

GLOBAL FOREST RESOURCES ASSESSMENT 2015

COUNTRY REPORT

Bangladesh

Rome, 2014

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Global Forest Resources Assessment (FRA). This country report is prepared as a contribution to the FAO publication, the Global Forest Resources Assessment 2015 (FRA 2015).

The content and the structure are in accordance with the recommendations and guidelines given by FAO in the document Guide for country reporting for FRA 2015 (<http://www.fao.org/3/a-au190e.pdf>). These reports were submitted to FAO as official government documents.

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Introductory Text

Place an introductory text on the content of this report

Bangladesh lies in the north-eastern part of the South Asia between 20°34 and 26°38 north latitude and 88°01' and 92°41' east longitude. The area of the country is 14.757 million hectares (ha). Here tropical climate prevails throughout the year with distinct rainfall and dry period.

Presently 149 million (March 2011) people living in Bangladesh, it is the highest population density (1034 per square kilometre) among large countries of the World. About 77% of the population live in the rural areas. Overall per capita availability of land and forest are about 0.10 ha and 0.016 ha respectively.

The total forests in Bangladesh, according to Forest Department, is estimated to be 2.33 million ha corresponding to 15.78% of the surface area of the country. This includes 1.60 million ha Forest Department controlled land, 0.73 million ha Unclassified State Forests (USF) under the control of District Administration. Besides, planted trees growing in villages and on marginal lands has established very rich homestead forests in the country. However, National forest and tree resources assessment 2005-2007 found forest cover of the country as 9.8% as per definition of FAO.

Under the auspices of Global Forest Resources Assessment (GFRA), Bangladesh Forest Department has implemented a technical cooperation project namely "Strengthening Capacity to Generate Quality Information on Forest Resources (TCP/BGD/3001)" during 2005-2007 with the technical and financial assistance from FAO of the UN. Under this project, the first National Forest Assessment (NFA) was conducted both in forests and

TOF areas whereby earlier management inventories were confined within the designated forest reserves only. The NFA was guided by remote sensing analysis as well as ground inventory with 296 sampling plots all over the country. Results show that almost 50% of the country has some kind of tree cover. Further, the inventory enumerated national landuse area, growing stock, biodiversity and regeneration, social and economical aspects of forests and trees and biomass and carbon as per guidelines of FAO.

Like FRA 2010 the FRA2015 of Bangladesh is also developed based primarily on the 'National Forest and Tree Resources Assessment 2005-2007' as no other such inventory has been carried out in the country after 2007 other than the carbon assessment of different forest areas. Recently preparation of a forest land cover map has been initiated based on satellite images of 2011 and 2012 which is yet to be completed. Report of carbon assessment and forest department records has been taken into consideration to update and supplement the data recieved in NFA for FRA 2015.

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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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	GOB. 1961. Inventory of Sangu- Matamuhari Reserved Forests.	Extent	1958 and 1961	N/A

2	GOB. 1963. Forestal, Forestry and Engineering International Ltd.. Inventory of Sitaphar .	Extent	1963	N/A
3	GOB. 1963. Forestal, Forestry and Engineering International Ltd.. Inventory of Kasalong	Extent	1963	N/A
4	GOB. 1963. Forestal, Forestry and Engineering International Ltd. Inventory of Rankiang	Extent	1963	N/A
5	ANON, 1964. Forest Inventory Survey of Chittagong Hill Tracts in 1961-1963, Forestal, Forestry and Engineering International Ltd.	Extent	1963	N/A
6	Hammermaster, E. T., 1981. Village Forest Inventory of Bangladesh: Inventory Results. Field Document No. 5. UNDP/FAO Project BGD/78/020	Extent	1981	N/A
7	FAO 1988. Assistance to the Forestry Sector of Bangladesh. Project Findings and Recommendations. FD/BGD/79/017 Terminal Report.	Extent	1983	N/A
8	Drigo et al 1987. FAO/UNDP/BGD/85/085.	Extent	1984	N/A
9	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB.1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes	Extent	1985, 1990, 1991, 1992	N/A
10	Ghani, . Q., A. ALim and P.R. Stevens. 1990. Rehabilitation and land use of Sal Forests. FAO/UNDP Project BGD/85/085.	Extent	1990	N/A

11	Revilla Jr. J. A. V et. al. 1998. Final Report: Forest Inventory of the natural forests and Forest plantation (Sundarbans Forest Division) Mandela Agricultural Development Corporation and Forest Department, Ministry of Environment and Forests. Bangladesh.	Extent	1995	N/A
12	Revilla Jr. J. A. V et. al. 1998. Final Report: Forest Inventory of the natural forests and Forest plantation (Cox's Bazar Forest Division) Mandela Agricultural Development Corporation and Forest Department, Ministry of Environment and Forests. Bangladesh.	Extent	1996	N/A
13	Revilla Jr. J. A. V et. al., 1998. Final Report: Forest Inventory of the natural forests and Forest plantation (Chittagong Forest Division) Mandela Agricultural Development Corporation and Forest Department, MOEF. Bangladesh.	Extent	1996	N/A
14	Revilla Jr. J. A. V et. al. 1998. Final Report: Forest Inventory of the natural forests and Forest plantation (Sylhet Forest Division) Mandela Agricultural Development Corporation and Forest Department, MOEF. Bangladesh.	Extent	1996	N/A
15	Revilla Jr. J. A. V et. al. 1998. Final Report: Forest Inventory of the natural forests and Forest plantation (Coastal Afforestation) Mandela Agricultural Development Corporation and Forest Department, MOEF. Bangladesh.	Extent	1998	N/A
16	Sylvander, R., Latif, M. A. and Karlsson, A. 2000. Forest Inventory of the Sal Forests of Bangladesh. Forestry Sector Project, Forest Department, MOEF, Bano Bhaban, Dhaka.	Extent	2000	N/A

17	SYB, 2000. Statistical yearbook of Bangladesh. Twenty-First edition. Bangladesh Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.	Extent	2000	N/A
18	GOB, 2002. Ek-najare Bangladesh Ban Bibhag, Information Cell, National Tree Planting Movement and Tree Fair.	Extent	2002	N/A
19	ANON, 2004. Office Letter of BFIDC, No. 455 of 19 Dec. 2004	Extent	2004	N/A
20	National Forest and Tree Resources Assessment 2005-2007	Extent	2005-2007	N/A
21	Forest Department Reports	area	2008	N/A
22	Cyclone-affected areas of the Sundarbans as inferred from Terra-MODIS satellite data by Bangladesh Space Research and Remote Sensing Organization (SPARSO).	Area, Cyclone damage of Sundarbans	2007	N/A
23	Forest Department Reports	Extent	2013	N/A
24	GOB, Forest Information Generation & Networking System Project (FIGNSP) RIMS-GIS Unit and FD, Technical assistance of Center for Environmental and Geographic Information Services.(CEGIS)	Extent	2013	N/A

1.2.2 Classification and definitions

National class	Definition
Hill Forest	Forests developed over tertiary hills along the northeast and southeast fringe of the country.
Natural Mangrove	Forests – naturally developed in the active delta of river Padma along the coast of Bay of Bengal.
Mangrove Plantation	Artificially created plantation of mangrove species over the estuary of the river Meghna
Plain Land Sal Forest	Forest, naturally developed in the Pleistocene terrace, spread over the central and northern region of the country.

Unclassed State Forests	Forests not classified as reserved or protected and not managed by Forest Department.
Forest Under Rubber	Rubber plantation managed for latex production.
Village Forest	Homestead garden – intensively managed – where fruits are preferential species.
Open Sal Forest	These are original Sal forest, which have been but depleted over time and their density is poor.
Khas Forest Lands	The forest in the govt. khas land, but not managed.
Strip Plantation	The afforestation along the roads, railway line, ‘Bangladesh Water Development Board’ embankment and linear strips.
Haor	A haor is a low-lying area consisted of bowl shaped depressions or succession of depressions.
Baor	A baor is a oxbow lake formed in a dead arm of a river.

1.2.3 Original data

Forest area			
A. Hill Forests			
1. Kassalong			
Category	Area in 000 ha		
	1963	1983	1992
Natural Forests	76.195	61.273	53.225
Bamboo	41.366	12.653	12.653
Sub Total	117.561	73.926	65.878
Scattered trees			3.525
Plantation			19.186
Total	117.561	73.926	88.589
2. Rankhiang			

Variable	Area in 000 ha		
	1963	1983	1992
Natural Forests	27.258	10.344	5.052
Bamboo	27.907	13.606	13.606
Sub Total	55.165	23.95	18.658
Scatter trees			6.494
Plantation			18.718
Total	55.165	23.95	43.87

3. Sitapahar

Category	Area in 000 ha	
	1984	1990
Natural Forests	0.65	0.65
Plantation (teak)	3.81	3.74
Sub total	4.46	4.39
Non-productive forests	0.35	0.30
Other	0.62	0.75
Sub-Total	0.98	1.05
TOTAL	5.44	5.44

4. Sangu Matamuhari

Category	Area in 000 ha	
	1958	1983

Timber mixed	9.48	8.70
Bamboo – Timber	64.24	47.84
Sub Total	73.72	56.54
Jhum	0.03	17.10
Other	0.75	0.86
Sub Total	0.78	17.96
Total	74.50	74.50

5. Chittagong

Category	Area in 000 ha	
	1984	1996
Natural Forests	30.003	22.224
Bamboo		3.299
Sub Total Forests	30.003	25.523
Scatter trees OWL	22.468	34.157
Plantation	13.223	14.109
Total	65.694	73.789

6. Cox's Bazar

Category	Area in 000 ha	
	1984	1996
Natural Forests	31.294	26.867
Bamboo		
Sub Total Forests	31.294	26.867

Scatter trees OWL	3.205	3.532
Plantation	18.044	19.439
Total	52.543	49.838

7. Sylhet

Category	Area in 000 ha	
	1984	1996
Natural Forests	3.337	2.782
Bamboo	13.933	20.04
Sub Total Forests	17.270	22.822
Scatter trees OWL	2.832	0.872
Plantation	11.502	17.872
Total	31.604	41.566

8. Jhum Plantations

The FMP, 1993 has indicated following area of Jhum Control plantations in the hills.

