9.18 MEGHALAYA

9.18.1. Introduction

One of the seven sister states of the north-eastern part of the country, Meghalaya, has a geographical area of 22,429 km^2. It lies between the latitudes of 24°58' N to 26°07' N and the longitudes of 89°48' E to 92°51' E. Cherrapunjee and Mawsynram, the highest rainfall spots of the world, are located in this state. The state has most of its land covered by hills interspersed with gorges and small valleys with elevation ranging between 150 m to 1,950 m. In terms of tribal composition, the state has three distinct regions, namely, Garo Hills, Khasi Hills and Jaintia Hills.

The western part of the state is warmer with mean temperature ranging between 12°c to 33°c. The central upland is relatively cooler with mean temperature ranging between 2°c to 24°c. The average annual rainfall in the state varies from 4,000 to 11,436 mm.

The population of the state is 2.96 million *(Census 2011)* which constitutes 0.24% of the country's population. Of this, the rural population is 79.92% and the urban population is 20.08%. The population density is 132 persons per km^2. The livestock population is 1.82 million *(Livestock Census 2011)*.

Land use pattern of the state is given in Table 9.18.1.

Table 9.18.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	2,243	
Reporting area for land utilization	2,227	100.00
Forests	948	42.57
Not available for cultivation	226	10.15
Permanent pastures and other grazing lands	0	0.00
Land under misc. tree crops and groves	160	7.18
Culturable wasteland	393	17.65
Fallow lands other than current fallows	157	7.05
Current fallows	59	2.65
Net area sown	284	12.75

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

9.18.2 Recorded Forest Area

The recorded forest area of the state is 9,496 km^2 which is 42.34% of its geographical area. The Reserved Forests constitute 11.72%, Protected Forests 0.13% and Unclassed Forests 88.15%.

9.18.3 Protected Areas

Meghalaya has 2 National Parks and 3 Wildlife Sanctuaries covering 304 km^2 which constitute 1.36% of the state's geographical area. Nokrek Biosphere Reserve is also located in this state. Meghalaya is among the few states in the country having the highest densityof elephants.

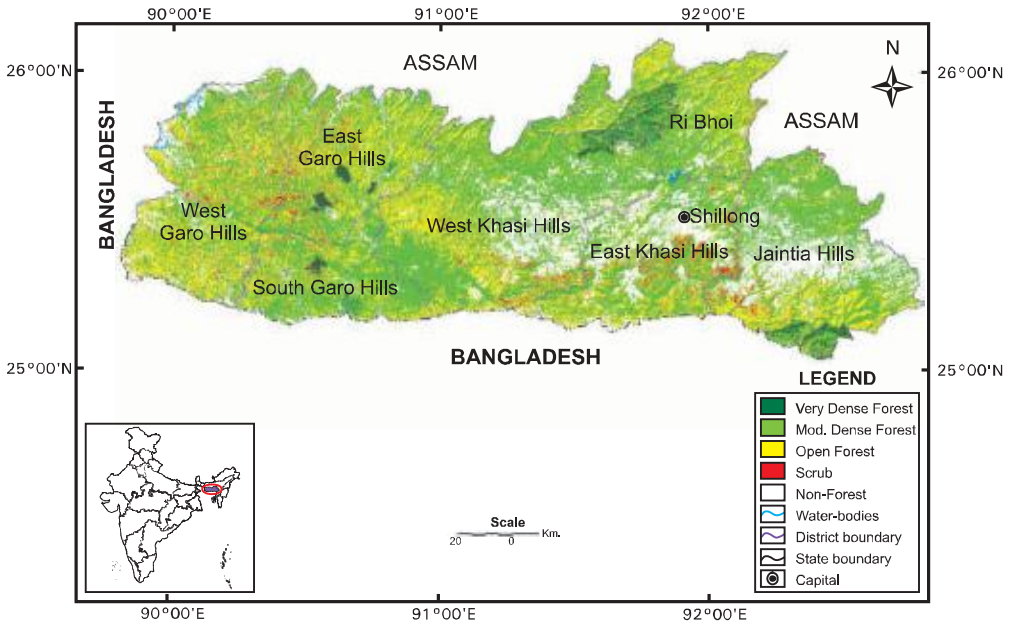
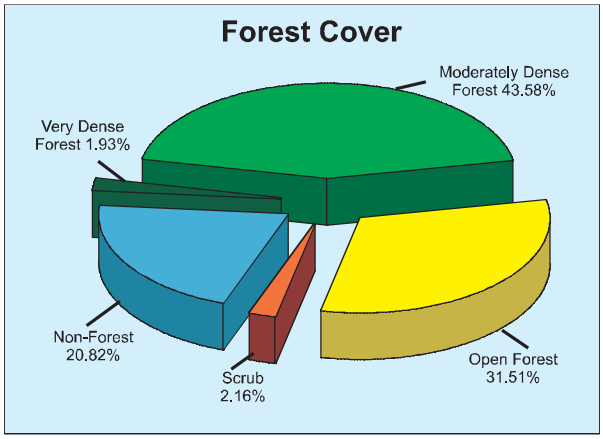


Fig 9.18 Forest cover map of Meghalaya

9.18.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of November-December 2008 and January 2009, is 17,275 km^2 which is 77.02% of the state's geographical area. In terms of forest canopy density classes, the state has 433 km^2 area under very dense forest, 9,775 km^2 area under moderately dense forest and 7,067 km^2 area under open forest. The forest cover of the state is shown in Fig. 9.18.



