



Gujarat

9.8.1 Introduction

The geographical area of the state is 1,96,244 sq km which is 5.97% of the country's area. Physiographically the state can be divided into three distinct regions, viz. (1) the peninsula, traditionally known as Saurashtra which is a hilly tract sprinkled with low hills (2) Kutch on the north-west which is barren and contains the famous Rann of Kutch and (3) the mainland, extending from Rann of Kutch and the Aravalli Hills to the river Damanganga and consists of plains with alluvial soil. Climate of the State is moderate ranging from 25°C to 28°C and average annual rainfall ranging from 800 to 1,000 mm. The state is drained by numbers of rivers which includes Sabarmati, Narmada, Tapi, Mahi, Bhadar and Shetrunji. The state has 26 districts out of which 8 are tribal districts. As per 2011 Census, Gujarat has a population of 60.44 million accounting to 4.99% of India's population. The rural, urban and tribal population stands at 42.60%, 57.40% and 14.75% respectively. The population density of the state is 308 per sq km which is lower than the national average of 382 persons per sq km. The 19th livestock census 2012 has reported a total livestock population of 27.12 million.

Table 9.8.1 Land Use Pattern

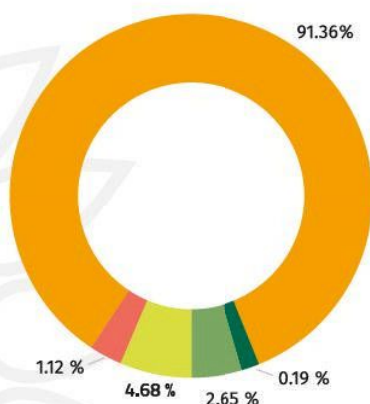
Land Use Types	Area (in 000' ha)	Percentage
Total Geographic Area	19,602	
Reporting area for land utilization	19,069	100
Forests	1,834	9.62
Not available for land cultivation	3,723	19.52
Permanent pastures and other grazing lands	851	4.46
Land under misc. tree crops and groves	4	0.02
Culturable wasteland	1,960	10.28
Fallow land other than current fallows	16	0.08
Current fallows	379	1.99
Net area sown	10,302	54.03

Source: Land Use Statistics, Ministry of Agriculture, GOI, 2013-14.

9.8.2

Forest Cover

Based on interpretation of satellite data pertaining to Oct-Jan 2015-2016, the forest cover in the State is 14,757 sq km which is 7.52% of the State's geographical area. In terms of forest canopy density classes, the state has 378 sq km under very dense forest, 5,200 sq km under moderately dense forest and 9,179 sq km under open forest.



Forest cover of Gujarat

Pie Chart showing forest cover of Gujarat

■ Non Forest
 ■ Scrub
 ■ Open Forest
 ■ Mod. Dense Forest
 ■ Very Dense Forest

9.8.3

Forest Cover within and outside Recorded Forest Area

The recorded forest area of the state is 21,647 sq km which is 11.03% of its geographical area. The Reserved, Protected and Unclassed Forests are 66.39%, 13.33% and 20.28% respectively of the recorded forest area. However, as the digitized boundary of recorded forest area provided by the State covers only 15,407 sq km, the analysis of forest cover within this area is depicted below.

Table 9.8.2 Forest Cover within and outside Recorded Forest Area

Forest Cover within Recorded Forest Area (Area in sq km)	
Very Dense Forest (VDF)	353
Moderately Dense Forest (MDF)	4,741
Open Forest (OF)	5,156
Total	10,250
Forest Cover outside Recorded Forest Area	
Very Dense Forest	25
Moderately Dense Forest	459
Open Forest	4,023
Total	4,507
Total Forest Cover	14,757
Tree Cover	8,024
Total Forest & Tree Cover	22,781
Of State's Geographical Area	11.61%
Of India's Forest & Tree Cover	2.84%
Per capita Forest & Tree Cover	0.04 ha

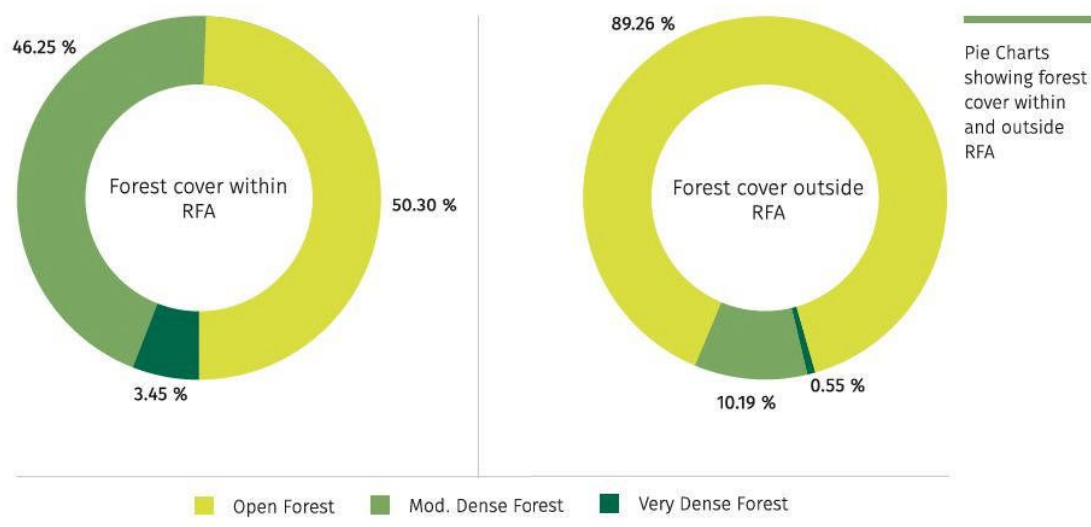


Table 9.8.3 Altitude-wise Forest Cover (Area in sq km)

