

Chapter

9 | Forest and Tree Resources in States and Union Territories



9.1 ANDHRA PRADESH

9.1.1 Introduction

Andhra Pradesh is the fourth largest state of India with a geographical area of 275,069 km², constituting 8.37% of total area of the country. It is situated between 12°37'N - 19°55'N latitude and 76°45'E - 84°46'E longitude. On its eastern boundary, the state has a coastline of 974 km along the Bay of Bengal. The state has three distinct physiographic regions, viz. (i) hilly region encompassing Nallamalai and Erramalai hills of Rayalaseema and Eastern Ghats, (ii) the plateau with an altitude of 100 m to 1000 m spread mainly over Telangana region and (iii) the deltas of rivers between the Eastern Ghats and the sea coast. The state has

a hot and humid climate with temperature ranging from 15°C - 45°C and annual rainfall of 1,100 - 1,250 mm in the north and about 500 mm in the south.

The population of the state is 84.67 million (*Census 2011*), which constitutes 7% of the country's population. Proportion of rural and urban population is 66.51% and 33.49% respectively. The population density is 308 persons per km². The livestock population of the state is 60.17 million (*Livestock Census 2007*).

Land use pattern of the state is given in Table 9.1.1.

Table 9.1.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	27,507	
Reporting area for land utilization	27,505	100.00
Forests	6,210	22.58
Not available for cultivation	4,797	17.44
Permanent pastures and other grazing lands	569	2.07
Land under misc. tree crops and groves	299	1.09
Culturable wasteland	650	2.36
Fallow lands other than current fallows	1,488	5.41
Current fallows	2,624	9.54
Net area sown	10,868	39.51

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

9.1.2 Recorded Forest Area

Total recorded forest area in the state is 63,814 km², which works out to 23.20% of its geographical area. Reserved, Protected and Unclassed Forests constitute 79.10%, 19.38% and 1.52% of the total forest area respectively.

9.1.3 Protected Areas

There are 6 National Parks and 21 Wildlife Sanctuaries covering an area of 0.14 million ha and 1.16 million ha respectively. Thus, a total of 1.30 million ha area constituting 4.73% of the geographical area of the state is under

protected area network. Nagarjuna Sagar-Srisailem, the largest tiger reserve of the country with an area of 0.36 million ha is located in the state.

9.1.4 Forest Cover

On the basis of interpretation of the satellite data of Oct 2008-Mar 2009, the forest cover in the state is 46,389 km², which works out to be 16.86% of the state's geographical area. In terms of canopy density classes, the area covered by very dense forests is 850 km², that with moderately dense forests is 26,242 km² and open forests are 19,297 km². The forest cover of the state is shown in Fig.9.1

