GLOBAL FOREST RESOURCES ASSESSMENT 2015

COUNTRY REPORT

India

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Report preparation and contact persons

Contact persons

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

Name (FAMILY NAME, first name)	Institution/address	Email	Tables
Kumar, Anmol	Forest Survey of India, Kaulagarh Road, PO-IPE, Dehradun, India-248195	anmolkumar56@gmail.com	N/A
Kumar, Rajesh	Forest Survey of India, Kaulagarh Road, PO-IPE, Dehradun, India-248195	rajsus1@rediffmail.com	N/A
Lakhchaura, Prakash Chand	Forest Survey of India, Kaulagarh Road, PO-IPE, Dehradun, India-248195	prakash_293@rediffmail.com	N/A
N/A	N/A	N/A	N/A

Introductory Text

Place an introductory text on the content of this report

Forest Survey of India (FSI) is a national organisation under the Ministry of Environment and Forests and mandated to assess the India's forest resource periodically. Forest cover and its characteristics are assessed every two year using remote sensing technology with wall to wall approach. Growing stock and its distribution into diameter class and species, biomass stock and carbon stock are estimated through National Forest Inventory (NFI) using sample based approach. During NFI the field parties also observe the incidence of forest fire ocularly within and around sample plot in two ha area. Detection of forest fire through remote sensing technology, web based rapid response system, has also started sine November 2004. The studies of FSI are published every two year coinciding with forest cover assessment in State of Forest Report. Since 1987, 12 such reports have been published which forms the most reliable basis of information about India's forest resource. The most of the tables presented in this report are mainly based on the FSI's studies.

The Indian Council of Forestry Research and Education (ICFRE), an autonomus national organisation mandated for forestry research and education has been given the responsibility by the Ministry of Environment and Forests to produce reports on forestry statistics of India periodically. Such reports are compiled by collecting data from the state forest departments. Forestry Statistics India of ICFRE has formed the second important source of information for this report. In addition, Forest Sector Report India, 2010 has also been consulted in preparation of the report.

Anmol Kumar

Director General

Forest Survey of India

Kaulagarh Road, PO: IPE

Dehradun-248195, India

E-mail: anmolkumar56@gmail.com

Desk Study?

Check "yes" if this survey is a Desk Study, "no" otherwise	
Desk Study?	no

1. What is the area of forest and other wooded land and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

1.1 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as "Forest" spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of 5-10 percent or trees able to reach these thresholds ; or with a combined cover of shrubs bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as "Forest" or "Other wooded land".
...of which with tree cover *(sub-category)*	Land considered as "Other land", that is predominantly agricultural or urban lands use and has patches of tree cover that span more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity. It includes bothe forest and non-forest tree species.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.
Forest expansion	Expansion of forest on land that, until then, was not defined as forest.
...of which afforestation *(sub-category)*	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not defined as forest.
...of which natural expansion of forest *(sub-category)*	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).
Deforestation	The conversion of forest to other land use or the longterm reduction of the tree canopy cover below the minimum 10 percent threshold.
...of which human induced *(sub-category)*	Human induced conversion of forest to other land use or the permanent reduction of the tree canopy cover below the minimum 10 percent threshold.
Reforestation	Natural regeneration or re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.
...of which artificial reforestation *(sub-category)*	Re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.

1.2 National data

1.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report 1997. Forest Survey of India, MOEF, GOI, India.	Extent	1990, 1994	N/A

2	State of Forest Report 1999. Forest Survey of India, MOEF, GOI, India.	Extent Introduced species	1997	N/A
3	State of Forest Report, 2001. Forest Survey of India, MOEF, GOI, India.	Extent	2000	N/A
4	State of Forest Report, 2003. Forest Survey of India, MOEF, GOI, India.	Extent	Oct 2002-Jan 2003	N/A
5	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent	Oct 2004-Jan 2005	N/A
6	State Forest Departments and Ministry of Environment and Forests, Govt of India	Plantation	2000, 2005	N/A
7	India State of Forest Report, 2011. Forest Survey of India, MOEF, GOI, India.	Extent	2008	N/A
8	Forest Sector Report India 2010	Plantation	2010	N/A
9	India State of Forest Report, 2013. Forest Survey of India, MOEF, GOI, India.	Extent	October 2010 to January 2012	N/A

1.2.2 Classification and definitions

National class	Definition
Forest area	The following table (SFR, 2005) provides the classification and sub-classification and their definitions in use at Forest Survey of India, Ministry of Environment and Forests, India. The "Forest Cover" includes very dense forests, moderately dense forests and open forests including mangroves cover.
Forest Cover	All lands, more than one hectare in area, with a tree canopy density of more than 10 percent. (Such lands may not be statutorily notified as forest area).
Very Dense Forest	All lands, with a forest cover with canopy density of 70 percent and above.
Moderately Dense Forest	All lands, with a forest cover with canopy density of 40-70 percent
Open Forest	All lands, with forest cover with canopy density of 10 to 40 percent.
Mangrove Cover	Mangrove forest is salt tolerant forest ecosystem found mainly in tropical and sub-tropical coastal and/or inter-tidal regions. Mangrove cover is the area covered under mangrove vegetation as interpreted digitally from remote sensing data. It is a part of forest cover and also classified into three classes viz. very dense, moderately dense and open.

Non Forest Land	Mangrove forest is salt tolerant forest ecosystem found mainly in tropical and sub-tropical coastal and/or inter-tidal regions. Mangrove cover is the area covered under mangrove vegetation as interpreted digitally from remote sensing data. It is a part of forest cover and also classified into three classes viz. very dense, moderately dense and open.
Non Forest Land	Lands without any forest cover.
Recorded Forest Area	Geographic areas recorded as forests in Government records.
Scrub	All lands, generally in and around forest areas, having bushes and or poor tree growth chiefly small or stunted trees with canopy density less than 10 percent.
Tree Cover	It comprises tree patches (blocks and linear) outside the recorded forest area exclusive of forest cover and less than the minimum mapable area of 1 ha. The areas of scattered trees are computed notionally.
Trees Outside Forests	Trees growing outside Recorded Forest Areas
Forest expansion, reforestation	The classification and definitions are same as in the FRA.

1.2.3 Original data

Forest area

The following table presents the national data on forest cover in India compiled from biennial "State of Forest Report (SFR)"of FSI as updated and revised in the various reports.

Category	Sub-Category	Extent in "000" ha								
		1990	**1992**	**1994**	**1997**	**2000**	**2002**	**2004**	**2008**	**2011**
Forest Cover	**Very dense**	38 514	38 532	36 726	37 736	39 517	5 452	6 457	8347	8350
	Moderately Dense						33 406	33 265	32073	31875
	Open	24 999	24 903	26 131	25 506	25 873	28 924	28 987	28782	29565
	Mangrove	426	453	483	487	448*	445*	445*	466*	428*
	Sub-Total	**63 939**	**63 888**	**63 340**	**63 729**	**65 390**	**67 782**	**67 709**	**69203**	**69790**
Non Forest	**Tree Cover**	-	-	-		8 147	9 990	9 166	9084	9127
	Scrub	5 894	6 052	5 270	5 190	4 732	4 027	3 848	4218	4138

	Other NF [1]	258 893	258 786	260 116	259 807	250 457	246 927	248 003	246221	245672
	Sub-Total	264 787	264 838	265 386	264 997	263 336	260 944	261 017	259523	258937
Country Total Area	**TOTAL**	**328 726**	**328 726**	**328 726**	**328 726**	**328 726**	**328 726**	**328 726**	**328 726**	**328 726**

(Note: 1. NF= Non Forest. It includes 31407 (000 ha) of Inland water bodies .

* the areas of mangroves though separately shown are already included in very dense ,moderately dense and open forest categories. In the sub-total of forest cover of 2000, 2002, 2004 and 2008, the areas of mangroves have to be excluded.

Until 1997, the mangrove was a separate category of forest cover and it was not possible to classify it into dense and open categories. Since 2000, the mangrove cover was classified into three categories namely very dense, moderately dense and open and hence the same was merged with forest cover. The figure of mangrove cover shown for 2000, 2002, 2004 and 2008 has already been included under, VDF, MDF and OF. Hence sub-total and total will not match for these years. Since mangrove is an eco-system and hence separately shown.

The "total area" of the country reported in SFRs matches completely with the total area figure in FAOSTAT and at the UN Statistical Division. The difference between the "Land Area" and the "Total Area" for a year in the FAOSTAT leads to the following figures of the area of "Inland water bodies".

Categories	**Extent in "000"ha.**
Total Country Area	**328 726**
Land Area	**297 319**
Inland Water bodies	**31 407**

Forest expansion, reforestation

The national data on afforestation and reforestation is not separately maintained. Ministry of Environment and Forests compiles the information on afforestation and reforestation as reported by State Forest Departments. There are two components in the reporting by the state forest departments, area under block plantation and number of seedlings distributed. The number of seedlings distributed are converted into area by a notional number where 2000 seedlings are considered equal to 1 ha. The area given in the following table comprises of both area planted as well as notional area. The notion area may not qualify the definition of forest hence may not add up in forest area.

Categories	Annual forest establishment (hectares/year)			
	1990	2000	2005	2010
Afforestation	1 688 600	1 500 000	1 480 000	1547130
Reforestation				

1.3 Analysis and processing of national data

1.3.1 Adjustment

Forest area

The land area figures for the whole country match with the land area figure with UN Statistical Division at New York USA. therefore, there is no need to calibrate the national data.

Forest expansion, reforestation

No calibration is required.

1.3.2 Estimation and forecasting

Forest area

The information about forest cover as given in ISFR 2011 pertains to data period Oct, 2008 to March, 2009. For projecting estimates of forest and other wooded land for 2010 and 2015, annual growth rate during 2000 to 2008 has been taken as there has been no change in the methodology within this period. For tree cover annual growth rate during 2000 to 2008 has been taken to forecast tree cover for 2010 and 2015.