Altitude Zone (m)	Geographical Area	VDF	MDF	OF	Total
0-500m	1,95,407	329	4,853	8,961	14,143
500-1000m	830	49	346	217	612
1000-2000m	7	0	1	1	2
Total	1,96,244	378	5,200	9,179	14,757

(Based on SRTM, Digital Elevation Model)

Table 9.8.4 Forest Cover in different Patch Size Classes

S. No	Patch Size Range in (Sq km)	No. of Patches	Area (Sq km)	%age
1	$\geq 0.01 \leq 1.0$	69,749	5,051	34.23
2	$> 1.0 \leq 10$	1,676	3,998	27.09
3	$> 10 \leq 100$	159	3,659	24.79
4	$> 100 \leq 500$	6	1,263	8.56
5	$> 500 \leq 1000$	1	786	5.33
	Total	71,591	14,757	100

Table 9.8.5 Growing Stock

	Growing Stock	% Contribution to country
Growing Stock in Recorded Forest Area	52.030 m cum	1.23
Growing Stock in TOF	113.992 m cum	7.11
Potential Production of industrial wood from TOF	6.47 m cum	8.68
Bamboo bearing area within forest area of the state	3,544 sq km	2.26
Total number of culms	485 millions	1.73
Total green weight equivalent of culms	6,035 (000' tonnes)	3.20

9.8.4

Carbon Stock in forest

The total Carbon stock of forests in the State is 110,697 million tonnes (405,889 million tonnes of CO₂ equivalent) which is 1.56% of total forest carbon of the country.

9.8.5

Decadal Change in water bodies within Forest

An increase of 428 sq km has been observed in the water body coverage within forest compared to 2005. The graphical and tabular comparison is depicted below.

Extent of
waterbodies
within forest

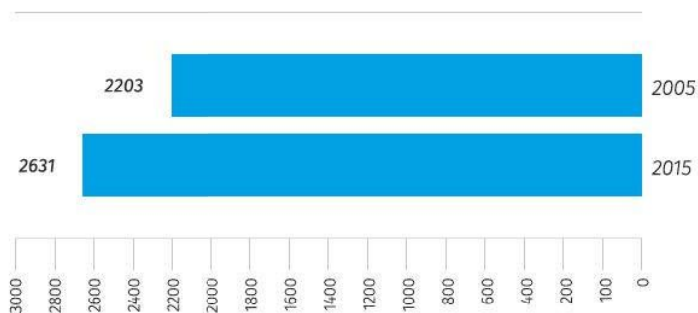


Table 9.8.6 Water bodies within Forest for the years 2005 and 2015

Area/Coverage	2005	2015
Extent of water bodies (sq km) within Forest	2,203	2,631
% of water bodies to Forest Cover	15.08	17.83

