

9.12 JHARKHAND

9.12.1 Introduction

Jharkhand, one of the most prolific mineral producing states of the country, consists primarily of Chhotanagpur Plateau. The geographical area of the state is 79,714 km² which accounts for 2.42% of the country's area. The state falls between 22°00' N - 24°37' N latitude and 83°15' E - 87°01' E longitude. The important rivers of the state are Sone, Keol and Damodar. Jharkhand has a tropical climate with annual average rainfall of about

900 mm. The temperature varies between 4°C to 47°C.

The population of the state is 32.97 million (*Census 2011*) which constitutes 2.72% of the country's population. Of this, rural population is 75.95% and urban population 24.05%. The population density is 414 persons per km². The livestock population is 18.10 million (*Livestock Census 2007*).

Land use pattern of the state is given in Table 9.12.1.

Table 9.12.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	7,972	
Reporting area for land utilisation	7,970	100.00
Forests	2,239	28.09
Not available for cultivation	1,332	16.71
Permanent pasture and other grazing lands	110	1.38
Land under misc. tree crops and groves	93	1.17
Culturable wasteland	336	4.22
Fallow lands other than current fallows	962	12.07
Current fallows	1,394	17.49
Net area sown	1,504	18.87

Source: Land Use Statistics, Ministry of Agriculture, GOI, 2008-09.

9.12.2 Recorded Forest Area

The recorded forest area of the state is 23,605 km² which is 29.61% of its geographical area. Reserved Forests constitute 18.58%, Protected Forests 81.28% and Unclassed Forests 0.14%.

9.12.3 Protected Areas

Jharkhand has one National Park and 11 Wildlife Sanctuaries covering 2,182.15 km² which constitutes 2.74% of the state's geographical area. Palamu Tiger Reserve is located in the state covering an area of 1,026 km².

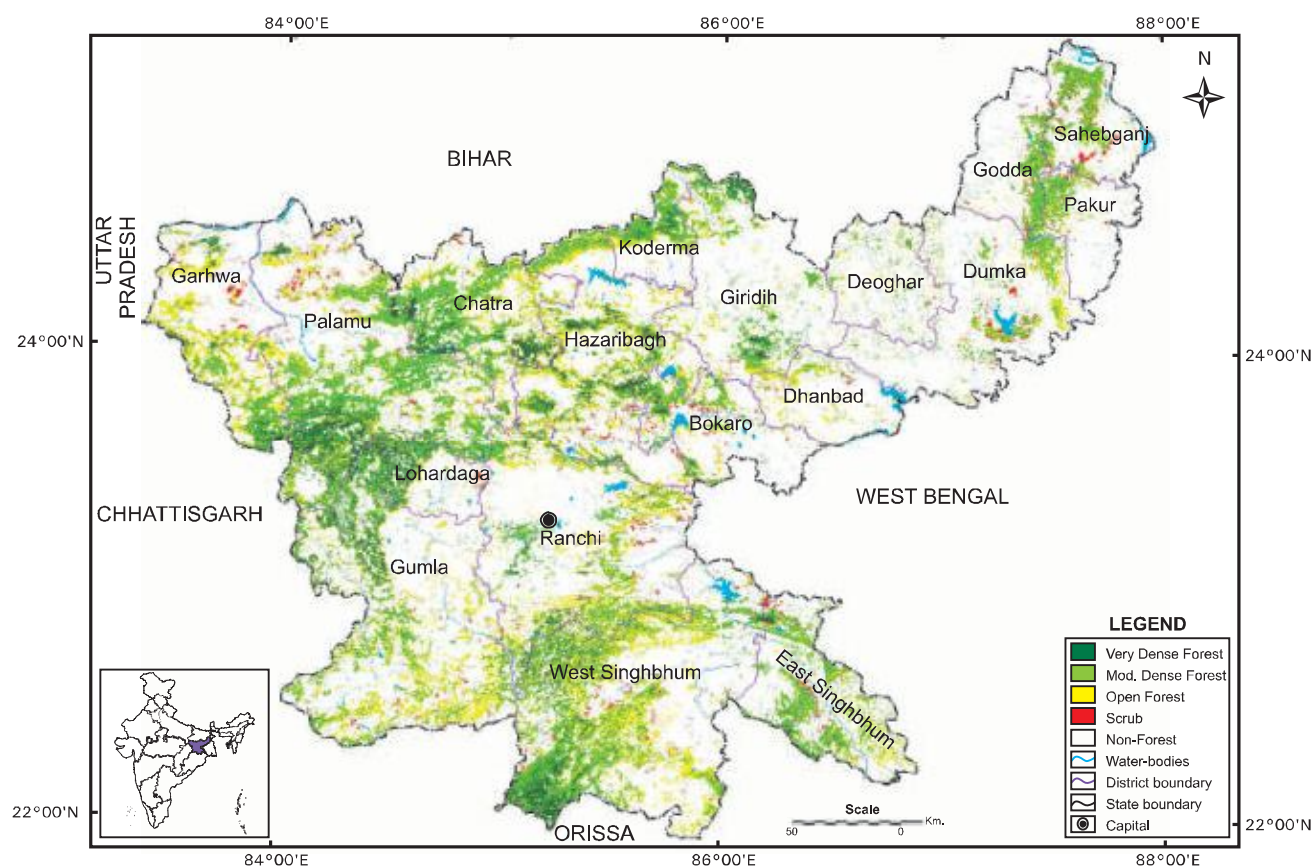
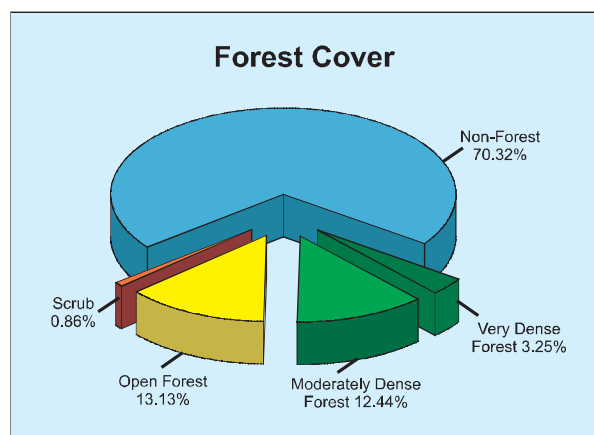