National Category	Forecasted Extent in "000"ha

	2010	2015
Forest Cover	69790	70 624
Tree Cover	9127	8941
Scrub	4138	446

For estimation of tree cover for 1990, the estimate of tree cover for 2000 has been extrapolated backward by average annual change during 2005 & 2000.

1.3.3 Reclassification

Forest area

The national definitions have been used for re-classification into the FRA categories. To report the area of "Tree Cover" outside the forests, the area of tree cover falling between 0.5 ha to 1.0 ha as obtained from NFI has been estimated to be 1,335,000 ha area, which constitutes about 15% of the total and has been reclassified as "Other land with tree cover" for FRA purpose.

Table: Reclassification (Percentage allocation) into FRA classes (excluding Inland water)

National Categories	National Classes	Percentage of a National class belonging to a FRA Class or category			
		Forests	Other Wooded Land	Other Land with Tree Cover	Other Land
Forest Cover		100			
Non Forest					
	(i) Scrub		100		
	(ii) Tree Cover			15	85
	(iii) Other Non Forest [1]				100

(Note:1.. Area of Other Non-Forest includes area of "Inland water bodies")

FSI does not separately provide the area of "Inland Water bodies" but includes it in the Non-Forest Area. The figures of the total area of India reported by FSI and the UN Statistical Division and FAOSTAT match, therefore, the area of "Inland Water bodies" (31.407 million ha.) as reported by UN Statistical division is being used as national data as well as FRA data.

The area figure for Inland water bodies in the UN Statistical database is the same for 1990 and 2000, and the same is being assumed for 2005 and 2010.

Forest expansion, reforestation

Available data and information does not allow re-classification of the plantation area into area under afforestation and reforestation.

1.4 Data

Table 1a

	Categories	Area (000 hectares)				
		1990	**2000**	**2005**	**2010**	**2015**
CFRQ	Forest	63939	65390	67709	69790	70682
CFRQ	Other wooded land	5894	4732	3848	4138	4124
CFRQ	Other land	227486	227197	225762	223391	222513
CFRQ	... of which with tree cover	916	1222	1375	1369	1366
CFRQ	Inland water bodies	31407	31407	31407	31407	31407
	TOTAL	328726.00	328726.00	328726.00	328726.00	328726.00

Table 1b

	Categories	Annual forest establishment / loss (000 hectares per year)				...of which of introduced species (000 hectares per year)			
		1990	**2000**	**2005**	**2010**	**1990**	**2000**	**2005**	**2010**
CFRQ	Forest expansion	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which afforestation	1133	1007	993	1038	N/A	N/A	N/A	N/A
CFRQ	... of which natural expansion of forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	Deforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

CFRQ	... of which human induced	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	Reforestation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which artificial	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend
Forest	Tier 3	Tier 3
Other wooded land	Tier 3	Tier 3
Forest expansion	N/A	N/A
Deforestation	N/A	N/A
Reforestation	N/A	N/A

Tier criteria

Category	Tier for status	Tier for reported trend
• Forest • Other wooded land • Afforestation • Reforestation • Natural expansion of forest • Deforestation	**Tier 3** : Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs **Tier 2** : Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago) **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	The national definition of forest cover has two deviations from FRA definition namely, the minimum area of forest cover is 1 ha instead of 0.5 and the forest cover is irrespective of the land use.	Since 2001 assessment there has been change in the methodology. The interpretation for the entire country became digital from visual and scale of mapping became 1:50,000 from 1:250,000 with minimum mapping area 1 ha. The areas less than 25 ha and up to 1 ha not mapped earlier were also included.
Other wooded land	N/A	N/A
Other land	N/A	N/A
Other land with tree cover	The area of tree cover falling between 0.5 ha to 1.0 ha as obtained from NFI	N/A
Inland water bodies	N/A	N/A
Forest expansion	Natural expansion of forest No national statistics is maintained for this category.	N/A

Deforestation	N/A	N/A
Reforestation	The statistics on afforestation and reforestation are not separately maintained in India. However, the combined estimates of afforestation and reforestation are given at 1.3.2 in the original data. These are reported figures of plantations which could be at variance with actual figures. It is also pertinent to mention here that this area is not directly adding up to the forest area of the country as some of the area which is notional is not meeting the definition of forest.	N/A

Other general comments to the table
Forest area The Forest Survey of India (FSI) is a Government of India organization under the Ministry of Environment & Forests. Since 1987, it has been regularly assessing the extent of forest at an interval of 2 years and publishing this information in the "State of Forest Report" (SFR). The SFRs form the basis of information for this reporting table. The first SFR was published as SFR 1987 using 1981-83 remotely sensed images. The SFR are generally known by their assessment year and contains information on forest resources of the country. Following table presents the assessment year, data periods of the satellite imageries, sensors, their spatial resolution and scale of interpretation. Assessment Year Data Period Sensor Resolution Scale of Interpretation Method of interpretation 1987 1981-83 Landsat – MSS 80 m 1:1 million Visual 1989 1985-87 Landsat - MSS 30 m 1:250000 Visual 1991 1987-89 Landsat - MSS 30 m 1:250000 Visual 1993 1989-91 Landsat - MSS 30 m 1:250000 Visual 1995 1991-93 IRS-1B LISS II 36.25 m 1:250000 Visual/digital 1997 1993-95 IRS-1B LISS II 36.25 m 1:250000 Visual/digital 1999 1996-98 IRS-1C/1D LISS III 23.5 m 1:250000 Visual/digital 2001 2000 IRS-1C/1D LISS III 23.5 m 1:50000 digital 2003 2002 IRS-1C/1D LISS III 23.5 m 1:50000 digital 2005 2004 IRS-P6 LISS III 23.5 m 1:50000 digital 2009 2006 IRS-P6 LISS III 23.5 m 1:50000 digital 2011 2008 IRS-P6 LISS III 23.5 m 1:50000 digital 2013 2011 Resourcesat-II LISS III 23.5 m 1:50000 digital The forest cover mapping work for 13th cycle is completed. Forest expansion, reforestation Note: The estimates are on the basis of five years average and inclusive of both afforestation and reforestation. Ministry of Environment and Forests compiles the information as reported by State Forest Department. Other information of table 5 is not available. Introduced species includes Eucalyptus spp., Populus spp., Acacia auriculiformis and Acacia mearnsii etc. The field work for forest/TOF inventory for the cycle 2012-14 has been completed. The forest cover mapping work for 13th cycle is completed.

2. What is the area of natural and planted forest and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

2.1 Categories and definitions

Term	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Naturalized introduced species	Other naturally regenerated forest where the tree species are predominantly non-native and do not need human help to reproduce/maintain populations over time.
Introduced species	A species, subspecies or lower taxon occurring outside its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
Category	**Definition**
Primary forest	Naturally regenerated forest of native species where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
...of which of introduced species *(sub-category)*	Other naturally regenerated forest where the trees are predominantly of introduced species.
...of which naturalized *(sub-sub category)*	Other naturally regenerated forest where the trees are predominantly of naturalized introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
...of which of introduced species *(sub-category)*	Planted forest where the planted/seeded trees are predominantly of introduced species.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
...of which planted *(sub-category)*	Mangroves predominantly composed of trees established through planting.

2.2 National data

2.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report 1997. Forest Survey of India, MOEF, GOI, India.	Extent	1990	N/A
2	State of Forest Report 1999. Forest Survey of India, MOEF, GOI, India.	Planted forests	1997	N/A
3	National Forest Inventory Database of FSI	Primary forests, other naturally regenerated forest, planted forests and bamboo	2005, 2010	N/A

| 4 | State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India. | Mangrove | 2004 - 2007 - 2009 - 2011 | N/A |

2.2.2 Classification and definitions

National class	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Naturalized introduced species	Other naturally regenerated forest where the tree species are predominantly non-native and do not need human help to reproduce/maintain populations over time.
Introduced species	A species, subspecies or lower taxon, occurring outside its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
Mangrove cover	Mangrove forest is salt tolerant forest ecosystem found mainly in tropical and sub-tropical coastal and/or inter-tidal regions. Mangrove cover is the area covered under mangrove vegetation as interpreted digitally from remote sensing data. It is a part of forest cover and also classified into three classes viz. very dense, moderately dense and open.

2.2.3 Original data

Categories	2005	2010
Primary Forest	15701	15701
Other naturally regenerated forest	42522	42950

2.3 Analysis and processing of national data

2.3.1 Adjustment

No calibration is required.

2.3.2 Estimation and forecasting

The estimates of primary forest and other naturally regenerated forest have been generated from NFI data. The primary and other naturally regenerated forest for 2015 has been assumed to be same as in 2011. The increase in the forest cover in 2015 will be attributed to planted forest only. The area of introduced species in planted

forest has been estimated from plantation data as given in SFR 1999. For other previous years the NFI data of 2005 is assumed to be valid and for 2010 and 15, the NFI data of 2009 is valid .

FRA 2010 Categories	Forecasted (1000 hectares)
	2015
Primary forest	15701
Other naturally regenerated forest	42950
...of which of introduced species	n.a.
Planted forest	
...of which of introduced species	12031
TOTAL	1576

Rubber plantation area is avaiablabe for the year 2000 and 2005. For estimating the area for 2010, annual growth rate during 2000 and 20056 has been taken. For forecasting the area under rubber planation for the year 2015, the same growth rate has been applied. Area under mangroves is available from ISFR 2013. For estimating area of mangroves for 2015, annual growth rate during 2000 to 2010 has been taken.   The area under bamboo has been assumed to be the same as given for the year 2010.

FRA 2010 Categories	Forecasted area (1000 hectares)
	2015
Rubber plantations (Forest)	665
Mangroves (Forest and OWL)	418
Bamboo (Forest and OWL)	13960

2.3.3 Reclassification

The FRA and national definitions for mangrove are same. For information on categories of FRA has been estimated from NFI data and therefore, there is no requirement of reclassification.

