



## Punjab

### 9.22.1 Introduction

*The State of Punjab, having a geographical area of 50,362 sq km constitutes 1.53% of the geographical area of the country. Although most of the state is comprised of fertile alluvial plains, the north eastern part of the state is comprised of low Shiwalik hills. Climate of the Punjab is tropical, semi arid, hot and subtropical monsoon type with cold winter and hot summer. The average annual rainfall varies from about 480mm to 960mm and the average annual temperature ranges between 0°C to 47°C. The Satluj and Beas are the major rivers of the state. The state comprises 20 districts which are neither Hill nor Tribal districts. As per the 2011 census, Punjab has a population of 27.74 million accounting to 2.29% of India's population. The rural and urban population constitutes 62.52% and 37.48% respectively. The population density of the state is 551 per sq km. The 19<sup>th</sup> Livestock census 2012 has reported a total livestock population of 8.12 million.*

Table 9.22.1 Land Use Pattern

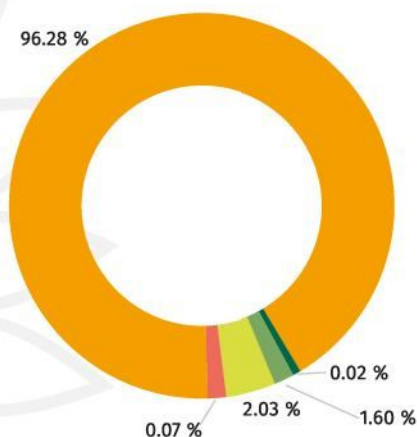
Land Use Types	Area (in 000' ha)	Percentage
Total Geographic Area	5,036	
Reporting area for land utilization	5,033	100
Forests	258	5.13
Not available for land cultivation	550	10.93
Permanent pastures and other grazing lands	5	0.10
Land under misc. tree crops and groves	8	0.16
Culturable wasteland	6	0.12
Fallow land other than current fallows	6	0.12
Current fallows	55	1.09
Net area sown	4,145	82.35

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

### 9.22.2

### Forest Cover

Based on interpretation of satellite data pertaining to Oct-Dec 2015, the forest cover in the state is 1,837 sq km which is 3.65% of the state's geographical area. In terms of forest canopy density classes, the state has 8 sq km under very dense forest, 806 sq km under moderately dense forest and 1,023 sq km under open forest.



*Forest cover  
of Punjab*

Pie Chart  
showing forest  
cover of Punjab

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

### 9.22.3

## Forest Cover within and outside Green Wash Area

The recorded forest area of the state is 3,084 sq km which is 6.12 % of its geographical area. The Reserved, Protected and Unclassed Forests are 1.43%, 36.87% and 61.70% respectively, of the recorded forest area. Due to non-availability of digitized boundary of recorded forest area from the State, the updated green wash area which is 840sq km has been used and the analysis of forest cover within and outside this area is depicted below.

Table 9.22.2 Forest Cover within and outside Green Wash Area

Forest Cover within Green wash (Area in sq km)	
Very Dense Forest	6
Moderately Dense Forest	396
Open Forest	334
<b>Total</b>	<b>736</b>
Forest Cover outside Green wash	
Very Dense Forest	2
Moderately Dense Forest	410
Open Forest	689
<b>Total</b>	<b>1,101</b>
<b>Total Forest Cover</b>	<b>1,837</b>
<b>Tree Cover</b>	<b>1,622</b>
<b>Total Forest &amp; Tree Cover</b>	<b>3,459</b>
Of State's Geographical Area	6.87%
Of India's Forest & Tree Cover	0.43%
Per capita Forest & Tree Cover	0.01 ha

