

13.19

# NAGALAND



### Geographical Area

16,579 sq km

### Geographical Coordinates

Latitude- 25° 10' N to 27° 4' N

Longitude- 93° 15' E to 95° 6' E

### Population (as per Census 2011)

1.98 million

Urban 0.57 million (28.86%)

Rural 1.41 million (71.14%)

Tribal 1.71 million (86.48 %)

### Average Population Density

119 per sq km

### Livestock population

(as per 19<sup>th</sup> Live Stock Census)

0.91 million

### No. of Districts

11

### No. of Hill Districts

11

### No. of Tribal Districts

11

Table 13.19.1 Land Use Pattern

Land Use Types	Area (in '000 ha)	Percentage
Geographical Area	1,658	
Reporting area for land utilization	1,653	100.00
Forests	863	52.21
Not available for land cultivation	96	5.81
Permanent pastures and other grazing lands	-	-
Land under misc. tree crops and groves	90	5.44
Culturable wasteland	66	3.99
Fallow land other than current fallows	109	6.60
Current fallows	44	2.66
Net area sown	385	23.29

Source: Land Use Statistics, Ministry of Agriculture, GOI, (2017-18)

### 13.19.1 Forest Cover

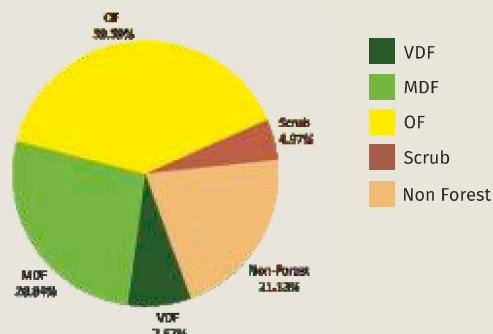


Figure 13.19.1  
Forest Cover of  
Nagaland

Table 13.19.2 Forest Cover of  
Nagaland (in sq km)

Class	Area	% of GA
VDF	1,272.04	7.67
MDF	4,449.07	26.84
OF	6,530.03	39.39
<b>Total</b>	<b>12,251.14</b>	<b>73.90</b>
Scrub	824.30	4.97

Table 13.19.3 District-wise Forest Cover in Nagaland

(in sq km)

District	Geo-geographical Area (GA)	2021 Assessment				%of GA	Change wrt 2019 assessment	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Dimapur <sup>TH</sup>	927	23.69	153.56	412.44	589.69	63.61	-2.40	9.23
Kiphire <sup>TH</sup>	1,130	150.26	266.76	376.46	793.48	70.22	-41.10	72.43
Kohima <sup>TH</sup>	1,463	134.19	376.40	683.89	1,194.48	81.65	11.82	57.83
Longleng <sup>TH</sup>	562	0.00	124.13	245.85	369.98	65.83	-2.42	44.05
Mokokchung <sup>TH</sup>	1,615	1.70	499.69	825.74	1,327.13	82.18	-0.48	68.27
Mon <sup>TH</sup>	1,786	31.50	418.97	694.07	1,144.54	64.08	-58.28	98.80
Peren <sup>TH</sup>	1,651	140.05	640.23	627.96	1,408.24	85.30	-6.58	89.39
Phek <sup>TH</sup>	2,026	272.17	625.46	696.06	1,593.69	78.66	-22.12	101.62
Tuensang <sup>TH</sup>	2,536	435.15	529.72	638.67	1,603.54	63.23	-96.12	166.64
Wokha <sup>TH</sup>	1,628	0.76	458.45	858.78	1,317.99	80.96	12.18	50.98
Zunheboto <sup>TH</sup>	1,255	82.57	355.70	470.11	908.38	72.38	-29.76	65.06
<b>Grand Total</b>	<b>16,579</b>	<b>1,272.04</b>	<b>4,449.07</b>	<b>6,530.03</b>	<b>12,251.14</b>	<b>73.90</b>	<b>-235.26</b>	<b>824.30</b>

#### 13.19.1.1 Forest Cover Inside and Outside Recorded Forest Area (or Green Wash)

The Forest Cover inside and outside Recorded Forest Area (RFA) has been analysed in different categories and presented in Table given below.

