



Food and Agriculture
Organization of the
United Nations

Global Forest Resources Assessment 2020

Report

Nepal

Updated version, July 2020

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.

Note to the updated version

This report has been updated by Nepal after the FRA 2020 reporting cycle was finalized. The updated figures are therefore not reflected in the FRA 2020 database and main report. Data will be incorporated in the database once opened again for periodic updates.

Report preparation and contact persons

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

Name	Role	Email	Tables
Ananda Khadka	Collaborator	anandakhadka@gmail.com	2a, 2b, 2c, 2d, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b, 7a, 7b, 7c, 8a
Deepak Kumar Kharal	Collaborator	info@dfrrs.gov.np	All
Deepak Mahatara	Collaborator	honeystar73@gmail.com	2a, 2b, 2c, 2d, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b, 7a, 7b, 7c, 8a
Dipesh Kumar Sharma	Collaborator	dipeshsharmadiyu2015@gmail.com	2a, 2b, 2c, 2d, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b, 7a, 7b, 7c, 8a
Keshab Ghimire	Collaborator	ksavgh048@gmail.com	2a, 2b, 2c, 2d, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b, 7a, 7b, 7c, 8a
Megh Nath Kafle	National correspondent	info@frtc.gov.np	All
Prabesh Shrestha	Collaborator	prabeshrestha07@gmail.com	All
Raj Kumar Giri	Alternate National correspondent	Rajkumargiri3699@gmail.com	2a, 2b, 2c, 2d, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b, 7a, 7b, 7c, 8a
Raja Ram Aryal	Collaborator	rajaram.aryal@gmail.com	All
Thakur Subedi	Collaborator	ecohtakur@yahoo.co.in	2a, 2b, 2c, 2d, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b, 7a, 7b, 7c, 8a

Introduction

In Nepal, the first national-level forest inventory was carried out in the 1960s (FRS, 1967). Since then, several forms of forest resource assessment activities have been carried out in different periods, each different in terms of purpose, scale, scope, design and technology used. Six national level forest cover assessments were carried out in the last four decades (DFRS, 1999; 2015). The latest forest resource assessment was started in 2010 and end up in 2014. As per the assessment, Forest area covers 5.96 million ha (40.36%), Other Wooded Land covers 0.65 million ha (4.38%) and Other Land covers 8.16 million ha (55.26%). Forest and OWL together comprise 44.74% of the total area of the country. The previous nation-wide forest resource assessment (NFI, 1994) was done in 1990s (DFRS, 1999). The forest area as estimated by NFI (1994) was 29% (4.27 million ha) and shrub 10.6%, making a total of 39.6% of the geographical area of the country. Both of these nation-wide forest resource assessments were conducted by the Forest Research and Training Centre (former Department of Forest Research and Survey).

During FRA Nepal Project (2010-2014) 1553 permanent sample plots (PSPs) were established in forest area. After 2015 those PSPs have been re-measured and monitored each year.

1a Extent of forest and other wooded land

National data

Data sources

1994	References	DFRS, 1999. Forest Resources of Nepal (1987-1998). Department of Forest Research and Survey, Ministry of Forest and Soil Conservation, Kathmandu, Nepal
	Methods used	National Forest Inventory, Full-cover forest/vegetation maps, Sample-based remote sensing assessment
	Additional comments	
2010	References	DFRS/FRA, 2015. State of Nepal's Forests. Department of Forest Research and Survey, Kathmandu, Nepal
	Methods used	Full-cover forest/vegetation maps, National Forest Inventory, Sample-based remote sensing assessment
	Additional comments	

Classifications and definitions

1994	National class	Definition
	Forests	Area where trees with well-defined stems are growing and crown coverage is more than 10%. Area must not be used primarily for uses other than forestry (widely understood) and must be at least 100m wide. Area can include treeless patches not wider than 25 m and not exceeding 1 ha.
	Shrubland	Similar to forest but well-defined stems cannot be found.
2010	National class	Definition
	Forests	An area of land at least 0.5 ha and a minimum width/length of 20 m with a tree crown cover of more than 10% and tree heights of 5 m at maturity.
	Other wooded land	The land not classified as forest spanning more than 0.5 ha, having at least 20 m width and a tree canopy cover of trees between 5% and 10%. or The canopy cover of trees less than 5% but the combined cover of shrubs, bushes and trees more than 10%; includes area of shrubs and bushes where no trees are present.
	Other Land	All land that is not classified as Forest or Other Wooded Land

Original data and reclassification

1994	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forests	4 268.00	100.00 %	0.00 %	0.00 %
	Shrubland	1 560.00	0.00	100.00 %	0.00 %
	Total	5 828.00	4268.00	156.00	0.00

2010	Class	Area (1000 ha)	Forest	Other wooded land	Other land
	Forests	5 962.03	100.00 %	0.00 %	0.00 %
	Other wooded land	647.89	0.00 %	100.00 %	0.00 %
	Other Land	7 725.08	0.00 %	0.00 %	100.00 %
	Total	14 335.00	5 962.03	647.89	7 725.08

FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest (a)	4268	5970.76	5962.03	5962.03	5962.03	5962.03	5962.03	5962.03	5962.03
Other wooded land (b)	1560	639.16	647.89	647.89	647.89	647.89	647.89	647.89	647.89
Other land (c-a-b)	8507	7725.08	7725.08	7725.08	7725.08	7725.08	7725.08	7725.08	7725.08
Total land area (c)	14335	14335	14335	14335	14335	14335	14335	14335	14335

Climatic domain	% of forest area 2015	Override value
Boreal	0.00	0.00
Temperate	32.00	32.00
Sub-tropical	38.00	38.00
Tropical	30.00	30.00

Comments

NFI 1994 used 147,181 km² as the total area of the country for its calculations while LRMP and FRA used the mapped areas calculated in their assessments i.e. 147,484 sq.km and 147,734 sq.km, respectively. FAO statistical figures (FAOSTAT:143,350 sq. km) has been used here for total land area.

Forest area included in 1990 has been derived from National Forest Inventory of 1994 which is the nearest value. It is a point value derived with different methodology and should not be used for comparison with forests area of year 2000 and 2010. The greater forest area enhancement seen from 1990 to 2000 is due to the management intervention of community forestry and drastic conversion of shrub land /other wooded land into forest area as well as use of 0.5 ha mapping unit in 2010 instead of 1 ha used in 1994.

The FRA 2000 figure has been derived by applying the estimated changes reported for the National Forest Reference Level (2000-2010).

Latest forest cover map of Nepal was prepared in 2010 during FRA Nepal project. At that time total land cover was classified as Forest, Other Wooded Land (OWL) and Other Land (non-forest) using RapidEye MSS satellite imagery, secondary images (Google Earth images, Landsat), ancillary maps (LRMP and topographical maps) and the FRA Nepal field inventory data. Images were classified by applying an automated method using object-based image analysis method on segmented images in eCognition software.

The difference in the forest area and other wooded land in different time series is due to the inconsistent data and methodology used at different time period. In MPFS 1985 and NFI 1984, we used satellite image, aerial photos and field survey in different locations within a country for forest and other wooded land area measurement. After 2000, we used satellite-based forest area estimation using Landsat and Rapid Eye image in 2000 and 2010, respectively. The difference in the forest and OWL is also due to different Minimum Mapping Unit for different time such as FRL, 2000 used 2.25 ha, FRA, 2010 used 0.5 ha, NFI 1994 1 ha.

