9.20 NAGALAND

9.20.1 Introduction

Nagaland is situated in the north-eastern part of India sharing international border with Myanmar. It lies between latitudes of 25°10' N and 27°4' N and the longitudes of 93°15' E and 25°6' E and has geographical area of 16,579 km^2. Nagaland consists of a narrow strip of hilly area running northeast to southwest which is located in the northern extension of the Arakan Yoma ranges. The altitude ranges from 194 m to 3,826 m. The summer temperature varies from 15°c to 30°c and the winter temperature ranges from 4°c to 25°c. Average annual rainfall in the state is 2,000 mm.

As per *Census 2011*, the population of the state is 1.98 million which constitutes 0.16% of the country's population. Rural population constitutes 71.03% and urban population 28.97%. The population density is 119.46 persons per km^2. The livestock population of the state as per *Livestock Census 2007* is 1.42 million.

Land use pattern of the state is given in Table 9.20.1.

Table 9.20.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	1,658	
Reporting area for land utilization	1,621	100.00
Forests	863	53.24
Not available for cultivation	98	6.05
Permanent pastures and other grazing lands	0	0.00
Land under misc. tree crops and groves	121	7.46
Culturable wasteland	60	3.70
Fallow lands other than current fallows	90	5.56
Current fallows	73	4.50
Net area sown	316	19.49

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

9.20.2 Recorded Forest Area

The recorded forest area of the state is 9,222 km^2 which is 55.62% of its geographical area. The Reserved Forests constitute 0.93%, Protected Forests 5.51% and Unclassed Forests constitute 93.56%.

9.20.3 Protected Area

Nagaland has one National Park and three Wildlife Sanctuaries covering 222 km^2 which constitutes 1.34% of the state's geographical area.

9.20.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of November 2008 - February 2009 is 13,318 km^2, which is 80.33% of the state's geographical area. In terms of forest canopy density classes, the state has 1,293 km^2 area under very dense forest, 4,931 km^2 area under moderately dense forest and 7,094 km^2 area under open forest. The forest cover of the state is shown in Fig. 9.20.

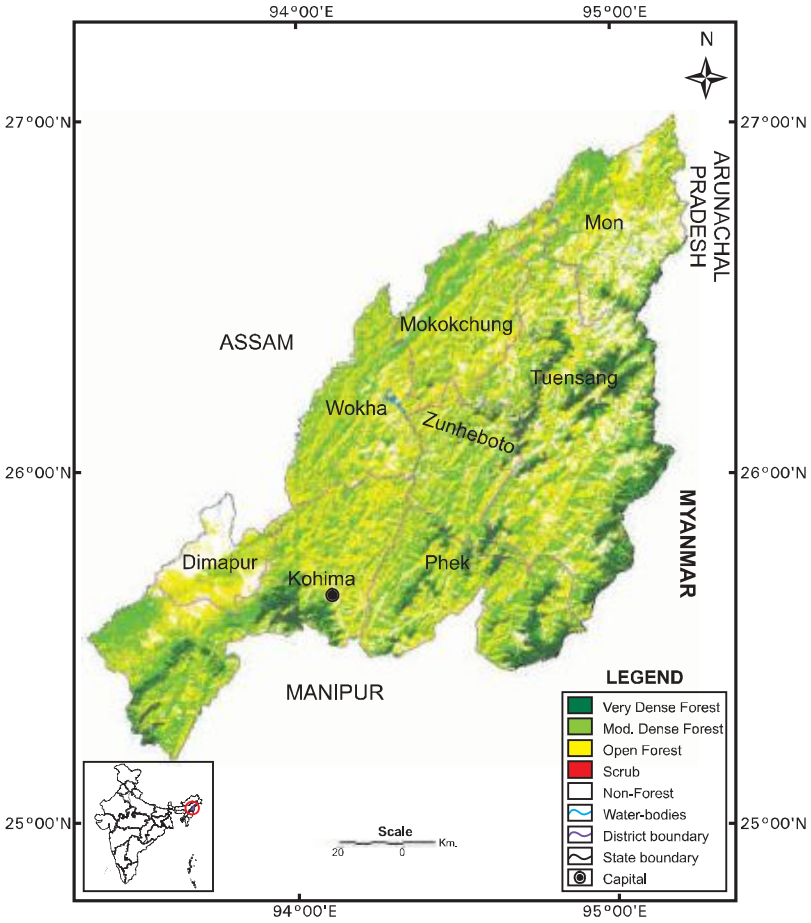
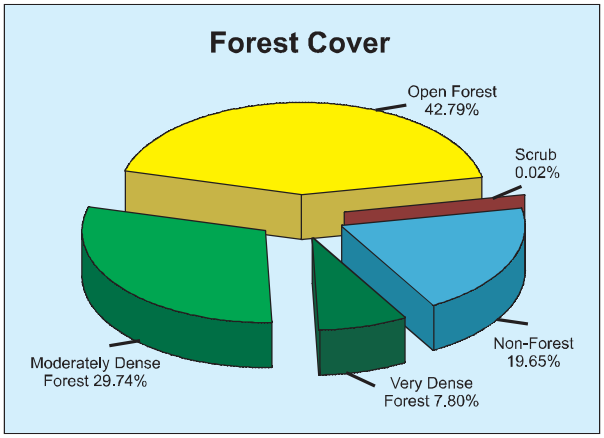


Fig 9.20 Forest cover map of Nagaland



District-wise forest cover in different canopy density classes along with the changes compared to 2009 Assessment and scrub are given in Table 9.20.2.