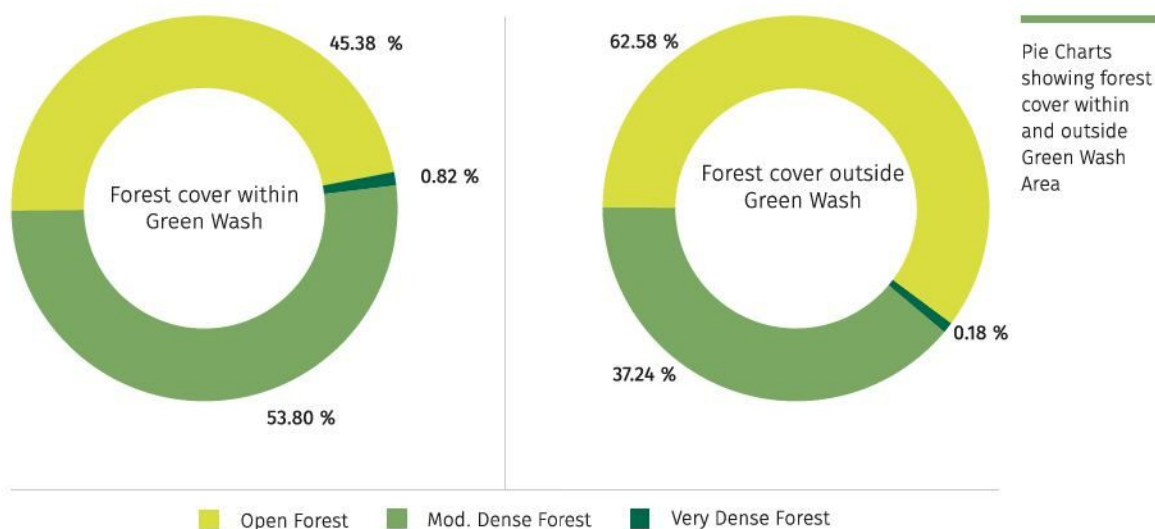


Table 9.22.3 Altitude-wise Forest Cover (Area in sq km)

Altitude Zone (m)	Geographical Area	VDF	MDF	Open	Total
0-500	49,882	8	586	868	1,462
500-1000	480	0	220	155	375
<b>Total</b>	<b>50,362</b>	<b>8</b>	<b>806</b>	<b>1,023</b>	<b>1,837</b>

(Based on SRTM, Digital Elevation Model)

Table 9.22.4 Forest Cover in different Patch Size Classes

S.No.	Patch Size Range in (sq km)	No. of Patches	Area (sq km)	%age
1.	≥ 0.01 ≤ 1.0	6,086	451	24.55
2.	> 1.0 ≤ 10	92	222	12.08
3.	> 10 ≤ 100	3	65	3.54
4.	> 100 ≤ 500	3	548	29.83
5.	> 500 ≤ 1000	1	551	30.00
	<b>Total</b>	<b>6,185</b>	<b>1,837</b>	<b>100</b>

Table 9.22.5 Growing Stock

	Growing Stock	% Contribution to country
Growing Stock in Recorded Forest Area	12.941 m cum	0.31
Growing Stock in TOF	20.012 m cum	1.25
Potential Production of industrial wood from TOF	2.75 m cum	3.69
Bamboo bearing area within forest area of the state	44 sq km	0.03
Total number of culms	6millions	0.02
Total green weight equivalent of culms	27(000' tonnes)	0.01

#### 9.22.4

### Carbon Stock in forest

The total Carbon stock of forests in the State is 16,038 million tonnes (58,806 million tonnes of CO<sub>2</sub> equivalent) which is 0.23% of total forest carbon of the country.

#### 9.22.5

### Decadal Change in water bodies within Forest

Increase of 7 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  
water bodies  
within forest

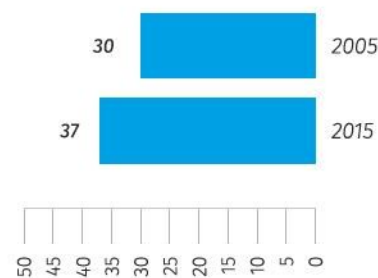


Table 9.22.6 Water bodies within Forest for the years 2005 and 2015

Area/Coverage	2005	2015
Extent of water bodies (sq km) within Forest	30	37
% of water bodies to Forest Cover	1.81	2.01