1b Forest characteristics

National data

Data sources

1994	References	DFRS, 1999. Forest Resources of Nepal (1987-1998). Department of Forest Research and Survey, Ministry of Forest and Soil Conservation, Kathmandu, Nepal
	Methods used	National Forest Inventory, Full-cover forest/vegetation maps, Sample-based remote sensing assessment
	Additional comments	
2010	References	DFRS/FRA, 2015. State of Nepal's Forests. Department of Forest Research and Survey, Kathmandu, Nepal
	Methods used	Full-cover forest/vegetation maps, National Forest Inventory, Sample-based remote sensing assessment
	Additional comments	

Classifications and definitions

1994	National class	Definition
	Forests	Area where trees with well-defined stems are growing and crown coverage is more than 10%. Area must not be used primarily for uses other than forestry (widely understood) and must be at least 100m wide. Area can include treeless patches not wider than 25 m and not exceeding 1 ha.
	Shrubland	Similar to forest but well-defined stems cannot be found.
2010	National class	Definition
	Forests	An area of land at least 0.5 ha and a minimum width/length of 20 m with a tree crown cover of more than 10% and tree heights of 5 m at maturity.
	Other wooded land	The land not classified as forest spanning more than 0.5 ha, having at least 20 m width and a tree canopy cover of trees between 5% and 10%. or The canopy cover of trees less than 5% but the combined cover of shrubs, bushes and trees more than 10%; includes area of shrubs and bushes where no trees are present.
	Other Land	All land that is not classified as Forest or Other Wooded Land

Original data and reclassification

1994	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Naturally regenerating forest	Plantation forest	Other planted forest
	Forests	4 268.00	97.88%	2.11%	0.00 %
	Shrubland	1 560.00	0.00	1.55 %	0.00 %
	Total	5 828.00	5737.66	90.33	0.00

Plantation forest	Area (1000 ha)	...of which introduced
Forests	90.3	20.00 %

2010	Classifications and definitions		FRA classes		
	Class	Area (1000 ha)	Naturally regenerating forest	Plantation forest	Other planted forest
	Forests	5 962.03	96.30 %	3.70 %	0.00 %
	Total	5 962.03	5 741.43	220.60	0.00

Plantation forest	Area (1000 ha)	...of which introduced
Forests	220.60	20.00 %
Total	220.60	44.12

FRA categories	Forest area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest (a)	4177.7	5833.09	5741.43	5741.43	5741.43	5741.43	5741.43	5741.43	5741.43
Planted forest (b)	90.30	137.67	220.60	220.60	220.60	220.60	220.60	220.60	220.60
Plantation forest	90.3	137.67	220.60	220.60	220.60	220.60	220.60	220.60	220.60
...of which introduced species	18.07	27.53	44.12	44.12	44.12	44.12	44.12	44.12	44.12
Other planted forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (a+b)	4268	5970.76	5962.03	5962.03	5962.03	5962.03	5962.03	5962.03	5962.03
Total forest area	4268	5970.76	5962.03	5962.03	5962.03	5962.03	5962.03	5962.03	5962.03

Comments

Sagarnath Forestry development project was established in 1978 to help for the supply of forest products by the establishment of production forest by augmenting fast growing and high yielding tree species in the degraded forest areas. Till now, the plantation area is spread across 10,447 hectares. Similarly, Ratuwamai Plantation project also planted trees in 2,240 hectares area. With the large-scale plantation commenced in the early 1980s, nearly 370,000 hectares of plantations have been successfully established in Nepal. With the commencement of a large-scale plantations in the early 1980s (Gilmour et al., 1990), nearly 0.4 million ha plantations have been successfully established particularly in the mid hills of Nepal dominated by Pines especially *Pinus patula* (DoF-a, 2012). Plantation program implemented by Nepal Swiss Community Forestry Project (NSCFP) in Dolakha district and Nepal Australia Community Forestry Project (NACFP) in Sindhupalchok, Kavrepalanchok and Dolakha districts were the major plantation project from 1980's to 1990's in Nepal.

At that time *Eucalyptus camaldulensis*, *Tectona grandis*, *Pinus patula* were major species for plantation in Nepal.

1c Annual forest expansion, deforestation and net change

National Data

Data sources + type of data source eg NFI, etc

National Forest Reference Level of Nepal (2000 – 2010).

National classification and definitions

Forest expansion is viewed as the positive complement to forest degradation, i.e. long term or permanent conversion of non-forest land to forest land. Measurement of the outcomes of these three activities (i) reducing deforestation, (ii) reducing forest degradation and (iii) promoting afforestation, reforestation (enhancement of forest carbon stocks) will enable Nepal to assess the net change as well as the expansion rate.

Deforestation is the long term or permanent conversion of forest to other (non-forest) land use.

Original data

The deforestation and expansion data are based on estimated changes after bias correction as of the National Forest Reference Level (2000-2010) report.

Analysis and processing of national data

Estimation and forecasting

Time interval used for forest expansion and deforestation quantification was 2000 to 2010. No estimation or forecasting was done.

Reclassification into FRA 2020 categories

The expansion and deforestation rate for 2010-2020 will be consider as same as 2000-2010.

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Forest expansion (a)		1.36		
...of which afforestation				
...of which natural expansion				
Deforestation (b)		2.23		
Forest area net change (a-b)		-0.87		

Comments

1d Annual reforestation

National Data

Data sources + type of data source eg NFI, etc

- Department of Forests and Soil Conservation annual report 'Hamro Ban'. National planning commission 14th and 15th Periodic plan declared the area of plantation.

National classification and definitions

-

Original data

-

Analysis and processing of national data

Estimation and forecasting

-

Reclassification into FRA categories

-

FRA categories	Area (1000 ha/year)			
	1990-2000	2000-2010	2010-2015	2015-2020
Reforestation	13.30	44.10	44.10	45.00

Comments

Nepal is celebrating plantation decade for year 2013-2023. Figures indicated here are related to the *Hamro Ban* published by Forest Department.

1e Specific forest categories

National Data

Data sources + type of data source eg NFI, etc

- DFRS/FRA, 2015. State of Nepal's Forests. Department of Forest Research and Survey, Kathmandu, Nepal
- Department of National Park and Wildlife Conservation database.

National classification and definitions

-

Original data

Original data as presented in the table below refer to the year 2010 obtained from State of Forest's Nepal

Analysis and processing of national data

Estimation and forecasting

No estimation and forecasting was done. 2010 data were used for all reporting years.

Reclassification into FRA categories

-

FRA categories	Area (1000 ha)				
	1990	2000	2010	2015	2020
Bamboos	60	60	60	60	60
Mangroves	0.00	0.00	0.00	0.00	0.00
Temporarily unstocked and/or recently regenerated	0.00	0.00	0.00	0.00	0.00
Primary forest	1030.0	1030.0	1030.0	1030.0	1030.0
Rubber wood	1.00	1.00	1.00	1.00	1.00

Comments

12 bamboo genera and more than 53 species have been identified in Nepal, estimated to cover more than 60,000 hectares, 60% located in natural forests (INBAR).

The rubber wood estimates are based on expert opinion. There are no official statistics supporting exact estimate of the extent of rubber wood.

There are no national definitions and record in FRA classes like primary, modified natural, semi-natural, productive plantation and protective plantation. Following assumptions have been made and related definitions and data are being provided for the purposes of this Question.

Primary Forest: The forest areas within the protected areas based on FRA 2010 have been placed under this category.

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 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)	1.00	1.00	1.00	2.00	3.00
Agroforestry (c)	5.00	5.00	5.00	7.00	10.00
Trees in urban settings (d)	1.00	1.00	1.00	2.00	4.00
Other (specify in comments) (e)					
Total (a+b+c+d+e)	7.00	7.00	7.00	11.00	17.00
Other land area	8508.00	7725.08	7725.08	7714.08	7708.08

Comments

Nepal is celebrating plantation decade for year 2013-2023 and one of the major intervention areas is as Agroforestry so it is expected to increase.

