest in Bhutan includes Forest Management Units (FMU), Community Forests (CF) and Local Forest Management Area.

**Conservation of biodiversity:** is defined as ‘protection regime applied to forestland, which maintain the productive and renewal capacities as well as the genetic, species and ecological diversity of forest ecosystems’. Conservation of Biodiversity includes forest remaining forest inside National Parks, Wildlife Sanctuaries and Strict Nature Reserves.

**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)	46.99	140.64	235.05	273.34	368.03
Protection of soil and water (b)	0.00	0.00	0.00	0.00	0.00
Conservation of biodiversity (c)	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20
Social Services (d)	0.00	0.00	0.00	0.00	0.00
Multiple use (e)	1 355.53	1 361.16	1 366.04	1 337.64	1 252.85
Other (specify in comments) (f)	0.00	0.00	0.00	0.00	0.00
None/unknown (g)	0.00	0.00	0.00	0.00	0.00
Total forest area	2 506.72	2 606.00	2 705.29	2 715.18	2 725.08

Total area with designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production	46.99	140.64	235.05	273.34	368.03
Protection of soil and water	2 506.72	2 606.00	2 705.29	2 715.18	2 725.08
Conservation of biodiversity	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20
Social Services	2 506.72	2 606.00	2 705.29	2 715.18	2 725.08
Other (specify in comments)	0.00	0.00	0.00	0.00	0.00

Comments

The production area is increasing as we are bringing more areas under Forest Management Units and Community Forest is on the rise. Bhutan is highly mountinous country, therefore, all the forest plays role in protection of soil and water. Similarly all the forest in one way or other caters the social service needs. Therefore, forest catering protection of soil and water and social services couldn't be segregated for Bhutan

### 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**

Forest Managment Units, Conservation and Community Forest Plans.

**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	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20	1 104.20
Forest area with long-term forest management plan	46.99	140.64	235.05	273.34	368.03	368.03	368.03	368.03	368.03
...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

-

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
Private ownership (a)	0.00	0.00	0.40	0.47
...of which owned by individuals	0.00	0.00	0.40	0.47
...of which owned by private business entities and institutions	0.00	0.00	0.00	0.00
...of which owned by local, tribal and indigenous communities	0.00	0.00	0.00	0.00
Public ownership (b)	2 506.72	2 606.00	2 704.89	2 714.71
Unknown/other (specify in comments) (c)	0.00	0.00	0.00	0.00
Total forest area	2 506.72	2 606.00	2 705.29	2 715.18

## Comments

Before 2000 the forest owned by private were not known and after the recent cadastral survey conducted by National Land Commission, the area has been known.

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)	2 506.72	2 605.64	2 670.50	2 638.85
Individuals (b)	0.00	0.00	0.40	0.47
Private business entities and institutions (c)	0.00	0.00	0.00	0.00
Local, tribal and indigenous communities (d)	0.00	0.36	33.99	75.39
Unknown/other (specify in comments) (e)	0.00	0.00	0.00	0.00
Total public ownership	2 506.72	2 606.00	2 704.89	2 714.71

Comments



5 Forest disturbances

5a Disturbances

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)																	
	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	2 606.00	-	-	-	-	-	-	-	-	-	2 705.29	-	-	-	-	2 715.18	2 717.16	2 719.14

Comments

5b Area affected by fire

National Data

Data sources + type of data source eg NFI, etc

Annual Forestry Facts and Figures, DoFPS

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)																	
	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						3.22	7.92	22.78	3.88	1.70	3.77	4.41	4.41	4.93	18.90	6.20	8.50	5.20

Comments

5c Degraded forest

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

Comments

6 Forest policy and legislation

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

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

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

### Comments

Bhutan have certificate of origin cum stump to depot timber movement order for tracing the movement of timber from one forest (site of felling) to depot. In addition to this, internal timber movement order is in place to monitor the movement of timber from one place to another. This permit system facilitates authenticity of the legal timber.

6b Area of permanent forest estate

National Data

Data sources + type of data source eg NFI, etc

Constitution of Bhutan

National classification and definitions

-

Original data

-



FRA 2020 categories	Forest area (1000 ha)					
	Applicable?	1990	2000	2010	2015	2020
Area of permanent forest estate	Yes	2 303.64	2 303.64	2 303.64	2 303.64	2 303.64

Comments

Constitution of Bhutan mandate to have 60% of forest cover at all times to come.

7 Employment, education and NWFP

7a Employment in forestry and logging

National Data

Data sources + type of data source eg NFI, etc

Natural Resources Development Coporation Limited

National classification and definitions

-

Original data

-

FRA 2020 categories	Full-time equivalents (1000 FTE)											
	1990			2000			2010			2015		
	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male
Employment in forestry and logging							1.90			1.79		
...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

Many of teh required parameters are not avialabe.

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

### National Data

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

Ministry of Agriculture and Forest.

**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										25.00		
Technician certificate / diploma										45.00		
Total												

Comments

Data not avialable.

## 7c Non wood forest products removals and value 2015

### National Data

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

Facts and Figures, Department of Forest and Park Services

**National classification and definitions**

-

**Original data**

-

	Name of NWFP product	Key species	Quantity	Unit	Value (1000 local currency)	NWFP category
#1	Terminalia Belerica	Terminalia Belerica	50	kg	10	3 Raw material for medicine and aromatic products
#2	Cordyceps	Ophiocordyceps sinensis	142	kg	201 995	3 Raw material for medicine and aromatic products
#3	Picrorhiza	Picrorhiza	1 600	kg		3 Raw material for medicine and aromatic products
#4	Mushroom	Musutake	669	kg	335	1 Food
#5	Piper nigra	Piper nigra	200	kg	100	1 Food
#6	Viscum sps	Viscum sps	100	kg	30	1 Food
#7	Rubia cordifolia	Rubia cordifolia	8 521	kg	1 704	4 Raw material for colorants and dyes
#8	Schezwan Pepper	Xanthozylium indicum	408	kg	81	1 Food
#9	Daphne sps	Daphne spp.	2 701	kg	414	8 Other plant products
#10	Cane shoot	Calamus spp.	616	kg	184	1 Food
All other plant products						
All other animal products						
Total					204 853	

Name of currency	Ngultrum
------------------	----------

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	68.36	70.97	71.23	71.28	71.33	71.38	71.43	71.49

Name of agency responsible	Department of Forests and Park Services
----------------------------	---

### 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	0.37	0.07	0.07	0.07	0.07	0.07	0.07

Name of agency responsible	Department of Forests and Park Services
----------------------------	---

Sub-Indicator 2	Forest biomass (tonnes/ha)							
	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass stock in forest	269.32	269.32	269.32	269.32	269.32	269.32	269.32	269.32

Name of agency responsible	Department of Forests and Park Services
----------------------------	---



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	40.67	40.67	40.67	40.67	40.67	40.67	40.67	40.67

Name of agency responsible	Department of Forests and Park Services
----------------------------	---

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	5.18	8.66	10.07	13.55	13.55	13.55	13.55	13.55

Name of agency responsible	Department of Forests and Park Services
----------------------------	---

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	—	—