

# 11.26

## TELANGANA

### 11.26.1 Introduction

Telangana, covers an area of 1,12,077 sq km, which is 3.41% of the geographical area of the country. The State lies between 15°50'N to 19°55'N latitudes and 77°14'E to 81°19'E longitude and is bordered by Maharashtra in the north & northwest, Karnataka in the west, Andhra Pradesh in the south & southeast and Chhattisgarh in the east. Being located in the Deccan Plateau in the central stretch, the State has sub-tropical climate. The annual rainfall ranges between 1,100 mm to 1,200 mm and the annual temperature varies from 15°C to 45°C. The State is drained by a number of rivers which include Godavari and Krishna. The State has 10 districts, of which 3 are tribal districts. As per the 2011 Census, Telangana has a population of 35.19 million, which is 2.91% of India's population. The rural and urban population constitute 61.12% and 38.88% respectively. The Tribal population is 9.35%. The population density is 306 per sq km, which is lower than the national average. The 19th Livestock Census 2012 has reported a total livestock population of 56.10 million in the State.

**TABLE 11.26.1** Land Use Pattern

Land Use Types	Area (in 000' ha)	Percentage
Geographical Area	11,231	
Reporting area for land utilization	11,208	100.00
Forests	2,540	22.66
Not available for land cultivation	1,492	13.31
Permanent pastures and other grazing lands	298	2.66
Land under misc. tree crops and groves	112	1.00
Culturable wasteland	183	1.64
Fallow land other than current fallows	805	7.18
Current fallows	1,401	12.50
Net area sown	4,377	39.05

Source: Land Use Statistics, Ministry of Agriculture, GOI, (2014-15)



### 11.26.1.1 A Brief Overview of Forestry Scenario

The State of Telangana is endowed with rich diversity of Flora and Fauna. The State has dense Teak forests on the northern part along the banks of river Godavari. As per the Champion & Seth Classification of Forest Types (1968), the forests in Telangana belong to three Forest Type Groups, which are further divided into 12 Forest Types. The State Government has taken up a massive greening programme, 'Telangana Ku Harita Haram' in the State to plant and protect 230 crore seedlings over a period of 4 years. This initiative aims at achieving the twin objectives of increasing the forest cover and reduce pressure on the existing forest resources, through massive community participation by Vana Samrakshna Samithis (VSS) and Eco-Development Committees (EDCs) in Protected Areas and Watershed Development Committees in the Watershed areas.

Recorded Forest Area (RFA) in the State is 26,904 sq km of which 20,353 sq km is Reserved Forest, 5,939 sq km is Protected Forest and 612 sq km is Unclassed Forests. In Telangana, during the period 1st January 2015 to 5th February 2019, a total of 9,420 hectares of forest land was diverted for non-forestry purposes under the Forest Conservation Act, 1980 (MoEF & CC, 2019). As per the information received from the State during that last two years, 12,730 ha of plantations including avenue plantations in the State.

Three National Parks and nine Wildlife Sanctuaries constitute the Protected Area network of the State covering 5.08% of its geographical area.

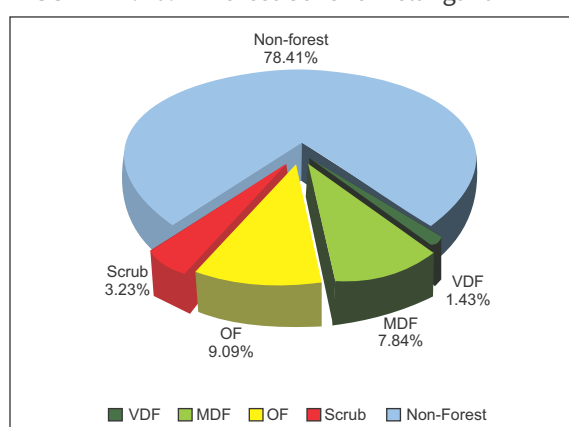
### 11.26.2 Forest Cover

Based on the interpretation of IRS Resourcesat-2 LISS III satellite data of the period Nov 2017 to Jan 2018, the Forest Cover in the State is 20,582.31 sq km which is 18.36 % of the State's geographical area. In terms of forest canopy density classes, the State has 1,608.24 sq km under Very Dense Forest (VDF), 8,787.13 sq km under Moderately Dense Forest (MDF) and 10,186.94 sq km under Open Forest (OF). Forest Cover in the State has increased by 163.31 sq km as compared to the previous assessment reported in ISFR 2017.