2a Growing stock

National Data

Data sources + type of data source eg NFI, etc

DFRS. (2015). State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.

DFRS. (1999). Forest Resources of Nepal (1987-1998). Department of Forest Research and Survey, Ministry of Forest and Soil Conservation, Kathmandu, Nepal

National classification and definitions

-

Original data

Data on growing stock per hectare refer to the years 1994 (used for 1990) and 2010. As the growing stock per hectare refers to all types of forest, it has been used for both naturally regenerating and planted forest.

Analysis and processing of national data

Estimation and forecasting

Data for year 2000 is interpolated between 1990 and 2010. After 2010 the growing stock per hectare is assumed constant.

Reclassification into FRA 2020 categories

-

FRA categories	Growing stock m ³ /ha (over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	177.70	171.5	164.76	164.76	164.76	164.76	164.76	164.76	164.76
Planted forest	177.70	171.5	164.76	164.76	164.76	164.76	164.76	164.76	164.76
...of which plantation forest	177.70	171.5	164.76	164.76	164.76	164.76	164.76	164.76	164.76
...of which other planted forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forest	177.70	171.5	164.76	164.76	164.76	164.76	164.76	164.76	164.76
Other wooded land	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91

FRA categories	Total growing stock (million m ³ over bark)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Naturally regenerating forest	742.38	1000.37	945.96	945.96	945.96	945.96	945.96	945.96	945.96
Planted forest	16.05	23.61	36.35	36.35	36.35	36.35	36.35	36.35	36.35
...of which plantation forest	16.05	23.61	36.35	36.35	36.35	36.35	36.35	36.35	36.35
...of which other planted forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forest	758.42	1023.99	982.30	982.30	982.30	982.30	982.30	982.30	982.30
Other wooded land	12.34	5.06	5.12	5.12	5.12	5.12	5.12	5.12	5.12

Comments

Growing stock data are obtained from successive forest resource inventory of 1994 and 2010-2014. Growing stock for 2000 has been derived from linear interpolation of the stock per hectare from 2010 and 1990. Growing stock calculation of 1990 is based on the Forest Resource Survey of Nepal (1987-1998) in which growing stock was calculated based on the information of reachable forest area which is 52 % of total forest area at that time.

After the community forest intervention in the mid hills and High Mountain there is increased in growing stock. Recently, scientific forest management system introduced to improve the number of regeneration and growth of remaining forest.

The data for 2010 is tabulated above on the basis of countrywide Forest Resource Assessment in Nepal.

2b Growing stock composition

National Data

Data sources + type of data source eg NFI, etc

DFRS. (2015). State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.D

FRS. (1999). Forest Resources of Nepal (1987-1998). Department of Forest Research and Survey, Ministry of Forest and Soil Conservation, Kathmandu, Nepal

National classification and definitions

-

Original data

	Unit	1960	1985/86	1994
Forest	Forest Area under consideration/ Inventory in million ha	2.5	5.416	2.179
	Growing stock of trees up to 10 cm diameter at breast height in million cum of	212	522	387.5
	Growing stock /ha	85	96.36	177.8

Source: HMGN/ADB/FINNIDA, 1988; DFRS, 1999

The National Forest Inventory of 1960 and 1994 has provided the information on relative percentage of growing stock (GS) by tree species. Based only on the share of growing stock of the tree species, the relative ranking (first being the highest share in growing stock) of ten most common tree species are as follows:

Table: Ranking of Major Tree Species by Growing Stock (m³/ha)

SN	Scientific Name	Common Name	Local name	Percent Share in GS of 2010	Percent Share in GS of 1990
1.	<i>Shorea robusta</i>	Sal	Sal, Sakhuwa	19.28	28.2
2.	<i>Quercus spp</i>	Oak	Khasru	14.8	9.3
3.	<i>Pinus roxburghii</i>	Chir pine	Kholesalla	7.05	6.3
4.	<i>Rhododendron spp</i>	Rhododendron	Laligurans	5.27	4.3
5.	<i>Terminalia alata</i>	Indian laurel	Asna, Saj	4.67	7.6
6.	<i>Abies spec tabilis</i>	Silver fir	Talispatra	4.59	4.4
7.	<i>Pinus wallichiana</i>	Blue Pine	Gobre salla	3.75	1.1
8.	<i>Alnus sps</i>	Alder	Uttis	3.56	2.9
9.	<i>Tsuga dumosa</i>	Hemlock	Thinguresall	3.48	1.9
10.	<i>Schima wallichii</i>		Chilaune	2.66	2.0
11.	<i>Castanopsis spp.</i>	Katus		1.73	1.0

Source: DFRS, 1999.

Analysis and processing of national data

Estimation and forecasting

The growing stock for 1990, 2000 (add how 2010, 2015 and 2020 were calculated) has been derived from the forest area presented in T1a table. The national figure of average stem volume (ob) of 96.36 m³/ha for 1985/86 has been considered to low to be used for the purposes of this table and for this reason the figure of 177.8 m³/ha for 1994 has been used estimating growing stock in forests for 1990, 2000 **2010** (DFRS, 1999). Regarding the growing stock in OWL (shrub land) the average stem volume of shrub (OWL) 30 cu.m/ha has been taken from the WECS, 1988.

Reclassification into FRA 2020 categories

Growing stock composition

FRA categories	Scientific name	Common name	Growing stock in forest (million m ³ over bark)				
Native tree species			1990	2000	2010	2015	2020
#1 Ranked in terms of volume	<i>Shorea Robusta</i>	Sal, Sakhuwa	109.4	149.37	189.35	189.35	189.35
#2 Ranked in terms of volume	<i>Quercus spp.</i>	Khasru, Banjh	35.9	90.65	145.41	145.41	145.41
#3 Ranked in terms of volume	<i>Pinus roxburghii</i>	Kholesalla	24.4	46.84	69.28	69.28	69.28
#4 Ranked in terms of volume	<i>Rhododendron spp</i>	Laligurans	16.4	34.07	51.75	51.75	51.75
#5 Ranked in terms of volume	<i>Terminalia alata</i>	Asna, Saj	29.4	37.65	45.91	45.91	45.91
#6 Ranked in terms of volume	<i>Abies spp.</i>	Talispatra	17.2	31.16	45.13	45.13	45.13
#7 Ranked in terms of volume	<i>Pinus wallichiana</i>	Gobresalla	4.1	20.47	36.85	36.85	36.85
#8 Ranked in terms of volume	<i>Alnus nepalensis</i>	Uttis	11.2	23.07	34.94	34.94	34.94
#9 Ranked in terms of volume	<i>Tsuga dumosa</i>	Thingure salla	7.3	20.73	34.16	34.16	34.16
#10 Ranked in terms of volume	<i>Schima wallichii</i>	Chilaune	7.9	17.00	26.11	26.11	26.11
Remaining native tree species			495.22	552.99	303.44	303.44	303.44
Total volume of native tree Species			758.42	1024	982.33	982.33	982.33

DFRS. (2015). State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.

Comments

Growing stock data were used for 1990 and 2010. Data for 2000 is interpolated from 1990 and 2010.

2c Biomass stock

National Data

Data sources + type of data source eg NFI, etc

DFRS. (2015). State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.

National classification and definitions

-

Original data

Original data for 2010 from the State of Nepal's Forests report. A root-shoot ratio of 0.25 has been used.