2.4 Data

Table 2a

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
CFRQ	Primary forest	15701	15701	15701	15701	15701
CFRQ	Other naturally regenerated forest	42522	42522	42522	42950	42950
CFRQ	... of which of introduced species	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which naturalized	N/A	N/A	N/A	N/A	N/A
CFRQ	Planted forest	5716	7167	9486	11139	12031
CFRQ	... of which of introduced species	749	939	1243	1460	1576
TOTAL		63939.00	65390.00	67709.00	69790.00	70682.00

Table 2b

Primary forest converted to (000 ha)								
1990-2000			2000-2010			2010-2015		
Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land	Other natural regeneration	Planted	Other land
0	0	0	0	0	0	0	0	0

Table 2c

Categories	Area (000 hectares)				
	1990	2000	2005	2010	2015
Mangroves (forest and OWL)	426	448	445	428	418
... of which planted	N/A	N/A	N/A	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend
Primary forest	Tier 3	Tier 3
Other naturally regenerated forest	Tier 3	Tier 3
Planted forest	Tier 3	Tier 3

Mangroves	Tier 3	Tier 3

Tier Criteria

Category	Tier for status	Tier for reported trend
Primary forest/Other naturally regenerated forest/Planted forest	**Tier 3** : Data sources: Recent (less than 10 years) National Forest Inventory or remote sensing with ground truthing or data provided by official agencies or programme for repeated compatible NFIs **Tier 2** : Data sources: Full cover mapping/ remote sensing or old NFI (more than 10 years) **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	N/A	N/A
Other naturally regenerating forest	N/A	According to NFI completed in 2012 (relating to the year 2009), the area under this category has been estimated and reported for the year 2009. The same figure has been assumed for 2015 as well.
Planted forest	N/A	The increase in the forest cover in 2011 and 2015 other than 'other naturally regenerated forest' has been attributed to planted forest.
Mangroves	N/A	N/A

Other general comments to the table
National statistics in India are not maintained by characteristic of Forests. The same have been estimated on the basis of NFI data.

3. What are the stocks and growth rates of the forests and how have they changed?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

3.1 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees with a minimum diameter of 10 cm at breast height (or above buttress if these are higher). Includes the stem from ground level up to a top diameter of 0 cm, excluding branches.
Net Annual Increment (NAI)	Average annual volume of gross increment over the given reference period less that of natural losses on all trees, measured to minimum diameters as defined for "Growing stock".
Above-ground biomass	All living biomass above the soil including stem stump branches bark seeds and foliage.
Below-ground biomass	All biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood	All non-living woody biomass not contained in the litter either standing lying on the ground or in the soil. Dead wood includes wood lying on the surface dead roots and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in above-ground biomass	Carbon in all living biomass above the soil including stem stump branches bark seeds and foliage.
Carbon in below-ground biomass	Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Carbon in dead wood	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm) lying dead in various states of decomposition above the mineral or organic soil.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a soil depth of 30 cm.

3.2 National data

3.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	FSI, 1989. State of Forest Report 1989. Forest Survey of India, Ministry of Environment and Forests, Government of India.	Extent, Growing Stock	1984	N/A
2	FSI, 1991. State of Forest Report 1989. Forest Survey of India, Ministry of Environment and Forests, Government of India	Extent, Growing Stock	1984	N/A

3	FSI, 1995. State of Forest Report 1995. Forest Survey of India, Ministry of Environment and Forests, Government of India.	Extent, Growing Stock	1994	N/A
4	FSI, 2001. State of Forest Report, 2001. Forest Survey of India, Ministry of Environment and Forests, Government of India.	Extent	2000	N/A
5	FSI, 2003. India Pilot Study. Forest Survey of India, Ministry of Environment and Forests, Government of India. (Unpublished report).	Extent, Growing Stock	2003	N/A
6	FSI, 2005. State of Forest Report, 2005. Forest Survey of India, Ministry of Environment and Forests, Government of India.	Extent, growing stock	2005	N/A
7	FSI, 2003. State of Forest Report, 2001. Forest Survey of India, Ministry of Environment and Forests, Government of India.	Extent	2000	N/A
8	Timber Mechanics: Strength, Classification and grading of timber, ICFRE Publication 38, 1996	Specific gravity	1996	N/A
9	FSI, 2013. Carbon Stock in India's Forets	Biomass, carbon stock	2004-2010	N/A

3.2.2 Classification and definitions

National class	Definition
Growing Stock	The sum-total of all trees, by number or volume (under bark) or biomass, growing within a particular area of interest.
Above-ground biomass	Same as FRA 2015
Below-ground biomass	Same as FRA 2015
Dead wood	Same as FRA 2015
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.
Carbon in below-ground biomass	Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.

Carbon in dead wood	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.
N/A	(Source: SFR205)

3.2.3 Original data

Growing stock

Following table contain national data on growing stock which is volume (under bark) of all living trees more than 10 cm in diameter at breast height (or above buttress if these are higher). It includes the stem volume from ground level or stump height up to a top diameter of 10 cm, and branches up to a minimum diameter of 5 cm.

Categories	Year			
	1990	**2000**	**2005**	**2010**
Growing Stock in million m^3	4 363	4 662	5 129	5102
Extent of Forest in "000"ha	63 939	65 390	67 709	69790

The relative ranking of these species is presented below.

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)	
Rank	Scientific name	Common name	2005	2010
1 st	*Shorea robusta*	Sal		544
2 nd	*Tectona grandis*	Teak		224
3 rd	*Pinus roxburghii*	Chir Pine		142
4 th	*Terminalia crenulata*	Saja		140
5 th	*Picea smithiana*	Spruce		135
6 th	*Anogeissus latifolia*	Dhauda		130
7 th	*Pinus wallichiana*			78
8 th	*Lannea coromandellllica*			77
9 th	*Quercus semicarpifolia*	Kharsu Oak		75
10 th	*Boswellia serrata*	Salai		71
Remaining				3487
TOTAL				5 102

Biomass stock

Categories	Year			
	1990	**2000**	**2005**	**2010**
Growing Stock in million m ^{3}	4 363	4 662	5 129	5102
Extent of Forest in "000"ha	63 939	65 390	67 709	69790

Carbon stock

Category	Biomass (million metric tonnes oven-dry weight)				
	Forest				
	1990	**2000**	**2005**	**2010**	
Above-ground biomass	2 616	2 796	4343	4531	
Below-ground biomass	825	882	1371	1435	

3.3 Analysis and processing of national data

3.3.1 Adjustment

No calibration is required.

3.3.2 Estimation and forecasting

Growing stock

The estimate of growing stocks for 2010 has been generated on the basis of NFI data conducted during 2002 to 2010. This estimate also includes estimates of growing stock in TOF of patches having area 1.0 ha or more. For forecasting estimates for 2015, the per hectare increment in growing stock was calculated on the basis of per hectare growing stock of 2000 and 2005 and applied on the projected forest area of 2010. The breakup of coniferous and broadleaves of 2005 based on the previous table in 3.2.3, has been applied on 1990, 2000 and 2010.

Biomass stock

The above ground biomass has been calculated by multiplying estimates of growing stock as given in table 3b with the specific gravity of corresponding species for 2005. For calculating below ground biomass, the default

values given by FAO/IPCC has been used. For this purpose, total estimates of above ground biomass was divided into biomass of moist and dry forest areas. Thereafter the default values for each area was multiplied to estimate the below ground biomass.

Ratio of below ground biomass to above ground biomass

Tropical moist deciduous forest	0.22 (it is an average of 0.20 and 0.24 because in India, some part of the forest have above ground biomass more than 125 tonns/ha and some part below it.)
Tropical dry forest	0.42 (it is an average of 0.28 and 0.56 because in India, some part of the forest have above ground biomass more than 20 tonns/ha and some part below it.)

Carbon stock

For estimation of carbon above ground, the carbon content of different species as available from literature was used. For below ground carbon estimation, default value as given by FAO/IPCC was applied. The Carbon in litter (excluding branch) and soil was estimated on the basis of NFI database of FSI inventoried during 2002 to 2006.

3.3.3 Reclassification

No reclassification is required.

3.4 Data
Table 3a

Category		Growing stock volume (million m^3 over bark)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Total growing stock	4363	4662	5129	5489	5167	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which coniferous	437	467	513	550	517	N/A	N/A	N/A	N/A	N/A

CFRQ	... of which broadleaved	3926	4195	4616	4939	4650	N/A	N/A	N/A	N/A	N/A

Table 3b

Category/Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	2010
1 st	Shorea robusta	Sal	321	345	377	544
2 nd	Tectona grandis	Teak	162	173	190	224
3 rd	Pinus roxburghii	Chir Pine	124	133	145	142
4 th	Terminalia crenulata	Saja	108	114	127	140
5 th	Abies smithiana	Spruce	95	103	112	68
6 th	Anogeissus latifolia	Dhauda	94	102	111	130
7 th	Quercus semecarpifolia	Kharsu Oak	82	88	96	75
8 th	Abies pindrow	Silver fir	76	81	89	68
9 th	Mangifera indica	Aam	77	81	90	14
10 th	Schima wallichii	Makrisal	71	76	83	42
Remaining			3153	3366	3709	4042
TOTAL			4363.00	4662.00	5129.00	5489.00

THE PRE-FILLED VALUES FOR GROWING STOCK REFER TO THE FOLLOWING THRESHOLD VALUES (SEE TABLE BELOW)

Item	Value	Complementary information
Minimum diameter (cm) at breast height of trees included in growing stock (X)	10cm	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	10cm	
Minimum diameter (cm) of branches included in growing stock (W)	5cm	
Volume refers to above ground (AG) or above stump (AS)	AG	

PLEASE NOTE THAT THE DEFINITION OF GROWING STOCK HAS CHANGED AND SHOULD BE REPORTED AS GROWING STOCK DBH 10 CM INCLUDING THE STEM FROM GROUND LEVEL UP TO A DIAMETER OF 0 CM, EXCLUDING BRANCHES.