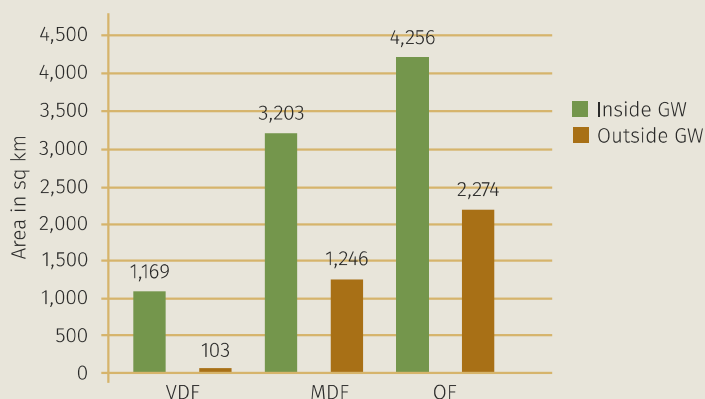
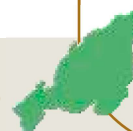
Table 13.19.4 Forest Cover Inside and Outside Recorded Forest Area (or Green Wash) in Nagaland

(in sq km)

Forest Cover Inside the Recorded Forest Area (or Green Wash)				Forest Cover Outside the Recorded Forest Area (or Green Wash)			
VDF	MDF	OF	Total	VDF	MDF	OF	Total
1,169	3,203	4,256	8,628	103	1,246	2,274	3,623
13.55%	37.12%	49.33%		2.84%	34.39%	62.77%	

\*in case of Nagaland, Green Wash boundaries have been used

## NAGALAND



**Figure 13.19.2**  
Forest Cover Inside  
and Outside of  
Green Wash in  
Nagaland

**Table 13.19.5 Forest Cover Change Matrix for Nagaland**

(in sq km)

Class	2021 Assessment					Total ISFR 2019
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	1,267	0	0	0	6	1,273
Moderately Dense Forest	5	4,432	0	0	97	4,534
Open Forest	0	17	6,368	45	249	6,679
Scrub	0	0	42	582	11	635
Non Forest	0	0	120	197	3,141	3,458
<b>Total ISFR 2021</b>	<b>1,272</b>	<b>4,449</b>	<b>6,530</b>	<b>824</b>	<b>3,504</b>	<b>16,579</b>
Net Change	-1	-85	-149	189	46	

**Table 13.19.6 Altitude-wise Forest Cover in Nagaland**

(in sq km)

Altitude Zone (m)	Geographical Area	VDF	MDF	OF	Total	Scrub
0-500	3,910	0	989	2,069	3,058	80
500-1000	5,051	8	1,256	2,293	3,557	313
1000-2000	6,520	558	1,969	2,076	4,603	421
2000-3000	1,075	692	228	90	1,010	10
3000-4000	23	14	7	2	23	0
<b>Total</b>	<b>16,579</b>	<b>1,272</b>	<b>4,449</b>	<b>6,530</b>	<b>12,251</b>	<b>824</b>