**TABLE 11.26.2** Forest Cover of Telangana

(in sq km)		
Class	Area	% of GA
VDF	1,608.24	1.43
MDF	8,787.13	7.84
OF	10,186.94	9.09
<b>Total</b>	<b>20,582.31</b>	<b>18.36</b>
Scrub	3,615.04	3.23

**FIGURE 11.26.1** Forest Cover of Telangana



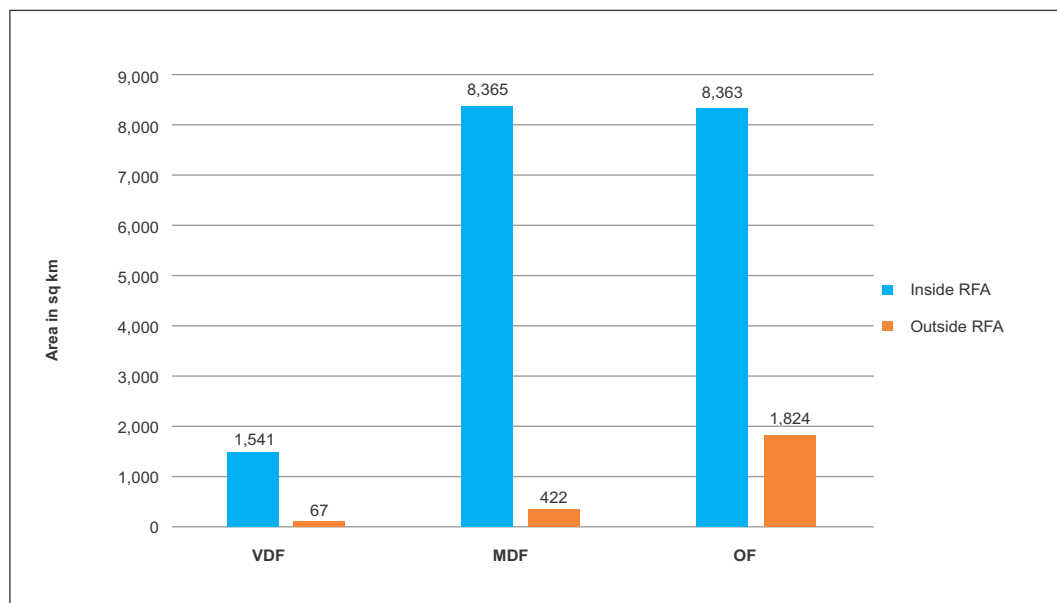
#### 11.26.2.1 Forest Cover inside and outside Recorded Forest Area (or Green Wash)

The State has reported extent of recorded forest area (RFA) 26,904 sq km which is 24.00% of its geographical area. The reserved, protected and unclassified forests are 75.65%, 22.07% and 2.28% of the recorded forest area in the State respectively. However, as the digitized boundary of recorded forest area from the State covers 26,989.00 sq km, the analysis of forest cover inside and outside this area is given below.

**TABLE 11.26.3** Forest Cover inside and outside Recorded Forest Area or (Green Wash) in Telangana (in sq km)

Forest Cover inside the Recorded Forest Area (or Green Wash)				Forest Cover outside the Recorded Forest Area (or Green Wash)			
VDF	MDF	OF	Total	VDF	MDF	OF	Total
1,541	8,365	8,363	18,269	67	422	1,824	2,313
8.43%	45.79%	45.78%		2.90%	18.26%	78.84%	

\*in case of Telangana RFA boundaries have been used.