Table 3c

Category		Net annual increment (m³ per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
CFRQ	Net annual increment	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which coniferous	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which broadleaved	N/A	N/A	N/A	N/A	N/A

Table 3d

Category		Biomass (million metric tonnes oven-dry weight)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Above ground biomass	2616	2796	3076	3291	3100	N/A	N/A	N/A	N/A	N/A
CFRQ	Below ground biomass	825	882	970	1038	992	N/A	N/A	N/A	N/A	N/A
CFRQ	Dead wood	N/A	N/A	54	58	58	N/A	N/A	N/A	N/A	N/A
TOTAL		3441.00	3678.00	4100.00	4387.00	4150.00	.00	.00	.00	.00	.00

Table 3e

Category		Carbon (Million metric tonnes)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
CFRQ	Carbon in above ground biomass	1691	1808	1989	2129	2006	N/A	N/A	N/A	N/A	N/A
CFRQ	Carbon in below ground biomass	532	569	626	671	641	N/A	N/A	N/A	N/A	N/A
CFRQ	*Subtotal Living biomass*	2223	2377	2764	2886	2923	N/A	N/A	N/A	N/A	N/A

CFRQ	Carbon in dead wood	25	25	25	27	27	N/A	N/A	N/A	N/A	N/A
CFRQ	Carbon in litter	75	77	121	130	132	N/A	N/A	N/A	N/A	N/A
CFRQ	*Subtotal Dead wood and litter*	100	102	146	157	159	N/A	N/A	N/A	N/A	N/A
CFRQ	Soil carbon	3751	3836	3753	3898	3948	N/A	N/A	N/A	N/A	N/A
TOTAL		6074.00	6315.00	6514.00	6855.00	6754.00	.00	.00	.00	.00	.00

Tiers

Variable/category	Tier for status	Tier for trend
Total growing stock	Tier 3	Tier 3
Net annual increment	Tier 2	Tier 2
Above ground biomass	Tier 3	Tier 3
Below ground biomass	Tier 1	Tier 1
Dead wood	Tier 2	Tier 2
Carbon in above-ground biomass	Tier 3	Tier 3
Carbon in below ground biomass	Tier 1	Tier 1
Carbon in dead wood and litter	Tier 3	Tier 3
Soil carbon	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend
Total growing stock	Tier 3: Data sources Recent 10 years National Forest Inventory or remote sensing with ground truthing or programme for repeated compatible NFI 10 years Domestic volume functions Tier 2: Data sources/registers and statistics modelling or old NFI 10 years or partial field inventory Tier 1: Other data sources	Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Domestic growth functions Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 tier for status Tier 1: Other
Net annual increment	Tier 3: Scientifically tested national volume and growth functions Tier 2: Selection of volume and growth functions as relevant as possible Tier 1: Other	Tier 3: Confirmation/adjustment of functions used through scientific work Tier 2: Review work done to seek alternative functions Tier: 1 Other

Biomass	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied or other domestic or otherwise nationally relevant biomass studies Tier 2: Application of country specific national or sub-national biomass conversion factors from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Carbon in above ground biomass • Carbon in below ground biomass • Carbon in dead wood and litter • Soil carbon	Tier 3: Country-specific national or sub-national biomass conversion expansion factors applied Tier 2: Application of country specific national or sub-national biomass conversion factors form from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
Total growing stock	The estimates for 2005 does not tally with the figure of SFR-2005 because this estimate also includes estimates of growing stock in TOF areas of patches having area 1.0 ha or more.	The methodology for estimating growing stock in 2000 an before was based on district inventory data of past several years, thematic maps and updated forest cover maps.
Growing stock of broadleaved coniferous	Original data is available only for 2005. For other years , the same proportion is used.	N/A
Growing stock composition	Note: the ranking of species for 2010 is not same as given in the table 3b for the year 2010.	N/A
Net annual increment	N/A	N/A
Above-ground biomass	The estimates of growing stock used for biomass calculation are under bark only. Hence the same is under estimated. In addition, the above ground biomass reported is only woody biomass and the limits of measurements of woody biomass has been mentioned in table 6c of growing stock. FSI has taken a study for estimating missing component of the above ground biomass, the results of which will be used to complete the total above ground biomass. Alternately, biomass expansion factor as provided by IPCC/FAO shall be used in the final report.	N/A
Below-ground biomass	In the light of the comments on above ground biomass, the below ground biomass is also under estimated.	N/A

Dead wood	FSI has undertaken a study for estimating biomass of dead wood. The results of which are not yet available.	N/A
Carbon in above-ground biomass	The carbon estimate relates to woody biomass only. Carbon content is significantly higher than the IPCC default value provided by FRA 2010 Guidelines	N/A
Carbon in below-ground biomass	Default value as provided by IPCC/FAO has been used.	N/A
Carbon in dead wood	FSI has under taken a study for estimating biomass of dead wood. The results of which were not yet available at the time of compilation of this country report.	N/A
Carbon in litter	The carbon in litter relates to humus only and excludes carbon in fallen branches of 5 cm and below. FSI has under taken a study for estimating carbon in the fallen branches. The results of which were not yet available at the time of compilation of this country report.	N/A
Soil carbon	N/A	N/A

Other general comments to the table
Growing stock Inventory of forest resources of different part of the country has been a regular activity of FSI since its inception in 1965. However the estimates of growing stock were confined only at district/catchments or state level. In 2001, the National forest inventory (NFI) was launched as a regular activity. The sampled districts are selected to generate the national level estimates of growing stock both for forest and Trees Outside Forests (TOF). The results of growing stock are being published in SFR biennially. The estimates of growing stock keeps improving as more samples are added in each cycle. Prior to 2000, FSI has estimated and published the growing stock figures only for two years: 1984 and 1994 using past field inventory data, thematic maps and forest cover maps of the concerned years. Carbon stock A special study for estimating the missing components of forest biomass including deadwood and litter was started by FSI in August 2008. Nationwide field data collection was completed by May 2009 but analysis of data was only partial till the time of the compilation of this country report. Current data has been used to make backward estimation of 2005, 2000 and 1990.

4. What is the status of forest production and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

4.1 Categories and definitions

Term	Definition
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription documented decision of the landowner/manager or evidence provided by documented studies of forest management practices and customary use.
Non wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Commercial value of NWFP	For the purpose of this table, value is defined as the commercial market value at the forest gate.
Category	Definition
Production forest	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Multiple use forest	Forest area designated for more than one purpose and where none of these alone is considered as the predominant designated function.
Total wood removals	The total of industrial round wood removals and woodfuel removals.
...of which woodfuel	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

4.2 National data

4.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report 1993. Forest Survey of India, MOEF, GOI, India.	Recorded forest area	1990	N/A
2	State of Forest Report 1997. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area	1990	N/A
3	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	2000, 2005	N/A
4	Forestry Statistics, India 1995 Indian Council of Forestry Research and Education, Dehradun, Uttaranchal, India	Production	1990	N/A
5	NFAP, 1999. National Forestry Action Plan, 1999. Ministry of Environment and Forests, Government of India, India	Designation	1993	N/A

6	National Wildlife Database. Wild Life Institute of India, India. www.wii.gov.in/nwdc/pastatistics.htm	Protected Areas	1990 -2000	N/A
7	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2004-Jan 2005	N/A
8	India State of Forest Report, 2009. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2006-Feb 2007	N/A
9	India State of Forest Report, 2011. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2008-March 2009	N/A

4.2.2 Classification and definitions

National class	Definition
Protection forests	Forest managed for biological stabilities and defined as "An area wholly or partly covered with woody growth, managed primarily for its beneficial effects on water, climate or soil rather than for forest products or services, and involving fragile lands, critical soil, catchment areas, steep slopes, and land at high altitudes. Controlled sustainable extraction of non-wood forest products are often allowed in protection forests"
Production forests	Forests managed for meeting timber requirements of the country and defined as "Forest designated for the sustained production of timber and other forest products, often with protection and/or nature conservation as recognised secondary objectives, chosen because of their potential ot provide a yield of high quality timber(or other products) in perpetuity. This category may also include degraded areas appropriate for reforestation. In general usage that term covers natural forests, forest plantations, woodlots, agroforestry plots, homestead forest etc.
Social Forests	Forests managed for meeting daily needs of local communities.
Protected Area	Forests managed as Protected Area (National Parks and Sanctuaries etc.) also termed as "Conservation area" in NFAP and defined as "Land such as national parks, reserves, protected areas, or other categories gazetted under the appropriate legislation."
N/A	The NFAP (1999) classifies and defines forests based on designation.

4.2.3 Original data

In India the national forest statistics is not maintained by the designation of forests. However, NFAP, 1999 has provided following broad information on designation of forests for 1993. The NFAP does not provide similar information for scrub areas (other wooded lands) etc.

National data.

National Classification of Forests	Area in million hectares			
	1993	**2000**	**2004**	**2010**
Protection forests (for biological stabilities)	10			
Production forests (for timber Requirements of the country)	15			
Social Forests (for meeting daily needs of local communities)	25			
Protected Area (National Parks and Sanctuaries etc,)	14	15.4	15.6	16.12
Total Forest	**64**			
Scrub (Other Wooded Lands)				

4.3 Analysis and processing of national data

4.3.1 Adjustment

No calibration is required.

4.3.2 Estimation and forecasting

For different categories under primary designated function, the estimates for 1990, 2000, 2005 and 2010 were obtained by distributing total forest area in the same proportion as provided in the NFAP except 'conservation of biodiversity'. For conversation of biodiversity category, the actual figures of protected area of 1990, 2000, 2005 and 2010 have been taken and increase/decrease in protected area was compensated by decrease/increase

in multiple-use category. For projecting estimates for 2015 under these categories the total forest area projected for 2015 was distributed in the proportion of estimates of 2010.