District-wise forest cover in different canopy density classes along with the changes compared to 2009 Assessment and scrub are given in Table 9.18.2.

Table 9.18.2: 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			
East Garo HillsTH	2,603	68	1,104	1,045	2,217	85.17	-302	92
East Khasi HillsTH	2,820	0	1,084	716	1,800	63.83	-279	110
JaintiaTH	3,819	99	1,578	839	2,516	65.88	-65	53

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Ri Bhoi[TH]	2,376	131	1,092	898	2,121	89.27	433	10
South Garo Hills[TH]	1,849	44	1,005	590	1,639	88.64	-50	27
West Garo Hills[TH]	3,715	0	1,361	1,613	2,974	80.05	257	129
West Khasi Hills[TH]	5,247	91	2,551	1,366	4,008	76.39	-40	64
Grand Total	**22,429**	**433**	**9,775**	**7,067**	**17,275**	**77.02**	**-46**	**485**

Comparison of current forest cover assessment with the previous assessment shows a loss of 46 km^2 of forest cover.

Forest Cover Change

Main reason for the change in forest cover is shifting cultivation which is widely practiced across the state.

Table 9.18.3: Forest Cover Change Matrix (Area in km^2)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	360	45	5	0	0	**410**
Moderately Dense Forest	65	8,091	675	33	637	**9,501**
Open Forest	8	794	5,746	263	599	**7,410**
Scrub	0	7	71	114	19	**211**
Non Forest	0	838	570	75	3,414	**4,897**
Total 2011	**433**	**9,775**	**7,067**	**485**	**4,669**	**22,429**
Net Change	23	274	-343	274	-228	

The change matrix given in Table 9.18.3 reveals that there has been an increase of 23 km^2 in very dense forest and 274 km^2 in open forest whereas there is a decrease of 343 km^2 in the moderately dense forest.

9.18.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.18.4.

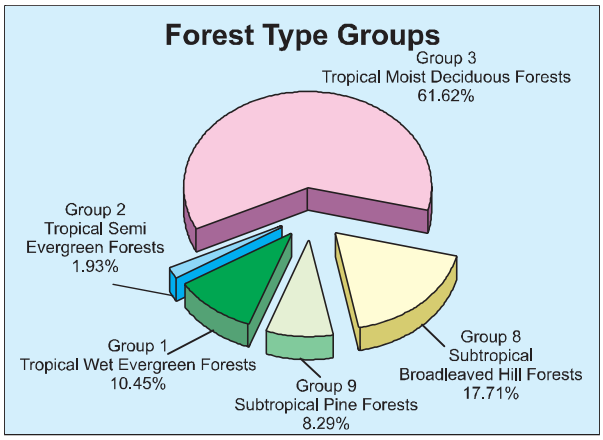
Table 9.18.4: Altitude Zone-wise Forest Cover (Area in km^2)

Altitude Zone	VDF	MDF	OF	Total
0-500m	229	4,341	4,037	8,607
500-1000m	197	2,839	2,192	5,228
1000-2000m	7	2,595	838	3,440
Total	**433**	**9,775**	**7,067**	**17,275**

(Based on SRTM, Digital Elevation Model)

9.18.6 Forest Cover in Different Forest Types

The state has eight forest types as per Champion & Seth Classification system (1968), belonging to five forest type groups, *viz*. Tropical Wet Evergreen, Tropical Semi Evergreen, Tropical Moist Deciduous, Subtropical Broadleaved Hill and Subtropical Pine Forests. 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.



9.18.7 Tree Cover

Tree cover of the state has been estimated using TOF inventory data collected over a period of six years, i.e. 2004-10. The estimated tree cover in the state is 578 km^2 which is 2.58% of its geographical area. Three districts of the state (East Garo Hills, Ri Bhoi and West Garo Hills) have been inventoried. The forest and tree cover of the state is presented in Table 9.18.5.

Table 9.18.5: Forest and Tree Cover (Area in km^2)

Category	Area	% of Geographical Area
Tree Cover	578	2.58
Forest Cover	17,275	77.02
Forest and Tree Cover	**17,853**	**79.60**

9.18.8 Growing Stock

The growing stock in the recorded forest area has been estimated on the basis of 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 9.18.6.

Table 9.18.6: Growing Stock (million cum)

Forest	TOF	Total
45.411	20.964	66.375

9.18.9 Bamboo

The extent of bamboo bearing area in the forests of the state is 4,793 km^2. Density-wise details, number of culms by soundness and equivalent green weight are given in following tables:

Table 9.18.7: 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
9,496	63	2,815	1,830	68	17	4,703

Table 9.18.8: 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
1109	104	38	1251	6334	1157	7491