**FIGURE 11.26.2** Forest Cover inside and outside RFA in Telangana**TABLE 11.26.4** District-wise Forest Cover in Telangana (in sq km)

District	Geographical Area (GA)	2019 Assessment				% of GA	Change wrt 2017 assessment	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Adilabad <sup>T</sup>	16,105	150.25	3,247.07	2,324.00	5,721.32	35.53	33.32	155.36
Hyderabad	217	0.00	5.00	13.68	18.68	8.61	1.68	2.42
Rangareddy	7,493	0.00	146.31	624.11	770.42	10.28	10.42	512.19
Karimnagar	11,823	71.00	769.25	1,147.96	1,988.21	16.82	26.21	520.34
Khammam <sup>T</sup>	13,266	721.30	2,245.62	1,512.22	4,479.14	33.76	46.14	61.27
Mahbubnagar	18,432	338.15	633.79	1,329.11	2,301.05	12.48	3.05	676.93
Medak	9,699	0.00	124.03	615.28	739.31	7.62	-6.69	362.36
Nalgonda	14,240	0.00	22.25	392.19	414.44	2.91	4.44	751.04
Nizamabad	7,956	0.00	253.27	943.02	1,196.29	15.04	9.29	320.68
Warangal <sup>T</sup>	12,846	327.54	1,340.54	1,285.37	2,953.45	22.99	35.45	252.45
<b>Grand Total</b>	<b>1,12,077</b>	<b>1,608.24</b>	<b>8,787.13</b>	<b>10,186.94</b>	<b>20,582.31</b>	<b>18.36</b>	<b>163.31</b>	<b>3,615.04</b>

**TABLE 11.26.5** Forest Cover Change Matrix for Telangana

(in sq km)

Class	2019 Assessment					Total ISFR 2017
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	1,596	0	0	0	0	<b>1,596</b>
Moderately Dense Forest	12	8,622	74	3	27	<b>8,738</b>
Open Forest	0	146	9,635	164	140	<b>10,085</b>
Scrub	0	0	93	3,110	35	<b>3,238</b>
Non Forest	0	19	385	338	87,678	<b>88,420</b>
<b>Total ISFR 2019</b>	<b>1,608</b>	<b>8,787</b>	<b>10,187</b>	<b>3,615</b>	<b>87,880</b>	<b>1,12,077</b>
Net Change	12	49	102	377	-540	

Main reasons for the increase in forest cover in the State are plantation and conservation activities as well as improvement in interpretation.

**TABLE 11.26.6** Altitude-wise Forest Cover in Telangana

(in sq km)

Altitude Zone (m)	Geographical Area	VDF	MDF	OF	Total	Scrub
0-500	88,743	1,277	7,505	7,547	16,329 (79.33%)	2,596
500-1000	23,334	331	1,282	2,640	4,253 (20.67%)	1,019
<b>Total</b>	<b>1,12,077</b>	<b>1,608</b>	<b>8,787</b>	<b>10,187</b>	<b>20,582</b>	<b>3,615</b>

(based on SRTM, Digital Elevation Model, 30 m, 2016)

