

8.24 SIKKIM

8.24.1 Introduction

Situated in Eastern Himalayas, the small State of Sikkim shares international borders with Nepal, Bhutan and Tibet and has geographic area of 0.71 million ha. It lies between lat 27° 04' to 28° 07' N and long 88° 00' to 88° 55' E. It is a mountainous state with wide variation in altitude ranging from 300 m to 8586 m. The third highest mountain in the world, Kanchendzonga, is located in this State. The Teesta is the main river of the state. Annual rainfall varies from 2,700 mm to 3200 mm. The temperature in the State ranges from sub-zero during winter to 28°C during summer.

The population of the State is 0.54 million (*Census 2001*) of which 88.9% is rural and 11.1% urban. Population density in the State is 76 persons per km². The Scheduled Tribes account for 20.6% of the total population of the State. The livestock population of the State is 0.34 million (*Livestock Census 2003*), which has decreased by nearly 14% since the census of 1992. Of the total geographic area, about 30% is under permanent snow cover/ glaciers and steep rocks where it is not possible to grow trees due to physical limitations. Land use pattern of the State is given in Table 8.24a.

8.24.2 Forest Resources

The recorded forest area of the State is 5,841 km², constituting 82.31% of the geographical area of the State. Legally this area has been classified into Reserved Forest and Protected Forest, which constitute 93.34% and 6.66% of the forest area respectively.

The State supports luxuriant tropical, temperate and alpine vegetation. Forest types follow a complex altitudinal zonation sequence typical of the Kanchendzonga region. The major forest types are, Subtropical Deciduous Monsoon Forest, Subtropical Evergreen Hill Forest, Lower Temperate Broadleaf Forest and Upper Temperate Conifer Forest, Rhododendron Forest, Sub-alpine Forest and Moist Alpine Scrub.

8.24.3 Protected Areas

Sikkim is known for orchids as it has more than 400 species. Over 600 species of butterflies are found at various altitudes of the State. High altitude areas above 10,000 ft support over 30 species of rhododendrons. Sikkim has one National Park (Kanchendzonga NP) and six Wildlife Sanctuaries spread over an area of 0.22 million ha constituting 30.7% of the geographical area of the State. The area is home to snow leopard. Other fauna of Sikkim include leopard, red panda, Himalayan black bear, musk deer and flying squirrel.

8.24.4 Joint Forest Management

The JFM began in the State in 1998. There are 155 JFM Committees managing about 10,000 ha of forest area as on March 2005. More than 46,000 families are involved in this programme, of which around 17,000 families belong to the Scheduled Tribes.

Source: Proceedings of the National Workshop on JFM, MoEF, 2005.

Table 8.24a: Land use pattern

Land Use	Area in '000 ha	Percentage
Total Geographic Area	710	
Reporting area for land utilization	672	94.65
Forests	265	37.32
Not available for land cultivation	250	35.21
Permanent pastures and other grazing lands	4	0.56
Land under misc. tree crops and groves	5	0.70
Culturable Wastelands	2	0.28
Fallow land other than current fallows	30	4.23
Current fallows	5	0.70
Net area sown	110	15.49

Source: Land Use Statistics, Ministry of Agriculture, GOI, 2005.

8.24.5 Forest Cover

The forest cover of the State, based on satellite data of December 2004, is 3,262 km², which is 45.97 % of the geographic area. Very dense forest is 498 km², moderately dense forest, 1,912 km², and open forest, 852 km². The forest cover of the State is shown in Fig. 8.24.

There is no change in forest cover in the present assessment as compared to the previous assessment (based on satellite data of November 2002). The change matrix, given in Table 8.24b reveals that there is an increase of 3 km² in scrub.

The district wise details of very dense forest, moderately dense forest, open forest and scrub, along with the changes compared to 2003 assessment, have been provided in Table 8.24c.