FRA 2010 Categories	Forestarea (1000 hectares)				
	1990	2000	2005	2010	2015
Production	16 260	16 629	17219	17748	18528
Protection of soil and water	10 000	10 227	10590	10915	11395
Conservation of biodiversity	12 740	13 029	15600	16122	16122
Social services	0	0	0	0	0
Multiple use	24 939	25 505	24300	25004	24638
Other (please specify in comments below the table)	0	0	0	0	0
No / unknown	0	0	0	0	0
TOTAL	**63 939**	**65 390**	**67709**	69790	70682

4.3.3 Reclassification

National Class	Percentage of a National Class to a FRA Classes of Primary Function					
	Production	Protection	Conservation of Biodiversity	Social Service	Multiple Function	Unknown Function.
	%	%	%	%	%	%
Production Forest	100					

Protection Forest		100				
Social Forest					100	
PA Network			100			

4.4 Data

Table 4a

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
CFRQ	Production forest	16260	16629	17219	17748	18528
CFRQ	Multiple use forest	24939	25505	20349	25004	24638

Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	Salseeds	N/A	114017	1
2 nd	Tenduleaves	N/A	108729	8
3 rd	Gums	N/A	44527	8
4 th	Resins	N/A	10848	3
5 th	Bamboo	N/A	4198700	5
6 th	Canes/ratton	N/A	2742	5
7 th	Lac	N/A	30915	8
8 th	Drugs	N/A	N/A	3
9 th	Fodder	N/A	111833800	2
10 th	others	N/A	N/A	N/A
TOTAL			116344278.00	

2010	
Name of local currency	Indian Rupees(INR)

Category
Plant products / raw material
1 Food
2 Fodder
3 Raw material for medicine and aromatic products
4 Raw material for colorants and dyes
5 Raw material for utensils handicrafts construction
6 Ornamental plants
7 Exudates
8 Other plant products
Animal products / raw material
9 Living animals
10 Hides skins and trophies
11 Wild honey and beewax
12 Wild meat
13 Raw material for medicine
14 Raw material for colorants
15 Other edible animal products
16 Other non-edible animal products

Table 4c Pre-filled data from FAOSTAT

Year	FRA 2015 category (1000 m^3 u.b.)	
	Total wood removals	**...of which woodfuel**
1990	248224	213169
1991	252103	216436

1992	255981	219703
1993	259860	222969
1994	263738	226236
1995	267617	229503
1996	271496	232770
1997	275374	236037
1998	279253	239303
1999	283131	242570
2000	287010	245837
2001	300442	258511
2002	313875	271185
2003	327307	283858
2004	340739	296532
2005	354172	309206
2006	367604	321880
2007	381036	334553
2008	394469	347227
2009	407901	359901
2010	421333	372575
2011	434766	385249

Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 1	Tier 1
Multiple use forest	Tier 1	Tier 1

Tier Criteria

Category	Tier for status	Tier for reported trend

| Production forest Multiple use forest | Tier 3: Updated including field verifications national forest maps including functions Tier 2: Forest maps older than 6 years including forest functions Tier 1: Other | **Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other |

4.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Production forest	N/A	N/A
Multiple use forest	N/A	N/A
Total wood removals	N/A	N/A
Commercial value of NWFP	N/A	N/A

Other general comments to the table
National statistics in India are not maintained by designation of Forests. However, National Forestry Action Plan (NFAP), 1999 attempted to provide broad information on designation of forest. The same proportion has been used to derive the estimates of other years. The National Forestry Action Plan of India (1999) classifies the forests of country into the following four functional categories. It does not classify "Other Wooded Lands". • Protection Forests (for biological stability) • Production Forests (for meeting timber requirements) • Social Forests (for meeting daily needs of the community) • Protected Area Network (National Parks and Sanctuaries) Information on areas on protected forests is mainly from the database maintained by the Wildlife Institute of India and Annual Reports of Ministry of Environment and Forests, Government of India. The details of these data sources are in 4.2.1.

5. How much forest area is managed for protection of soil and water and ecosystem services?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

5.1 Categories and definitions

Category	Definition
Protection of soil and water	Forest area designated or managed for protection of soil and water
...of which production of clean water *(sub-category)*	Forest area primarily designated or managed for water production, where most human uses are excluded or heavily modified to protect water quality.
...of which coastal stabilization *(sub-category)*	Forest area primarily designated or managed for coastal stabilization.
...of which desertification control *(sub-category)*	Forest area primarily designated or managed for desertification control.
...of which avalanche control *(sub-category)*	Forest area primarily designated or managed to prevent the development or impact of avalanches on human life assets or infrastructure.
...of which erosion, flood protection or reducing flood risk *(sub-category)*	Forest area primarily designated or managed for protecting communities or assets from the impacts of erosion riparian floods and landslides or for providing flood plain services.
...of which other *(sub-category)*	Forest area primarily designated or managed for other protective functions.
Ecosystem services, cultural or spiritual values	Forest area primarily designated or managed for selected ecosystem services or cultural or spiritual values.
...of which public recreation *(sub-category)*	Forest area designated or managed for public recreation.
...of which carbon storage or sequestration *(sub-category)*	Forest area designated or managed for carbon storage or sequestration.
...of which spiritual or cultural services *(sub-category)*	Forest area designated or managed for spiritual or cultural services.
...of which other *(sub-category)*	Forest area designated or managed for other ecosystem services.

5.2 National data

5.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A

3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

5.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

5.2.3 Original data

5.3 Analysis and processing of national data

5.3.1 Adjustment

5.3.2 Estimation and forecasting

5.3.3 Reclassification

5.4 Data

Table 5a

Categories			Forest area (1000 hectares)				
			1990	2000	2005	2010	2015
	CFRQ	Protection of soil and water	N/A	N/A	N/A	N/A	N/A
	CFRQ	... of which production of clean water	N/A	N/A	N/A	N/A	N/A
	CFRQ	... of which coastal stabilization	N/A	N/A	N/A	N/A	N/A

CFRQ	... of which desertification control	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which avalanche control	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which erosion, flood protection or reducing flood risk	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

Other
N/A

Table 5b

Categories	Forest area (1000 hectares)				
	1990	**2000**	**2005**	**2010**	**2015**
Ecosystem services, cultural or spiritual values	N/A	N/A	N/A	N/A	N/A
...of which public recreation	N/A	N/A	N/A	N/A	N/A
...of which carbon storage or sequestration	N/A	N/A	N/A	N/A	N/A
...of which spiritual or cultural services	N/A	N/A	N/A	N/A	N/A
...of which other (please specify in comments below the table)	N/A	N/A	N/A	N/A	N/A

Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	Tier 1	Tier 1
Ecosystem services, cultural or spiritual values	Tier 2	Tier 2

Tier criteria

Category	Tier for status	Tier for reported trend

Protection of soil and water	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations or legislation relating to soil and water protection. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Cultural or spiritual values • Public recreation • Spiritual or cultural services • Other	Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

5.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Protection of soil and water	N/A	N/A
Production of clean water	N/A	N/A
Coastal stabilization	N/A	N/A
Desertification control	N/A	N/A
Avalanche control	N/A	N/A
Erosion, flood protection or reducing flood risk	N/A	N/A
Other protective functions	N/A	N/A
Ecosystem services, cultural or spiritual values	N/A	N/A
Public recreation	N/A	N/A
Carbon storage or sequestration	N/A	N/A
Spiritual or cultural services	N/A	N/A
Other ecosystem services	N/A	N/A

Other general comments to the table

N/A

6. How much forest area is protected and designated for the conservation of biodiversity and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

6.1 Categories and definitions

Category	Definition
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.

6.2 National data

6.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report 1993. Forest Survey of India, MOEF, GOI, India.	Recorded forest area	1990	N/A
2	State of Forest Report 1997. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area	1990	N/A
3	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	2000, 2005	N/A
4	Forestry Statistics, India 1995 Indian Council of Forestry Research and Education, Dehradun, Uttaranchal, India	Production	1990	N/A
5	NFAP, 1999. National Forestry Action Plan, 1999. Ministry of Environment and Forests, Government of India, India	Designation	1993	N/A
6	National Wildlife Database. Wild Life Institute of India, India. www.wii.gov.in/nwdc/pastatistics.htm	Protected Areas	1990 -2000	N/A
7	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2004-Jan 2005	N/A
8	Forest Sector Report 2010, . Ministry of Environment and Forests, Government of India, India	Protected area	2010	N/A

6.2.2 Classification and definitions

National class	Definition
Protected Area	Forests managed as Protected Area (National Parks and Sanctuaries etc.) also termed as "Conservation area" in NFAP and defined as "Land such as national parks, reserves, protected areas, or other categories gazetted under the appropriate legislation."
N/A	N/A
N/A	N/A
N/A	N/A

6.2.3 Original data

For protected area, a better estimate is available from the database of other resources indicated below :

Item	Area of PA in 000 ha			
	1990*	2000**	2005***	2010 $^\$$
Total Area of Protected Area Network	12 740	13 029	15600	16122

* Forest Statistics India, 1995,** Database of WII,*** SFR 2005 $: Forest Sector Report 2010

6.3 Analysis and processing of national data

6.3.1 Adjustment

See 4.3.1.

6.3.2 Estimation and forecasting

See 4.3.2.

6.3.3 Reclassification

See 4.3.3.

6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	**2000**	**2005**	**2010**	**2015**
CFRQ	Conservation of biodiversity	12740	13029	15600	16122	16122
CFRQ	Forest area within protected areas	12740	13029	15600	16122	16122

Tiers

Category	Tier for status	Tier for reported trend
Conservation of biodiversity	Tier 3	Tier 3
Forest area within protected areas	Tier 3	Tier 3

Tier criteria

Category	Tier for status	Tier for reported trend
• Conservation of biodiversity • Forests within protected areas	Tier 3: Data obtained from national or state agencies responsible for conservation and protected area or legislation relating to area protection. Tier 2: Studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates Tier 1 Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	N/A	N/A
Forest area within protected areas	N/A	N/A

Other general comments to the table

National statistics in India are not maintained by designation of Forests. However, National Forestry Action Plan (NFAP), 1999 attempted to provide broad information on designation of forest. The same proportion has been used to derive the estimates of other years. The National Forestry Action Plan of India (1999) classifies the forests of country into the following four functional categories. It does not classify "Other Wooded Lands". • Protection Forests (for biological stability) • Production Forests (for meeting timber requirements) • Social Forests (for meeting daily needs of the community) • Protected Area Network (National Parks and Sanctuaries) Information on areas on protected forests is mainly from the database maintained by the Wildlife Institute of India and Annual Reports of Ministry of Environment and Forests, Government of India. The details of these data sources are in 4.2.1.