Analysis and processing of national data

Estimation and forecasting

As growing stock is assumed constant from 2010 and onwards, the data for 2010 is repeated for the following reporting years. For 1990 and 2000 the 2010 data has been prorated to respective data on growing stock per hectare.

Reclassification into FRA 2020 categories

-

FRA categories	Forest biomass (tonnes/ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Above-ground biomass	190.7	184.05	176.82	176.82	176.82	176.82	176.82	176.82	176.82
Below-ground biomass	47.67	46.01	44.21	44.21	44.21	44.21	44.21	44.21	44.21
Dead wood	11.94	11.50	10.66	10.66	10.66	10.66	10.66	10.66	10.66
TOTAL	248.94	240.27	231.69	231.67	231.67	231.67	231.67	231.67	231.67

Comments

The National Forest Inventory 1990s and MPFS 1988 provide biomass estimate including leaf, branch, and stem components.

Department of Forest Research and Survey (DFRS), 2015 provided above ground biomass estimate including stem, branch and foliage components.

2d Carbon stock

National Data

Data sources + type of data source eg NFI, etc

DFRS. (2015). State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.

National classification and definitions

-

Original data

Data on total C stocks, litter and soil carbon from 2010 from the State of Nepal's forest report. Data on biomass, see table 2c.

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	89.63	86.51	83.11	83.11	83.11	83.11	83.11	83.11	83.11
Carbon in below-ground biomass	22.40	21.63	20.78	20.78	20.78	20.78	20.78	20.78	20.78
Carbon in dead wood	5.61	5.41	5.01	5.01	5.01	5.01	5.01	5.01	5.01
Carbon in litter	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Soil carbon	66.88	66.88	66.88	66.88	66.88	66.88	66.88	66.88	66.88
Soil depth (cm) used for soil carbon estimates									

Comments

DFRS, 2015 estimated carbon stock of tree component including live, dead standing, dead wood and belowground biomass. In this estimate, total biomass is calculated dividing total carbon stock by 0.47. Belowground biomass is obtained from difference of total biomass and above ground biomass.

3a Designated management objective

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
GoN, 1973. National Park and Wildlife Conservation Act 1973. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1973	
MoFSC, 1988. Master Plan for the Forestry Sector in Nepal. Kathmandu, Nepal.	H	Forest Areas	1988	
GoN, 1995. Forest Act 1993 and Forest Regulation 1995. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1993 1995	
MoFSC, 2002. Nepal Biodiversity Strategy. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Community, Lease hold, Production, PAs, Protection Forest.	1988 to 2002	
GoN, 2007. The three-year interim Plan (2007-2010). Government of Nepal. National Planning Commission, Nepal	H	Area of Community. Forest and Pas	2007	
DFRS, 2015. State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.	H	Forest Area of Protected Areas	2015	
DNPWC, 2018. Protected Areas of Nepal	H	Area of Protected Areas	2018	
DoF, 2004, 2011, 2018. Hamro Ban and annual report of Department of Forests.	H	Forest area according to different management regime	2004, 2011, 2018	

National classification and definitions

Definitions

Nepal's forest outside the protected areas is legally categorized into National forests and Private forests. The National Forest includes Government managed Forest, Protected Forest, Community Forest, Leasehold Forest, Religious Forest and Collaborative Forest. The ownership and control of the national forest lies with the government and that of the private forest lies with the owner of the forest. All the national forest other than the government managed forest, only the usufruct right has been given to the users. Whereas protected areas are defined differently as National Park, Strict Nature Reserve, Wildlife Reserve, Hunting Reserve, Conservation Area and Buffer Zone respectively. Similarly, the ownership and control of protected areas lies within government and all sorts of activities are restricted and monitored strictly.

National class	Definition
National Forest	All forests excluding private forest within Nepal, whether marked and unmarked with forest boundaries and the terms shall also include waste or uncultivated lands or unregistered lands surrounded by the forest or situated near the adjoining forest as well as paths, ponds, lakes, rivers or streams and riverine lands within the forest.
Government Managed Forest	"Government Managed Forest" means a National Forest to be managed by Government of Nepal .
Protected Forest	"Protected Forest" means a National Forest declared by Government of Nepal as a Protected Forest pursuant to this Act, considering it to be of special environmental, scientific or cultural importance
Community Forest	"Community Forest" means the National Forest handed over to user groups for the development, protection and utilization of common interest in the interest of the community.
Leasehold Forest	"Leasehold Forest" means a National Forest handed over as a Leasehold Forest to any institution established under prevailing laws, industry based on Forest Products or community.

Religious Forest	"Religious Forest" means a National Forest handed over to a religious body, group or community for its development, conservation and utilization.
Collaborative Forest	A part of national forest managed in collaboration with District forest office, local level and user group.
Private Forest	"Private Forest" means a Forest planted, nurtured or conserved in any private land owned by an individual pursuant to prevailing laws.
National Park	"National Park" means an area set aside for the conservation, management and utilization of flora, fauna and scenery along with the natural environment.
Strict Nature Reserve	"Strict Nature Reserve" means an area of ecological importance or important otherwise and set aside for scientific studies.
Wildlife Reserve	"Wildlife Reserve" means an area set aside for the conservation and management of wildlife resources and their habitats.
Hunting Reserve	"Hunting Reserve" means an area set aside for the management of wildlife for allowing hunters to hunt them.
Conservation Area	"Conservation Area" means an area to be managed according to an integrated plan for the conservation of natural environment and balanced utilization of natural resources.
Buffer Zone	"Buffer Zone" means a peripheral area of a national park or reserve prescribed under the Section 3a in order to provide facilities to use forest resources on a regular and beneficial basis for the local people.

Original data

A. Protected Areas

Protected Areas (Year of Establishment)	1990 000 ha	2000 000 ha	2002 000 ha	2005 000 ha	2008 000 ha	2010	2015	2018	Forest & Shrub 000 ha (%)
National Park (NP)									
Chitwan NP (1973)	93.2	93.2	93.2	93.2	93.2	93.2	93.2	95.3	81.07 (85.1)
Bardia NP (1976/1988)	96.8	96.8	96.8	96.8	96.8	96.8	96.8	96.8	na
Shivapuri and Nagarjun NP (2002)			14.4	14.4	15.9	15.9	15.9	15.9	
Khaptad NP (1984)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Makalu Barun NP (1991)		150	150	150	150	150	150	150	86
Sagarmatha NP (1976)	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	2
Langtang NP (1976)	171	171	171	171	171	171	171	171	69
SheyPhoksundo NP (1984)	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	
Rara NP (1976)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	
Banke NP (2010)						55	55	55	
Shuklaphanta NP (1976/2017)								30.5	(21.4) 70%
Parsa NP (1984/2017)								62.7	(57.684) 92%
Sub Total NP	864.4	1014.4	1028.8	1028.8	1030.3	1085.3	1085.3	1182.7	
Wildlife Reserve (WR)									
KoshiTappu WR (1976)	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	10
Parsa WR (1984)	50	50	50	50	50	50	50	0	
Suklaphanta WR (1976)	30.5	30.5	30.5	30.5	30.5	30.5	30.5	0	
Sub Total WR	98.	98.	98.	98.	98.	98.	98	17.6	
Hunting Reserve (HR)									
Dhorpatan HR (1987)	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5	
Sub Total HR	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5	
Conservation Area (CA)									
Kanchenjunga CA (1997)		203.5	203.5	203.5	203.5	203.5	203.5	203.5	49
Manaslu CA (1998)		166.3	166.3	166.3	166.3	166.3	166.3	166.3	
Annapurna CA (1986, 1992)		762.9	762.9	762.9	762.9	762.9	762.9	762.9	153
Apinampa CA (2010)						190.3	190.3	190.3	
Gaurishankar CA (2010)						217.9	217.9	217.9	
Krishnasar CA (2009)						1.6	1.6	1.6	
Sub Total CA		1132.7	1132.7	1132.7	1132.7	1542.6	1542.6	1542.5	
Buffer Zone									
Chitwan NP(1996)		75	75	75	75	75	72.9	72.9	na
Bardia NP(1996)		32.7	32.7	32.7	32.7	32.7	32.7	32.7	
Makalu Barun NP(1999)		83	83	83	83	83	83	83	
Langtang NP(1998)		42	42	42	42	42	42	42	
SheyPhoksundo NP(1998)		45	45	135	135	135	135	135	