ForestPlantation	Area in 000 ha (1990)
Jhum Plantations	15.36

B. Plain Sal Forests

1. Dhaka

Category	Area in 000 ha	
	1990	2000
Natural Forests	6.734	9.88
Plantation (wood lot)	0.917	2.04
Total	7.651	11.92

2. Tangail

Category	Area in 000 ha	
	1990	2000
Natural Forests	9.975	8.130
Plantation (wood lot)	5.157	7.250
Total	15.132	15.38

3. Mymensingh

Category	Area in 000 ha	
	1990	2000
Natural Forests	5.787	2.320
Plantation (wood lot)	3.844	5.136
Total	9.631	7.456

4. Dinajpur

Category	Area in 000 ha
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	1990	2000
Natural Forests	0.946	1.472
Plantation (wood lot)	3.450	1.856
Total	4.396	3.328

5. Rangpur

Category	Area in 000 ha	
	1990	2000
Natural Forests	0.084	0.064
Plantation (wood lot)	1.746	0.568
Total	1.83	0.632

6. Rajshahi

Category	Area in 000 ha	
	1990	2000
Natural Forests	not available	0.128
Plantation (wood lot)	not available	0.200
Total	not available	0.328

C. Littoral Forests (Mangrove and Coastal Afforestation)

1. Sunderbans

Category	Area in 000 ha	
	1981	1995
Forests	405.257	399.465
Plantations	0.351	0.217
Total	405.608	399.682

2. Coastal Afforestation

Coastal Areas	Area in 000 ha	
	1984	1996
Bhola CA	3.565	12.42
Chittagong CA	3.342	20.042
Noakhali CA	6.065	34.223
PatuaKhali CA	4.007	9.848
Total	16.979	76.533

D. Rubber Plantation

Category	Area in 000 ha	
	1990	2000
Rubber Plantations	19.800	35.430

E. Unclassed State Forests

There is more than 700,000 ha of hill land under district administration and most of this land is barren and lacks forest cover (GOB, 1993 Page 84 Main volume). No information is available on extent of forest cover on this land except for following plantations in the hills (FMP, 1993). Hence its area, excluding following plantations, will be classified as “Other Land” under FRA 2005 Category.

Forest Plantation	Area in 000 ha (1990)
Khagrachari	1.41
Bandarban Pulpwood	8.72
Bandarban	9.36
Kaptai Pulpwood	18.17

F. Strip Plantations

Bangladesh Forest Department (GOB, 2002) estimates that the country has about 72,498.37 km long strip plantations. If average width of these plantations is assumed to be 10 meters then 1 km long plantation is equal to 1 hectare and the total strip plantation in Bangladesh in 2002 may be treated as covering about 72, 498 ha. It will be classified as “Other Land with tree cover ” under FRA 2005 Category.

G. Village Homestead Forests

The “Forest Master Plan” indicates that about 270,000 ha are under village homestead forests comprising of bamboo as well as trees (GOB, 1993. “Statistical Report” – Village Forest Inventory- Page 1, one of the supplementary volumes to the “Forest Master Plan”). It will be classified as “Other Land with tree cover ” under FRA 2005 Category.

H. National Forest Assessment 2005-2007

International LUCs	National Land Use Classes			Codes	Area (000ha)
	Level 1	Level 2	Level 3		
Forest	Forest	Natural Forest	Hill forest	(FH)	551
(F)	(F)	(FN)	Sal forest	(FSa)	34
1,442	1,442	1,204	Mangrove forest (saltwater)	(FM)	436

			Bamboo or mixed Bamboo/ broad-leaved forest	(FB)	184
		Forest Plantations (FP) 237	Long rotation forest plantation	(PL)	131
			Short/medium rotation forest plantation	(PS)	54
			Mangrove Plantation	(PM)	45
			Rubber Plantation	(PR)	8
Other Wooded Land (OWL) 289	Cultivated Land (Cult.) 8327	Shrubs (S) 289	Shrubs	(Sh)	266
			Swamps with shrubs	(Sw)	23
Other Land (OL) 11005		Barren/Grass Land		(BG)	89
		Annual Crops (CA) 7492	Annual Crops without trees	(CA0)	6,583
			Annual Crops with trees 0.1-0.5 ha	(CA1)	784
			Annual Crops with trees >0.5 ha	(CA2)	126
		Perennial Crops (CP) 106	Perennial Crops without trees	(CP0)	19
			Perennial Crops with trees 0.1-0.5 ha	(CP1)	8
			Perennial Crops with trees >0.5 ha	(CP2)	79
Range Land/ Pasture		(RL)	25		

		Wooded land with shifting cultivation (Fallow)	(Fa)	327
	Villages (Vill.) 2862	Rural settlement without trees	(SR0)	95
		Rural settlement with trees 0.1-0.5 ha	(SR1)	1,090
		Rural settlement with trees > 0.5 ha	(SR2)	1,677
	Built-up Areas(BUA) 104	Urban settlements	(SU)	85
		Highways and other artificial areas	(HA)	19
Inland Water (W) 2022	Inland Water (W) 2022	Lake	(WL)	43
		River	(WR)	1,070
		Pond	(WP)	286
		Haor & Baor	(WHB)	622
Total country area of Bangladesh				14,757

I. Forest Information Generation & Networking System Project, Satellite Data Processing, GIS Analysis and Map Preparation

Land cover map with area estimation of Bangladesh forests has been prepared in 2013 using the satellite images (IKONOS and RapidEye) of Feb 11 to Feb 12. All the Data generated in the Map as shown below has not been used in FRA 15 preparation because,

1. it could not differentiate the Teak plantation and younger (3 to 4 yr) plantation from Shrub and Grasses,
2. it is not complete inventory of the Country's forest resources,
3. ground verification of the images is yet to completed.

However, the data regarding Rubber and Coastal Plantations are taken into consideration in FRA 2015 because these are assumed close to realistic one than NFA 2005-07.

International LUCs	National Land Use Classes	Types of land	Area (000ha)
	Level 1	Level 2	
Forests(693.91)	Natural (502.35)	Hill Forest	79.161
		Sal Forest	17.495
		Mangrove	390.55

		Swamp	0.102	
		Bamboo	15.039	
	Plantation (137.45)	Hill Forest	54.066	
		Plain land Forest	21.806	
		Mangrove	61.574	
	Other Vegetation (44.903)	Hill	6.434	
		Plain land	38.469	
	Rubber (9.217)		9.217	
	Other Wooded land (116.97)	Scattered Forests(116.97)	Hill Forest	116.97
	Other land (629.38)	Settlement with Homestead vegetation (350.89)	Plain land (34.72)	34.72
Hill (56.76)			56.76	
Coastal (259.41)			259.41	
Shrubs and Grass		Hill (278.50)	278.50	

1.3 Analysis and processing of national data

1.3.1 Adjustment

Forest area		
National Statistics on Total Area and Inland water bodies area		
Category	Country Variables	Area (¢000 hectare)
Inland Water		1770.0
	Haor, Baor & Lakes	133.8
	Rivers	1506.2
	Ponds	130.0
Total for country	Country Area	14,757.0

Source: SYB 2000, Table- 2.02 page-20.

UN Statistics on Total Land Area and Inland Water bodies

The total area of the country in FAOSTAT is 14,400 (000 ha) and the area of inland water is 1383 (000 ha), which is different than the above.

The calibration has been done to match the area of the country and inland water bodies with FAOSTAT/ UNSTAT by adjusting these area differences in the area of the “other land”.

1.3.2 Estimation and forecasting

Forest area

The estimating and the forecasting for 1990, 2000 and 2005 have been done separately for each sub-national forest boundary of inventory or assessment as these has been inventoried or surveyed in different years as indicated in the original data.

A. Hill Forests

1. Kassalong

The linear trend has been used for natural forests and bamboo area. Since only one point information was available for Bamboo, Scattered trees and Plantations same figure has been used for 1990, 2000 and 2005.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	55.01	46.07	41.60
Bamboo	12.65	12.65	12.65
Sub Total	67.67	58.72	54.25
Scattered trees	3.53	3.53	3.53
Plantation	19.19	19.19	19.19
Total	90.38	81.44	76.96

2. Rankhiang

The linear trend has been used for natural forests and bamboo area. Since only one point information was available for Bamboo, Scattered trees and Plantations same figure has been used for 1990, 2000 and 2005

	Area in 000 ha		
	1990	2000	2005
Natural Forests	6.23	0.35	0.35
Bamboo	13.61	13.61	13.61
Sub Total	19.83	13.95	13.95
Scatter trees	6.49	6.49	6.49
Plantation	18.72	18.72	18.72
Total	45.05	39.17	39.17

3. Sita Pahar

The linear interpolation and extrapolation method has been used for estimating area of natural forests, plantations and non-productive forests in 1990, 2000 and 2005.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	0.65	0.65	0.65
Plantation (teak)	3.74	3.62	3.56
Sub total	4.39	4.27	4.21
Non-productive forests	0.30	0.21	0.17
Other	0.75	0.96	1.06
Sub-Total	1.05	1.17	1.23
TOTAL	5.44	5.44	5.44

4. Sanghu Matamuhari

The linear interpolation and extrapolation method has been used for estimating areas of timber and bamboo-timber natural forests. The area of Jhum has been assumed constant since 1990.