7. What is the area of forest affected by woody invasive species?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

7.1 Categories and definitions

Category	Definition
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.

7.2 National data

7.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

7.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

7.2.3 Original data

7.3 Analysis and processing of national data

7.3.1 Adjustment

7.3.2 Estimation and forecasting

7.3.3 Reclassification

7.4 Data

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	**2010**
1.	N/A	N/A
2.	N/A	N/A
3.	N/A	N/A
4.	N/A	N/A
5.	N/A	N/A
6.	N/A	N/A
7.	N/A	N/A
8.	N/A	N/A
9.	N/A	N/A
10.	N/A	N/A
Total	N/A	N/A

Tiers

Category	Tier for status	Tier for reported trend

Invasive species	N/A	N/A

Tier Criteria

Category	Tier for status	Tier for reported trend
Invasive species	Tier 3: Systematic assessment in forest inventory or other survey (e.g. by conservation department) within the last 5 years) Tier 2: Systematic assessment in forest inventory or other survey (e.g. by conservation department conducted more than 5 years ago) Tier 1: Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

7.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	N/A	N/A

Other general comments to the table
N/A

8. How much forest area is damaged each year?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

8.1 Categories and definitions

Category	Definition
Number of fires	Number of fires per year
Burned area	Area burned per year
Outbreaks of insects	A detectable reduction in forest health caused by a sudden increase in numbers of harmful insects.
Outbreaks of diseases	A detectable reduction in forest health caused by a sudden increase in numbers of harmful pathogens, such as bacteria, fungi, phytoplasma or virus.
Severe weather events	Damage caused severe weather events, such as snow, storm, drought, etc.

8.2 National data

8.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

8.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

8.2.3 Original data

8.3 Analysis and processing of national data

8.3.1 Adjustment

8.3.2 Estimation and forecasting

8.3.3 Reclassification

8.4 Data

Table 8a

Category		000 ha, number of fires									
		2003		2004		2005		2006		2007	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
CFRQ	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which forest area burned	N/A	N/A	N/A	N/A	1600	20567	N/A	16779	N/A	17264
Category		2008		2009		2010		2011		2012	
		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
CFRQ	Total land area burned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CFRQ	... of which forest area burned	1639	26180	N/A	30892	N/A	13898	N/A	29362	N/A	18451

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
N/A	Data is being collated from concerned institutions	N/A	N/A
N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Outbreak category
1 Insects
2 Diseases
3 Severe weather events

Tiers

Category	Tier for status	Tier for trend
Area affected by fire	Tier 2	Tier 2
• Insects • Diseases • Severe weather events	N/A	N/A

Tier criteria

Category	Tier for status	Tier for reported trend
Burned area	**Tier 3** : National fire monitoring routines **Tier 2** : Remote sensing surveys **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other
• Insects • Diseases • Severe weather events	**Tier 3** : Systematic survey (e.g. via inventory or aerial damage assessment) **Tier 2** : Management records **Tier 1** : Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

8.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend

Burned area	N/A	N/A
Insects	N/A	N/A
Diseases	N/A	N/A
Severe weather events	N/A	N/A

Other general comments to the table
N/A

9. What is the forest area with reduced canopy cover?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

Category	Definition
Reduction in canopy cover	Forest that has undergone a reduction of canopy cover of more than 20% between the years 2000 and 2010 within the forest canopy cover range of 30-80% as detected by the MODIS VCF sensor.

Table 9

Category	Area of forest with reduced canopy cover (000 ha)
Reduction in canopy cover	2053

Tiers

Category	Tier for reported trend
Reduction in canopy cover	N/A

Tier criteria

Category	Tier for reported trend
Reduction in canopy cover	**Tier 3** : Remote sensing with ground truthing and/or Landsat imagery **Tier 2** : Remote sensing using Modis (using pre-filled data provided by FAO) **Tier 1** : Expert opinion

Comments

Category	Comments related to data definitions etc
Reduction in canopy cover	The reduced canopy cover as per the ISFR 2013 is 5611 sq km as compared to the assessment of ISFR 2011.

Other general comments

10. What forest policy and regulatory framework exists to support implementation of sustainable forest management SFM?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

10.1 Categories and definitions

Category	Definition
Policies supporting sustainable forest management	Policies or strategies that explicitly encourage sustainable forest management.
Legislation and regulations supporting sustainable forest management	Legislation and regulations that govern and guide sustainable forest management, operations and use.

10.2 National data

10.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

10.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

10.2.3 Original data

10.3 Data

Table 10

Category	National	Sub-national		
		Regional	Provincial/State	Local
Policies supporting sustainable forest management	yes	yes	yes	yes
... of which, in publicly owned forests	yes	yes	yes	yes
... of which, in privately owned forests	yes	yes	yes	yes
Legislation and regulations supporting sustainable forest management	yes	yes	yes	yes
... of which, in publicly owned forests	yes	yes	yes	yes
... of which, in privately owned forests	yes	yes	yes	yes

10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	N/A
Legislation and regulations supporting sustainable forest management	N/A

Other general comments

11. Is there a national platform that promotes stakeholder participation in forest policy development?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

11.1 Categories and definitions

Category	Definition
National stakeholder platform	A recognized procedure that a broad range of stakeholders can use to provide opinions, suggestions, analysis, recommendations and other input into the development of national forest policy.

11.2 National data

11.2.1 Data sources

	References to sources of information	Years	Additional comments
1	N/A	N/A	N/A
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A

Table 11

Is there a national platform that promotes or allows for stakeholder participation in forest policy development?	yes

11.3 Comments

Category	Comments related to data definitions etc
National stakeholder platform	Before finalising any forest policy, it is circulated to concerned stakeholder for commensts, suggestions etc.

Other general comments

12. What is the forest area intended to be in permanent forest land use and how has it changed over time?

Documents for this question:

12.1 Categories and definitions

Category	Definition
Forest area intended to be in permanent forest land use	Forest area that is designated or expected to be retained as forest and is highly unlikely to be converted to other land use.
...of which permanent forest estate *(sub-category)*	Forest area that is designated by law or regulation to be retained as forest and may not be converted to other land use.

12.2 National data

12.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	2000, 2005	N/A
2	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2004-Jan 2005	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

12.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

12.2.3 Original data

Categories	Forest area 2005(000 ha)	Forest area 2010 (000 ha)	Forest area 2015 (000 ha)
Forest area intended to be in permanent forest land use	76963	77182	77182
…of which permanent forest estate	46123	47541	48148

12.3 Analysis and processing of national data

12.3.1 Adjustment

12.3.2 Estimation and forecasting

The area of permanent forest estate has been obtained by taking a proportion of forested area within recorded forest area as obtained from NFI to the area under reserved and protected forest. The same proportion has been applied to other years as well. The area of permanent forest estate and with management plan for 2010 was projected on the basis of average annual growth rate during 2000-2005.

12.3.3 Reclassification

12.4 Data

Table 12

Categories		Forest area 2010 (000 ha)
CFRQ	Forest area intended to be in permanent forest land use	69790
CFRQ	... of which permanent forest estate	47541

Tiers

Category	Tier for status
Forest area intended to be in permanent forest land use	Tier 3

Permanent forest estate	Tier 3

Tier Criteria

Category	Tier for status
Forest area intended to be in permanent forest land use	**Tier 3** : National or sub-national land use plans strategy documents or other reports within the past 10 years **Tier 2** : National or sub-national land use plans strategy documents or other reports within the past 20 years **Tier 1** : Other
Permanent forest estate	**Tier 3** : National or sub-national land use plans strategy documents or other reports within the past 10 years **Tier 2** : National or sub-national land use plans strategy documents or other reports within the past 20 years **Tier 1** : Other

12.5 Comments

Category	Comments related to data definitions etc
Forest area intended to be in permanent forest land use	N/A
Permanent forest estate	On the basis of NFI data 2005, the area under reserved and protected forest having forest cover is estimated and has been put under this category. For other years, the ratio developed from 2005 data has been applied.

Other general comments

13. How does your country measure and report progress towards SFM at the national level?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

13.1 Categories and definitions

Category	Definition
Forest area monitored under a national forest monitoring framework	Forest area monitored by a national monitoring framework or systems that provide measurement based periodic monitoring of forest extent and quality.
Forest reporting at national scale	National reporting of forest extent and characteristics that includes some measure of progress toward sustainable forest management.

13.2 National data

13.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

13.2.2 Classification and definitions

National class	Definition
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

13.3 Data

Table 13a

Category	% of total forest area	Most recent year	Check all boxes that apply					
			Continuous	Periodic	Permanent ground plots	Temporary ground plots	Aerial/ remote sensing sample based	Aerial/ remote sensing full coverage
Forest inventory	100	2014	yes	no	no	yes	yes	no
Other field assessments	N/A	N/A	no	no	no	no	no	no
Updates to other sources	N/A	N/A	no	no	no	no	no	no
Expert estimate	N/A	N/A						

Table 13b

Type of forest reporting used at national scale	Check boxes that apply
1 Criteria and Indicators reporting	no
2 Periodic national state of the forest report	yes
3 Other (please document)	yes
4 None	no

Other type of forest reporting
Carbon stock in india's forests, vulnerability of india's forests due to fire

13.4 Comments

Category	Comments
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

14. What is the area of forest under a forest management plan and how is this monitored?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

14.1 Categories and definitions

Category	Definition
Forest area with management plan	Forest area that has a long-term documented management plan, aiming at defined management goals which is periodically revised
...of which for production *(sub-category)*	Forest management plan mainly focused on production
...of which for conservation *(sub-category)*	Forest management plan mainly focused on conservation
Monitoring of forest management plans	Government monitoring of forest management plan implementation conducted through field visits or audits of forest management plan performance

14.2 National data

14.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report, 2003. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	2000, 2005	N/A
2	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2004-Jan 2005	N/A
3	India State of Forest Report, 2009. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2007	N/A
4	India State of Forest Report, 2011. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2009	N/A
5	India State of Forest Report, 2013. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	Oct 2011	N/A

14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	69790
... of which for production	N/A

... of which for conservation	N/A

Table 14b

Indicate which (if any) of the following are required in forest management plans in your country	
1 Soil and water management	yes
2 High conservation value forest delineation	yes
3 Social considerations community involvement	yes

Table 14c

Percent of area under forest management plan that is monitored annually	100

Tiers

Category	Tier for status
Forest area with management plan	Tier 2
Percent of area under forest management plan that is monitored annually	Tier 2

Tier criteria

Category	Tier for status
Forest area with management plan	**Tier 3** : Reports that describe national records 5 years old or less that contain long-term forest monitoring plans **Tier 2** : Industry or other records indicating the presence of a long-term forest management plan **Tier 1** : Other
Percent of area under forest management plan that is monitored annually	**Tier 3** : Government documentation of monitoring extent **Tier 2** : Reports from forest managers or other documental sources **Tier 1** : Other

14.4 Comments

Category	Comments
Forest area with management plan	This area has been estimated on the basis of data available on this variable and recorded forest area as given in Forestry statistics India, 2001.
N/A	N/A
N/A	N/A

Other general comments

Original data
National data.