Sagarmatha NP(2002)			27.5	27.5	27.5	27.5	27.5	27.5	
Suklaphanta WR(2004)				24.4	24.4	24.4	24.4	24.4	
Koshitappu WR(2004)				17.4	17.4	17.4	17.4	17.4	
Parsa WR(2005)					28.5	28.5	28.5	28.5	
Rara NP(2006)					19.8	19.8	19.8	19.8	
Kaptad NP(2006)					21.6	21.6	21.6	21.6	
Banke NP (2010)						34.3	34.3	34.3	
Shivapuri and Nagarjun NP (2016)								11.9	
SubTotal Buffer Zone	0	305	305	437	508	508	508	551.0	

B. Summary

Protected Areas (Year of Establishment)	1990 000ha	2000 000ha	2002 000ha	2005 000ha	2008 000ha	2010 000ha	2015 000ha	2018 000ha
National Park (NP)	929.9	1094.9	1109.3	1109.3	1110.8	1165.8	1178.5	1182.7
Wildlife Reserve	98.5	98.5	98.5	98.5	98.5	98.5	98.5	17.5
Hunting Reserve	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5
Conservation Area		1325.9	1340.3	1340.3	1341.8	1396.8	1409.5	1542.5.6
Buffer zone Area	0	305	305	437	508	508	508	551.0
Total	1160.9	2956.8	2985.6	3117.6	3191.6	3301.6	3327	3426.2

C. Forest Areas

National Category	Year	Forest Area in 000 ha
Community Forest	1986	48.5
	1994	112.626
	1997	352.326
	2002	854.389
	2004	1187.02
	2008	1270.43
	2011	1665.42
	2015	1813.49
	2018	2237.67
Leasehold forest (commercial)	2015	0.64
	2018	0.64
Leasehold forest (Pro-poor)	1998	7.011
	2004	9.46
	2011	18.34
	2015	42.34
	2018	43.32
Protected Areas	2018	3442.1
Production Forest	1986	31
	1990	136
	2002	298.7
	2005	345
	2008	578
Protected Forest	2002	0.17
	2010	133.32
	2011	133.32
	2015	133.69
	2018	190.81
Private Forest	2000	2.01
	2004	2.3
	2011	2.36
	2015	2.36
	2018	2.36
Collaborative Forest	2011	54.07
	2015	63.93
	2018	76.01
Religious Forest	2002	
	2018	2.06

Analysis and processing of national data

Estimation and forecasting

Primary designated management objective

Master plan for the forestry Sector in Nepal (MPFS, 1988) data is used to forecast the area of production forest in the year 1990 and 2000 AD. For the year 2015 average is taken of 2005 area indicated by MPFS and 2015 calculated value. In 2015 the production area is assumed by summing up of national category data as indicated in reclassification and for the year 2020 the Community forest and Collaborative forest areas is assumed to increase linearly since 2018 original Data. There is no relevant data available for the forest primarily for soil and water conservation. The area primarily designated for conservation of biodiversity is obtained by summing up of protected forest area and forest area of protected areas. The forest of protected areas is calculated according to proportion of forest in core area and Buffer zone area separately as indicated by State of Nepal's Forests in 2015 and assumed similar proportion for all reported years. The protected area is assumed constant and proposed protected forest areas is added for the year 2020. The religious forest area is assumed constant for 2020 because it has remained constant since very long. The private and leasehold forest are considered primarily for multiple use forest and assumed same for 2020 of recent (2018) data. Leasehold forest for commercial purpose is taken differently as case-wise data is not available.

Total area with designated management objective

Total designated area is estimated by summing of all the forest area of national forest category as indicated by reclassification. The total area of Community forest, leasehold forest for pro-poor and collaborative forest for the year is extrapolated by original data of 2018.

Reclassification into FRA 2020 categories

A Reclassification (percentage allocation) into Primary Designated Management Objective

National Classes	Percentage of National Class into FRA 2020 Categories						None/Unknown
	Production	Protection of soil and water	Conservation of Biodiversity	Social Services	Multiple Use	Others	
Community Forest	100						
Collaborative Forest	100						
Leasehold (Pro-poor)					100		
Leasehold (Commercial)						100	
Protected Forest			100				
Private Forest	100						
Protected Areas			100				
Religious Forest				100			
Government Managed Forest							100

B. Reclassification (percentage allocation) into Total Area with Designated Management Objective

National Classes	Percentage of National Class into FRA 2020 Categories				
	Production	Protection of Soil and Water	Conservation of Biodiversity	Social Services	Other
Community Forest	100				
Collaborative Forest	100				
Leasehold (Pro-poor)	100				
Leasehold (Commercial)	100				
Protected Forest			100		
Protected Areas			100		
Religious Forest				100	
Private Forest	100				
Government Managed Forest	100				100

Primary designated management objective

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production (a)	136.00	206.00	1 112.00	1 879.78	2 026.78
Protection of soil and water (b)					
Conservation of biodiversity (c)	1030.00	1030.00	1163.32	1163.69	1220.81
Social Services (d)			2.06	2.06	2.06
Multiple use (e)		9.91	20.70	44.70	45.68
Other (specify in comments) (f)			0.64	0.64	0.64
None/unknown (g)	3102.00	4724.85	3663.31	2871.16	2392.27
Total forest area	4268.00	5970.76	5 962.03	5 962.03	5 962.03

Total area with designated management objective

Designated management objective, regardless whether it is primary or not. The different designation categories are *not exclusive*. Hence, areas can be reported more than once e.g. Forest area reported as primary management objective "Multiple use" should be reported on for each management objectives. Thus, the sum of the different management objectives can be larger than the total forest area.

FRA 2020 categories	Forest area (1000 ha)				
	1990	2000	2010	2015	2020
Production	216.00	612.91	1 609.41	1 922.76	2 648.03
Protection of soil and water					
Conservation of biodiversity	1030.00	1030.00	1163.32	1163.69	1220.81
Social Services			2.06	2.06	2.06
Other (specify in comments)	3022.00	4327.85	3187.24	2873.52	2091.13

Comments

The other category of above-mentioned forest is remaining forest area of primarily designated objective which is basically government managed forest. There is not any particular forest designated for the protection of soil and water which fulfills the criteria of primary designated management objective.