Category	1990	2000	2005
Timber mixed	8.48	8.17	8.01
Bamboo – Timber	43.25	36.69	33.41
Sub Total	51.73	44.86	41.42
Jhum	17.10	17.10	17.10
Other	5.67	12.54	15.98
Sub Total	22.77	29.64	33.08
Total	74.50	74.50	74.50

3. Chittagong

The interpolation and extrapolation method has been used for estimating and forecasting the area of natural forests. Since bamboo had only data hence same figure has been assumed for the three reference years. Area under plantation for 1990 has been interpolated, while for 2000 and 2005 it has been assumed same as in 1996. The area under scattered trees for 1990 has been interpolated for 1990 but for 2000 and 2005 it has been treated as remainder area such that the total does not increase the actual original level of 1996.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	26.114	19.631	16.390
Bamboo	3.299	3.299	3.299
Sub Total Forests	29.413	22.930	19.689
Scatter trees	28.313	36.750	39.991
Plantation	13.666	14.109	14.109
Total	71.391	73.789	73.789

4. Cox's Bazar

The interpolation and extrapolation method has been used for natural forests. Area under plantation for 1990 has been interpolated, while for 2000 and 2005 it has been assumed as in 1996. The area under Scattered trees for 1990 has been interpolated for 1990 but for 2000 and 2005 it has been treated as remainder area such that the total does not increase the actual original level of 1996.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	29.081	25.391	23.547
Bamboo	0	0	0
Sub Total Forests	29.081	25.391	23.547
Scatter trees OWL	3.369	5.008	6.852
Plantation	18.742	19.439	19.439
Total	51.191	49.838	49.838

5. Sylhet

The interpolation and extrapolation method has been used for estimating and forecasting the areas of natural forests. Area under bamboo has been interpolated for 1990 but for 2000 and 2005 it has been assumed same as in 1996. The area under plantation for 1990 has been interpolated, while for 2000 and 2005 it has been assumed as in 1996. The area under Scattered trees for 1990 has been interpolated for 1990 but for 2000 and 2005 it has been treated as remainder area such that the total maintains the original level of 1996.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	3.060	2.597	2.366
Bamboo	16.987	20.04	20.04
Sub Total Forests	20.046	22.637	22.406
Scatter trees OWL	1.852	1.057	1.288
Plantation	14.687	17.872	17.872
Total	36.585	41.566	41.566

6. Other Plantations

The area in 1990 has been assumed for 2000 and 2005 since there was only one point in time information available for the following plantations in the hills.

Category	Area in 000 ha		
	1990	2000	2005
Khagrachari	1.41	1.41	1.41
Bandarban Pulpwood	8.72	8.72	8.72
Bandarban	9.36	9.36	9.36
Kaptai Pulpwood	18.17	18.17	18.17
Jhum control	15.36	15.36	15.36
Total	53.02	53.02	53.02

Total Hill Forests

The above estimating and forecasting for different forest areas has lead to the following total of forest, bamboo, plantation and scattered trees (OWL) areas in the hills of Bangladesh.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	128.63	102.86	92.91
Bamboo	89.79	86.29	83.01
Sub-total Forests	218.42	189.15	175.92
Plantation	141.76	145.97	145.91
Sub-Total Forests and Plantation	360.18	335.12	321.83
Scattered trees (Other wooded lands)_	43.55	52.83	58.15
Grand Total	403.73	387.95	379.98

B. Plain Sal Forests

The figures for 1990 and 2000 were available. The figures of 2000 have been assumed for 2005 as they present more realistic picture of the forest resources on the ground.

1. Dhaka

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	6.734	9.88	9.88
Plantation (wood lot)	0.917	2.04	2.04
Total	7.651	11.92	11.92

2. Tangail

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	9.975	8.130	8.130
Plantation (wood lot)	5.157	7.250	7.250
Total	15.132	15.38	15.38

3. Mymensingh

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	5.787	2.320	2.320
Plantation (wood lot)	3.844	5.136	5.136
Total	9.631	7.456	7.456

4. Dinajpur

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	0.946	1.472	1.472

Plantation (wood lot)	3.450	1.856	1.856
Total	4.396	3.328	3.328

5. Rangpur

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	0.084	0.064	0.064
Plantation (wood lot)	1.746	0.568	0.568
Total	1.83	0.632	0.632

6. Rajshahi

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	0.128	0.128	0.128
Plantation (wood lot)	0.200	0.200	0.200
Total	0.328	0.328	0.328

Total Plains Forest

The above figures lead to the following total of the forest resources in the plains of Bangladesh.

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	23.654	21.994	21.994
Plantation (wood lot)	15.314	17.050	17.050
Total	38.968	39.044	39.044

C. Littoral Forests (Mangroves and Coastal Afforestation)

Interpolation and extrapolation has been used to estimate the areas figures for 1990, 2000 and 2005 in littoral forest of Bangladesh.

1. Sunderbans

Category	Area in 000 ha		
	1990	2000	2005
Natural Forests	401.53	397.40	395.33
Plantation	0.26	0.22	0.22
Total	401.80	397.61	395.54

2. Coastal Afforestation

Interpolation and extrapolation has been used to estimate data for 1990, 2000 and 2005.

Coastal Areas	Area in 000 ha		
	1990	2000	2005
Bhola CA	10.21	12.42	12.90
Chittagong CA	15.87	20.04	20.82
Noakhali CA	27.18	34.22	35.55
PatuaKhali CA	8.39	9.85	10.23
Total	61.65	76.53	79.50

Total Littoral Forests

Category	Area in 000 ha		
	1990	2000	2005
Forests	401.53	397.40	395.33
Plantations	61.91	76.75	79.72
Total	463.44	474.15	475.05

D. Rubber Plantations

The figure for 2005 has been assumed same as of 2000.

Category	Area in 000 ha		
	1990	2000	2005
Rubber Plantation	19.800	35.430	35.430

E. Unclassed State Forests

There is more than 700,000 ha of hill land under district administration and most of this land is barren and lacks forest cover (GOB, 1993 Page 84 Main volume). Detail information is not available on extent of forest cover on this land. Since only point (1992) information is available for village homestead forests the same information is being assumed for 1990, 2000 and 2005.

Category	Area in 000 ha		
	1990	2000	2005
Un-classed State forests	700	700	700

F. Strip Plantations

Bangladesh Forest Department (GOB, 2002) estimates that the country has about 72,498.37 km long strip plantations. If average width of these plantations is assumed to be 10 meters then 1 km long plantation is equal to 1 hectare and the total strip plantation in Bangladesh in 2002 may be treated as covering about 72, 498 ha.

Category	Area in 000 ha		
	1990	2000	2005
Strip plantations	73	73	73

G. Village Homestead Forests

Since only point (1992) information is available for village homestead forests the same information is being assumed for 1990, 2000 and 2005. This assumption is also based on the cultural practice to maintain and conserve village homesteads.

Category	Area in 000 ha		
	1990	2000	2005
Village homestead forests	270	270	270

H. Total Hills, Plain and Littoral Forests and Rubber Plantation

National Category		Area in 000 ha		
		1990	2000	2005
Natural Forests	Hills	218.42	189.14	175.92
	Plain	23.65	21.99	21.99
	Littoral	401.53	397.40	395.33
	Sub Total	643.61	608.53	593.24
Plantations	Hills	141.76	145.97	145.91
	Plain	15.31	17.05	17.05
	Littoral	61.91	76.75	79.72
	Rubber	19.80	35.43	35.43
	Sub Total	238.79	275.20	278.11
Sub Total Forest		882.39	883.74	871.35
Scattered Trees (OWL)		43.55	52.83	58.15
Homestead Forest and Strip Plantations		342.50	342.71	342.67

The same figures from NFMA have been assumed valid for 2010. For the previous reference years, the change rate of -2600 ha of forest per year (calculated in the period 2000-2005) has been applied to the NFMA figures. For other wooded land the change of 1000 ha per year has been applied.

This assumption was necessary since the latest available figures from the NFMA 2005-2007 were not directly comparable with the previous forest inventories, and their comparison would have led to an unrealistic trend in forest cover areas over the period.

1.3.3 Reclassification

Forest area					
Country Variables	FRA 2015 Categories				
	Forest	Other Wooded land	Other land	Other land of which with tree cover	Inland Water bodies
Natural Forests	100				
Forest Plantation	100				
Scattered Trees		100			
Rubber Plantations	100				
Unclassed State Forests			100		
Strip Plantations				100	
Village Homesteads				100	
All remaining national categories			100		
Haor, Baor & Lakes					100
Rivers					100
Ponds					100

(Note: Inland water bodies' areas will be calibrated (set equal to) with area of Inland water bodies in FAOSTAT. The area of the land remaining after accounting forests and other wooded land will be allocated to the category of "other land")

For the National forest assessment 2005-2007 there is no need of reclassifying since the categories of Forest, Other wooded land, other land and inland water already correspond to the FRA categories.

1.4 Data

Table 1a













Categories		Area (000 hectares)				
		1990	2000	2005	2010	2015
	Forest	1494	1468	1455	1442	1429
	Other wooded land	269	279	284	289	294
	Other land	11254	11270	11278	11286	11294
	... of which with tree cover	270	934	1408	1882	2356
	Inland water bodies	1383	1383	1383	1383	1383
	TOTAL	14400.00	14400.00	14400.00	14400.00	14400.00

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
	Forest expansion	N/A	4.51	4.52	7.34	N/A	N/A	0.85	1.12
	... of which afforestation	N/A	4.51	4.52	7.34	N/A	N/A	0.85	1.12
	... of which natural expansion of forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Deforestation	N/A	2.6	2.6	2.6	N/A	N/A	N/A	N/A
	... of which human induced	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Reforestation	N/A	7.29	14.47	8.14	N/A	6.56	11.57	5.69
	... of which artificial	N/A	7.29	14.47	8.14	N/A	6.56	11.57	5.69

Tiers

Category	Tier for status	Tier for reported trend
Forest	Tier 3	Tier 3
Other wooded land	Tier 1	Tier 1
Forest expansion	Tier 3	Tier 3
Deforestation	Tier 1	Tier 1

Reforestation	Tier 3	Tier 3
---------------	--------	--------

Tier criteria

Category	Tier for status	Tier for reported trend
<ul style="list-style-type: none"> • Forest • Other wooded land • Afforestation • Reforestation • Natural expansion of forest • Deforestation 	<p>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</p>	<p>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</p>

1.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trends
Forest	N/A	Data are different from FRA 2005 report that was based on partial inventories from different reference years. Present data have been updated based on National Forest and Tree Resources Assessment (NFA) 2005-2007 which is supported by remote sensing analysis. The reliability of the figures is confirmed by the fact that the BSS in 2000 reported that forest area was 2.6 million ha and 2.5 in 2004. These figures are much higher than what here reported but the BSS mainly reports on legally designated forest area which also include garden areas (NFMA 2005-2007)
Other wooded land	N/A	N/A
Other land	N/A	N/A
Other land with tree cover	N/A	Figure for reporting year 2010 has been changed from 2209 to 1882 . New figure has taken from NFA 2005-07 having trees over >0.5 hectares of annual crop, perennial crops and rural settlement areas for 2010. Data for other reference years has been calibrated assuming village forest of 1993 is equivalent to other land with trees. And figure for 1993 has taken as same for 1990 because no other data is available.
Inland water bodies	N/A	As found through remote sensing study.
Forest expansion	Definition adopted from FAO guidelines Natural succession in newly accreted land.	Plantation on newly raised land on coastal area and Strip plantation on marginal land, every 2.5 Kilometer strip plantation counted as equivalent to a hectare. In case of coastal afforestation only local species used while fast growing speies introduced for forest expansion on marginal land

Deforestation	N/A	Change rate of Forest assumed as Deforestation
Reforestation	Second rotation plantation and plantation in the degraded forest areas	Plantation on degraded forest areas taken as Reforestation, For reforestation under social forestry fast growing species introduced to facilitate quick return for the beneficiaries. Issues of Biodiversity conservation has been taken care recently, steps taken to reduce the proportion of introduced species with local species during plantation.

