9.19 MIZORAM

9.19.1 Introduction

Mizoram, situated in the north eastern part of India, shares international borders with Bangladesh in the west and Myanmar in east and south. The area of the state is 21,081 km^2 which is 0.64% of the country's geographical area. The state lies between latitude 21°56' N and 24°31'N and longitude 92°16' E and 93°26' E. The average altitude ranges from 500 m to 800 m with the maximum reaching 2,157m in Blue Mountain (Phawngpui).

The state has a climate ranging from moist tropical to moist sub-tropical, not very warm in summer and not very cold in winter. During winter, the temperature varies from 11°c to 24°c and in summer it varies between 18°c to 29°c. The entire area is under the regular influence of monsoons. It rains heavily from May to September and the average annual rainfall ranges from 2,160 mm to 3,500 mm. Winter in Mizoram is normally rain-free.

The population of the state is 1.09 million (*Census 2011*) which constitutes 0.09% of the country's population. Of this, rural population is 48.49% and urban population 51.51%. The population density is 52 persons per km^2. The livestock population of the state is 0.33 million (*Livestock Census 2007)*.

Land use pattern of the state is given in Table 9.19.1.

Table 9.19.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	2,108	
Reporting area for land utilization	2,109	100.00
Forests	1,594	75.58
Not available for cultivation	133	6.31
Permanent pastures and other grazing lands	5	0.24
Land under misc. tree crops and groves	46	2.18
Culturable wasteland	5	0.24
Fallow lands other than current fallows	171	8.11
Current fallows	60	2.84
Net area sown	95	4.50

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

9.19.2 Recorded Forest Area

The recorded forest area in the state is 16,717 km^2 which works out as 79.30% of its geographical area. Reserved Forests constitute 47.31%, Protected Forests 21.34%, and Unclassed Forests 31.35%.

9.19.3 Protected Areas

Mizoram has two National Parks and eight Wildlife Sanctuaries covering an area of 1,241 km^2 which constitute 5.89% of the state's geographical area. Dampa Tiger Reserve is situated in the state covering an area of 500 km^2.

9.19.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of January 2009, is 19,117 km^2, which is 90.68% of the state's geographical area. In terms of forest canopy density classes, the state has 134 km^2 area under very dense forests, 6,086 km^2 area under moderately dense forests and 12,897 km^2 area under open forests. The forest cover of the state is shown in Fig. 9.19.

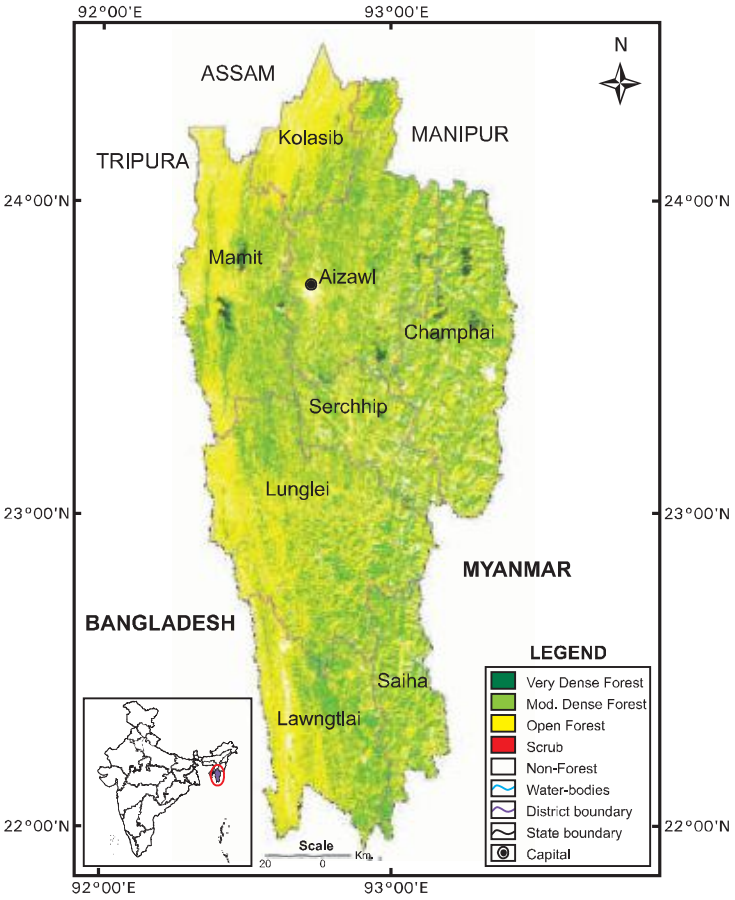
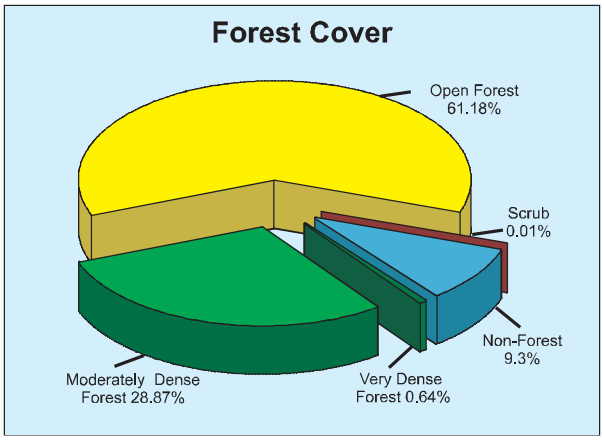


Fig 9.19 Forest cover map of Mizoram



District-wise forest cover in different canopy density classes and scrub along with the changes compared to 2009 Assessment are given in Table 9.19.2.

