9.16 MAHARASHTRA

9.16.1 Introduction

Maharashtra lies in the western part of India with a long coast along Arabian Sea and has an area of 307,713 km^2 which accounts for 9.36% of the country's geographical area. It lies between the latitudes of 15°35' N and 22°02' N and the longitudes of 72°36' E and 80°54' E. Physiographically, the state can be divided into three distinct regions, namely, Deccan Plateau, western Ghats and Coastal Plains. The state has a tropical monsoon climate, the mean annual temperature ranges from 25°c to 27.5°c and average annual rainfall ranges between 1,600 and 2,000 mm.

The total population of the state is 112.37 million *(Census 2011)* which constitutes 9.29% of the country's population. Of this, rural population is 54.77% and urban population 45.23%. The population density is 366 persons per km^2. The state has a livestock population of 35.95 million *(Livestock Census 2007)*.

Land use pattern of the state is given in Table 9.16.1

Table 9.16.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	30,771	
Reporting area for land utilization	30,758	100.00
Forests	5,213	16.95
Not available for cultivation	3,151	10.24
Permanent pastures and other grazing lands	1,246	4.05
Land under misc. tree crops and groves	248	0.81
Culturable wasteland	917	2.98
Fallow lands other than current fallows	1,187	3.86
Current fallows	1,370	4.45
Net area sown	17,426	56.66

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

9.16.2 Recorded Forest Area

The recorded forest area of the state is 61,939 km^2 which is 20.13% of the geographical area. The Reserved Forests constitute 79.48%, Protected Forests 13.23% and Unclassed Forests 7.29% of the recorded forest area.

9.16.3 Protected Areas

Maharashtra has 6 National Parks and 35 Wildlife Sanctuaries covering an area of 15,526 km^2 which constitutes 5.04% of the state's geographical area. There are three Tiger Reserves, namely, Melghat, Tadoba-Andhari and Pench covering an area of

1,660km^2. A wetland of national importance Ujni is located in Sholapur district.

9.16.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of Oct 2008- Dec 2008, is 50,646 km^2 which is 16.46% of the state's geographical area. In terms of forest canopy density classes, the state has 8,736 km^2 area under very dense forest, 20,815 km^2 area under moderately dense forest and 21,095 km^2 area under open forest. The forest cover of the state is shown in Fig. 9.16.

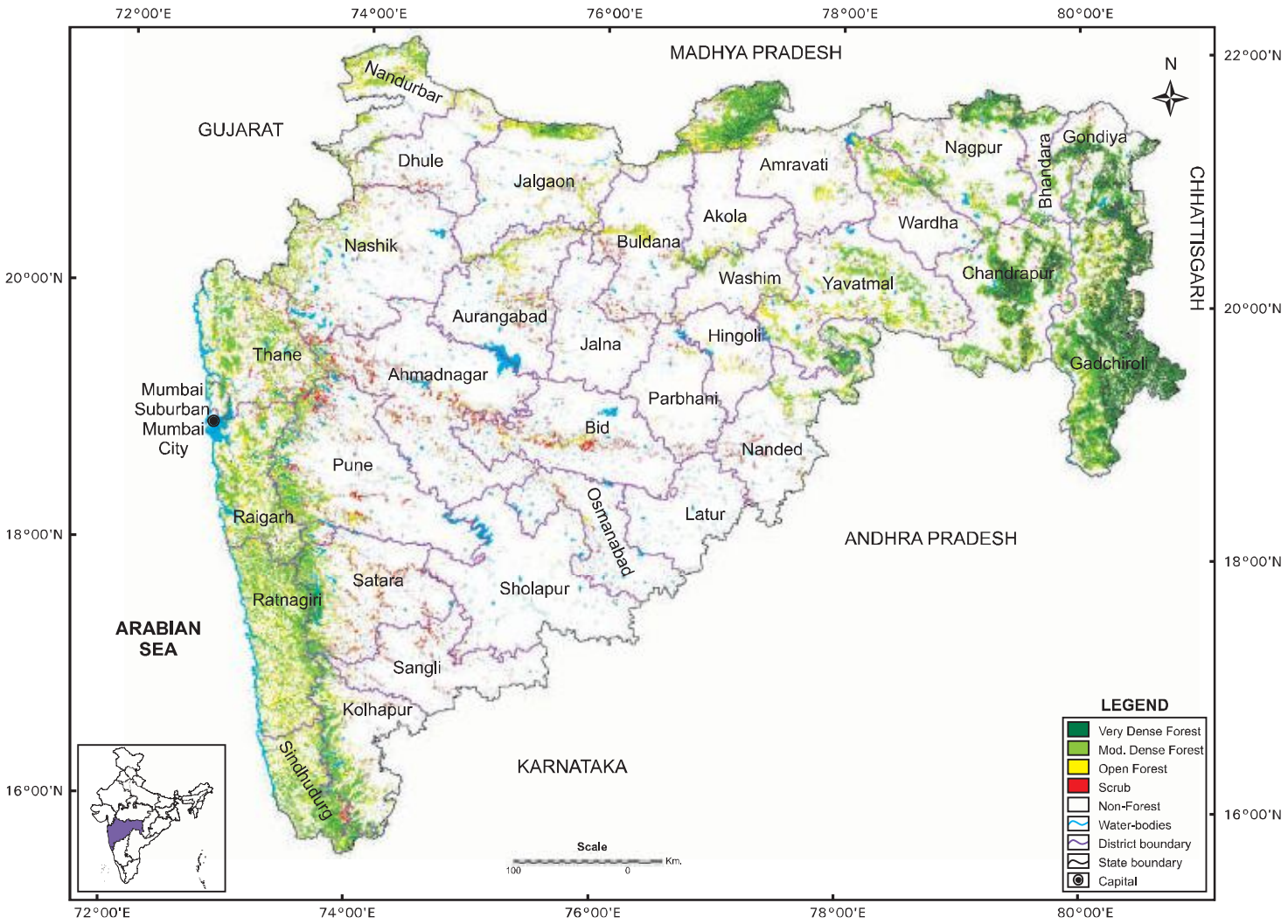
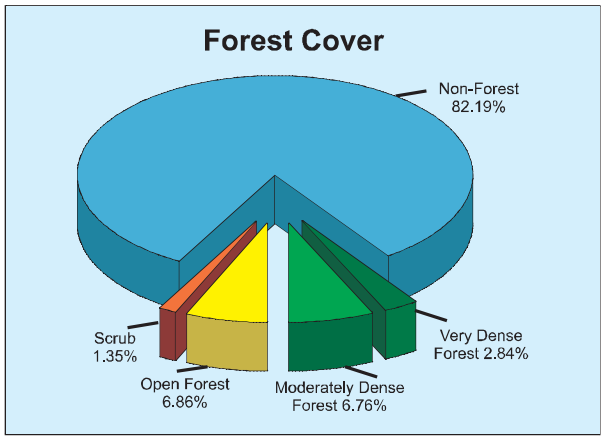