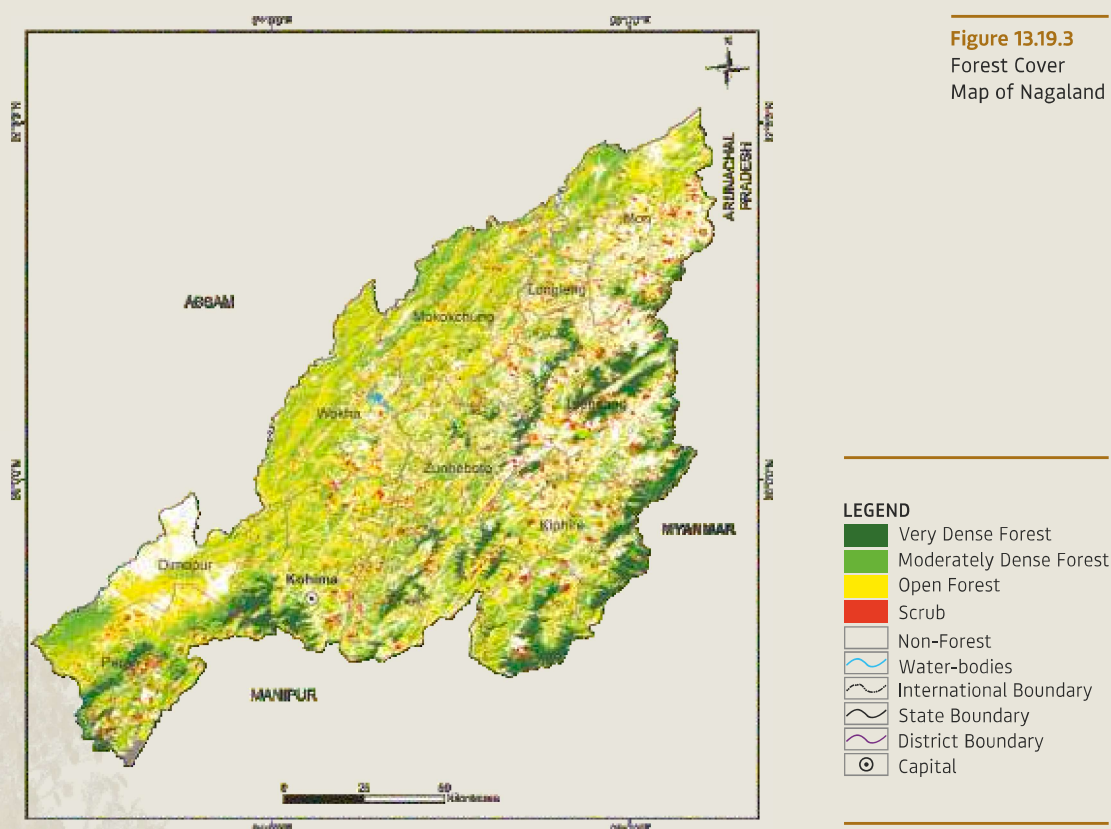
(based on SRTM, Digital Elevation Model, 30 m, 2016)

**Table 13.19.7 Forest Cover in different slope classes in Nagaland**

(in sq km)

Slope (in degrees)	Geographical Area	VDF	MDF	OF	Total	Scrub
0-5	1,704	23	318	667	1,008	38
5-10	2,006	78	509	917	1,504	86
10-15	2,804	154	725	1,213	2,092	145
15-20	3,098	219	831	1,260	2,310	176
20-25	2,809	246	784	1,073	2,103	166
25-30	2,115	223	618	757	1,598	121
>30	2,043	329	664	643	1,636	92
<b>Total</b>	<b>16,579</b>	<b>1,272</b>	<b>4,449</b>	<b>6,530</b>	<b>12,251</b>	<b>824</b>

(based on SRTM, Digital Elevation Model, 30 m, 2016)



### 13.19.2 Forest Types

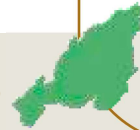
The area under different forest types of Nagaland as per the Champion & Seth classification (1968), according to the Atlas Forest Types of India 2020 are presented in the following Table.

**Table 13.19.8 Area statistics of the Forest Types found in Nagaland**

(in sq km)

Sl. No.	Forest Type	Area	% of the total mapped area*
1.	1B/C1 Assam Valley tropical wet evergreen forest ( <i>Dipterocarpus</i> )	82.82	0.63
2.	1/2S1 Pioneer Euphorbiaceous scrub	639.37	4.86
3.	2B/C1/2S2 Eastern alluvial secondary semi-evergreen forest	2,353.38	17.90
4.	2/2S1 Secondary moist bamboo brakes	546.69	4.16
5.	3C/C3b East Himalayan moist mixed deciduous forest	5,030.79	38.26
6.	8B/C2 <i>Khasi</i> subtropical wet hill forest	2,148.80	16.34
7.	9/C2 Assam subtropical pine forest	735.33	5.59
8.	11B/C2 Naga hill wet temperate forest	1,446.16	11.00
9.	12/DS1 Montane bamboo brakes	9.16	0.08
	<b>Sub Total</b>	<b>12,992.50</b>	<b>98.82</b>
10.	TOF/Plantation	129.39	0.98
	<b>Total (Forest Cover &amp; Scrub)</b>	<b>13,121.89</b>	

# NAGALAND



(in sq km)

Sl. No.	Forest Type	Area	% of the total mapped area*
<b>Grassland forest type (outside forest cover)</b>			
11.	9/C2/DS1 Assam subtropical pine savannah	26.17	0.20
<b>Grand Total</b>		<b>3,148.06</b>	<b>100.00</b>