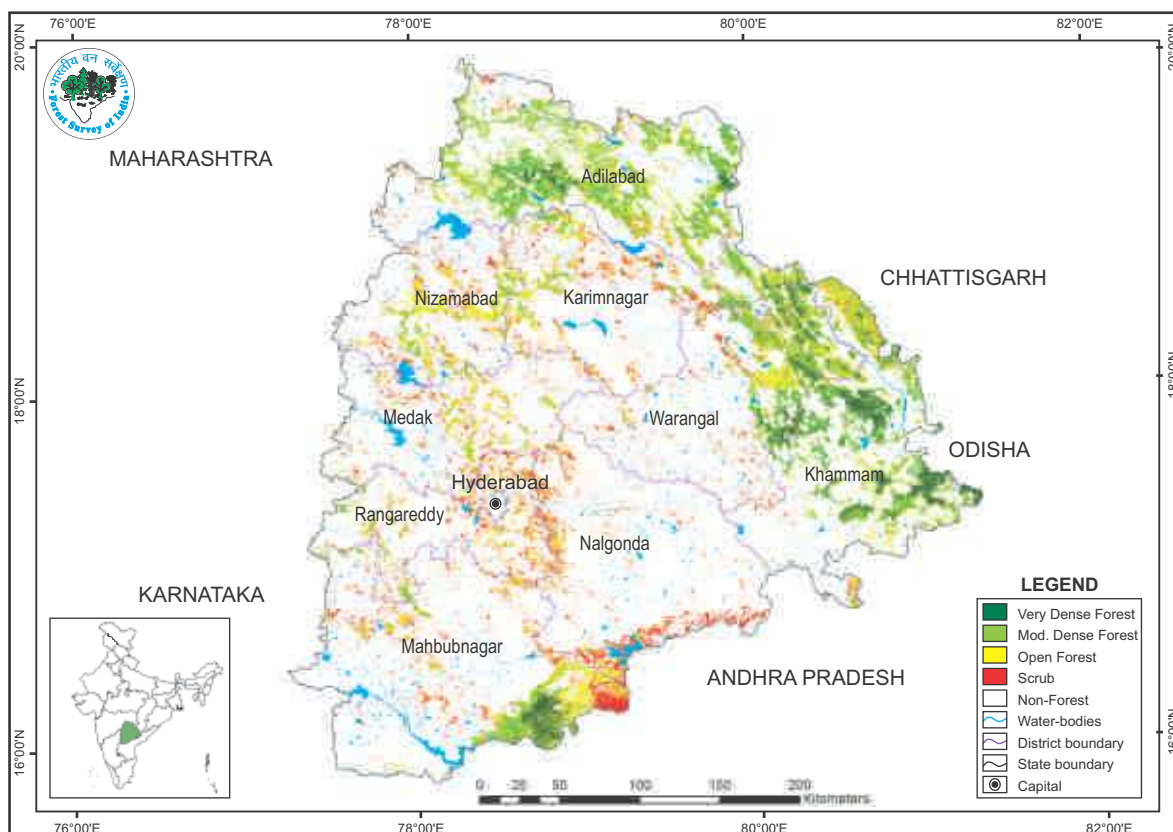
**TABLE 11.26.7** Forest Cover in different slope classes in Telangana

(in sq km)

Slope (in degrees)	Geographical Area	VDF	MDF	OF	Total	Scrub
0-5	1,01,773	919	5,655	7,061	13,635 (66.25%)	2,768
5-10	5,542	284	1,374	1,524	3,182 (15.46%)	439
10-15	2,243	163	793	749	1,705 (8.28%)	188
15-20	1,260	107	490	424	1,021 (4.96%)	108
20-25	719	71	280	243	594 (2.89%)	65
25-30	357	41	132	122	295 (1.43%)	33
>30	183	23	63	64	150 (0.73%)	14
<b>Total</b>	<b>1,12,077</b>	<b>1,608</b>	<b>8,787</b>	<b>10,187</b>	<b>20,582</b>	<b>3,615</b>

(based on SRTM, Digital Elevation Model, 30 m, 2016)



**FIGURE 11.26.3** Forest Cover Map of Telangana**TABLE 11.26.8** Wetlands inside the Recorded Forest Area (or Green Wash) in Telangana

(in ha)