Other general comments to the table

The national land use categories and definitions are already defined in the NFA2005-2007 supported by the FAO of the UN and the information in the above table has been derived from the said inventory, Data updated through forest Department record

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 (<i>sub-category</i>)	Other naturally regenerated forest where the trees are predominantly of introduced species.
...of which naturalized (<i>sub-sub category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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	National Forest and Tree Resources Assessment 2005-2007	Landuse area, Growing stock, Biodiversity and regeneration, Social and Economic products/ services, Biomass & carbon	2005-2007	Natural mangrove forests is considered as primary forest; Hill and Sal forests are considered as other naturally regenerated forests.

2	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB (Government of Bangladesh) 1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes	Characteristics	1985, 1990, 1991 and 1992	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB (Government of Bangladesh) 1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes
3	ANON, 2004. Office Letter of BFIDC, No. 455 Dated : 19-12-2004.	Rubber Plantations	2004	ANON, 2004. Office Letter of BFIDC, No. 455 Dated : 19-12-2004.
4	Forest Department Record	Extent	2013	N/A

2.2.2 Classification and definitions

National class	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
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).
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.
Naturally regenerated forest where there are clearly visible indications of human activities.	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species (sub-category)	Planted forest, where the planted/seeded trees are predominantly of introduced species.
Special categories	N/A
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

2.2.3 Original data

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Plantations	Area in 000 ha		
	1990	2000	2005
Protective Plantations			
Teknaf GR	2.40	2.40	2.40
Chunati WS	1.45	1.45	1.45
Sundarbans	0.26	0.22	0.22
Costal Afforestation	61.64	76.53	79.50
Sub Total	65.75	80.60	83.56
Productive plantation			
(Total less protective)	173.04	194.61	194.55
Total Plantation	238.79	270.74	278.11

2.3 Analysis and processing of national data

2.3.1 Adjustment

2.3.2 Estimation and forecasting

2.3.3 Reclassification

More realistic figure on primary forest from 1998 Inventory by Mandella Agriculture Development has been considered for 2015.

Total forest area as coming from Question 1, less primary forest and planted forest has been considered as other naturally regenerated forest.

For mangroves estimates for 1990, 2000 and 2005 have been taken from the FAO Mangroves study that used as original sources the following two reference documents:

-1981 Ibid Combined National Level Mangrove Estimate based on remote sensing studies.

-1995 Ibid Combined National Level Mangrove Estimate based on remote sensing studies

Estimates for bamboo for 2010 comes from the NFMA while for the other reference year, the FRA 2005 Thematic study on bamboo was used. New plantation area added with previous data. Every 2.5 kilometer strip plantation considered as 1 hectare of plantation.

2.4 Data

Table 2a







Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Primary forest	436	436	436	436	411
	Other naturally regenerated forest	819	761	741	769	744
	... of which of introduced species	N/A	N/A	N/A	N/A	N/A
	... of which naturalized	N/A	N/A	N/A	N/A	N/A
	Planted forest	239	271	278	237	274
	... of which of introduced species	N/A	N/A	N/A	40	40
TOTAL		1494.00	1468.00	1455.00	1442.00	1429.00

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

Table 2c

Categories	Area (000 hectares)				
	1990	2000	2005	2010	2015
Mangroves (forest and OWL)	460	476	476	504	531
... of which planted	24	40	40	68	99

Tiers

Category	Tier for status	Tier for reported trend
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Primary forest	Tier 2	Tier 1
Other naturally regenerated forest	Tier 1	Tier 1
Planted forest	Tier 2	Tier 1
Mangroves	Tier 2	Tier 1

Tier Criteria

Category	Tier for status	Tier for reported trend
Primary forest/Other naturally regenerated forest/Planted forest	<p>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</p> <p>Tier 2 : Data sources: Full cover mapping/ remote sensing or old NFI (more than 10 years)</p> <p>Tier 1 : Other</p>	<p>Tier 3 : Estimate based on repeated compatible tiers 3 (tier for status)</p> <p>Tier 2 : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status)</p> <p>Tier 1 : Other</p>

2.5 Comments

Category	Comments related to data definitions etc	Comments on reported trend
Primary forest	The forests under naturally regenerated forest with native species and the ecological process are not significantly disturbed but some degrees of human interventions are visible. Only Sundarbans fall under this category in Bangladesh.	Area of primary forest taken from Inventory report of 1998 as it is found more realistic.
Other naturally regenerating forest	All natural forests, except primary forests, includes hill forests, sal forests and bamboo or mixed bamboo/broad-leaved forests	Figure under this category has been taken from deducting primary forests and plantation forests from total forests.
Planted forest	All plantations including long rotation, short rotation, mangrove plantations and rubber plantation areas.	Long rotation plantations cover almost 10% of total forest area. Trend of forest area within this category may not be realistic due to necessary adjustment that was made to the forest area figures because of differences in the datasets
Mangroves	All natural and plantation Mangroves and Swamp with shrubs. Hill forests and Mangrove forests cover more than 2/3 of total forest area.	Extensive mangrove plantation carried out on newly raised coastal land.

Other general comments to the table

Primary forests are not converted to for any other purposes but part of mangrove forests loss occurs by soil erosion of which the amount has to be recorded.

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	Sylvander, R., Latif, M. A. and Karlsson, A. 2000. Forest Inventory of the Sal Forests of Bangladesh. Forestry Sector Project, Forest Department, MOEF, Bano Bhaban, Dhaka.	Extent	2000	N/A
2	FRA 2010 Guidelines	BCEF	N/A	N/A

3	National Forest and Tree Resources Assessment 2005-2007	Landuse area, Growing stock, Biodiversity and regeneration, Social and Economic products/ services, Biomass & carbon	2005-2007	Data generated in the previous FRA has been updated with new inventory reports.
4	Forest inventory of Sundarbans Reserved Forests by U.S. Forest Service (USFS) and USAID, FD and the Integrated Protected Area Co-Management (IPAC) project.	Extent	2009	N/A
5	Islam S S et al, Financial Analysis of Keora (Sonneratia apetala) Plantations in Bangladesh, Department of Business Administration, International Islamic University Chittagong, Forest Research Institute, Chittagong, Bangladesh	Extent	2011	N/A
6	Donato D. C et al Carbon Assessment Report 2009-2010 Inventory of the Sundarbans Reserved Forest U.S.D.A. Forest Service and Forest Department Bangladesh.	Extent	2010	N/A
7	Carbon Inventory for 6 Protected Areas of Bangladesh Integrated Protected Area Co Management Project and Forest Department	Extent	2011	N/A
8	Forest Department Record	Extent	2013	N/A

3.2.2 Classification and definitions

National class	Definition
Biomass stock	N/A
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark and foliage.
Carbon stock	N/A
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, and foliage.

3.2.3 Original data

Growing stock		
Scientific name	Common name	2005-2007
<i>Heritiera fomes</i>	Sundri	8.30
<i>Dipterocarpus turbinatus</i>	Garjan	4.90
<i>Gmelina arborea</i>	Gamari	2.43
<i>Albizia procera</i>	Koroi	2.07
<i>Lannea coromandelica</i>	Jiga	2.05
<i>Cocos nucifera</i>	Coconut	1.96
<i>Bombax ceiba</i>	Shimul	1.75
<i>Tectona grandis</i>	Teak	1.67
<i>Artocarpus chaplasha</i>	Chapalish	1.66
<i>Swietenia spp.</i>	Mehagani	1.33
Remaining		41.54
Total (million m3)		69.65

Biomass stock

Estimates on biomass were derived from carbon Inventory result.

Carbon stock

Carbon inventory recently carried out for Natural Mangrove forest and 6 PAs of Hill forest. Original data of carbon as inventoried for Natural Mangrove forest applied, average per hectare carbon content multiplied with total Natural Hill forest to estimate carbon of Hill forest. Only Natural Mangrove and Hill forest considered for carbon stock

Furthermore following carbon estimation biomass stock calculated,

3.3 Analysis and processing of national data

3.3.1 Adjustment

Growing stock

This step is not needed

3.3.2 Estimation and forecasting

Growing stock

Due to incomparability of previous forest inventories with the latest figures of the NFMA, the same growing stock per ha has been applied to the total forest area as from Question 1 for all the other reference years.

Same growing stock composition has been applied to the all the reference years.

Biomass stock

Consider the ecological zone and the growing stock per ha a BCEF of 2.05 to estimate aboveground biomass and a ratio of 0.20 to estimate below ground biomass were adopted. Biomass stock estimated from the carbon assessment and applied previous reference years.

Carbon Stock

Carbon Stock for Sundarbans and 6 portected areas of Hill forest has been assessed in the year 2009 and 2011 respectively. Per hectare carbon stock applied to total natural hill forest to estimate the carbon of Hill forest. For rest of the forest area an estimate of carbon stock made on the basis of total growing stock found through assessment. Proportion of Carbon content found by assessment has been applied for previous reference years also.

3.3.3 Reclassification

Scientific name	Common name	2015
<i>Heritiera fomes</i>	Sundri	14.57
<i>Sonneratia apetala</i>	Keora	7.15
<i>Dipterocarpus turbinatus</i>	Garjan	4.90
<i>Excoecaria agallocha</i>	Gewa	2.56
<i>Shorea robusta</i>	Sal	2.5
<i>Gmelina arborea</i>	Gamari	2.43

<i>Acacia auriculiformes</i>	Akasmoni	2.38
<i>Albizia procera</i>	Koroi	2.07
<i>Tectona grandis</i>	Teak	1.67
<i>Artocarpus chaplasha</i>	Chapalish	1.66
Remaining		41.53
Total (million m3)		83.42

Growing stock of Sundri and Gewa taken from Carbon inventory report carried out in 2009, an 2009, while the growing stock of Keora as published in Financial Analysis of Keora (*Sonneratia apetala*) Plantations in Bangladesh applied in coastal plantation. Per hectare volume of Sal and Akasia as found in Sal forest inventory report of 2000, applied to the total area of natural sal forest and plantation area of NFA 2005-07 assuming 90% species of Natural Sal forest is Sal. and assuming 80% species of medium and long rotation plantation is Akashmoni.

