

9.29 WEST BENGAL

9.29.1 Introduction

West Bengal is situated in the eastern part of the country between 21°20' N and 27°32' N latitude and 85°50' E and 89°52' E longitude sharing borders with Bangladesh, Nepal and Bhutan. Geographical area of the state is 88,752 km² (8.88 million ha) which is 2.7% of the total area of the country. The state falls in the physiographic zones of Eastern Himalayas and Eastern Plains and has two distinct natural divisions: the North Himalayas and the South Alluvial Gangetic Plain. The state has famous delta of Indian Sunderbans.

The state has a diverse climate, varying from moist tropical in the southeast to dry tropical in the southwest and from subtropical to

temperate in the mountains in the north. Annual rainfall varies from 900 mm in southwest to about 5000 mm in northern parts of the state. The temperature also ranges between sub-zero in the hills during the winters to about 46°C in southern parts during the summer.

The population of the state is 91.35 million (*Census 2011*) which constitutes 7.55% of the country's population. The population density is 1029 persons per km². The rural and urban population is 68.11% and 31.89% respectively. The livestock population of the state is 37.42 million. (*Livestock Census 2007*)

Land use pattern of the state is given below in Table 9.29.1.

Table 9.29.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	8,875	
Reporting area for land utilization	8,684	100.00
Forests	1,174	13.52
Not available for cultivation	1,814	20.89
Permanent pastures and other grazing lands	7	0.08
Land under misc. tree crops and groves	55	0.63
Culturable wasteland	32	0.37
Fallow lands other than current fallows	22	0.25
Current fallows	287	3.30
Net area sown	5,294	60.96

Source: Land Use Statistics, Ministry of Agriculture, GOI, 2008-09.

9.29.2 Recorded Forest Area

The recorded forest area of the state is 11,879 km² which is 13.38% of its geographical area.

Reserved Forests constitute 59.38%, Protected Forests 31.75% and Unclassed Forests constitute 8.87% of the total forest area of the state.

9.29.3 Protected Areas

The state has 0.29 million ha, i.e. 3.26% of its geographical area under Protected Areas comprising of 5 National Parks and 15 Wildlife Sanctuaries. There are 2 Tiger Reserves, namely, Sundarbans and Buxa in the state. Sunderbans is a unique eco-system having substantial area under mangrove forests. Recognizing its special conservation value,

the area has been declared as Biosphere Reserve (0.96 million ha) which includes a Tiger Reserve and a National Park. Sundarbans National Park is also a World Heritage site. In addition, two Elephant Reserves, namely, Eastern Duars Elephant Reserve and Mayur Jharna have been formed in the northern and southern parts of the state respectively.