Wetland Category	No. of Wetlands	Total Wetland Area
Inland Wetlands - Natural		
Lake/Pond	2	1,1822
Waterlogged	2	12
River/Stream	55	11,252
<b>Sub - Total</b>	<b>59</b>	<b>13,086</b>
Inland Wetlands - Man-made		
Reservoir/Barrage	169	11,547
Tank/Pond	482	3,052
Waterlogged	3	197
<b>Sub - Total</b>	<b>654</b>	<b>14,796</b>
Wetlands (<2.25 ha)	357	357
<b>Total</b>	<b>1,070</b>	<b>28,239</b>
Total Recorded Forest (or Green Wash) Area (in ha)		26,98,900
<b>% of Wetland area inside Recorded Forest (or Green Wash) Area</b>		<b>1.05%</b>

(analysis based on the National Wetland Atlas: India, 2011)

**11.26.3 Forest Types & Biodiversity**

Forest Type Maps of 2011 have been refined in the recently completed exercise by FSI. Percentage area under different forest types of Telangana as per the Champion & Seth classification (1968), according to the latest exercise are presented in the following table.

**TABLE 11.26.9** Percentage area under different forest types of Telangana

Sl.No.	Forest Type	% of Forest cover
1.	3B/C2 Southern Moist Mixed Deciduous Forest	0.27
2.	5A/C3 Southern Dry Mixed Deciduous Forest	60.52
3.	5B/DS1 Dry Deciduous Scrub	19.21
4.	5A/C1b Dry Teak Forest	14.84
5.	5/2S1 Secondary Dry Deciduous Forest	0.89
6.	5/E9 Dry Bamboo Brake	0.07
7.	5/E4 <i>Hardwickia</i> Forest	0.00
8.	5/E2 <i>Boswellia</i> Forest	0.00
9.	5/DS2 Dry Savannah Forest	0.22
10.	5/DS4 (Dry Grass Land)	0.13
11.	6A/DS1 Southern Thorn Scrub	0.00
12.	6A/C1 Southern Thorn Forest	1.46
13.	Plantation/TOF	2.39
	<b>Total</b>	<b>100.00</b>

### 11.26.3.1 Assessment of Biodiversity

Findings of the rapid assessment of Biodiversity carried out at the national level for natural forests during September 2018 to May 2019 as part of the forest type mapping exercise is summarized below in respect of Telangana.

**TABLE 11.26.10** No. of species observed during the rapid assessment

Plant Type	Number of Species
Tree	167
Shrub	67
Herb	33

**TABLE 11.26.11** Shannon-Wiener Index of Tree, Shrub and Herb species in different Type Groups of Telangana

Sl.No.	Forest Type Group	Shannon-Wiener Index		
		Tree	Shrub	Herb
1.	Group 3- Tropical Moist Deciduous Forests	2.65	3.03	1.95
2.	Group 5- Tropical Dry Deciduous Forests	3.63	2.68	2.34
3.	Group 6- Tropical Thorn Forests	2.42	2.33	1.80