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
	Total growing stock	72.16	70.9	70.28	83.43	86.34	N/A	N/A	N/A	N/A	N/A
	... of which coniferous	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
	... of which broadleaved	72.16	70.9	70.28	83.43	86.34	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	<i>Heritiera fomes</i>	Sundri	8.59	8.45	8.37	14.57
2 nd	<i>Sonneratia apetala</i>	Keora	N/A	N/A	N/A	7.15
3 rd	<i>Dipterocarpus turbinatus</i>	Garjan	5.07	4.98	4.94	4.9



4 th	Excoecaria agallocha	Gewa	N/A	N/A	N/A	2.56
5 th	Shorea robusta	Sal	N/A	N/A	N/A	2.5
6 th	Gmelina arborea	Gamari	2.52	2.48	2.45	2.43
7 th	Acacia auriculiformes	Akasmoni	N/A	N/A	N/A	2.38
8 th	Albizia procera	Koroi	2.15	2.11	2.09	2.07
9 th	Tectona grandis	Teak	1.73	1.7	1.69	1.68
10 th	Artocarpus chaplasha	Chapalish	1.72	1.69	1.67	1.66
Remaining			43.04	42.28	41.91	41.53
TOTAL			64.82	63.69	63.12	83.43

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)	5 cm	In NFA 2005-2007, 10cm diameter at breast height was adopted
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	10 cm	For gross volume total height was taken whereas for commercial height upto 10 cm or up to the branching was taken
Minimum diameter (cm) of branches included in growing stock (W)	20 cm	10 cm
Volume refers to above ground (AG) or above stump (AS)	AS	Above ground volume is calculated

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 (m ³ per hectare and year)				
		Forest				
		1990	2000	2005	2010	2015
	Net annual increment	1.15	1.97	2.38	2.91	2.91
	... of which coniferous	N/A	N/A	N/A	N/A	N/A


	... of which broadleaved	1.15	1.97	2.38	2.91	2.91
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Table 3d











Category		Biomass (million metric tonnes oven-dry weight)									
		Forest					Other wooded land				
		1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
	Above ground biomass	148	145	144	171	177	N/A	N/A	N/A	N/A	N/A
	Below ground biomass	30	29	29	34	35	N/A	N/A	N/A	N/A	N/A
	Dead wood	4.8	4.6	4.6	5.6	5.8	N/A	N/A	N/A	N/A	N/A
TOTAL		182.80	178.60	177.60	210.60	217.80	.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
	Carbon in above ground biomass	70	68	68	80	83	N/A	N/A	N/A	N/A	N/A
	Carbon in below ground biomass	14	13.63	13.63	16	16.45	N/A	N/A	N/A	N/A	N/A
	<i>Subtotal Living biomass</i>	84	81.63	81.63	96	99.45	N/A	N/A	N/A	N/A	N/A
	Carbon in dead wood	2.23	2.17	2.15	2.65	2.75	N/A	N/A	N/A	N/A	N/A
	Carbon in litter	0.97	0.94	0.93	1.15	1.19	N/A	N/A	N/A	N/A	N/A
	<i>Subtotal Dead wood and litter</i>	3.19	3.12	3.08	3.8	3.53	N/A	N/A	N/A	N/A	N/A
	Soil carbon	19.32	18.86	18.63	22.97	23.89	N/A	N/A	N/A	N/A	N/A

TOTAL	106.52	103.60	103.34	122.77	127.28	.00	.00	.00	.00	.00
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Tiers

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

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

<ul style="list-style-type: none"> • Carbon in above ground biomass • Carbon in below ground biomass • Carbon in dead wood and litter • Soil carbon 	<p>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</p>	<p>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</p>
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3.5 Comments on growing stock biomass and carbon

Category	Comments related to data definitions etc	Comments on the reported trend
Total growing stock	Gross volume enumerated in NFA 2005-07, recent inventory result of Sundarbans and per hectare vol of keora, Sal and Acacia found in different inventory applied to the total forest (respective) area to calculate stock.	Growing stock of Sundri recieved from Carbon Inventroy of Sundarbans in 2009, For other growing stock calibrated from the previous data. The NFA 2005-07 represents the entire country while the previous data calibrated from different management inventories
Growing stock of broadleaved coniferous	Species combination of Gross volume enumeration has been changed according to forest condition	N/A
Growing stock composition	Species combination of Gross volume enumeration has been changed according to forest condition	N/A
Net annual increment	Annual increment found during forestry master plan taken as basis reading for 1990, annual increment found in Sundarbans in 2009 taken as average increment and the rest of the reference year data has been calibrated.	N/A
Above-ground biomass	Biomass estimated from carbon inventory.	Data generated has been updated.
Below-ground biomass	Same like above	N/A
Dead wood	Carbon of dead wood estimated from carbon assessment of forests.	N/A
Carbon in above-ground biomass	Calculated recently in Sundarbans and 6 other PAs average estimate of carbon per hectare applied to total hill forest. Carbon of other forests estimated from expert assessment.	Data generated has been updated after inventory and experiences.
Carbon in below-ground biomass	Same like above	not applicable
Carbon in dead wood	Same like above	not applicable
Carbon in litter	Same like above, In sundarbans no litter remains due to regular inundation.	not applicable

Soil carbon	Estimated value is for Natural Mangrove forest only, Soil of 30 cm depth considered for carbon estimation	not applicable
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Other general comments to the table

Total growing stock corresponds to the growing stock commercial species. Species composition of Growing stock has been changed, and previous data for changed species are not available so the respective fields kept blank. Other Wooded Land (OWL) has not been enumerated during NFA2005-2007. Parameters like below ground Carbon and biomass, dead wood carbon and biomass have been included. Carbon content of Sundarbans and Hill forests has been assessed in 2009 and 2011 and applied for the year 2010. Per ha. Carbon stock for rest of the forests calculated from experience. Proportion of carbon content applied to other reference years.

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	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB (Government of Bangladesh) 1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes Forest Resources Management Project (FRMP) Inventory Forestry Sector Project (FSP) Inventory	As designated under different inventories	1985, 1990, 1991 and 1992 1997 2000	FRA2010 report mainly based on the 'National Forest and Tree Resources Assessment 2005-2007'.
2	National Forest and Tree Resources Assessment	N/A	2005-2007	N/A
3	ANON, 2004. Office Letter of BFIDC, No. 455 of 19th December 2004.	Rubber Plantations	2004	N/A

4	Forest Information Generation & Networking System Project (FIGNSP) RIMS-GIS Unit and Bangladesh Forest Department, MOEF, Technical assistance of Center for Environmental and Geographic Information Services.	Area	2013	N/A
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4.2.2 Classification and definitions

National class	Definition
Production	Hill and Plains Forests less areas under forests designated for Conservation, Social services and Protection of Soil and water.
Multiple Purpose	Forest lands that provide multiple usages to the society e.g. wood, fuel, environmental and production purposes.
N/A	N/A
N/A	N/A

4.2.3 Original data

Multiple Function Areas						
Forest Type		Area in 000 ha				
		1990	2000	2005	2010	2015
Littoral forests	All areas of natural mangroves (saltwater) and mangrove plantations less Pas	323.74	334.45	335.35	358.95	497.57
	TOTAL	323.74	334.45	335.35	358.95	497.57
Production forest						
Production Forests Areas						

Forest Type		Area in 000 ha				2015
		1990	2000	2005	2010	
Hill Forests and Plantations	All areas less Rankhiang, Kassalong, Sangu-Matamuhuri, and PAs areas.	244.19	233.95	225.14	448	438
Sal and Plantations	All plain land plantation	15.59	15.66	15.66	54	55
Rubber Plantations	All areas under rubber plantations.	19.80	35.43	35.43	8.00	9.21
Bamboos	All areas				184	184
	TOTAL	279.58	285.04	276.23	694	685

4.3 Analysis and processing of national data

4.3.1 Adjustment

The different percentages of forest designation have been applied to the total forest area for 1990, 2000 and 2005 as coming from Question 1.

4.3.2 Estimation and forecasting

Not needed

4.3.3 Reclassification

A. Primary Function

National Category	Percentage of area serving Primary function				
	Production	Protection	Conservation	Social Ser.	Multiple
Production	100				
Protection		100			
Conservation			100		
Social Service				100	
Multiple					100

4.4 Data

Table 4a



Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Production forest	280	285	276	340	340
	Multiple use forest	772	621	604	358	358

Table 4b

Rank	Name of product	Key species	Commercial value of NWFP removals 2010 (value 1000 local currency)	NWFP category
1 st	Bamboo	Melocana bambusoides Bambusa tulda Mabmusa spp.,	72000	5
2 nd	Fish	Hilsa, Harpadon nehereus, Lates calcarifer, Polynemous indicus, Trichiurus lepturus etc	17459	9
3 rd	Leaves of trees	Nipa fruticans	15313	5
4 th	Crab	Scylla serrata,	6136	9
5 th	Broom Stick	Thysanolaena maxima	2007	2
6 th	Honey	Honey	883	11
7 th	Sungrass	Imperata cylindrica	500	5

8 th	Bark of trees	Dechasia kurzii, Terminalia arjuna, Saraka indica	463	3
9 th	Rattan	Daemonorops jenkisianus, Calamus latifolius Calamus spp	370	5
10 th	Wax	Wax	261	11
TOTAL			115392.00	

2010	
Name of local currency	Local currency is Taka, 1 US \$ = 80 Taka

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 beeswax
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	28383.09	27742.09
1991	28581.81	27875.81
1992	28568.6	27922.6
1993	28634.15	27928.15
1994	28586.67	27923.67
1995	28519.26	27940.26
1996	28508.24	27904.24
1997	28476.07	27866.07
1998	28468	27851
1999	28465.85	2784.85
2000	28458.89	27835.89
2001	28386.73	27798.73
2002	28017.75	27762.75
2003	28009.95	27727.95
2004	27976.29	27694.29
2005	27943.78	27661.78
2006	27866.2	27584.2
2007	27790	27508
2008	27714.96	27432.96
2009	27641.26	27359.26
2010	27568.83	27286.83
2011	27568.83	27286.83

Tiers

Category	Tier for status	Tier for reported trend
Production forest	Tier 3	Tier 3
Multiple use forest	Tier 3	Tier 3

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	Hill and Plain land forests less area designated under Conservation, Social services and Protection of Soil and water.	FRA 2010 categories were different from the categories designated for the previous years. Plantations in forests (Replanting and afforestation on marginal lands) are constitute main area of production.
Multiple use forest	Forest land provides multiple usages to the society e.g. wood, fuel, environmental and production services	Newly Afforested area in coast of the country as found in satellite image included.
Total wood removals	As recorded in previous reports of FRA	N/A
Commercial value of NWFP	Reveue received by Forest Department for collection of NWFP	Only NWFP collected from government designated forest through management practices has been included.