Fig 9.16 Forest cover map of Maharashtra



District-wise forest cover in different canopy density classes along with the changes compared to 2009 Assessment and scrub are given in Table 9.16.2.

Table 9.16.2: District-wise Forest Cover (Area in km^2)

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Ahmadnagar[T]	17,048	0	69	217	286	1.68	0	555
Akola	5,390	11	96	215	322	5.97	0	8
Amravati[T]	12,210	655	1,455	1,077	3,187	26.10	0	116
Aurangabad	10,107	19	101	437	557	5.51	0	193
Bhandara	3,588	130	544	215	889	24.78	-2	21
Bid	10,693	0	13	162	175	1.64	0	357
Buldana	9,661	23	137	430	590	6.11	1	163
Chandrapur[T]	11,443	1,340	1,588	1,150	4,078	35.64	4	56
Dhule[T]	7,189	0	70	251	321	4.47	0	103
Gadchiroli[T]	14,412	4,733	3,392	1,969	10,094	70.04	-1	20
Gondia	5,733	884	824	303	2,011	35.08	0	37
Hingoli	4,686	0	10	104	114	2.43	0	47
Jalgaon[T]	11,765	52	363	770	1,185	10.07	0	69
Jalna	7,718	1	16	48	65	0.84	0	55
Kolhapur[H]	7,685	65	1,038	672	1,775	23.10	0	88
Latur	7,157	0	0	5	5	0.07	0	25
Mumbai city	157	0	0	2	2	1.27	0	0
Mumbai Suburban	446	0	62	58	120	26.91	0	0
Nagpur[T]	9,892	372	953	698	2,023	20.45	0	77
Nanded	10,528	60	434	420	914	8.68	0	128
Nandurbar	5,961	0	418	796	1,214	20.37	0	30
Nashik[TH]	15,530	0	351	738	1,089	7.01	0	319
Osmanabad	7,569	0	3	40	43	0.57	0	49

