

## SIKKIM: FOREST AREA INTRODUCTION

### 1. Forest Area Details as per the State Records:

Total geographical area----- =7096 sq. kms.

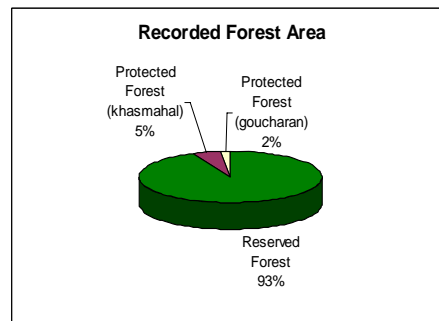
Recorded forest land:

1. (A) Reserved Forests----- =2261 sq. kms.

(B) Khasmal Forests----- =285 sq. kms.

(C) Gorucharan Forests----- = 104 sq. kms.

**Total = 2650 sq. kms. = 37.34%**



2. Area under alpine pasture & scrub-(RF) = 1024 sq. kms. = 14.44 %

3. Area under perpetual snow cover (RF) = 2091 sq. kms. = 29.5

**Thus the total recorded forest land in the state > 81.28 % of total geographical area and the Revenue area =1643.59 sq Kms.**

### 2. As per the Remote Sensing Data 1988: Area statistics for total state (in sq. Kms.)

Sl.No.	CLASS	RESERVE FOREST	REVENUE BLOCK	TOTAL	%OF TOTAL
1	Crop land (Terraced/Semi Terraced)	0.00	604.85	604.85	8.52
2	Fallow/Scrub in Revenue Blocks	0.00	155.69	155.69	2.19
3	Sal dense forest	5.30	0.77	6.07	0.09
4	Sal open forest	15.93	1.54	17.47	0.25
5	Sal degraded forest	3.32	0.71	4.03	0.06
6	Mixed dense forest	464.46	138.88	603.34	8.50
7	Mixed open forest	433.37	333.38	766.75	10.81
8	Mixed degraded forest	194.56	235.06	429.62	6.05
9	Dense conifer forest	351.94	16.14	368.08	5.19
10	Open conifer forest	340.63	21.55	362.18	5.10
11	Degraded conifer forest	156.89	16.30	173.19	2.44
12	Oak-Rhododendron forest	100.34	26.24	126.58	1.78
13	Scrubs in reserve forest	101.87	0.00	101.87	1.44
14	Forest blanks	90.56	0.00	90.56	1.28
15	Alpine scrub	611.44	27.72	639.16	9.01
16	Alpine pastures	431.32	0.00	431.32	6.08
17	Alpine barren	815.80	2.35	818.15	11.53
18	Snow	1018.23	5.41	1023.64	14.43
19	Glaciers	208.23	0.00	208.23	2.93
20	Lakes	32.30	0.70	33.00	0.47
21	Rivers/major streams	31.81	32.50	64.31	0.91
22	Dry river beds	31.49	9.10	40.59	0.57
23	Built-up area	0.30	3.24	3.54	0.05
24	Land slide areas	5.37	5.16	10.53	0.15
25	Miscellaneous	6.93	6.30	13.23	0.19
	<b>TOTAL</b>	<b>5452.39</b>	<b>1643.59</b>	<b>7095.98</b>	<b>100.00</b>

### 3. As per the Forest Survey of India (FSI): The recorded forest area in the State is as under:

(Area in sq. kms)

Geographic area	Reserved Forests	Protected Forests (Khasmal)	Protected Forests (Gorucharan)	Recorded Forests of State's Geographic area	Of Country's Forest area
7,096	5,452.39	285	104	5,841.39	82.32%
					0.8%

## Forest Cover in Different Assessments (1987-2003):

As per the **State of Forest Report** of the Forest Survey of India, Ministry of Environment & Forest, Government of India, the Forest cover assessment status in different reported year is as under:

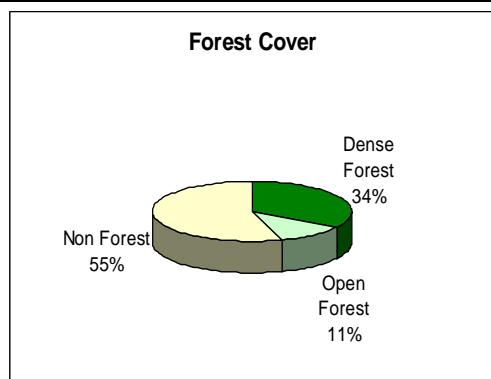
(Area in sq. kms)

Year	1987	1989	1991	1993	1995	1997	1999	2001	2003
Forest Cover Assessment	2,756	3,041	3,041	3,119	3,127	3,129	3,118	3,193	3262
Percentage of Geographical area	38.84 %	42.86 %	42.86 %	43.95 %	44.06 %	44.1%	44%	45%	46%

Note: In the State of Sikkim about 44 % of Total Geographical area is under Alpine pasture & scrub and under perpetual snow cover and hence in these areas, it would not be possible to bring the tree cover. And hence the area may be considered for the tree cover may be excluding these areas.

## District –wise Forest Cover (Assessment year 2001):

Districts	Geographic area	Forest Cover				Scrub
		Dense Forest	Open Forest	Total	Percent	
East	954	571	99	670	70.23	85
West	1,166	570	142	712	61.06	52
North	4,226	836	465	1,301	30.79	204
South	750	414	96	510	68.00	0
<b>Total</b>	<b>7,096</b>	<b>2,391</b>	<b>802</b>	<b>3,193</b>	<b>45.00</b>	<b>341</b>



Forest Cover(2001)	
Dense Forest	2,391 sq.kms.
Open Forest	802 sq.kms
<b>Total</b>	<b>3,193 sq. kms.</b>
<b>Of State's Geographic area</b>	<b>45.0%</b>
<b>Of Country's Forest Cover</b>	<b>0.5%</b>

Tree Cover(2001)	
Culturable Non-Forest Area(CFNA)	443 sq.kms.
No. of Trees per ha of CFNA	14.7
Tree Cover	14 sq. kms.
Of State's Geographic area	0.2 %
Of CFNA	3.2 %

Forest & Tree Cover(2001)	
Total Forest & Tree Cover	3,207 sq.kms.
Of State's Geographic area	45.2 %
Of Country's Forest & Tree Cover	0.4 %
Per capita Forest & Tree Cover	0.59 Ha

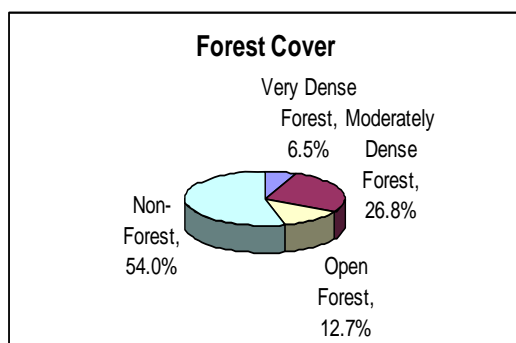
**District – wise Forest Cover (Sikkim) (Assessment year 2003):**

District	Geographic Area	Forest Cover				Percent	Change
		Very Dense	Moderately Dense	Open Forest	Total Forest		
East Sikkim	954	162	396	121	679	71.17	9
North Sikkim	4,226	92	747	487	1,326	31.38	25
South Sikkim	750	95	311	123	529	70.53	19
West Sikkim	1,166	109	450	169	728	62.44	16
<b>Total</b>	<b>7,096</b>	<b>458</b>	<b>1,904</b>	<b>900</b>	<b>3,262</b>	<b>45.97</b>	<b>69</b>

**Forest Cover Change Matrix (Sikkim):**

2001 Assessment	2003 Assessment				Total 2001
	Dense forest	Open forest	Scrub	Non-forest	
Dense Forest	1,859	437	8	87	2391
Open Forest	289	413	36	64	802
Scrub	27	4	236	74	341
Non- forest	187	46	80	3249	3562
<b>Total 2003</b>	<b>2,362</b>	<b>900</b>	<b>360</b>	<b>3474</b>	<b>7096</b>
<b>Net change</b>	<b>-29*</b>	<b>98</b>	<b>19</b>	<b>-88</b>	