National Category	Forestarea (000 ha)			
	1990	**2000**	**2005**	**2010**
Reserved Forest	41 492	42 331	41 903	42549
Protected Forest	23 308	21 725	21 661	21499
Un-classed Forest	12 208	12 788	13 399	13134

Estimation and forecasting

The forest area with management plan for 2000 was taken from Forestry Statistics India, 2003. The forest area with management plan for the year 2010 has been estimated on the basisi of number of working plan in different states as given in 'Forest Sector Report India 2010'. For projecting the area under working planfor the year 2015, it has been assumed that entire recorded forest area will be put under management plan by 2015.

Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)	Forest area 2015 (000 ha)
Forest area with management plan	71900	77182
… of which for production		
… of which for conservation		

15. How are stakeholders involved in the management decision making for publicly owned forests?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

15.1 Categories and definitions

Category	Definition
Stakeholder involvement	Stakeholder involvement is defined as significant inputs into at least one aspect of forest management at the operational scale

Table 15

Please indicate the type of stakeholder involvement in forest management decision making required in your country	
1. Planning phase	yes
2. Operations phase	yes
3. Review of operations	yes

Tiers

Category	Tier for status
Type of stakeholder inputs	Tier 2

Tier criteria

Category	Tier for status
Type of stakeholder inputs	**Tier 3** : Government (national or sub-national) documentation of stakeholder inputs **Tier 2** : Government (national or subnational) requirement but stakeholder inputs not documented **Tier 1** : Other

15.2 Comments

Category	Comments
N/A	N/A
N/A	N/A
N/A	N/A

Other general comments

16. What is the area of forest under an independently verified forest certification scheme?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

16.1 Categories and definitions

Category	Definition
FSC certification	Forest area certified under the Forest Stewardship Council certification scheme
PEFC certification	Forest area certified under the Programme for the Endorsement of Forest Certification scheme
Other international forest management certification	Forest area certified under an international forest management certification scheme with published standards and is independently verified by a third-party, excluding FSC and PEFC certification.
Certified forest area using a domestic forest management certification scheme	Area certified under a forest management certification scheme with published standards that are nationally recognized and independently verified by a thirdparty

16.2 Data

Table 16a

International forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
CFRQ	FSC	0	0	0.18	0	0	0	0
CFRQ	PEFC	0	0	0	0	0	0	0
CFRQ	Other	0	0	0	0	0	0	0
		2007	2008	2009	2010	2011	2012	
CFRQ	FSC	0.64	0.64	0.64	0.68	0.68	19.6	
CFRQ	PEFC	0	0	0	0	0	0	
CFRQ	Other	0	0	0	0	0	0	

Table 16b

Domestic forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
CFRQ	1.Name	0	0	0	0	0	0	0
CFRQ	2.Name	0	0	0	0	0	0	0
CFRQ	3.Name	0	0	0	0	0	0	0

		2007	2008	2009	2010	2011	2012	
CFRQ	1.Name	0	0	0	0	0	0	
CFRQ	2.Name	0	0	0	0	0	0	
CFRQ	3.Name	0	0	0	0	0	0	

Tier criteria

Category	Tier for status
International forest management certification	Tier 3: International forest management scheme records maintained by the certifying organization for the reporting year Tier 2: International forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other
Domestic forest management certification	Tier 3: National registry reports for domestic forest management certification maintained by the certifying organization for the reporting year Tier 2: Domestic forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other

Tiers

Category	Tier for status
International forest management certification	Tier 3
Domestic forest management certification	N/A

16.3 Comments

Category	Comments related to data definitions etc
Certified forest area using an international forest management certification scheme	N/A
Domestic forest management certification	N/A

Other general comments

17. How much money do governments collect from and spend on forests?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

17.1 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include: • Goods : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products. • Services : including concession fees and royalties, stumpage payments, public timber sales revenue taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.
Public expenditure on forestry	All government expenditure on forest related activities.

17.2 National data

17.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	Revenue	2000, 2005	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

17.3 Data

Table 17

Category	Revenues / expenditures (000 local currency)		
	2000	**2005**	**2010**
Forest revenue	15165800	15074200	25785000
Public expenditure on forestry	N/A	N/A	57300000

	2000	2005	2010
Name of Local Currency	INR	INR	INR

17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	Forest revenue has been taken as 45% as per the information given in Forestry Statistics India 200, ICFRE, MoEF on revenue and expenditure.
Public expenditure on forestry	Budget estimate for forest in wild life
Other general comments	N/A

Other general comments

18. Who owns and manages the forests and how has this changed?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

18.1 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at national scale *(sub-category)*	Forest owned by the State at the national scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
...of which owned by the state at the sub-national government scale *(sub-category)*	Forest owned by the State at the sub-national government scale or administrative units of the public administration or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private cooperatives corporations and other business entities, private, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
...of which individuals *(sub-category)*	Forest owned by individuals and families.
...of which private business entities and institutions *(sub-category)*	Forest owned by private corporations cooperatives companies and other business entities as well as private nonprofit organizations such as NGOs nature conservation associations, and private religious and educational institutions etc.
...of which local tribal and indigenous communities *(sub-category)*	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people The community members are coowners that share exclusive rights and duties and benefits contribute to the community development.
Unknown ownership	Forest area where ownership is unknown includes areas where ownership is unclear or disputed.
Categories related to management rights of public forests	**Definition**
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private companies	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities private cooperatives, private nonprofit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

18.2 National data

18.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	State of Forest Report 1993. Forest Survey of India, MOEF, GOI, India.	Recorded forest area	1990	N/A
2	State of Forest Report 1997. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area	1990	N/A
3	State of Forest Report, 2005. Forest Survey of India, MOEF, GOI, India.	Extent, Recorded forest area, Management rights	2000, 2005	N/A
4	National Foarest inventory database	Ownership	2005	N/A

18.2.2 Classification and definitions

National class	Definition
Reserved Forest	An area notified under the provisions of the Indian Forest Act or other State Forest Acts, having full degree of protection. Explanation: In reserved forests all activities are prohibited unless permitted. Their ownership belongs to government.
Protected Forests	An area notified under the provisions of the Indian Forest Act or other State Forest Acts, having limited degree of protection. Explanation: In protected forest all activities are permitted unless prohibited. Their ownership belongs to government.
Un-Classed Forests	An area recorded as forest in government land records but not notified as reserved or protected forest under Indian Forest Act or Other State Forest Acts. Explanation: Level of protection and Ownership status of such forests varies from state to state.
N/A	N/A

18.2.3 Original data

The Forest Survey of India (FSI) is a Government of India organization under the Ministry of Environment & Forests. Since 1987, it has been regularly assessing the extent of forest at an interval of 2 years and publishing this information in the "State of Forest Report" (SFR) .

The SFR also contains information on legal status of forests which has three categories (a) Reserved forests, (b) Protected forests and (c) Un-classed forests. The first two categories of forests are "owned by government". The ownership of un-classed forests varies from state to state and includes forest owned by private individuals, communities and local bodies besides government.

Forest area

The figures of reserved, protected and un-classed forests has been taken from the published SFRs. These figures are provided by the provinces which are compiled at the Forest Survey of India. These areas may or may not consist of tree or forest cover but in the government records they fall in the category of forests. The trees outside the boundaries of these forests are known as TOF .

18.3 Analysis and processing of national data

18.3.1 Adjustment

Not required.

18.3.2 Estimation and forecasting

Forest Survey of India started national forest inventory in 2002 which has formed basis of estimating the area under ownership categories.

National Category (NFI)	2005 (in 000 ha.)	%
Public ownership	58 007	86
Private ownership	9 702	14
Total	67 709	100

On the basis of proportion of public and private ownership, area corresponding to year 2000 has been estimated. For the year 1990, the proportion of 2005 has been applied.

18.3.3 Reclassification

Since the FRA categories and national categories are same there is no need of reclassification.