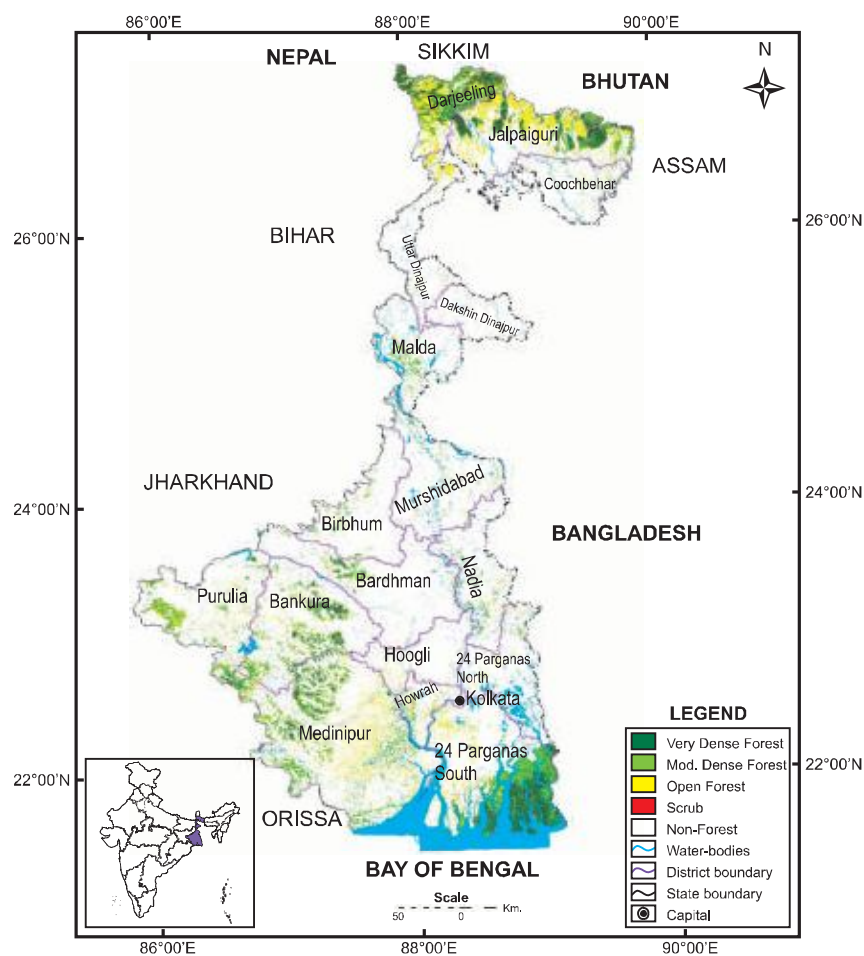
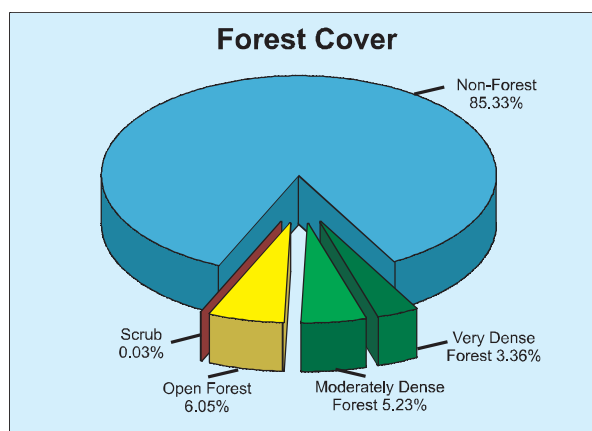


Fig 9.29 Forest cover map of West Bengal

9.29.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of November 2008-January 2009, is 12,995 km² which is 14.64% of the state's geographical area. In terms of forest canopy density classes, the state has 2,984 km² area under very dense forests, 4,646 km² area under moderately dense forests and 5,365 km² area under open forests. The forest cover of the state is shown in Fig. 9.29.



District-wise forest cover in different canopy density classes and scrub along with the

changes compared to 2009 Assessment are given in Table 9.29.2.

Table 9.29.2: District-wise Forest Cover

(Area in km²)

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Bankura ^T	6,882	213	510	333	1,056	15.34	0	4
Bardhaman ^T	7,024	44	135	82	261	3.72	0	1
Birbhum ^T	4,545	0	42	63	105	2.31	0	2
Kolkata	185	0	0	0	0	0.00	0	0
Coochbehar	3,387	0	15	79	94	2.78	0	1
Dakshin Dinajpur ^T	2,219	0	2	13	15	0.68	0	0
Darjeeling TH	3,149	714	663	912	2,289	72.69	0	0
Howrah	1,467	0	53	93	146	9.95	0	0
Hoogli	3,149	0	9	52	61	1.94	0	0
Jalpaiguri ^T	6,227	681	514	1,309	2,504	40.21	-2	8
Malda ^T	3,733	0	113	51	164	4.39	0	0
Medinipur ^T	14,081	253	1,171	1,172	2,596	18.44	1	0
Murshidabad ^T	5,324	0	63	44	107	2.01	0	0
Nadia	3,927	2	74	53	129	3.28	0	0
North 24 Pargana	4,094	20	18	51	89	2.17	0	0
Purulia ^T	6,259	43	373	381	797	12.73	0	13
South 24 Pargana ^T	9,960	1,014	889	503	2,406	24.16	2	0
Uttar Dinajpur	3,140	0	2	174	176	5.61	0	0
Grand Total	88,752	2,984	4,646	5,365	12,995	14.64	1	29

There is net increase of 1 km² in the forest cover from the reported area in ISFR 2009. A quantitative account of the class-wise change

is given in the forest cover change matrix in Table 9.29.3.