Other general comments to the table

Data taken mainly from FD data sources and National Forest and Tree Resources Assessment 2005-2007. and recent satellite image report of forest

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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	Forest area primarily designated or managed for coastal stabilization.
...of which desertification control (<i>sub-category</i>)	Forest area primarily designated or managed for desertification control.
...of which avalanche control (<i>sub-category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	Forest area designated or managed for public recreation.
...of which carbon storage or sequestration (<i>sub-category</i>)	Forest area designated or managed for carbon storage or sequestration.
...of which spiritual or cultural services (<i>sub-category</i>)	Forest area designated or managed for spiritual or cultural services.
...of which other (<i>sub-category</i>)	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	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB.1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes	Extent	1985, 1990, 1991, 1992	N/A
2	(FRMP) Inventory Forestry Sector Project (FSP) Inventory	N/A	1990	N/A
3	National Forest and Tree Resources Assessment	N/A	2005-07	N/A
4	Forest Information Generation & Networking System Project (FIGNSP) RIMS-GIS Unit and Bangladesh Forest Department, MOEF, Technical assistance of Center for Environmental and Geographic Information Services.	Area	2013	N/A
5	Forest Department Record	Extent	2013	N/A

5.2.2 Classification and definitions

National class	Definition
Protection of Soil and Water	Rankheong, Kassalong, and Sangu, Matamuhuri reserves in Chittagong Hill Tracts
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 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.
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.

5.2.3 Original data

Category	Area in (000) hectares			
	1990	2000	2005	2010
Protection of soil and water ¹⁾	Na			630
...of which production of clean water (All natural Hill forests)	87.5	72.678	68.207	551
...of which coastal stabilization (Mangrove Plantation)				45
... of which desertification control (Natural Sal forests of North Bengal)				34
... of which avalanche control				
...of which erosion, flood protection or reducing flood risk (Plantation in Hills)				
...of which other (please specify in comments below the table)				

FRA 2015 Categories	Forest area (000 hectares)				
	1990	2000	2005	2010	2015
Protection of soil and water 1)	Na			761	778
...of which production of clean water (All natural Hill forests)	87.5	72.678	68.207	551	551
...of which coastal stabilization (Mangrove Plantation)				45	62
... of which desertification control (Natural Sal forests of North Bengal)				34	34
... of which avalanche control					
...of which erosion, flood protection or reducing flood risk (Plantation in Hills)				131	131
...of which other (please specify in comments below the table)					

1) Under this reporting category all areas designated for protection of soil and water should be reported, regardless whether they are primarily designated or not. (All figures taken from 2005-2007 NFI)

For Production of Clean Water All Natural Hill forests 551,000 ha

For Coastal stabilization Mangrove plantation 62,000 ha

Desertification Control All Natural Sal forests 34,000 ha

For erosion control and reducing flood risk long rotation plantation in Hills are being preserved. 130,000 ha

5.3 Analysis and processing of national data

5.3.1 Adjustment

5.3.2 Estimation and forecasting

5.3.3 Reclassification

Table Table 5a

Table 5a

FRA 2015 Categories	Forest area (000 hectares)				
	1990	2000	2005	2010	2015
Protection of soil and water 1)	314.56	317.17	315.61	687	704
...of which production of clean water (All natural Hill forests)	87.5	72.678	68.21	477	477
...of which coastal stabilization (Mangrove Plantation)	61.65	76.53	79.50	45	61.57

... of which desertification control (Natural Sal forests of North Bengal)	23.65	21.99	21.99	34	34
... of which avalanche control					-
...of which erosion, flood protection or reducing flood risk (Plantation in Hills)	141.76	145.97	145.91	131	131
...of which other (please specify in comments below the table)					








Table 5b

FRA 2015 Categories	Forest area (1000 hectares)				
	1990	2000	2005	2010	2015
Ecosystem services, cultural or spiritual values	470	478	492	494	527
... of which public recreation	33	41	55	55	55
... of which carbon storage or sequestration	0	0	436	436	469.34
... of which spiritual or cultural services	0.77	0.77	0.77	2.64	2.64

... of which other (please specify in comments below the table)		436	436			
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5.4 Data

Table 5a

Categories		Forest area (1000 hectares)				
		1990	2000	2005	2010	2015
	Protection of soil and water	314.56	317.17	315.61	482	420
	... of which production of clean water	87.5	72.67	68.207	272	193
	... of which coastal stabilization	61.65	76.53	79.5	45	62
	... of which desertification control	23.65	21.99	21.99	34	34
	... of which avalanche control	N/A	N/A	N/A	N/A	N/A
	... of which erosion, flood protection or reducing flood risk	141.76	145.97	141.91	131	131
	... 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	17	17	17	14	40
...of which public recreation	15	17	17	14	40
...of which carbon storage or sequestration	0	0	0	0	0
...of which spiritual or cultural services	0.77	0	0	0	0
...of which other (please specify in comments below the table)	0	0	0	0	0

Tiers

Category	Tier for reported trend	Tier for status
Protection of soil and water	Tier 3	Tier 2
Ecosystem services, cultural or spiritual values	Tier 3	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
<ul style="list-style-type: none"> • 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
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Protection of soil and water	All forests maintained for production of clean water and soil, coastal stabilization, desertification control and erosion control fall under this category	N/A
Production of clean water	Natural Hill forests are maintained for production of clean water. The figure taken after deducting the areas used for public recreation and Carbon sequestration from total natural hill forest to avoid duplication.	N/A
Coastal stabilization	Plantation programs carried out in newly accreted coastal area for land stabilization.	Coastal plantations are increasing but about 44000 hectares of coastal (forest) planted area has been surrendered to land ministry for crop production after stabilization of the land in 2009, as decided by the Government.
Desertification control	Natural plain land sal forests are maintained for desertification control particularly of the drier region of the county.	N/A
Avalanche control	Not applicable	N/A
Erosion, flood protection or reducing flood risk	Matured Teak and other plantation in the Hill forests are refrained from felling to help control erosion and flood.	N/A
Other protective functions	N/A	N/A
Ecosystem services, cultural or spiritual values	Forests maintained for ecosystem services, carbon storage, public recreation and cultural and spiritual values fall under this category.	N/A
Public recreation	Forest Parks and Wildlife Sanctuaries open for public recreations.	N/A
Carbon storage or sequestration	Forests managed with no extraction of trees but only non timber forest products to meet local demand with special emphasis for storage and sequestration of atmospheric carbon	N/A
Spiritual or cultural services	National Parks of cultural values	N/A
Other ecosystem services	Primary forests maintained earlier for ecosystem services which are meant for carbon sequestration	N/A

Other general comments to the table

Data generated in accordance with the objectives of forest management

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	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB (Government of Bangladesh) 1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes Forest Resources Management Project (FRMP) Inventory Forestry Sector Project (FSP) Inventory	As designated under different inventories	1985, 1990, 1991 and 1992 1997 2000	FRA2010 report mainly based on the 'National Forest and Tree Resources Assessment 2005-2007'.
2	National Forest and Tree Resources Assessment	N/A	2005-2007	N/A
3	Forest Department Record	N/A	2013	N/A
4	N/A	N/A	N/A	N/A

6.2.2 Classification and definitions

National class	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.
Protected areas within forest area	Forest area designated as protected under Wildlife (Security and conservation) Act 2012
N/A	N/A

N/A	N/A
-----	-----

6.2.3 Original data

Protected Areas					
ForestAreas	Protected Area	Area in 000 ha			
		1990	2000	2005	2010
Hill Forest and Plantations	Himchari National Park	1.73	1.73	1.73	1.73
	Lawachara National Park	1.25	1.25	1.25	1.25
	Rema-Kalenga WS	1.80	1.80	1.80	1.80
	Hail Haor	1.43	1.43	1.43	
	Hazarikhil	2.91	2.91	2.91	2.91
	Chunati WS	7.76	7.76	7.76	7.76
	Teknaf Game Reserve	11.62	11.62	11.62	11.62
	Kaptai National Park				5.46
	PablaKhali Wildlife Sanctuary				42.09
	Medha Kachapia National Park				0.40
	Sathchari National Park				0.24
	Khadim Nagar National Park				0.68
	Fashiakhali Wildlife Sanctuary				1.30
	Sub TOTAL	28.49	28.49	28.49	77.24

Sal Forests and Plantation					
	Bhawal National Park	5.02	5.02	5.02	5.02
	Modhupur National Park	8.44	8.44	8.44	8.44
	Ramsagar National Park	0.05	0.05	0.05	0.05
	Mirpur Botanic Garden	0.09	0.09	0.09	
	Sub TOTAL	13.60	13.60	13.60	13.51
Littoral Forests					
	Sundarbans East WS	31.23	31.23	31.23	31.23
	Sundarbans South WS	36.97	36.97	36.97	36.97
	Sundarbans West WS	71.50	71.50	71.50	71.50
	Nijum Dweep National Park				16.35
	Char Kukri- Mukri Wildlife Sanctuary				0.04
	Sub TOTAL	139.70	139.70	139.70	156.09
Grand Total PA		181.78	181.78	181.78	246.84

(WS= Wildlife Sanctuary)

6.3 Analysis and processing of national data

6.3.1 Adjustment

The different percentages of forest designation have been applied to the total forest area for 1990, 2000 and 2005 as coming from Question 1.

6.3.2 Estimation and forecasting

Not needed

6.3.3 Reclassification

See 4.3.3.