Fig 9.12 Forest cover map of Jharkhand

9.12.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of November 2008-January 2009, is 22,977 km² which is 28.82% of the state's geographical area. In terms of forest canopy density classes, the state has 2,590 km² area under very dense forest, 9,917 km² area under moderately dense forest and 10,470 km² area under open forest. The forest cover of the state is shown in Fig. 9.12.



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District-wise forest cover in different canopy density classes along with the changes

compared to 2009 assessment and scrub are given in Table 9.12.2.

Table 9.12.2: District-wise Forest Cover (Area in km²)

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Bokaro	1,929	64	244	252	560	29.03	0	48
Chatra	3,732	251	863	663	1,777	47.62	-5	15
Deoghar ^T	2,479	0	84	85	169	6.82	0	5
Dhanbad	2,996	0	50	155	205	6.84	0	17
Dumka	6,212	0	314	323	637	10.25	0	58
Garhwa	4,092	124	406	835	1,365	33.36	0	55
Giridih	4,963	98	422	344	864	17.41	10	8
Godda	2,110	15	268	116	399	18.91	0	25
Gumla ^T	9,077	324	919	1,414	2,657	29.27	0	33
Hazaribagh	5,998	272	626	1,164	2,062	34.38	9	44
Koderma	1,435	68	321	207	596	41.53	-4	0
Lohardaga ^T	1,491	174	219	110	503	33.74	0	10
Pakur ^T	1,571	3	172	108	283	18.01	0	19
Palamu ^T	8,657	529	1,809	1,189	3,527	40.74	0	88
Pashchimi Singhbhum ^T	9,907	453	1,559	1,829	3,841	38.77	6	81
Purbi Singhbhum ^T	3,533	53	621	404	1,078	30.51	67	38
Ranchi ^T	7,698	141	684	1,079	1,904	24.73	0	67
Sahebganj	1,834	21	336	193	550	29.99	0	72
Grand Total	79,714	2,590	9,917	10,470	22,977	28.82	83	683

Comparison of current forest cover assessment with the previous assessment shows a gain of 83 km² of forest cover.