Table 9.29.3: Forest Cover Change Matrix (Area in km²)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	2,984	1	2	0	0	2,987
Moderately Dense Forest	0	4,641	3	0	0	4,644
Open Forest	0	4	5,354	0	5	5,363
Scrub	0	0	0	29	0	29
Non - Forest	0	0	6	0	75,723	75,729
Total 2011	2,984	4,646	5,365	29	75,728	88,752
Net Change	-3	2	2	0	-1	

9.29.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.29.4.

Table 9.29.4: Altitude Zone-wise Forest Cover (Area in km²)

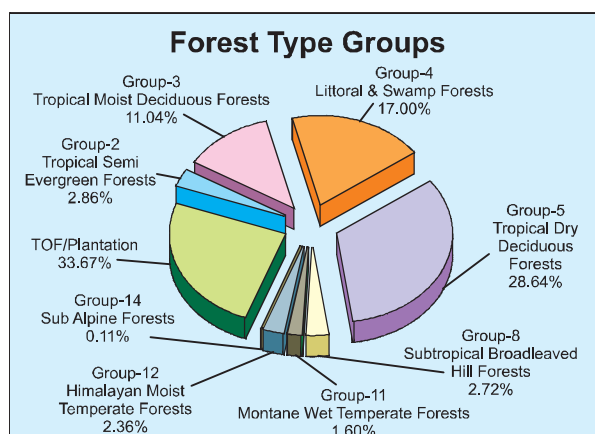
Altitude Zone	VDF	MDF	OF	Total
0-500m	2,319	4,097	4,657	11,073
500-1000m	151	277	258	686
1000-2000m	282	221	405	908
2000-3000m	205	47	43	295
>3000m	27	4	2	33
Total	2,984	4,646	5,365	12,995

(Based on SRTM, Digital Elevation Model)

9.29.6 Forest Cover in Different Forest Types

Forest type mapping using satellite data has been undertaken by Forest Survey of India with reference to Champion & Seth Classification. As per this assessment, the state has 30 forest types which belong to the

eight forest type groups, viz. Tropical Semi Evergreen, Tropical Moist Deciduous, Littoral & Swamp, Tropical Dry Deciduous, Subtropical Broadleaved Hill, Montane Wet Temperate, Himalayan Moist Temperate and Sub Alpine Forests. Distribution of forest cover in different forest type groups is given in the pie diagram.



9.29.7 Tree Cover

Tree cover of the state has been estimated using sample data of TOF inventory collected over a period of six years, i.e. 2004-10. The

estimated tree cover in the state is 2,335 km² which is 2.63% of the geographical area of the state. A total of 4 districts of the state have been inventoried. The forest and tree cover of the state is presented in Table 9.29.5.

Table 9.29.5: Forest and Tree Cover (Area in km²)

Category	Area	% of Geographical Area
Tree Cover	2,335	2.63
Forest Cover	12,995	14.64
Forest and Tree Cover	15,330	17.27

9.29.8 Growing Stock

The growing stock in the recorded forest area has been estimated on the basis of the current forest cover map, forest type map and forest

inventory data. For trees outside forests (TOF), the same has been estimated using TOF inventory data. It is presented in the Table 9.29.6.

Table 9.29.6: Growing Stock (million cum)

Forest	TOF	Total
92.515	45.693	138.208

9.29.9 Bamboo

The extent of bamboo bearing area in the forests of the state is 1,042 km². Density-wise

details, number of culms by soundness and equivalent green weight are given in the following tables:

Table 9.29.7: Bamboo bearing area by density in recorded forest area (Area in km²)

Recorded Forest Area	Pure bamboo	Dense bamboo	Scattered bamboo	Clumps hacked	Bamboo regeneration	No bamboo
11,879	0	362	582	58	40	10,837

Table 9.29.8: Estimated number of bamboo culms and equivalent green weight

Number of culms (in millions)				Equivalent Green Weight (in 000' tonnes)		
Green	Dry	Decayed	Total	Green	Dry	Total
568	59	33	660	2158	681	2839