18.4 Data

Table 18a

Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010

CFRQ	Public ownership	54777	56020	58007	60019
CFRQ	... of which owned by the state at national scale	N/A	N/A	N/A	N/A
CFRQ	... of which owned by the state at the sub-national government scale	N/A	N/A	N/A	N/A
CFRQ	Private ownership	9162	9370	9702	9771
CFRQ	... of which owned by individuals	N/A	N/A	N/A	N/A
CFRQ	... of which owned by private business entities and institutions	N/A	N/A	N/A	N/A
CFRQ	... of which owned by local, tribal and indigenous communities	N/A	N/A	N/A	N/A
CFRQ	Unknown ownership	0	0	0	0
TOTAL		63939.00	65390.00	67709.00	69790.00

Tiers

Category	Tier for status	Tier for reported trend
Public ownership	Tier 3	Tier 3
Private ownership	Tier 3	Tier 3
Unknown ownership	N/A	N/A

Tier criteria

Category	Tier for status	Tier for reported trend
Ownership	Tier 3: National forestry statistics registers of land titles or maps on land ownership or all forest area under one ownership category that is five years old or less. Tier 2:National forestry statistics registers of land titles or maps on land ownership or questionnaires that are more than five years old. Tier 1: Other	**Tier 3** : Estimate based on repeated compatible tiers 3 (tier for status) **Tier 2** : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) **Tier 1** : Other

Table 18b - Holder of management rights of public forests

Categories	Forest area (000 hectares)			
	1990	**2000**	**2005**	**2010**

Public Administration	N/A	45771	36453	37717
Individuals	N/A	0	0	0
Private companies	N/A	0	0	0
Communities	N/A	10249	21554	22302
Other	N/A	0	0	0
TOTAL	.00	56020.00	58007.00	60019.00

Category	Tier for reported trend	Tier for status
Public Administration	Tier 3	Tier 3
Individuals	N/A	N/A
Private companies	N/A	N/A
Communities	Tier 2	Tier 2
Other	N/A	N/A

18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	N/A	N/A
Private ownership	There are some tribal communities mainly in north eastern regions which own forest. However, information on the extent of such areas are not reliably available.	N/A
Unknown ownership	N/A	N/A
Management rights	In 2000 and 2005, the areas under communities management are those which are managed under Joint Forest Management (JFM). The JFM was initiated in 1990. Hence estimates of 1990 are not available.	N/A

Other general comments to the table
N/A

19. How many people are directly employed in forestry?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

19.1 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment in forestry	Employment in activities related to production of goods derived from forests. This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

19.2 National data

19.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	WB. 2000. India: Alleviating Poverty through Employment. The World Bank. 2000	Employment under various forestry activities.	1993	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

19.2.2 Classification and definitions

National class	Definition
Principal "Usual Status" or Principal Activity	The activity on which the person spent relatively more time preceding 365 days.
Employed in Principal Activity or Usual Status	A person is "working or employed" if he or she was engaged for a relatively longer time during the past year in one or more work activities (economic activities).
Unemployed in Principal Activity or Usual Status	A person is "seeking or available for work or unemployed" if he or she was not working but was seeking or was available for work for a relatively longer time during the past year.
Out of Labour Force (Primary Activities)	A person is "out of labour force" if he or she was engaged in non-economic activities for a relatively longer time of the reference year.

Principal Status "Worker" or "Employed	A person categorised as "worker" or "employed" on the basis of principal status is as principal status "worker" or "employed". Explanation: Unpaid helpers, who assist in operation of an economic activity in household farm or non farm activities are also considered as workers. It does not include persons engaged in collection of firewood as a non-economic activity.
Subsidiary Status "Worker" or "Employed"	A person categorised as non worker (unemployed or "out of labour force")"who pursued some economic activity in a subsidiary capacity. Explanation: Unpaid helpers, who assist in operation of an economic activity in household farm or non farm activities are also considered as workers. It does not include persons engaged in collection of firewood as a non-economic activity.
Total Workers	Sum of Principal Status Workers and Subsidiary Status workers under "Usual Status" Classification.
Economic Activity	It includes (a) all market activities performed for pay or profit that result in production of goods and services for exchange, and (b) selected non market activities like agriculture sector activities that result in production (including gathering of uncultivated crops, forestry, collection of firewood, hunting, fishing etc.) of agriculture produce fro consumption; activities relating to the production of fixed assets for personal use (including houses, roads, wells, machinery, tools etc. for household enterprise and construction of private or community facilities free of charge)

19.2.3 Original data

The employment by production and other activities in forest is not reported at the national level. A study done by World Bank (WB, 2000) to estimate the employment potential in forestry sector in India based on 1993 data has formed the main source of this reporting. The employment generated per unit of activity such as production of timber, plantation, etc of this study has been used to estimate the employment in 2000 and 2005. The updates of production of timber etc. and area under other activities has been derived from relevant Reporting Tables.

National class	Definition
Principal "Usual Status" or Principal Activity	The activity on which the person spent relatively more time preceding 365 days.
Employed in Principal Activity or Usual Status	A person is "working or employed" if he or she was engaged for a relatively longer time during the past year in one or more work activities (economic activities).
Unemployed in Principal Activity or Usual Status	A person is "seeking or available for work or unemployed" if he or she was not working but was seeking or was available for work for a relatively longer time during the past year.
Out of Labour Force (Primary Activities)	A person is "out of labour force" if he or she was engaged in non-economic activities for a relatively longer time of the reference year.
Principal Status "Worker" or "Employed	A person categorised as "worker" or "employed" on the basis of principal status is as principal status "worker" or "employed". Explanation: Unpaid helpers, who assist in operation of an economic activity in household farm or non farm activities are also considered as workers. It does not include persons engaged in collection of firewood as a non-economic activity.
Subsidiary Status "Worker" or "Employed"	A person categorised as non worker (unemployed or "out of labour force") "who pursued some economic activity in a subsidiary capacity. Explanation: Unpaid helpers, who assist in operation of an economic activity in household farm or non farm activities are also considered as workers. It does not include persons engaged in collection of firewood as a non-economic activity.
Total Workers	Sum of Principal Status Workers and Subsidiary Status workers under "Usual Status" Classification.
Economic Activity	It includes (a) all market activities performed for pay or profit that result in production of goods and services for exchange, and(b) selected non market activities like agriculture sector activities that result in production (including gathering of uncultivated crops, forestry, collection of firewood, hunting, fishing etc.) of agriculture produce from consumption; activities relating to the production of fixed assets for personal use (including houses, roads, wells, machinery, tools etc. for household enterprise and construction of private or community facilities free of charge).

The following table presents the number of principal and subsidiary forest workers in 1993 in the eight forest related categories mentioned in a World Bank Study (WB, 2000).

National Class	Number in 1993 (in millions)
Firewood/fuelwood by exploitation of forest	0.049
Gathering of fodder from forests	0.014
Uncultivated materials in forests	0.300
Hunting, trapping, and game propagation	0.067
Forestry and logging	1.488
Plantations [1]	4.703
Planting, replanting and conservation of forestry	0.532
Forest services	0.344

(Source: WB, 2000.)

Note.   1. The total estimated annual employment provided by plantations, which includes plantations of non forest species also on non-forest land with or without trees, is 9.406 million. It is assumed that only fifty percent is related to forests and Other Wooded lands.

Calibration

The figure on employment in study (WB, 2000) are taken as standard verified figures and therefore do not need for any calibration.

Estimation and forecasting

To calculate the employment in 1990, 2000 and 2005, it has been assumed that the employment in the eight forest related employment groups of the World Bank Study (WB, 2000) will follow the same trend required for FRA. Since the national data is available only for three categories namely wood production, fuel wood and plantation. From which employment per unit of these three categories was generated. These ratios have been applied on eight employment categories of World Bank. The ratio of logging was applied on forestry & logging, forest services and conservation of forest, the ratio of plantation is applied on plantation and ratio of fuel wood was applied on fire wood, fodder, uncultivated materials and hunting etc. The estimates of self and paid employment have been obtained by expert judgement.

Eight Employment Categories As per the World Bank	Corresponding temporal trend used for Employment per unit	Type of employment
Firewood/fuelwood by exploitation of forest	Production of Fuel wood	Self
Gathering of fodder from forests	Production of Fuel wood	Self
Uncultivated materials in forests	Production of Fuel wood	Self
Hunting, trapping, and game propagation	Production of Fuel wood	Self
Forestry and Logging	Production of Industrial Round Wood	Paid
Plantations	Annual Establishment of Plantations	Paid
Planting, replanting and conservation of forests	Production of Industrial Round Wood	Paid
Forest services	Production of Industrial Round Wood	Paid

(Note 1. Most of the hunting trapping and game propogation is currently prohibited in the country.

Reclassification

National Classes of Employment	Percentage of a National Class to a FRA Class
	Production of Goods
Firewood/fuelwood by exploitation of forest	**100**
Gathering of fodder from forests	**100**
Uncultivated materials in forests	**100**
Hunting, trapping, and game propagation	**100**
Logging	**100**
Plantations	**0**
Planting, replanting and conservation of forests	**0**
Forest Admin services	**100**

19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	**2000**	**2005**	**2010**
CFRQ	Employment in forestry	6360	6053	6188	6257
CFRQ	... of which female	N/A	N/A	N/A	N/A

19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	The major component of employment is on plantation activities but it is not known whether World Bank surveyed certain areas to estimate the number or it was estimated on the basis of expenditure incurred on forestry plantations because the number of employed persons as shown by world bank seems on a higher side. The data on self employment seems to be underestimated in absence of any supporting documents	Same as given in previous column.

Other general comments to the table
Best effort was made to get any new study data but nothing was available. NSSO do collects data on employment but for the agriculture sector where forestry is also included and it is not possible to segregate for forestry.

20. What is the contribution of forestry to Gross Domestic Product (GDP)?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

20.1 Categories and definitions

Category	Definition
Gross value added from forestry (at basic prices)	This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging).

20.2 Data

Table 20 (Pre-filled data from UNdata/EUROSTAT)

Category	Million	Currency	Year for latest available information
Gross value added from forestry (at basic prices)	1134880	Indian rupee	2010-11

20.3 Comments

Category	Comments
Gross value added from forestry (at basic prices)	N/A

Other general comments

21. What is forest area likely to be in the future

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

21.1 Categories and definitions

Category	Definition
Government target/ aspiration for forest area	Government target/aspiration for forest area for a specific year.
Forests earmarked for conversion	Forest area that is allocated/classified or scheduled to be converted into non-forest uses.

21.2 National data

21.2.1 Data sources

	References to sources of information	Variables	Years	Additional comments
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

21.3 Data

Table 21a

Category	Forest area (000 ha)	
	2020	2030
Government target/aspiration for forest area	108480	108480

Table 21b

Category	Forest area (000 ha)
	2013
Forests earmarked for conversion	0

21.4 Comments

Category	Comments
Government target/aspiration for forest area	30% of geographical area under forests/tree cover

Forests earmarked for conversion	N/A

Other general comments