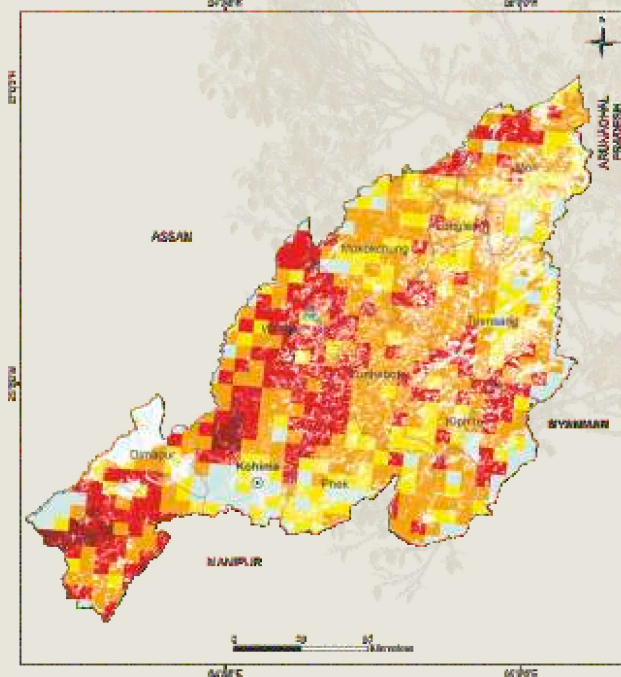
\*Forest Types have been assigned to the natural forest formations under forest cover and scrub categories shown in forest cover mapping (ISFR, 2019). Grassland forest type outside forest cover has also been mapped. The total mapped area, therefore, is sum of forest cover, scrub and grassland forest types (found in non-forest).

### 13.19.3 Fire Prone Forest Areas

Forest Cover under different classes of forest fire proneness is given in following table.

**Table 13.19.9 Forest Fire Prone Classes** (in sq km)

Sl. No.	Forest Fire Prone Classes	Forest Cover	% of Total Forest Cover
1.	Extremely fire prone	352.24	2.88
2.	Very highly fire prone	3,129.20	25.54
3.	Highly fire prone	4,849.90	39.59
4.	Moderately fire prone	2,477.96	20.23
5.	Less fire prone	1,441.70	11.76
<b>Total</b>		<b>12,251.00</b>	<b>100.00</b>



**Figure. 13.19.4** Fire prone forest areas under different fire prone classes

- LEGEND**
- Extremely Fire Prone
  - Very Highly Fire Prone
  - Highly Fire Prone
  - Moderately Fire Prone
  - Less Fire Prone
  - Water-bodies
  - International Boundary
  - State Boundary
  - District Boundary
  - Capital

### 13.19.4 Tree Cover

Tree cover is defined as all tree patches of size less than 1 ha occurring outside the recorded forest area. Tree cover includes trees in all formations including scattered trees. Tree cover in Nagaland has been estimated as given in following table.

**Table 13.19.10 Tree Cover in Nagaland** (in sq km)

2019 Assessment	2021 Assessment	Change wrt 2019 Assessment
362	365	3

### 13.19.5 Extent of Trees Outside Forest (TOF)

Trees outside Forests (TOF) refer to tree resources found outside the forests as defined in the Government records. Forest Cover outside the recorded forest area is derived using boundaries of RFA or Green Wash. Extent of TOF therefore may be estimated as the sum of extent of forest cover outside the recorded forest areas (RFA) and tree cover as given in following table.

**Table 13.19.11 Extent of TOF in Nagaland** (in sq km)

Forest Cover outside the RFA/GW	Tree Cover	Extent of TOF
3,623	365	3,988

### 13.19.6 Growing Stock in Forest

Growing stock in the recorded forest areas (RFA) in Nagaland is given in the Table 13.19.12. Diameter class-wise distribution of top 5 species in numbers derived from the forest inventory data is presented in the table 13.19.13.

**Table 13.19.12 Growing Stock in Nagaland** (in m cum)

Sl. No.	Growing Stock (GS)	2019 Assessment	2021 Assessment	Change wrt 2019 Assessment	% of Country's GS
1.	Growing Stock in Recorded Forest Area	29.52	30.28	0.76	0.69
2.	Growing Stock in TOF	13.72	15.60	1.88	0.88

**Table 13.19.13 Diameter class distribution of top five tree species inside RFA in Nagaland** (in '000)

Sl. No.	Species	Dia class (cm)		
		10-30	30-60	>60
1.	<i>Schima wallichii</i>	9,748	1,826	0
2.	<i>Macaranga spp.</i>	9,936	228	0

# NAGALAND



Sl. No.	Species	Dia class (cm)		
		10-30	30-60	>60
3.	<i>Quercus</i> spp.	7,707	1,598	0
4.	<i>Ficus</i> spp.	5,897	456	456
5.	<i>Alnus</i> spp.	1,826	913	0

## 13.19.7 Dominant tree species in Trees Outside Forests (TOF)

Top five species in numbers in Trees Outside Forests in Nagaland in Rural and Urban areas are given in the Table 13.19.14 and Table 13.19.15 respectively.