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

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
GoN, 1973. National Park and Wildlife Conservation Act 1973. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1973	
MoFSC, 1988. Master Plan for the Forestry Sector in Nepal. Kathmandu, Nepal.	H	Forest Areas	1988	
GoN, 1995. Forest Act 1993 and Forest Regulation 1995. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1993 1995	
MoFSC, 2002. Nepal Biodiversity Strategy. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Community, Lease hold, Production, PAs, Protection Forest.	1988 to 2002	
GoN, 2007. The three year interim Plan (2007-2010). Government of Nepal. National Planning Commission, Nepal	H	Area of Community. Forest and PAs	2007	
DFRS, 2015. State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.	H	Forest Area of Protected Areas	2015	
DNPWC, 2018. Protected Areas of Nepal	H	Area of Protected Areas	2018	
DoF, 2004, 2011, 2018. Hamro Ban an annual report of Department of Forests.	H	Forest area according to different management regime	2004, 2011, 2018	

National classification and definitions

Definitions

Nepal's forest outside the protected areas is legally categorized into National forests and Private forests. The National Forest includes Government managed Forest, Protected Forest, Community Forest, Leasehold Forest, Religious Forest and Collaborative Forest. The ownership and control of the national forest lies with the government and that of the private forest lies with the owner of the forest. All the national forest other than the government manage forest, only the usufruct right has been given to the users. Whereas, protected areas are defined differently as National Park, Strict Nature Reserve, Wildlife Reserve, Hunting Reserve, Conservation Area and Buffer Zone respectively. Similarly the ownership and control of protected areas lies within government and all sorts of activities are restricted and monitored strictly.

National class	Definition
National Forest	All forests excluding private forest within Nepal, whether marked and unmarked with forest boundaries and the terms shall also includes waste or uncultivated lands or unregistered lands surrounded by the forest or situated near the adjoining forest as well as paths, ponds, lakes, rivers or streams and riverine lands within the forest.
Government Managed Forest	"Government Managed Forest" means a National Forest to be managed by Government of Nepal .
Protected Forest	"Protected Forest" means a National Forest declared by Government of Nepal as a Protected Forest pursuant to this Act, considering it to be of special environmental, scientific or cultural importance
Community Forest	"Community Forest" means the National Forest handed over to users group for the development, protection and utilization of common interest in the interest of the community.

Leasehold Forest	“Leasehold Forest” means a National Forest handed over as a Leasehold Forest to any institution established under prevailing laws, industry based on Forest Products or community.
Religious Forest	“Religious Forest” means a National Forest handed over to a religious body, group or community for its development, conservation and utilization.
Collaborative Forest	A part of national forest managed in collaboration with District forest office, local level and user group.
Private Forest	“Private Forest” means a Forest planted, nurtured or conserved in any private land owned by an individual pursuant to prevailing laws.

Original data

A. Protected Areas

Protected Areas (Year of Establishment)	1990 000 ha	2000 000 ha	2002 000 ha	2005 000ha	2008 000 ha	2010 000 ha	2015 000ha	2018 000 ha	Forest & Shrub 000 ha (%)
National Park (NP)									
Chitwan NP (1973)	93.2	93.2	93.2	93.2	93.2	93.2	93.2	95.3	81.07 (85.1)
Bardia NP (1976/1988)	96.8	96.8	96.8	96.8	96.8	96.8	96.8	96.8	na
Shivapuri and Nagarjun NP (2002)			14.4	14.4	15.9	15.9	15.9	15.9	
Khaptad NP (1984)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Makalu Barun NP (1991)		150	150	150	150	150	150	150	86
Sagarmatha NP (1976)	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	2
Langtang NP (1976)	171	171	171	171	171	171	171	171	69
SheyPhoksundo NP (1984)	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	
Rara NP (1976)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	
Banke NP (2010)						55	55	55	
Shukla Phanta (1976/2017)								30.5	(21.4) 70%
Parsa NP (1984/2017)								62.7	92
Sub Total NP	864.4	1014.4	1028.8	1028.8	1030.3	1085.3	1085.3	1180.6	
Wildlife Reserve (WR)									
KoshiTappu WR (1976)	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	10
Parsa WR (1984)	50	50	50	50	50	50	50	0	
Suklaphanta WR (1976)	30.5	30.5	30.5	30.5	30.5	30.5	30.5	0	
Sub Total WR	98.0	98.0	98.0	98.0	98.0	98.0	98.0	17.6	
Hunting Reserve (HR)									
Dhorpatan HR (1987)	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5	
Sub Total HR	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5	
Conservation Area (CA)									
Kanchenjunga CA (1997)		203.5	203.5	203.5	203.5	203.5	203.5	203.5	49
Manaslu CA (1998)		166.3	166.3	166.3	166.3	166.3	166.3	166.3	
Annapurna CA (1986, 1992)		762.9	762.9	762.9	762.9	762.9	762.9	762.9	153
Apinampa CA (2010)						190.3	190.3	190.3	
Gaurishankar CA (2010)						217.9	217.9	217.9	
Krishnasar CA (2009)						1.6	1.6	1.6	
Sub Total CA		1132.7	1132.7	1132.7	1132.7	1542.6	1542.6	1542.5	
Buffer Zone									
Chitwan NP(1996)		75	75	75	75	75	72.9	72.9	na
Bardia NP(1996)		32.7	32.7	32.7	32.7	32.7	32.7	32.7	
Makalu Barun NP(1999)		83	83	83	83	83	83	83	
Langtang NP(1998)		42	42	42	42	42	42	42	
SheyPhoksundo NP(1998)		45	45	135	135	135	135	135	
Sagarmatha NP(2002)			27.5	27.5	27.5	27.5	27.5	27.5	
Suklaphanta WR(2004)				24.4	24.4	24.4	24.4	24.4	
Koshitappu WR(2004)				17.4	17.4	17.4	17.4	17.4	
Parsa WR(2005)					28.5	28.5	28.5	28.5	
Rara NP(2006)					19.8	19.8	19.8	19.8	
Kaptad NP(2006)					21.6	21.6	21.6	21.6	
Banke NP (2010)						34.3	34.3	34.3	
Shivapuri and Nagarjun NP (2016)								11.6	
SubTotal Buffer Zone	0	305	305	437	508	508	508	550.6.9	

B. Summary

Protected Areas (Year of Establishment)	1990 000 ha	2000 000 ha	2002 000 ha	2005 000ha	2008 000 ha	2010 000 ha	2015 000 ha	2018 000 ha
National Park (NP)	864.4	1014.4	1028.8	1028.8	1030.3	1085.3	1085.3	1180.6
Wildlife Reserve	98	98	98	98	98	98	98	17.5
Hunting Reserve	132.5	132.5	132.5	132.5	132.5	132.5	132.5	132.5
Conservation area		1132.7	1132.7	1132.7	1132.7	1542.6	1542.6	1542.6
Bufferzone area	0	305	305	437	508	508	508	568.9
Total	1094.9	2682.6	2697	2829	2901.5	3366.4	3366.4	3442.1

C. Forest Areas

National Category	Year	Forest Area in 000 ha
Community Forest	1986	48.5
	1994	112.626
	1997	352.326
	2002	854.389
	2004	1187.02
	2008	1270.43
	2011	1665.42
	2015	1813.49
	2018	2237.67
Leasehold forest (commercial)		
	2015	0.64
	2018	0.64
Leasehold forest (Pro-poor)	1998	7.011
	2004	9.46
	2011	18.34
	2015	42.34
	2018	43.32
Protected Areas	2018	3442.1
Production Forest	1986	31
	1990	136
	2002	298.7
	2005	345
	2008	578
Protected Forest	2002	0.17
	2010	133.32
	2011	133.32
	2015	133.69
	2018	190.81
Private Forest	2000	2.01
	2004	2.3
	2011	2.36
	2015	2.36
	2018	2.36
Collaborative Forest	2011	54.07
	2015	63.93
	2018	76.01
Religious Forest	2002	
	2018	2.06

Analysis and processing of national data

Estimation and forecasting

Total forested area for National Parks and Wildlife Reserves are considered 40% of total area and 10% of that in Hunting Reserves. The total forest area in core area protected areas are seen constant which is taken same until the year 2020. The forested area of Conservation Area is considered as 20% and that of Bufferzone Area is 42.2%. In this way total forested area and forest area of core and Bufferzone equals the forest area of protected areas indicated by recent national forest data. The proposed protected forest area is added for the year 2019 and 2020 to the total protected forest.