\*See remarks below table 7.36



Forest Cover (2003)	
Very Dense Forest	458 km <sup>2</sup>
Moderately Dense Forest	1,904 km <sup>2</sup>
Open Forest	900 km <sup>2</sup>
<b>Total</b>	<b>3,262 km<sup>2</sup></b>
<b>Of State's Geographic Area</b>	<b>45.97%</b>
<b>Of Country's Forest Cover</b>	<b>0.48 %</b>

Tree Cover (2003)	
Culturable Non-Forest Area (CNFA)	322 km <sup>2</sup>
No. of Trees per ha of CNFA	20.3
<b>Tree Cover</b>	<b>22 km<sup>2</sup></b>
<b>Of State's Geographic Area</b>	<b>0.31 %</b>
<b>Of CNFA</b>	<b>6.83%</b>

Forest & Tree Cover	
<b>Total Forest &amp; Tree Cover</b>	<b>3,284 km<sup>2</sup></b>
<b>Of State's Geographic area</b>	<b>46.28%</b>
<b>Of Country's Forest &amp; Tree Cover</b>	<b>0.42%</b>
<b>Per capita Forest &amp; Tree Cover</b>	<b>0.61 ha</b>

**Wildlife (Protected Area Network):**

Sl. No.	Name	Area in Sq km.	District	Biogeographic Province	Altitude	Notification Dated
1	Barsey Rhododendron Sanctuary	104.00	West	2 C	2200-4100m	08.06.96
2	Fambonglho Wildlife Sanctuary	51.76	East	2 C	1524-2749	02.04.84
3	Kyongnosla Alpine Sanctuary	31.00	East	2 C	3292-4116m	05.12.92
4	Maenam Wildlife Sanctuary	35.34	South	2 C	2300-3263m	09.03.87
5	Pangolakha Wildlife Sanctuary	128.00	East	2 C		07.11.00
6	Shingba Rhododendron Sanctuary	43.00	North	1 B	3048-4575m	05.12.92
7	Khangchendzonga National Park	1784.00	North/West	1 B		26.08.77
	Total area	2177.10				
	Total Geo.area	7096.00				
8	Khangchendzonga Biosphere Reserve	2620.00	North/West	1 B & 2 C		
	National Park	1784.00	North/West			
	Buffer area	836.00	North/West			

- NOTE: 1. Protected Area Network does not include area under buffer zone of a biosphere reserve.  
 2. Total area under Protected Area Network of State is 2177.10 sq.km. (i.e.30.68% of the total geographical area).  
 3. Total area under Protected Area Network and biosphere reserve in State is 3013.10 sq.km. (i.e.42.46% of the total geographical area).

**BIODIVERSITY & NATURAL RESOURCES OF SIKKIM**

India is recognized as one of the 12 mega diversity centres of the world. India has two out of the 18 BIODIVERSITY hot-spots in the world, which are in the Western Ghats and Eastern Himalayas. Sikkim, covering just 0.2 % of the geographical area of the country, has tremendous biodiversity and has been identified as one of the HOT-SPOT in the Eastern Himalayas.

The Sikkim Himalayas falls under the Himalayan (2) Bio – geographic Zones and Central Himalaya (2C) Biotic Province. As per the Champion & Seth 1968 new classification of Forests Types, about 9 Types of Major Forests Types are found in the State. Sikkim Himalayas has more than 26% of flowering plants of the country and is very important phytogeographical reserve of the country.

- There are 10 bio-geographic zones & 25 biotic provinces--- which have 16 major forests types & > 200 sub types as per (Champion & Seth 1968).
- Sikkim falls under “Himalayan (2) Biogeographic zone & Central Himalaya (2c) biotic province---having about 9 types of forests types (Champion & Seth).

Biodiversity	Nos
Flowering Plants	4500
Orchids	515
Rhododendrons	36
Conifers	16
Bamboos	23
Ferns and Ferns allies	362
Tree Ferns	8
Primulas	60
Oaks	11
Medicinal Plants	424
Mammals	150
Birds	552
Butterflies	690
Fishes	48
Mountain & Peaks	28
Glaciers	21
Lakes and Wetlands	227
Rivers and Streams	>104

**By:**

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