Reasons for change detected in 2011 Assessment

Changes reported in current assessment

which have been validated through ground truthing of selected sample points in the field, are mainly due to plantation activities and regeneration of forests owing to protection measures taken by the SFD.

Table 9.12.3: Forest Cover Change Matrix(Area in km²)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	2,590	0	0	0	0	2,590
Moderately Dense Forest	0	9,899	0	0	0	9,899
Open Forest	0	2	10,398	0	5	10,405
Scrub	0	0	2	680	1	683
Non-Forest	0	16	70	3	56,048	56,137
Total 2011	2,590	9,917	10,470	683	56,054	79,714
Net Change	0	18	65	0	-83	

The change matrix given in Table 9.12.3 reveals that there has been an increase of 18 km² in the moderately dense forest and 65 km² in open forest whereas there is no change reported in the very dense category.

9.12.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.12.4.

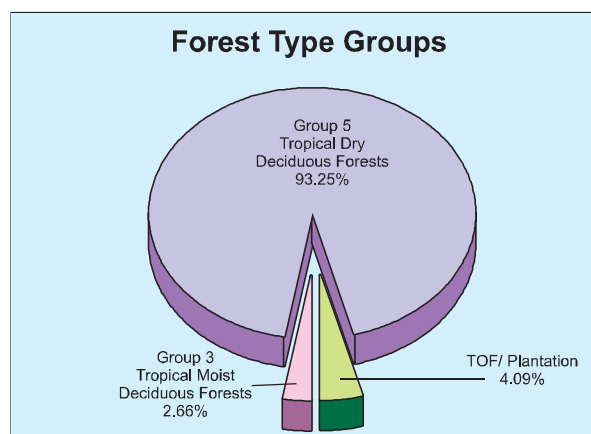
Table 9.12.4: Altitude Zone-wise Forest Cover(Area in km²)

Altitude Zone	VDF	MDF	OF	Total
0-500m	1,038	6,978	7,684	15,700
500-1000m	1,493	2,807	2,754	7,054
1000-2000m	59	132	32	223
Total	2,590	9,917	10,470	22,977

(Based on SRTM, Digital Elevation Model)

9.12.6 Forest Cover in Different Forest Types

Forest type mapping using satellite data has been undertaken by Forest Survey of India with reference to Champion & Seth Classification. As per this assessment, the state has five forest types which belong to two forest type groups, viz. Tropical Moist Deciduous and Tropical Dry Deciduous Forests. Percentage-wise distribution of forest cover in different forest type groups found in the state is given in the pie diagram.



9.12.7 Tree Cover

Tree cover of the state has been estimated using TOF inventory data collected over a period of six years, i.e. 2004-10. The estimated tree cover in the state is 2,914 km² which is

3.66% of its geographical area. Six districts of the state (Deoghar, Dhanbad, Giridih, Gumla, Koderma and Ranchi) have been inventoried. The forest and tree cover of the state is presented in Table 9.12.5.

Table 9.12.5: Forest and Tree Cover (Area in km²)

Category	Area	% of Geographical Area
Tree Cover	2,914	3.66
Forest Cover	22,977	28.82
Forest & Tree Cover	25,891	32.48

9.12.8 Growing Stock

The growing stock in the recorded forest area has been estimated on the basis of the current forest cover map, forest type map and forest

inventory data. For trees outside forests (TOF), the same has been estimated using TOF inventory data. It is presented in the Table 9.12.6.

Table 9.12.6: Growing Stock (million cum)

Forest	TOF	Total
116.308	51.308	167.616

9.12.9 Bamboo

The extent of bamboo bearing area in the forests of the state is 3,603 km². Density-wise

details, number of culms by soundness and equivalent green weight are given in following tables:

Table 9.12.7: Bamboo bearing area by density in recorded forest area (Area in km²)

Recorded Forest Area	Pure bamboo	Dense bamboo	Scattered bamboo	Clumps hacked	Bamboo regeneration	No bamboo
23,605	14	898	1,571	509	611	20,002

Table 9.12.8: Estimated number of bamboo culms and equivalent green weight

Number of culms (in millions)				Equivalent Green Weight (in 000' tonnes)		
Green	Dry	Decayed	Total	Green	Dry	Total
181	49	8	238	736	357	1093