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Parbhani	6,355	0	4	46	50	0.79	0	49
Pune[TH]	15,643	0	757	975	1,732	11.07	0	493
Raigarh[H]	7,152	13	1,248	1,603	2,864	40.04	0	70
Ratnagiri[H]	8,208	33	1,910	2,255	4,198	51.15	-1	2
Sangli	8,572	0	95	49	144	1.68	0	156
Satara[H]	10,480	119	569	588	1,276	12.18	0	365
Sholapur	14,895	0	8	39	47	0.32	0	50
Sindhudurg[H]	5,207	88	1,364	1,116	2,568	49.32	-5	47
Thane[T]	9,558	0	1,281	1,631	2,912	30.47	0	222
Wardha	6,309	10	419	430	859	13.62	0	62
Washim	5,184	5	113	214	332	6.40	0	28
Yavatmal[T]	13,582	123	1,110	1,372	2,605	19.18	0	97
Grand Total	**307,713**	**8,736**	**20,815**	**21,095**	**50,646**	**16.46**	**-4**	**4157**

Comparison of the current forest cover assessment with the previous assessment (satellite data of Oct-Dec 2006) shows a loss of 4 km^2 of forest cover.

The change matrix given in Table 9.16.3 reveals that there has been a decrease of 3 km^2 in the very dense forest, 19 km^2 in moderately dense forest and an increase of 18 km^2 in open forest.

Table 9.16.3: Forest Cover Change Matrix (Area in km^2)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	8,736	0	2	0	1	**8,739**
Moderately Dense Forest	0	20,815	8	0	11	**20,834**
Open Forest	0	0	21,071	0	6	**21,077**
Scrub	0	0	0	4,157	0	**4,157**
Non- Forest	0	0	14	0	252,892	**252,906**
Total 2011	**8,736**	**20,815**	**21,095**	**4,157**	**252,910**	**307,713**
Net Change	-3	-19	18	0	4	

9.16.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.16.4.

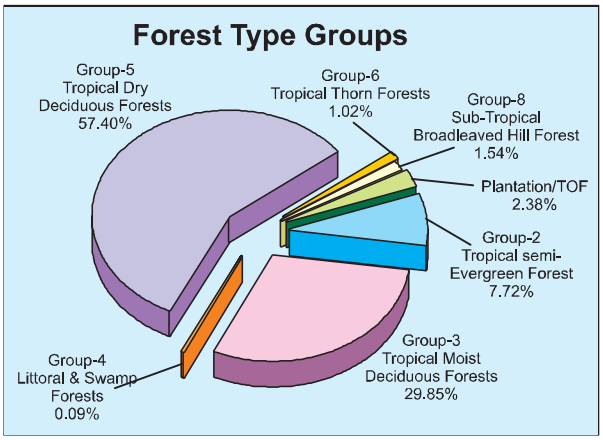
Table 9.16.4: Altitude Zone-wise Forest Cover (Area in km^2)

Altitude Zone	VDF	MDF	OF	Total
0-500m	7,556	15,762	15,627	**38,945**
500-1000m	1,133	4,696	5,129	**10,958**
1000-2000m	47	357	339	**743**
Total	**8,736**	**20,815**	**21,095**	**50,646**

(Based on SRTM, Digital Elevation Model)

9.16.6 Forest Cover in Different Forest Types

As per Champion & Seth Classification, the State has 16 forest types which belong to six forest type groups, *viz.* Tropical Semi Evergreen, Tropical Moist Deciduous, Littoral & Swamp, Tropical Dry Deciduous, Tropical Thorn and Subtropical Broadleaved Hill Forests. Percentage-wise distribution of forest cover in different forest type groups found in the state on the basis of the forest cover assessment is given in the pie diagram.



9.16.7 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 9079 km^2 which is 2.95% of its geographical area. Fifteen districts of the state (Ahmadnagar, Akola, Aurangabad, Bid, Chandrapur, Dhule, Gondia, Mumbai, Mumbai Suburb, Nagpur, Nandurbar, Nasik, Ratnagiri, Sindhudurg and Wardha) have been inventoried. The forest and tree cover of the state is presented in Table 9.16.5.

Table 9.16.5: Forest and Tree Cover (Area in km^2)

Category	Area	% of Geographical Area
Tree Cover	9,079	2.95
Forest Cover	50,646	16.46
Forest and Tree Cover	**59,725**	**19.41**

9.16.8 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 9.16.6.

Table 9.16.6: Growing Stock (Area in million cum.)

Forest	TOF	Total
293.669	147.029	440.698

9.16.9 Bamboo

The extent of bamboo bearing area in the forests of the state is 11,465 km^2. Density-wise details, number of culms by soundness and equivalent green weight are given in the following tables:

Table 9.16.7: Bamboo bearing area by density in recorded forest area (Area in km^2)

Recorded Forest Area	Pure bamboo	Dense bamboo	Scattered bamboo	Clumps hacked	Bamboo regeneration	No bamboo
61,939	56	2,618	4,604	1,466	2,719	50,474

Table 9.16.8: 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
536	191	21	748	13024	6087	19111