Protected Areas(2013)

Protected Area	Area in (000) hectares
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		1990	2000	2005	2010	2015
Himchari National Park		1.73	1.73	1.73	1.73	1.73
Lawachara National Park			1.25	1.25	1.25	1.25
Rema-Kalenga WS			1.8	1.8	1.8	1.8
Chunati WS		7.76	7.76	7.76	7.76	7.76
Teknaf Game Reserve		11.62	11.62	11.62	11.62	11.62
Kaptai National Park			5.46	5.46	5.46	5.46
PablaKhali W S		42.09	42.09	42.09	42.09	42.09
Medha Kachapia NP				0.4	0.4	0.4
Sathchari NP				0.24	0.24	0.24
Khadim Nagar N P					0.68	0.68
Fashiakhali WS					1.3	1.3
Baroyardhala N P						2.93
Dudhpukuria Dhopachari WS						4.716
Hazarikhil W S						1.17
Sangu W S						2.31
	Sub TOTAL	63.2	71.71	72.35	74.33	85.456
Sal Forests and Plantation						
Bhawal National Park		5.02	5.02	5.02	5.02	5.02
Modhupur N Park		8.44	8.44	8.44	8.44	8.44
Ramsagar N P				0.27	0.27	0.27
Mirpur Botanic Garden		0.09	0.09	0.09	0.09	0.09
Nababganj N Park						0.51
Singra National Park						0.305
Kadigarh National Park						0.34
Altadighi National Park						0.26

Birganj National Park						0.16
	Sub TOTAL	13.55	13.55	13.82	13.82	15.395
Littoral Forests						
Sundarbans East WS		5.44	31.23	31.23	31.23	31.23
Sundarbans South WS		17.88	36.97	36.97	36.97	36.97
Sundarbans West WS		9.07	71.5	71.5	71.5	71.5
Nijum Dweep N Park				16.35	16.35	16.35
Char Kukri-Mukri W.S		0.04	0.04	0.04	0.04	0.04
kuakata National Park						1.61
Tengragiri W Sanctuary						4.04
Sonarchar W Sanctuary						2.02
Dhangmari W S						0.34
Chandpai W Sanctuary						0.56
Dudhmukhi W Sactuary						0.17
	Sub TOTAL	32.46	139.74	156.09	156.09	164.83
Banskhali EcoPark				1.2	1.2	1.2
Madhobkundu Eco Park				0.266	0.266	0.266
Botanical Garden Sitakundu			0.8	0.8	0.8	0.8
Modhutila Eco Park		0.1	0.1	0.1	0.1	0.1
Tilagorh Eco Park					0.046	0.046
Borshijora Eco Park					0.325	0.325
Rajeshpur Eco Park					0.2	0.2
Bangabandu Safari Park(Cox)		0.9	0.9	0.9	0.9	0.9
Bangabandu Safari Gazipur						1.542

National Botanic Garden Dhaka		0.084	0.084	0.084	0.084	0.084
Baldha Garden Dhaka		0.001	0.001	0.001	0.001	0.001
Bangabandu Setu Ecopark					0.124	0.124
Sheikh Rasel Aviary Park						0.21
Pirojpur River View Ecopark						0.006
	Sub TOTAL	1.085	1.885	3.351	4.046	5.804
	Grand Total	110.26	226.885	245.611	248.286	271.485

6.4 Data

Table 6

Categories		Forest area (000 hectares)				
		1990	2000	2005	2010	2015
	Conservation of biodiversity	110.26	227	246	248	271
	Forest area within protected areas	110.26	227	246	248	271

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
<ul style="list-style-type: none"> Conservation of biodiversity Forests within protected areas 	<p>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</p>	<p>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</p>

6.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Conservation of biodiversity	Protected Areas (PAs)	Area of Protected has been increased to conserve biodiversity
Forest area within protected areas	All designated Protected Areas (PAs) namely wildlife sanctuaries, national parks and safary parks and Ecoparks including Botanical gardens.	Areas increasing

Other general comments to the table

Pervious data has been changed after confirming the office records. Protected area maintained by Forest Department as declared under Wildlife (Security and Conservation) Act 2012 has taken into consideration

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

No data generated

7.3 Analysis and processing of national data

7.3.1 Adjustment

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7.3.2 Estimation and forecasting

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7.3.3 Reclassification

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7.4 Data

Table 7

Scientific name of woody invasive species	Forest area affected (000 ha)	
	2005	2010
Leucaena leucocephala	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
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
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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
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7.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Invasive species	Data not available	N/A

Other general comments to the table

Leucaena leucocephala is one of such species can be considered but the area of forest affected by the species has not been recorded.

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	Forest Department Report	Area	1995, 1996	N/A
2	Anon. 2004 Office record of Bangladesh Forest Department and Bangladesh Forest Research Institute, Bangladesh	Insect and Disease	2000	N/A
3	Banik, 2004. Bangladesher Sundarbans	Top dying of Sundri	2004	N/A
4	National Forest and Tree Resources Assessment 2005-07.	Bio Sicial	2005-07	N/A
5	Cyclone-affected areas of the Sundarbans as inferred from Terra-MODIS satellite data by Bangladesh Space Research and Remote Sensing Organization (SPARSO).	Area	2007	N/A
6	Fire Occurrence map of Bangladesh International Centre for Integrated Mountain Development (ICIMOD) launched real-time forest fire detection and monitoring system.	Area, Intensity of damages	2013	N/A

8.2.2 Classification and definitions

National class	Definition
Forest fires	Occurance of fire in the forest area.
Severe weather events	Occurance of forest damage by Natural calamities
Outbreaks of diseases	Same as FRA
Outbreaks of insects	Same as FRA

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	#
	Total land area burned	75.52	N/A	100.04	N/A	110.69	N/A	101.65	N/A	85.15	N/A
	... of which forest area burned	10	N/A	6.81	N/A	12.87	N/A	42.42	N/A	25.86	N/A
Category		2008		2009		2010		2011		2012	



		000 ha	#	000 ha	#	000 ha	#	000 ha	#	000 ha	#
	Total land area burned	48.81	N/A	78.61	N/A	23.37	N/A	37.64	N/A	72.93	N/A
	... of which forest area burned	7.12	N/A	16.16	N/A	9.52	N/A	7.48	N/A	26.69	N/A

Table 8b

Outbreak category	Description/name	Year(s) of latest outbreak	Area damaged (000 hectares)
2	Top Dying Sundri	1996	0.07274
2	Loranthus	1995	0.006
3	Cyclone Sidr Damage of Sundarbans	2007	117.8
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
<ul style="list-style-type: none"> • Insects • Diseases • Severe weather events 	Tier 2	Tier 2

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
<ul style="list-style-type: none"> • 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	Fire occur mainly due to practice of shifting cultivation by local people, the data received from ICIMOD, after Nasa.	Record of forest fire after 2011 is not available.
Insects	N/A	N/A
Diseases	Top dying disease of Sundri trees of Sundarbans not so severe	N/A
Severe weather events	Damage by Cyclone Sidr	N/A

Other general comments to the table

The area burned received from ICIMOD. Actual forest burnt not recorded. MODIS FAO value used by default

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	N/A

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	Canopy cover of the forest has been reduced but the area needs to be inventoried.

Other general comments

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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	Forest Act	Extent	1927	N/A
2	National Forest Policy	N/A	1994	N/A
3	Wildlife (Conservation and Security) act 2012	N/A	2012	N/A
4	N/A	N/A	N/A	N/A

10.2.2 Classification and definitions

National class	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.
N/A	N/A
N/A	N/A

10.2.3 Original data

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10.3 Data

Table 10

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

10.4 Comments

Variable / category	Comments related to data definitions etc
Policies supporting sustainable forest management	Clause 9 of the National Forest Policy states that Multiple use of forest, water and fish of the Sundarbans through sustained management will be ensured keeping the bio-environment of the area. Clause 10: All state owned forests of the natural origin and plantation of the Hills and Sal forest will be used for producing forest resources keeping aside the areas earmarked for conserving soil, water and biodiversity.
Legislation and regulations supporting sustainable forest management	Forest ACT 1927 Wildlife (Conservation and Security) Act 2012.

Other general comments

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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	Existing practice in the country to develop and approve policies related to forests and lands.	2013	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
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11.3 Comments

Category	Comments related to data definitions etc
National stakeholder platform	All stakeholders are invited for discussion at different level during policy formulation. One of the precondition for implementing National Forest Policy 1994 states that in the planning and decision making process the opinions and suggestions of the people whose livelihood depends on forestry will be incorporated.

Other general comments

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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:

- [Guide for country reporting FRA 2015](#)
- [FRA 2015 Terms and Definitions](#)

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 (<i>sub-category</i>)	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	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB (Government of Bangladesh) 1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes Forest Resources Management Project (FRMP) Inventory Forestry Sector Project (FSP) Inventory	As designated under different inventories	1985, 1990, 1991 and 1992 1997 2000	FRA2010 report mainly based on the 'National Forest and Tree Resources Assessment 2005-2007'.
2	National Forest and Tree Resources Assessment	N/A	2005-2007	N/A
3	Forest Department Record	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

12.2.2 Classification and definitions

National class	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.

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

12.2.3 Original data

Country has about 1600 thousand hectares of land notified as forest, According to existing policy no forest land can be used for any other purpose but forestry. But due to natural calamities including soil erosion country have been losing forests particularly in coastal areas.

More lands being raised in coastal area through afforestation also declared as reserved forest and part of which will remain as forest for shelter belt and rest of the area may be transferred for crop production after stabilization.

12.3 Analysis and processing of national data

12.3.1 Adjustment

The different percentages of forest designation have been applied to the total forest area for 1990, 2000 and 2005 as coming from Question 1.



12.3.2 Estimation and forecasting

Not needed

12.3.3 Reclassification

12.4 Data

Table 12

Categories		Forest area 2010 (000 ha)
	Forest area intended to be in permanent forest land use	1400
	... of which permanent forest estate	1400

Tiers

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

Permanent forest estate	Tier 3
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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	Although forest area intended to be in permanent forest land has been estimated only 14,00,000 hectares which is only 10% of the county, Government has committed to bring 20% of land under afforestation in National forest Policy 1994 within the year 2015 which is about 29,00,000 hectares. To achieve the target different initiatives already are in progress as a result Other land with tree cover (including Homestead forests) are increasing rapidly.
Permanent forest estate	All notified forests reserved, protected and under the process of declaring as reserved forests under forest Act 1927.