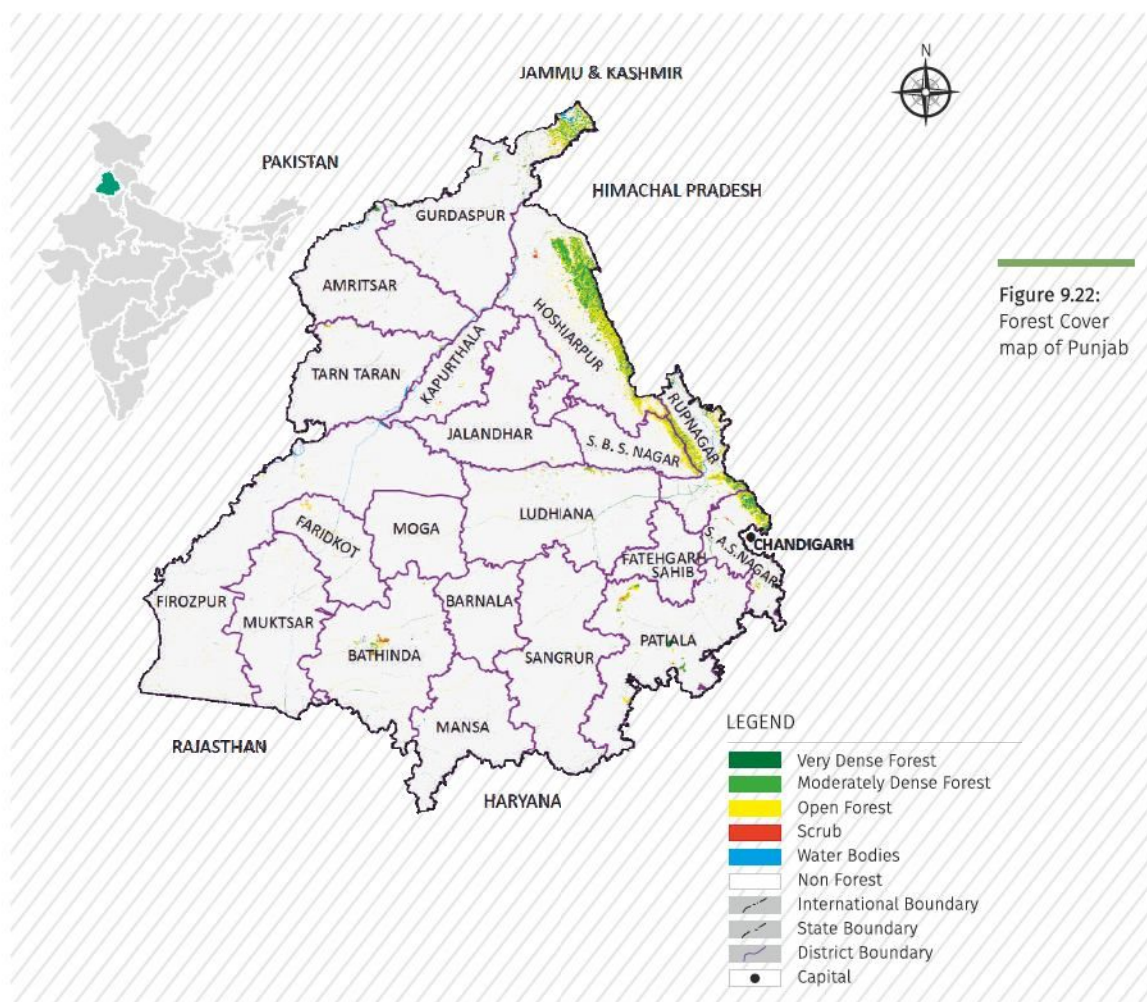


Table 9.22.7 District-wise Forest Cover							(area in sq km)		
District	Geographical Area	2017 Assessment			% of GA	Change *	Scrub		
		Very Dense Forest	Mod. Dense Forest	Open Forest					
Amritsar	2,683	1	12	14	27	1.01	-1	1	
Barnala	2,414	0	1	7	8	0.33	0	0	
Bathinda	3,353	0	19	37	56	1.67	7	9	
Faridkot	1,458	0	4	17	21	1.44	-1	1	
Fatehgarh Sahib	1,180	0	4	0	4	0.34	0	0	
Firozpur	5,305	0	6	28	34	0.64	0	1	
Gurdaspur	2,242	0	105	108	213	9.50	24	1	
Hoshiarpur	3,551	0	371	354	725	20.42	34	7	
Jalandhar	3,386	0	2	9	11	0.32	1	1	
Kapurthala	2,624	0	2	8	10	0.38	0	1	
Ludhiana	1,633	0	26	29	55	3.37	-8	1	
Mansa	3,578	0	1	9	10	0.28	1	0	

Table 9.22.7 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				
Moga	2,198	0	0	9	9	0.41	-2	0
Muktsar	2,593	0	6	12	18	0.69	-2	0
Patiala	3,325	7	29	39	75	2.26	2	4
Rupnagar	1,356	0	106	154	260	19.17	-2	3
Sahibzada Ajit Singh Nagar	1,094	0	75	67	142	12.98	3	3
Sangrur	3,625	0	6	17	23	0.63	1	0
Shahid Bhagat Singh Nagar	1,482	0	26	92	118	7.96	7	0
Tarn Taran	1,282	0	5	13	18	1.40	2	0
<b>Total</b>	<b>50,362</b>	<b>8</b>	<b>806</b>	<b>1,023</b>	<b>1,837</b>	<b>3.65</b>	<b>66</b>	<b>33</b>

\*Change compared to updated 2015 assessment.

Table 9.22.8 Forest Cover Change Matrix						(area in sq km)
Class	2017 Assessment				Total ISFR 2015 updated	
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	0	0	0	0	0	0
Moderately Dense Forest	5	618	88	1	21	733
Open Forest	3	151	794	5	85	1,038
Scrub	0	2	12	7	16	37
Non Forest	0	35	129	20	48,370	48,554
<b>Total ISFR 2017</b>	<b>8</b>	<b>806</b>	<b>1,023</b>	<b>33</b>	<b>48,492</b>	<b>50,362</b>
Net Change	8	73	-15	-4	-62	

## 9.22.6

### Reasons for change detected in 2017 assessment

Much of the 66 sq km increase in the forest cover could be attributed to increase in tree cover outside recorded forest areas.