Table 9.20.2: 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			
DimapurTH	758	0	75	317	392	51.72	-9	0
KohimaTH	3,283	288	1,146	1,489	2,923	89.03	58	0
MokokchungTH	1,615	3	521	825	1,349	83.53	-46	0
MonTH	1,786	33	482	724	1,239	69.37	-55	1
PhekTH	2,026	279	675	813	1,767	87.22	56	0
TuensangTH	4,228	603	1,112	1,517	3,232	76.44	-108	2
WokhaTH	1,628	1	504	873	1,378	84.64	-36	0
ZunhebotoTH	1,255	86	416	536	1,038	82.71	-6	0
Grand Total	**16,579**	**1,293**	**4,931**	**7,094**	**13,318**	**80.33**	**-146**	**3**

Comparison with the previous assessment (satellite data of Dec 2006-Jan 2007) shows a loss of 146 km^2 of forest cover.

Table 9.20.3: Forest Cover Change Matrix (Area in km^2)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	1,231	26	7	0	10	**1,274**
Moderately Dense Forest	51	4,245	416	0	185	**4,897**
Open Forest	9	612	6,096	0	576	**7,293**
Scrub	0	0	0	2	0	**2**
Non- Forest	2	48	575	1	2,487	**3,113**
Total 2011	**1,293**	**4,931**	**7,094**	**3**	**3,258**	**16,579**
Net Change	19	34	-199	1	145	

Reasons for change detected in 2011 Assessment

Main reason for the change in forest cover is the shifting cultivation practiced widely across the state. The change matrix given in Table 9.20.3 reveals that there has been an increase of 19 km^2 in very dense forest, 34 km^2 in the moderately dense forest and a decrease of 199 km^2 in open forest.

9.20.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.20.4.

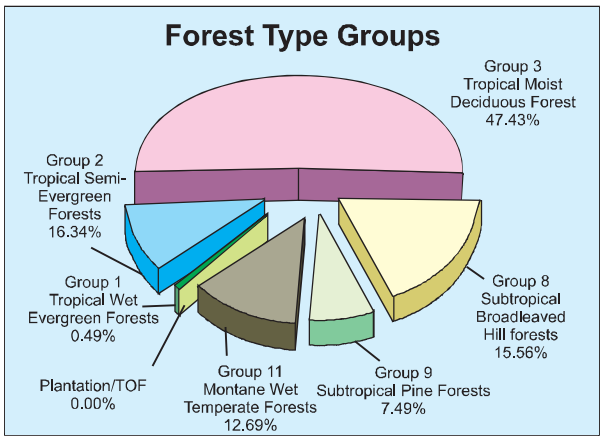
Table 9.20.4: Altitude Zone-wise Forest Cover (Area in km^2)

Altitude Zone	VDF	MDF	OF	Total
0-500m	0	1,098	1,946	3,044
500-1000m	16	1,410	2,533	3,959
1000-2000m	595	2,169	2,505	5,269
2000-3000m	669	246	108	1,023
Above 3000m	13	8	2	23
Total	**1,293**	**4,931**	**7,094**	**13,318**

(Based on SRTM, Digital Elevation Model)

9.20.6 Forest Cover in Different Forest Types

The state has seven forest types as per Champion & Seth Classification, belonging to six forest type groups, *viz*. Tropical Wet Evergreen, Tropical Semi-evergreen, Tropical Moist Deciduous, Subtropical Broadleaved Hill, Subtropical Pine and Montane Wet Temperate 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.



9.20.7 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 322 km^2 which is 1.94% of its geographical area. Only Kohima district of the state has been inventoried as a part of national forest inventory. The forest and tree cover of the state is presented in Table 9.20.5.

Table 9.20.5: Forest andTree Cover (Area in km^2)

Category	Area	% of Geographical Area
Tree Cover	322	1.94
Forest Cover	13,318	80.33
Forest and Tree Cover	**13,640**	**82.27**

9.20.8 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 Table 9.20.6.

Table 9.20.6: Growing Stock (million cum)

Forest	TOF	Total
40.955	12.681	53.636

9.20.9 Bamboo Resources

The extent of bamboo bearing area in the forests of the state is 4,902 km^2. Density-wise details, number of culms by soundness and equivalent green weight are given in the following tables:

Table 9.20.7: 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
9,222	101	3,064	1,644	65	28	4,320

Table 9.20.8: 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
1077	102	37	1216	6150	1124	7274