**Table 13.19.14 Top five tree species in TOF (Rural) in Nagaland**

Sl. No.	Species	Relative Abundance (%)
1.	<i>Schima wallichii</i>	8.46
2.	<i>Alnus nepalensis</i>	5.71
3.	<i>Duabanga grandiflora</i>	5.69
4.	<i>Macaranga</i> spp.	4.37
5.	<i>Livistona jenkinsiana</i>	4.27

**Table 13.19.15 Top five tree species in TOF (Urban) in Nagaland**

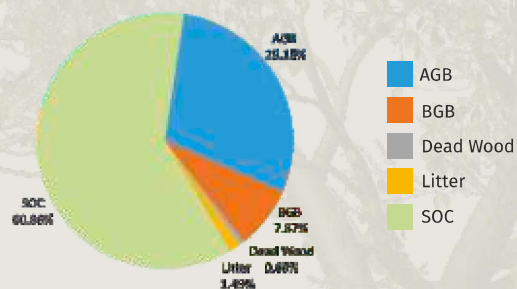
Sl. No.	Species	Relative Abundance (%)
1.	<i>Areca catechu</i>	12.53
2.	<i>Mangifera indica</i>	11.22
3.	<i>Tectona grandis</i>	5.72
4.	<i>Artocarpus heterophyllus</i>	3.22
5.	<i>Cocos nucifera</i>	2.67

## 13.19.8 Carbon Stock in Forest

The total Carbon stock of forest in the State including the TOF patches which are more than 1ha in size is 134.93 million tonnes (494.74 million tonnes of CO<sub>2</sub> equivalent) which is 1.87 % of total forest carbon of the country. Pool wise forest carbon in Nagaland is given in the following table.

**Table 13.19.16 Forest Carbon in Nagaland in different pools** (in '000 tonnes)

Sl. No.	Carbon Pools	Forest Carbon
1.	AGB	39,339
2.	BGB	10,618
3.	Dead wood	854
4.	Litter	2,006
5.	SOC	82,115
	<b>Total</b>	<b>1,34,932</b>



**Figure 13.19.5 Forest Carbon in Nagaland**

### 13.19.9 Growing Stock of Bamboo

Bamboo bearing area and growing stock inside the recorded forest area (RFA)/ Green Wash which include culms of 1 year age and above are given in the following table.

**Table 13.19.17 Growing Stock of Bamboo in Nagaland**

Growing Stock (GS)		% of Country's GS of Bamboo
Bamboo bearing area inside RFA/Green Wash (in sq km)	3,947	2.64
Total number of culms (in millions)	2,705	5.07
Total equivalent green weight (in '000 tonnes)	32,402	8.06

### 13.19.10 Major NTFP and Invasive Species

Major NTFP and invasive species as assessed from forest inventory data are presented in the Table 13.19.18 and Table 13.19.19 respectively.

**Table 13.19.18 Major NTFP species in Nagaland**

Sl. No.	Species	Plant Type	Relative Abundance (%)
1.	<i>Thysanolaena maxima</i>	Herbs	79.17
2.	<i>Embilial officinalis/Phyllanthus</i>	Tree	8.33
3.	<i>Rhus semialata</i>	Tree	6.25
4.	<i>Oroxylum indicum</i>	Tree	4.17
5.	<i>Litsea citara</i>	Tree	2.08

**Table 13.19.19 Major invasive species in the State inside the RFA/Green Wash in Nagaland** (in sq km)

Sl. No.	Species	Estimated Extent
1.	<i>Chromolaena odorata</i>	43
2.	<i>Mikania micrantha</i>	43
3.	<i>Ageratum conyzoides</i>	3
4.	<i>Parthenium hysterophorus</i>	1

Major NTFP species are given in terms of relative abundance whereas invasive species are given in terms of their estimated extent.