Table 9.19.2: 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			
AizawlTH	3,575	26	1,205	2,034	3,265	91.33	-2	0
ChamphaiTH	3,185	57	1,096	1,632	2,785	87.44	-21	0
KolasibTH	1,382	0	175	1,046	1,221	88.35	2	0
LawngtlaiTH	2,557	0	704	1,664	2,368	92.61	-6	0
LungleiTH	4,536	1	1,233	2,972	4,206	92.72	-18	1
MamitTH	3,025	45	697	2,032	2,774	91.70	14	0
SaihaTH	1,400	0	568	723	1,291	92.21	-12	0
SerchhipTH	1,421	5	408	794	1,207	84.94	-23	0
Grand Total	**21,081**	**134**	**6,086**	**12,897**	**19,117**	**90.68**	**-66**	**1**

* *Change figures are based on comparison of 2011 Assessment with that of 2009 after incorporating interpretational changes*

9.19.5 Forest Cover Change

A loss of 66 km^2 has been detected during 2011 Assessment for the state. This, coupled with interpretational change of 57 km^2 on the negative side, has resulted in net decrease of 123 km^2 in forest cover of the state as compared to 2009 Assessment.

Table 9.19.3: Forest Cover Change Matrix (Area in km^2)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	134	0	0	0	0	**134**
Moderately Dense Forest	0	6,086	0	0	63	**6,149**
Open Forest	0	0	12,813	0	87	**12,900**
Scrub	0	0	0	1	0	**1**
Non Forest	0	0	84	0	1,813	**1,897**
Total 2011	**134**	**6,086**	**12,897**	**1**	**1,963**	**21,081**
Net Change	0	-63	-3	0	66	

As is evident from the above table, there is a shift of 63 km^2 and 3 km^2 from MDF and OF respectively to non forest (NF) category.

Reasons for Change detected in 2011 Assessment

On the basis of ground truthing by the officials of FSI, the main reasons for change are given below:

a. Interpretational changes are primarily accounted for due to selection of images pertaining to the season that coincided with the peak shifting cultivation activities.

b. Due to change in customary cultivation practices, focus has now shifted to raising horticultural crops like banana plantation and pineapple orchards thus preventing secondary growth on old shifting cultivation patches. This has also led to decline in forest cover assessed in the state.

9.19.6 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.19.4.

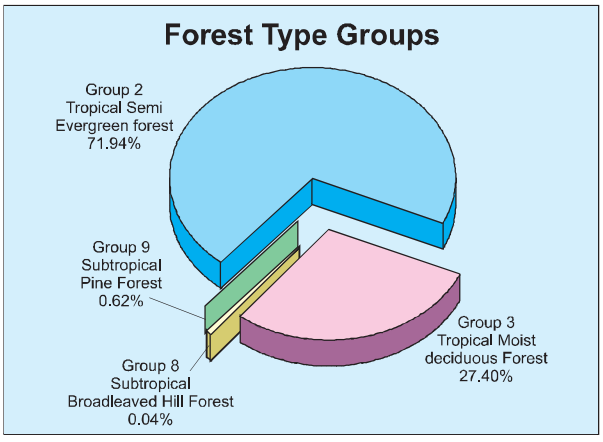
Table 9.19.4: Altitude Zone-wise Forest Cover (Area in km^2)

Altitude Zone	VDF	MDF	OF	Total
0-500m	15	1,971	6,129	8,115
500-1000m	56	2,872	5,001	7,929
1000-2000m	62	1,241	1,765	3,068
2000-3000m	1	2	2	5
Total	**134**	**6,086**	**12,897**	**19,117**

(Based on SRTM, Digital Elevation Model)

9.19.7 Forest Cover in Different Forest Types

Forest type mapping using satellite data was carried out by Forest Survey of India. The state has six forest types as per Champion & Seth Classification system (1968) belonging to four forest type groups, *viz*. 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 is given in the pie diagram.



9.19.8 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 190 km^2 which is 0.90% of its geographical area. Two districts of the state (Aizawl and Saiha) have been inventoried. The forest and tree cover of the state is presented in Table 9.19.5.

Table 9.19.5: Forest and Tree Cover (Area in km^2)

Category	Area	% of Geographical Area
Tree Cover	190	0.90
Forest Cover	19,117	90.68
Forest and Tree Cover	**19,307**	**91.58**

9.19.9 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 9.19.6.

Table 9.19.6. Growing Stock (million cum)

Forest	TOF	Total
68.042	9.392	77.434

9.19.10 Bamboo

The extent of bamboo bearing area in the forests of the state is 9,245 km^2. Density-wise details, number of culms by soundness and equivalent green weight are given in following tables:

Table 9.19.7: 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
16,717	226	6,116	2,757	104	42	7,472

Table 9.19.8: 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
1953	185	67	2205	11150	2037	13187