Other general comments

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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	Forest Department Record	Extent	2013	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
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.
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	2012						yes
Other field assessments	40	2009			yes	yes		
Updates to other sources	10	2007		yes				
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	
2 Periodic national state of the forest report	yes
3 Other (please document)	
4 None	

Other type of forest reporting

N/A

13.4 Comments

Category	Comments
Periodic national state of the forest report	There are permanent sample plots (PSP) and Temporary sample plots (TSP) in the forests, PSPs are visited every 4-5 years while 10% of TSPs are visited every year for continuous monitoring of forests. The data collected for different parameters are then used for planning the sustainable forest management.
N/A	N/A
N/A	N/A

Other general comments

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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 (<i>sub-category</i>)	Forest management plan mainly focused on production
...of which for conservation (<i>sub-category</i>)	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	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB (Government of Bangladesh) 1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes Forest Resources Management Project (FRMP) Inventory Forestry Sector Project (FSP) Inventory	As designated under different inventories	1985, 1990, 1991 and 1992	FRA2010 report mainly based on the 'National Forest and Tree Resources Assessment 2005-2007'.
2	National Forest and Tree Resources Assessment	N/A	2005-2007	N/A
3	Forest Department Record	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A

14.3 Data

Table 14a

Forest plan type	Forest area 2010 (000 ha)
Forest area with management plan	871

... of which for production	435
... of which for conservation	436

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	10
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Tiers

Category	Tier for status
Forest area with management plan	Tier 3
Percent of area under forest management plan that is monitored annually	Tier 3

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	Areas under approved Management Plans for 10/20 years aiming to achieve defined management goals.
N/A	N/A
N/A	N/A

Other general comments

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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
Beneficiaries of forests Wood traders local government agencies	All neighbours, beneficiaries stakeholders invited to comment on forest management issues and useful comments are taken into consideration for sustainable management of resources
N/A	N/A
N/A	N/A

Other general comments

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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
	FSC	0	0	0	0	0	0	0
	PEFC	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0
		2007	2008	2009	2010	2011	2012	
	FSC	0	0	0	0	0	0	
	PEFC	0	0	0	0	0	0	
	Other	0	0	0	0	0	0	

Table 16b

Domestic forest management certification		Forest area (000 ha)						
		2000	2001	2002	2003	2004	2005	2006
	0	0	0	0	0	0	0	0
	N/A	0	0	0	0	0	0	0
	N/A	0	0	0	0	0	0	0

		2007	2008	2009	2010	2011	2012	
	0	0	0	0	0	0	0	
		0	0	0	0	0	0	
		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	N/A
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	Recently an agreement signed with TUVUSD Germany Company, under CDM project financed by GIZ in Chunati Wildlife Sanctuary
Domestic forest management certification	No domestic forest management certification system is in place.

Other general comments

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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: <ul style="list-style-type: none"> • <u>Goods</u> : roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products. • <u>Services</u> : 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	Forest Department	Budget and expenditure	2008	Data generated for the first time
2	Forest Department Record	Budget and expenditure	2013	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	620798	964331	734735
Public expenditure on forestry	432980	770106	2087600

	2000	2005	2010
Name of Local Currency	Bangladesh Taka	N/A	N/A

17.4 Comments

Category	Comments related to data definitions etc
Forest revenue	Revenue earned by selling forest produces and services by the Forest Department
Public expenditure on forestry	Expenditure incurred by Forest Department only under revenue budget, for 2010 the expenditure under development budget included
Other general comments	Data given of the financial year 2012-13

Other general comments

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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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	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 (<i>sub-category</i>)	Forest owned by individuals and families.
...of which private business entities and institutions (<i>sub-category</i>)	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 (<i>sub-category</i>)	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	National Forest and Tree Resources Assessment 2005-2007	Landuse area, Growing stock, Biodiversity and regeneration, Social and Economic products/ services, Biomass & carbon	2005-2007	Due to small area coverage under Sal forests and Mangrove plantations, distribution of sample plots were inadequate for the two categories as inventory layout follows systematic sampling.
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

18.2.2 Classification and definitions

National class	Definition
State ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Public Ownership Regional	The forest lands under land ministry.
Community Ownership	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous Ownership	Forest owned by communities of indigenous or tribal people.
Industrial Ownership	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and religious and educational institutions etc.
Individual Ownership	Forest owned by individuals and families. Forest owned by individuals, families, private co-operatives, communities, corporations and other business entities, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Other/Unknown Ownership	N/A

18.2.3 Original data

National Forest and Tree Resources Assessment 2005-2007.
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Ownership category	Area (000ha)	%
Public ownership	888	0.62
Private ownership	521	0.36
...of which owned by individuals	177	0.12
...of which owned by private business entities and institutions	0	0.00
...of which owned by local communities	0	0.00
...of which owned by indigenous / tribal communities	344	0.24
Other types of ownership	33	0.02
TOTAL	1442	1.00

18.3 Analysis and processing of national data

18.3.1 Adjustment



18.3.2 Estimation and forecasting







Since no data is available on the forest ownership apart from the NFMA 2005-2007 data, the same percentages of different ownerships have been applied to the forest areas as from Question 1.

18.3.3 Reclassification

18.4 Data

Table 18a

Categories		Forest area (1000 hectares)			
		1990	2000	2005	2010
	Public ownership	926	910	902	894
	... of which owned by the state at national scale	926	910	902	894

	... of which owned by the state at the sub-national government scale	0	0	0	0
	Private ownership	538	528	524	519
	... of which owned by individuals	179	176	175	174
	... of which owned by private business entities and institutions	0	0	0	0
	... of which owned by local, tribal and indigenous communities	359	352	349	345
	Unknown ownership	30	30	29	29
TOTAL		1494.00	1468.00	1455.00	1442.00

Tiers

Category	Tier for status	Tier for reported trend
Public ownership	Tier 2	Tier 2
Private ownership	Tier 2	Tier 2
Unknown ownership	Tier 2	Tier 2

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	926	910	899	698
Individuals	0	0	0	0
Private companies	0	0	0	0

Communities	0	0	3	196
Other	0	0	0	0
TOTAL	926.00	910.00	902.00	894.00

Category	Tier for reported trend	Tier for status
Public Administration	Tier 2	Tier 2
Individuals	Tier 2	Tier 2
Private companies	Tier 2	Tier 2
Communities	Tier 1	Tier 1
Other	Tier 2	Tier 2

18.5 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Public ownership	FAO Definitions commensurate with National Definitions	Data reflected in the table T2 has been generated for the first time under the NFA 2005-2007.
Private ownership	Forests on the basis of FAO definition.	N/A
Unknown ownership	Forests of which ownership is conflicting between agencies.	N/A
Management rights	Management rights shared with local people through Co Management	Co Management started in 2003 and it has been expanded rapidly depending on the effectiveness in biodiversity conservation.

Other general comments to the table

Data presented here is derived from National Forest and Tree Resources Assessment 2005-2007. the change rate of forest applied to generate current data and data for other reference years also. Area under Co Management taken as management under community.

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	FMP, 1993. Forestry Master Plan, Ministry of Environment and Forest, Government of Bangladesh. GOB.1993. Asian Development Bank (UNDP/FAO/BGD/88/025). Main and supporting volumes.	Extent	1985, 1990, 1991, 1992	N/A
2	Statistical yearbook of Bangladesh 2000	Employed persons in forestry and related services	2000	N/A
3	Statistical yearbook of Bangladesh 2011	Employed persons in forestry and related services	2011	N/A
4	N/A	N/A	N/A	N/A

19.2.2 Classification and definitions

National class	Definition
Employment in primary production of goods	Employment derived from forestry activities
...of which paid employment	Persons work in forests and forest industries etc on payment basis;
...of which self-employment	persons engaged in forestry activities in own enterprise, nursery etc.
Employment in management of protected areas	Employment in activities related to management of protected areas within the forests.

19.2.3 Original data

The FMP (1993) estimates that at the 1990 level of primary activities, the forest land annually provides employment to about 97,900 persons or about 0.1109 person years per ha.

1.1.1 Estimation and forecasting

The total number of employment on forest land in 2000 has been calculated assuming same level of activities (or number of persons per ha) as in 1990.

Variable	1990
Forest land (000 ha)	882
Per ha person year employment	0.1109
Employment on forest land in "000"	97.9



This total employment has been apportioned to the employment relating to the “provision of services” on the basis of percentage of area under conservation of biodiversity (Question 6) to total area of forest in 1990 which is about 20.6%. The rest of the employment has been apportioned to the employment relating to the “production of goods”.

The figure of 116 from the Statistical Yearbook of Bangladesh has been used to estimate forest employment in 2000 and in 2005. The 20% of employment related to the provision of service has been deducted and this figure has been also used for 2005, since there was a lack of reliable updated figures.

The figure of 2010 extracted from statistical year book of 2011 as stated against person employed for wood treaters, cabinet makers and related trades workers

19.3 Data

Table 19

Category		Employment (000 years FTE)			
		1990	2000	2005	2010
	Employment in forestry	1650	1520	1480	1500
	... of which female	150	300	580	600

19.4 Comments

Category	Comments related to data definitions etc	Comments on the reported trend
Employment in forestry	Data taken from the Statistical year book of Bangladesh 2011. The figure estimated for wood treaters, cabinet makers and related trade workers. It may not same as defined by FAO for employment in forestry.	N/A

Other general comments to the table

Data taken from statistical year book of Bangladesh 2011, the figure not resemble FTE as described in the definition. conversion to FTE is also not possible. because part time labor and traders also included.
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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)	63645	taka	2011

20.3 Comments

Category	Comments
N/A	Data taken from statistical year book of 2011 as stated against Gross domestic product of Bangladesh by broad activity categories it includes all forestry related activities which may not resemble the definition.

Other general comments

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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	National Forest Policy	Extent	1994	None of the notified forest will be converted or used for any other purposes other than forestry
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	1400	1400

Table 21b

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

21.4 Comments

Category	Comments
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Government target/aspiration for forest area	None of the notified forest (Nearly 10% of the country) will be converted for any other purpose but forestry. Government has committed to bring 20% of land (2900 thousand hectares) under afforestation by the year 2015, which will include other land with tree cover also. All measures are in progress to achieve the target.
Forests earmarked for conversion	No forest is earmarked for conversion

Other general comments

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