Reclassification into FRA 2020 categories

A. Reclassification into forest area within protected areas and forest area with long-term management plans FRA 2020 categories

National Classes	Percentage of National Class into FRA 2020 Categories		
	Forest area within protected area	Forest area with long-term forest management plan	Forest area of which in protected areas
National Park	100	100	100
Wildlife Reserve	100	100	100
Hunting Reserve	100	100	100
Conservation Area		100	100
Buffer Zone		100	100
Protected Forest		100	
Collaborative Forest		100	

FRA categories	Area (1000 ha)								
	1990	2000	2010	2015	2016	2017	2018	2019	2020
Forest area within protected areas	1030	1030	1030	1030	1030	1030	1030	1030	1030
Forest area with long-term forest management plan	3238	4940.76	4932.03	4932.03	4932.03	4932.03	4932.03	4932.03	4932.03
...of which in protected areas	1030	1030	1030	1030	1030	1030	1030	1030	1030

Comments

All forests are managed under different management regime with long-term management plan. In the 1994 National forest inventory we did not measure Protected areas. We have only the data of protected areas from the 2010 FRA,

4a Forest ownership

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
GoN, 1973. National Park and Wildlife Conservation Act 1973. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1973	
MoFSC, 1988. Master Plan for the Forestry Sector in Nepal. Kathmandu, Nepal.	H	Forest Areas	1988	
GoN, 1995. Forest Act 1993 and Forest Regulation 1995. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1993 1995	
MoFSC, 2002. Nepal Biodiversity Strategy. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Community, Lease hold, Production, PAs, Protection Forest.	1988 to 2002	
GoN, 2007. The three year interim Plan (2007-2010). Government of Nepal. National Planning Commission, Nepal	H	Area of Community. Forest and PAs	2007	
DFRS, 2015. State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.	H	Forest Area of Protected Areas	2015	
DNPWC, 2018. Protected Areas of Nepal	H	Area of Protected Areas	2018	
DoF, 2004, 2011, 2018. Hamro Ban an annual report of Department of Forests.	H	Forest area according to different management regime	2004, 2011, 2018	

National classification and definitions

Definitions

Nepal's forest is legally categorized into National forests and Private forests. The National Forest includes Government-managed Forest, Protected Forest, Community Forest, Leasehold Forest, Religious Forest and Collaborative Forest. The ownership and control of the national forest lies with the government and that of the private forest lies with the owner of the forest. In case of the community forest and leasehold forest, only the usufruct right has been given to the users.

National class	Definition
National Forest	All forests excluding private forest within Nepal, whether marked and unmarked with forest boundaries and the terms shall also include waste or uncultivated lands or unregistered lands surrounded by the forest or situated near the adjoining forest as well as paths, ponds, lakes, rivers or streams and riverine lands within the forest.
Government Managed Forest	"Government Managed Forest" means a National Forest to be managed by Government of Nepal .
Protected Forest	"Protected Forest" means a National Forest declared by Government of Nepal as a Protected Forest pursuant to this Act, considering it to be of special environmental, scientific or cultural importance
Community Forest	"Community Forest" means the National Forest handed over to user groups for the development, protection and utilization of common interest in the interest of the community.
Leasehold Forest	"Leasehold Forest" means a National Forest handed over as a Leasehold Forest to any institution established under prevailing laws, industry based on Forest Products or community.
Religious Forest	"Religious Forest" means a National Forest handed over to a religious body, group or community for its development, conservation and utilization.

Collaborative Forest	A part of national forest managed in collaboration with District forest office, local level and user group.
Private Forest	“Private Forest” means a Forest planted, nurtured or conserved in any private land owned by an individual pursuant to prevailing laws.

Original data

Information on private forests is only available after 2000 A.D. The total area of registered “private forests” as on Jan 2000 is 2360 hectares Hamro Ban, Annual Report, 2075 B.S. (2018 AD, Department of Forest)). As per the community forestry division (Do, 2018) total area of registered Private forest is 2902 ha. The remaining area is all national forest and owned by the government of Nepal. All the below mention data are based on “Hamro Ban” annual report of Department of Forest.

National Category	Year	Forest Area in 000 ha
Community Forest	1986	48.5
	1994	112.626
	1997	352.326
	2002	854.389
	2004	1187.02
	2008	1270.43
	2011	1665.42
	2015	1813.49
	2018	2237.67
Leasehold forest (commercial)		
	2015	0.64
	2018	0.64
Leasehold forest (Propoor based)	1998	7.011
	2004	9.46
	2011	18.34
	2015	42.34
	2018	43.32
Protected Areas	2018	3442.1
Production Forest	1986	31
	1990	136
	2002	298.7
	2005	345
	2008	578
Protected Forest	2002	0.17
	2010	133.32
	2011	133.32
	2015	133.69
	2018	190.81
Private Forest	2000	2.01
	2004	2.3
	2011	2.36
	2015	2.36
	2018	2.36
Collaborative Forest	2011	54.07
	2015	63.93
	2018	76.01
Religious Forest	2002	
	2018	2.06

Analysis and processing of national data

Estimation and forecasting

All the forest except the registered private forest is considered as public forest. The private registered forest area remained same since long time. There is relatively small amount of private forest of which the data is not available. So this is not taken into consideration.

Reclassification into FRA 2020 categories

Categories	Percentage of a National Class belonging to a FRA Class		
	Public Ownership	Private Ownership	Other Ownership
National Forest	100	-	-
Private Forest		100	

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Private ownership (a)	2.01	2.36	2.36	2.36
...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)	4265.99	5968.4	5959.63	5959.63
Unknown/other (specify in comments) (c)	0	0	0.04	0.04
Total forest area	4268	5970.76	5962.03	5962.03

Comments

The private forest is not as exact as defined by FAO on the basis crown cover and area. Private forest is the area registered as private forest, if there are at least some trees however there were similar types of trees grown in private land and not considered as private forest if they are not registered legally.

4b Holder of management rights of public forests

National Data

Data sources + type of data source eg NFI, etc

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
GoN, 1973. National Park and Wildlife Conservation Act 1973. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1973	
MoFSC, 1988. Master Plan for the Forestry Sector in Nepal. Kathmandu, Nepal.	H	Forest Areas	1988	
GoN, 1995. Forest Act 1993 and Forest Regulation 1995. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Legal Definitions	1993 1995	
MoFSC, 2002. Nepal Biodiversity Strategy. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.	H	Community, Lease hold, Production, PAs, Protection Forest.	1988 to 2002	
GoN, 2007. The three year interim Plan (2007-2010). Government of Nepal. National Planning Commission, Nepal	H	Area of Community. Forest and PAs	2007	
DFRS, 2015. State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey (DFRS). Kathmandu, Nepal.	H	Forest Area of Protected Areas	2015	
DNPWC, 2018. Protected Areas of Nepal	H	Area of Protected Areas	2018	
DoF, 2004, 2011, 2018. Hamro Ban an annual report of Department of Forests.	H	Forest area according to different management regime	2004, 2011, 2018	

National classification and definitions

Definitions

Nepal's forest is legally categorized into National forests and Private forests. The National Forest includes Government-managed Forest, Protected Forest, Community Forest, Leasehold Forest, Religious Forest and Collaborative Forest. The ownership and control of the national forest lies with the government and that of the private forest lies with the owner of the forest. In case of the community forest and leasehold forest, only the usufruct right has been given to the users.