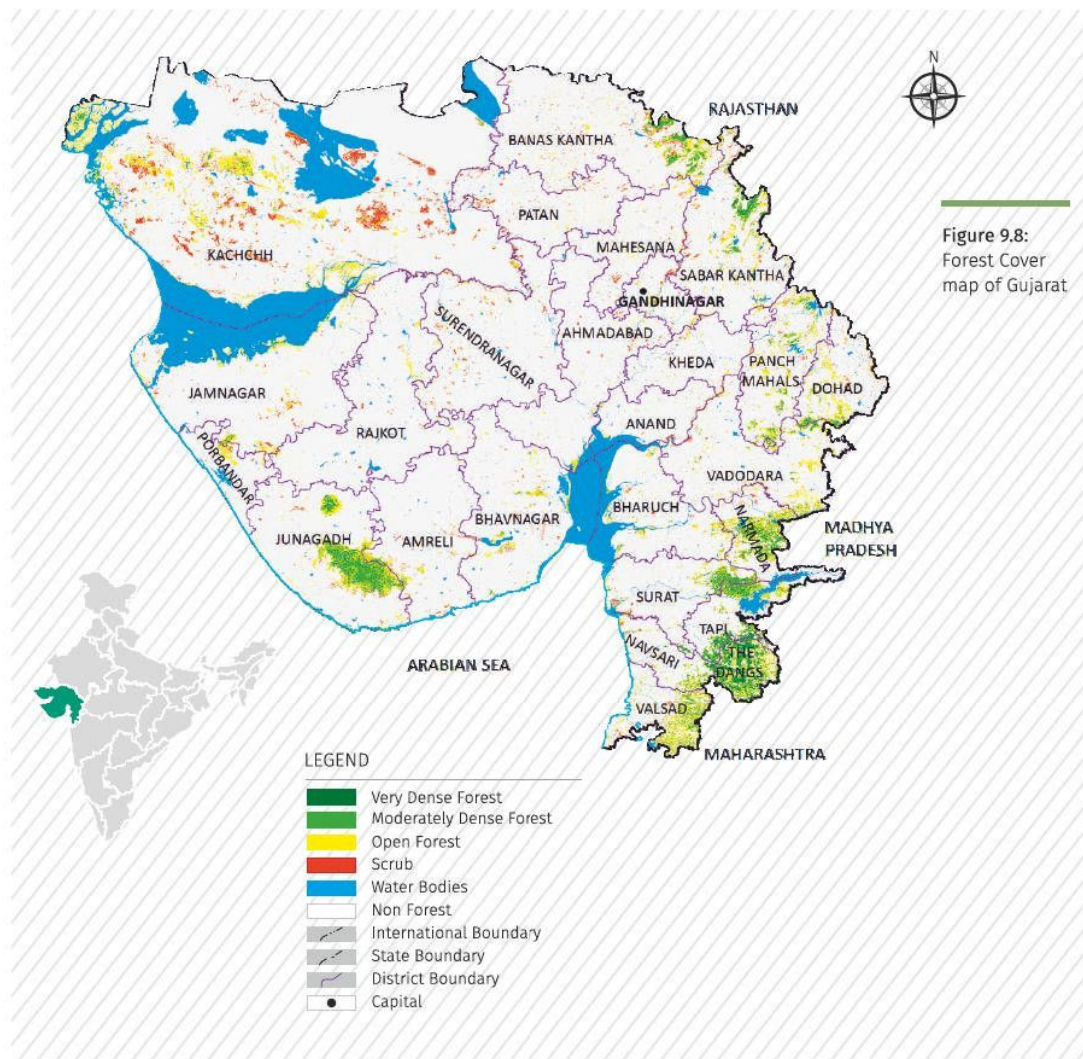


Figure 9.8:
Forest Cover
map of Gujarat

Table 9.8.7 District- wise Forest Cover							(area in sq km)	
District	Geographical Area	2017 Assessment			% of GA	Change *	Scrub	
		Very Dense Forest	Mod. Dense Forest	Open Forest				
Ahmadabad	8,107	0	12	117	129	1.6	-1	52
Amreli	7,397	0	63	188	251	3.4	1	66
Anand	3,204	0	18	45	63	2	0	19
Banas Kantha [†]	10,743	0	372	476	848	7.9	1	208
Bharuch [†]	6,509	0	71	243	314	4.8	2	26
Bhavnagar	10,034	0	47	230	277	2.8	5	76
Dohad	3,642	1	118	419	538	14.8	1	45

District	Geographical Area	2017 Assessment				% of GA	Change *	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Gandhinagar	2,140	0	11	81	92	4.3	0	50
Jamnagar	14,184	0	55	380	435	3.1	12	99
Junagadh	8,831	15	956	663	1,634	18.5	17	60
Kachchh	45,674	0	301	2,011	2,312	5.1	11	752
Kheda	3,953	0	20	74	94	2.4	0	37
Mahesana	4,401	0	13	146	159	3.6	-1	64
Narmada	2,817	20	464	479	963	34.2	-2	32
Navsari	2,246	18	125	159	302	13.4	2	15
Panch Mahals ^T	5,231	0	219	518	737	14.1	-5	57
Patan	5,792	0	1	101	102	1.8	1	126
Porbandar	2,316	0	16	108	124	5.3	0	20
Rajkot	11,198	0	3	138	141	1.3	0	37
Sabar Kantha ^T	7,394	29	304	474	807	10.9	1	130
Surat ^T	4,549	5	294	216	515	11.3	1	90
Surendranagar	10,423	0	6	169	175	1.7	-2	36
Tapi ^T	3,139	80	479	251	810	25.8	1	7
The Dangs ^T	1,766	210	743	415	1,368	77.5	1	3
Vadodara ^T	7,546	0	145	484	629	8.3	0	60
Valsad ^T	3,008	0	344	594	938	31.2	1	27
TOTAL	1,96,244	378	5,200	9,179	14,757	7.52	47	2,194

*Change compared to updated 2015 assessment.

Table 9.8.8 Forest Cover Change Matrix						(area in sq km)
Class	2017 Assessment					Total ISFR 2015 updated
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	378	0	0	0	0	378
Moderately Dense Forest	0	5,196	1	1	0	5,198
Open Forest	0	0	9,125	0	9	9,134
Scrub	0	0	0	2,002	6	2,008
Non Forest	0	4	53	191	1,79,278	1,79,526
Total 2017	378	5,200	9,179	2,194	1,79,293	1,96,244
Net Change	0	2	45	186	-233	

9.8.6

Reasons for change detected in 2017 assessment

An increase of 47 sq km observed in the State can be attributed to plantations both within and outside recorded forest areas as well as due to conservation and expansion of mangrove cover.