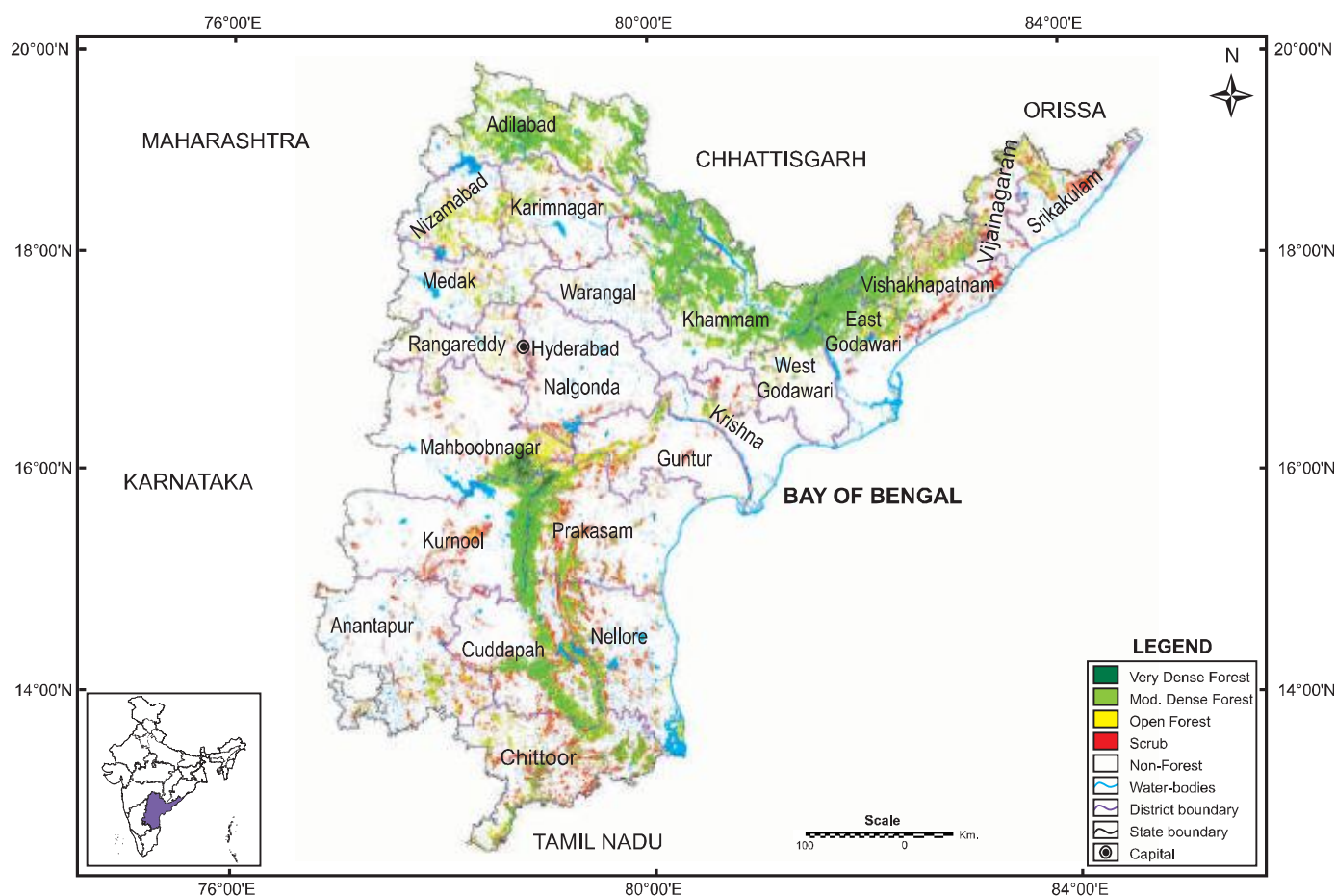
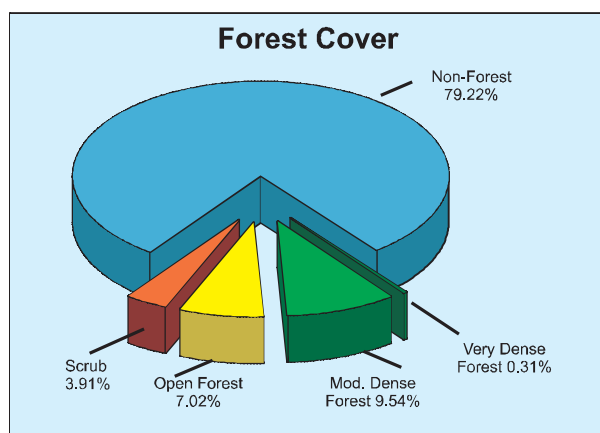


Fig 9.1 Forest cover map of Andhra Pradesh



District-wise forest cover in different canopy density classes, scrub and change in forest cover in comparison to 2009 assessment are given in Table 9.1.2.

Table 9.1.2: 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			
Adilabad ^T	16,128	127	3,643	2,296	6,066	37.61	-18	101
Anantapur	19,130	0	143	543	686	3.59	0	758
Chittoor	15,151	0	1,253	1,318	2,571	16.97	0	1,680
Cuddapah	15,359	8	2,450	1,641	4,099	26.69	0	1,210
East Godavari ^T	10,807	72	2,513	964	3,549	32.84	-12	166
Guntur	11,391	0	219	645	864	7.58	0	391
Hyderabad & Rangareddy	7,710	0	47	344	391	5.07	0	253
Karimnagar	11,823	0	979	699	1,678	14.19	-5	365
Khammam ^T	16,029	28	5,120	1,782	6,930	43.23	-182	42
Krishna	8,727	0	83	230	313	3.59	0	214
Kurnool	17,658	72	1,488	549	2,109	11.94	-2	644
Mahaboobnagar	18,432	329	537	1,076	1,942	10.54	-2	325
Medak	9,700	0	81	504	585	6.03	-1	141
Nalgonda	14,240	0	12	142	154	1.08	3	359
Nellore	13,076	4	429	760	1,193	9.12	0	772
Nizamabad	7,956	0	217	979	1,196	15.03	-2	140
Prakasam	17,626	198	1,691	1,418	3,307	18.76	-6	1,148
Srikakulam ^T	5,837	0	108	508	616	10.55	0	471
Vijainagaram ^T	6,539	0	145	602	747	11.42	-2	340

District	Geographical Area	2011 Assessment				Percent of GA	Change*	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Vishakhapatnam ^T	11,161	0	2,053	1,386	3,439	30.81	-6	1,066
Warangal ^T	12,847	0	2,426	642	3,068	23.88	-23	155
West Godavari ^T	7,742	12	605	269	886	11.44	-23	27
Grand Total	275,069	850	26,242	19,297	46,389	16.86	-281	10,768

* Change figures are based on comparison of 2011 assessment with that of 2009 after incorporating interpretational changes.