National class	Definition
NationalForest	All forests excluding private forest within the kingdom of Nepal, whether marked and unmarked with forest boundaries and the terms shall also include waste or uncultivated lands or unregistered lands surrounded by the forest or situated near the adjoining forest as well as paths, ponds, lakes, rivers or streams and riverine lands within the forest.
Government ManagedForest	A national forest to be managed by Government of Nepal.
ProtectedForest	A national forest declared by His Majesty's Government as the protected forest considering it to be of special environmental, scientific or cultural importance.
CommunityForest	A national forest handed over to an user group for its development, conservation and utilization for the collective interest.
LeaseholdForest	A national forest handed over to any institution established on the prevailing laws, industry based on forest products or community for the purposes of conservation and development of forest.
ReligiousForest	A national forest handed over to any religious body, group or community for its development, conservation and utilization.
CollaborativeForest	A part of national forest managed in collaboration with District forest office, local level and user group .
PrivateForest	A forest planted, nurtured or conserved in any private land own by an individual pursuant to prevailing law.

Original data

Only 3,753 private individuals have registered 2,902 ha of their forests as PFs at their respective DFOs (DoF, 2017). According to DOF (Hamro Ban 2011) registered private forest area was 2360.84 ha and in 2004 the area is 2333.4 ha. The total area of registered "private forests" as on Jan 2000 was 2090.82 hectares (GoN and MoFSC, 2002). Information on private forests "before this date" is not available.

National Category	Year	Forest Area in 000 ha
Community Forest	1986	48.5
	1994	112.626
	1997	352.326
	2002	854.389
	2004	1187.02
	2008	1270.43
	2011	1665.42
	2015	1813.49
	2018	2237.67
Leasehold forest (commercial)		
	2015	0.64
	2018	0.64
Leasehold forest (Propoor based)	1998	7.011
	2004	9.46
	2011	18.34
	2015	42.34
	2018	43.32
Protected Areas	2018	3442.1
Production Forest	1986	31
	1990	136
	2002	298.7
	2005	345
	2008	578
Protected Forest	2002	0.17
	2010	133.32
	2011	133.32
	2015	133.69
	2018	190.81
Private Forest	2000	2.01
	2004	2.3
	2011	2.36
	2015	2.36
	2018	2.36
Collaborative Forest	2011	54.07
	2015	63.93
	2018	76.01
Religious Forest	2002	
	2018	2.06

Analysis and processing of national data

Estimation and forecasting

By summing up of reclassification data of national category, interpolation has been done for the specified year if necessary.

Reclassification into FRA 2020 categories

Categories	Public Administration	Individuals	Private business entities and institutions	Local, tribal and indigenous communities	Unknown/other
Community Forest	100				
Collaborative Forest	100				
Leasehold Forest (Propoor)				100	
Religious Forest	100				
Government Managed Forest					100
Leasehold Forest(commercial)			100		

FRA categories	Forest area (1000 ha)			
	1990	2000	2010	2015
Public Administration (a)	80.6	605	1 721.55	1 721.55
Individuals (b)				
Private business entities and institutions (c)	0.64			
Local, tribal and indigenous communities (d)	7.8	0	42.34	42.34
Unknown/other (specify in comments) (e)	4725.95	5363.4	4195.74	4195.74
Total public ownership	4265.99	5968.4	5959.63	5959.63

Comments

There is not adequate information to justify the holder of management rights of public forest in different categories as per our practice.

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

-

	Area (1000 ha)								
FRA categories	2000	2001	2002	2003	2004	2005	2006	2007	2008
Insects (a)									
Diseases (b)									
Severe weather events (c)									
Other (specify in comments) (d)									
Total (a+b+c+d)									
Total forest area	5 780.76								

	Area (1000 ha)								
FRA categories	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		5 962.03					5 962.03	5 962.03	5 962.03

Comments

5b Area affected by fire

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
Total land area affected by fire									
...of which on forest									

FRA categories	Area (1000 ha)								
	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total land area affected by fire									
...of which on forest									

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

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	Yes
Traceability system(s) for wood products	Yes	No

Comments

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	Yes	4268.00	5970.76	5962.03	5962.03	5962.03

Comments

According to National Forest Act of Nepal, there is not the provision of land use conversion of forest area so they are the permanent forest state.

7a Employment in forestry and logging (3 year average)

National Data

Data sources + type of data source eg NFI, etc

-

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												
...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

Actually we have different forest management system such as government managed, community based forest management, leasehold forest management. These different systems use employee in a separate way and not recorded consistently. Those system are also varied in local community, district level and regional level which ultimately cannot support the central level data base generation. We did not have central level accounting system for employment generation from different organization.

However, number of employee working under government level is known. Those are mainly technical manpower.

7b Graduation of students in forest-related education (3 year average)

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	2		2	4	0	4	5	1	4	5	1	4
Master's degree	10	2	8	40	10	30	50	20	30	100	40	60
Bachelor's degree	40	10	30	80	20	60	120	40	80	288	120	168
Technician certificate / diploma	120	20	100	80	20	60	80	20	60	100	40	60
Total	172	32	140	204	50	154	255	81	174	493	201	292

Comments

There is increasing number of forestry graduate higher level above Technical Certificate from university. Now, there is not Technical Certificate level education in college and university. Technical certificate level is studied by Council for Technical Education and Vocational Training (CTEVT).

Initially there is Institute of Forestry in Pokhara and Hetauda which produced Technical certificate level, Bachelor's level, Master Level and Doctor level graduates. Now there is Kathmandu forestry college for Bachelor's degree and Technical Certificate start from 2005 onwards. Recently there is Agriculture and Forestry University which teach bachelor's and master degree in forestry science.

Most students before 2000 did master degree from foreign country. Master in forestry start from 1996.

7c Non wood forest products removals and value 2015

National Data

Data sources + type of data source eg NFI, etc

-

National classification and definitions

-

Original data

-

S N	Name of NWFP Product	Key species	Quantity	Unit	Value (1000 local currency)	NWFP category
1	Khoto (Pine Resin)	Rani salla (Pinus roxburghii)	1 563 545.7	kg	12 508.3656	Resin
2	Wild and oil	Jatamansi (Nardostachys grandiflora)	241 120.5	kg	3 616.8075	oil
3	Paper	Argeli (Edgeworthia gardneri)	31 895	kg	478 425	paper
4	Paper	Lokta (Daphne bhaula)	10 100.15	kg	30.30045	paper
5	Dry stem	orchid ()	700	kg	140	essential oil
6	Leaf	Lauthsalla (Taxus spp.)	46.5	kg	1.1625	essential oil
7	Cutch and kathha	Khair (Acacia catechu)	4 793.86	Cu.ft	460.8	medicine/dye
8	Other	All other plant products	42 696	kg	642.8	
All other plant products						
All other animal products						
Total					—	

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

Comments

- 2000 sps are called as NTFPs. (WWF, Nepal, 2065)
- 1463 sps of herbal medicinal plants are used by rural people of Nepal. (Government of Nepal 2014)
- 701 sps are called as medicinal plants. (Department of Plant Resources, 2004)
- 238 sps are chemically tested MAPs (Department of Plant Resources, 2004)
- More than 100 sps are highly traded (Asia Network for Sustainable Agriculture and Bioresources (ANSAB), 1997)
- 30 sps are listed for research and management.
- 12 plants have been selected for agro-technology.