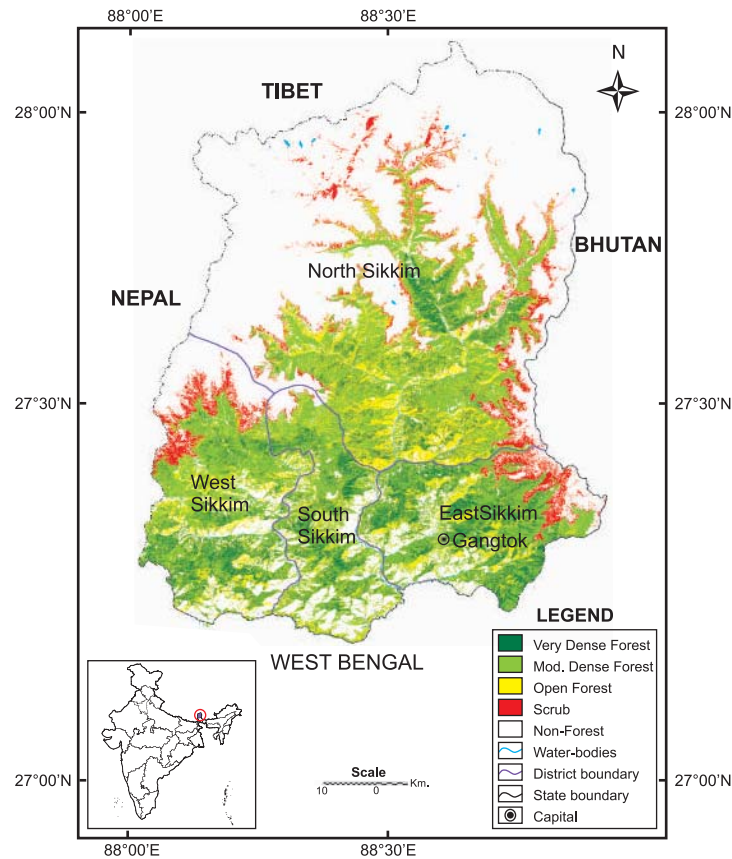
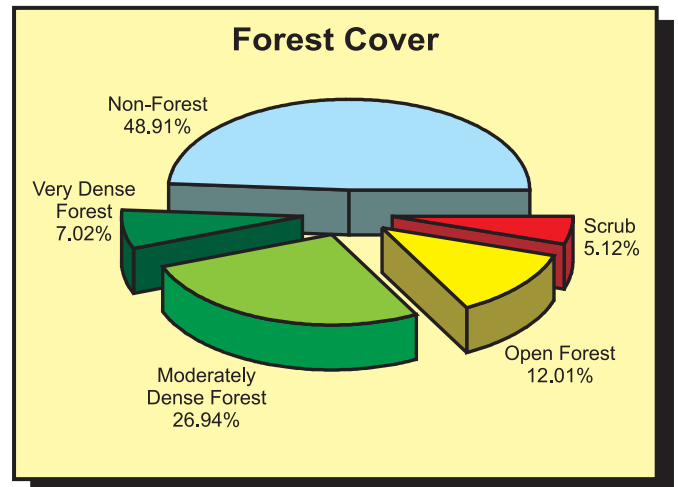


Fig. 8.24 : Forest Cover Map of Sikkim

Table 8.24b: Forest cover change matrix

 (area in km²)

2003 Assessment(Data of Nov.2002)	2005 Assessment (Data of Dec. 2004)					Total 2003
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	498	0	0	0	0	498
Moderately Dense Forest	0	1,912	0	0	0	1,912
Open Forest	0	0	852	0	0	852
Scrub	0	0	0	360	0	360
Non-Forest	0	0	0	3	3,471	3,474
Total 2005	498	1,912	852	363	3,471	7,096
Net Change	0	0	0	3	-3	

Table 8.24c: District-wise forest cover

Number of Districts: 4

 (area in km²)

District	Geographic area	2005 Assessment				Percent of G.A.	Change	Scrub
		Very dense forest	Mod. dense forest	Open forest	Total			
East Sikkim TH	954	162	396	121	679	71.17	0	68
North Sikkim TH	4,226	132	755	439	1,326	31.38	0	208
South Sikkim TH	750	95	311	123	529	70.53	0	4
West Sikkim TH	1,166	109	450	169	728	62.44	0	83
Total	7,096	498	1,912	852	3,262	45.97	0	363

8.24.6 Tree Cover

Tree cover of Sikkim has been estimated following a sampling based approach. A separate exercise was carried out where high resolution satellite data (5.8m) has been used for identification of tree patches for field inventory. Field inventory has been carried out on 107 sample plots in

one district of the State between 2002-06 and the estimated tree cover in the State is 27 km². Being a forest rich State, there is limited scope of expanding tree cover outside the forest areas.

The forest and tree cover of the State is presented in the Table 8.24d.

Table 8.24d: Forest & tree cover

 (area in km²)

Category	Area	% of Geographical Area
Tree Cover	27	0.38
Forest Cover	3,262	45.97
Forest & Tree Cover	3,289	46.35