9.1.5 Forest Cover Change

Although there is actual change of 281 km² as detected during 2011 assessment, there is net increase of 1287 km² in the forest cover from the reported area in ISFR 2009. This has occurred due to refinement of interpretational methodology on the one hand and availability of satellite data of improved quality and

appropriate season on the other hand. This has made it possible to capture the spectral signatures of thorny forests as also the areas bearing trees with stunted growth on rocky sites.

A quantitative account of the class-wise change is given in the forest cover change matrix in Table 9.1.3.

Table 9.1.3: Forest cover change matrix (Area in km²)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	850	0	0	0	0	850
Moderately Dense Forest	0	26,233	2	0	142	26377
Open Forest	0	5	19,278	1	159	19443
Scrub	0	1	7	10,757	56	10821
Non-Forest	0	3	10	10	217,555	217578
Total 2011	850	26,242	19,297	10,768	217,912	275069
Net Change	0	-135	-146	-53	334	

Reasons for change detected in 2011 assessment:

Changes observed in current assessment which have been validated through ground truthing of selected sample points in the field are enumerated hereunder:

- (a) Management interventions like harvesting of short rotation plantations (mainly *Eucalyptus*) in forest areas and private holdings have primarily accounted for the change detected in the current assessment. Even though, in some of these areas, plantation activities might have followed; they are yet to register their

reflectance in the satellite data.

- (b) Change detected has also been caused due to forest clearances in encroached areas.
- (c) In certain areas, increase of forest cover from the previous assessment has been

recorded due to growth of young plantations.

9.1.6 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.1.4.

Table 9.1.4: Altitude Zone-wise Forest Cover				(Area in km ²)
Altitude Zone	VDF	MDF	OF	Total
0-500m	220	18,758	13,651	32,629
500-1000m	630	6,979	5,300	12,909
1000-2000m	0	505	346	851
Total	850	26,242	19,297	46,389

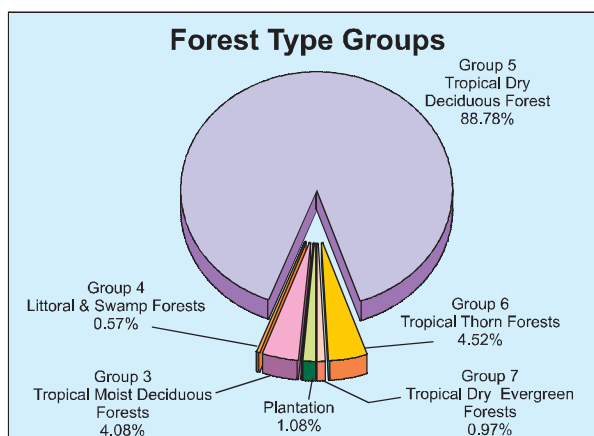
(Based on SRTM, Digital Elevation Model)

9.1.7 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 15 forest types which belong to five forest type groups, viz. Tropical Moist Deciduous, Littoral and Swamp, Tropical Dry Deciduous, Tropical Thorn and Tropical Dry Evergreen Forests. Percentage-wise distribution of the forest cover of the state in various forest type groups is given in the pie diagram.

9.1.8 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 7,152 km² which is



2.60% of the geographical area of the state. Eight districts of the state, namely Hyderabad, Guntur, Cuddapah, East Godawari, Karimnagar, Prakasam, Vijainagaram and Vishakhapatnam were inventoried during this period.

The forest and tree cover of the state is given in Table 9.1.5.

Table 9.1.5: Forest and Tree Cover (Area in km²)

Category	Area	% of Geographical Area
Tree Cover	7,152	2.60
Forest Cover	46,389	16.86
Forest & Tree Cover	53,541	19.46

9.1.9 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 Table 9.1.6.

Table 9.1.6: Growing Stock (million cum)

Forest	TOF	Total
255.082	115.683	370.765

9.1.10 Bamboo Resources

The extent of bamboo bearing area in the forest of the state is 8184 km². Density-wise

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

Table 9.1.7: 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
63814	26	1795	3963	309	2091	55630

Table 9.1.8: 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
837	198	63	1098	4732	2080	6812