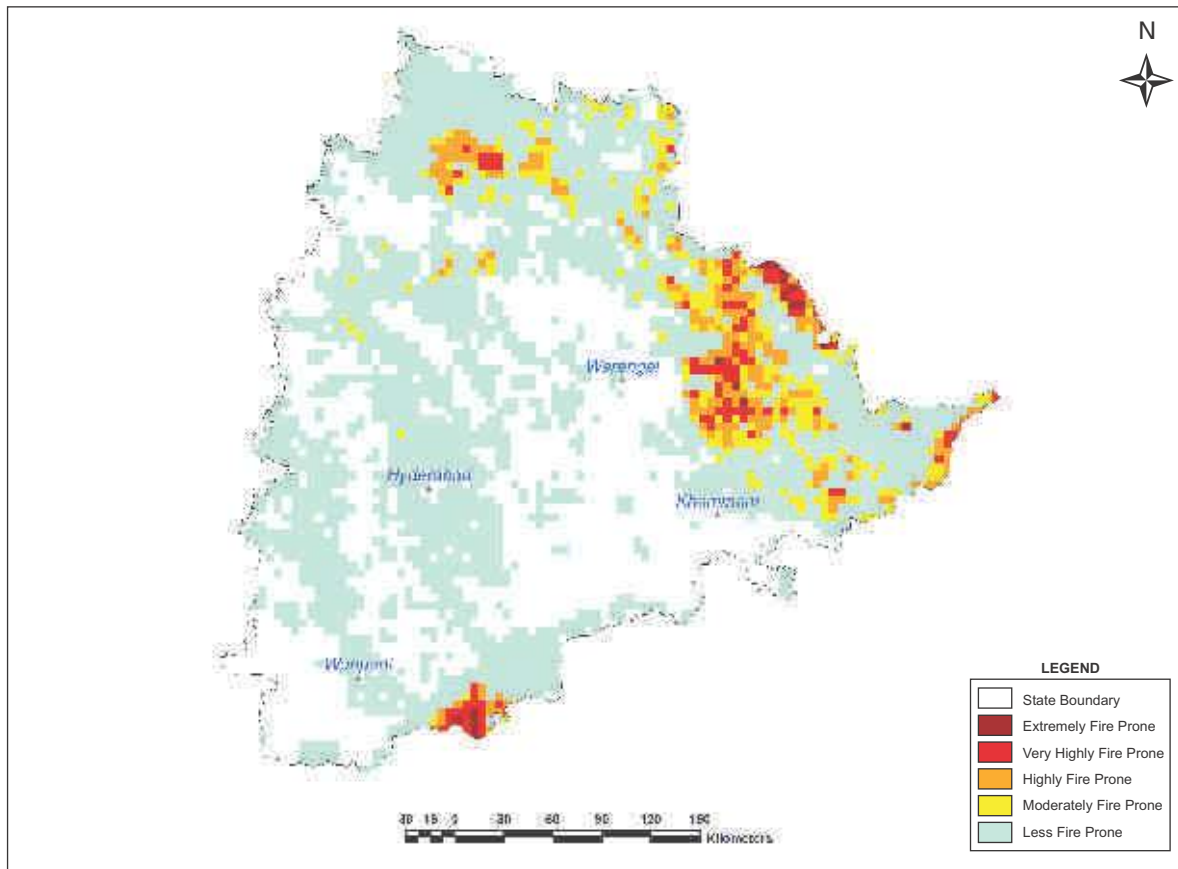
### 11.26.4 Fire Prone Forest Areas

Geographical area under different classes of forest fire proneness are given in the following table.

**TABLE 11.26.12** Forest Fire Prone Classes (in sq km)

Sl. No.	Forest Fire Prone Classes	Geographical Area	% of Total forest cover
1.	Extremely fire prone	1,062.98	4.21
2.	Very highly fire prone	1,542.55	6.89
3.	Highly fire prone	4,586.50	17.59
4.	Moderately fire prone	6,145.56	18.60
5.	Less fire prone	54,018.12	52.71
	<b>Total</b>	<b>67,355.71</b>	<b>100.00</b>

**FIGURE 11.26.4** Fire prone forest areas under different fire prone classes



**11.26.5 Tree Cover**

Forest cover presented in the section 11.26.2 accounts for tree patches of size 1 ha and more having canopy density more than 10%. However, trees occurring in patches of size less than 1 ha including scattered trees are assessed through sampling based methodology. Tree cover in Telangana has been estimated as given in table 11.26.13.

**TABLE 11.26.13** Tree Cover in Telangana  
(in sq km)

Tree Cover	Area
	2,514

Tree cover of Telangana has decreased by 155 sq km as compared to the previous assessment reported in ISFR2017.

**11.26.6 Extent of Trees Outside Forest (TOF)**

Trees outside Forests (TOF) refer to tree resources found outside the forests as defined in the Government records. FSI maps forest cover using satellite data and assesses tree cover outside forests using sampling based method. Forest Cover outside the recorded forest area is derived using boundaries of RFA or Green Wash. Extent of TOF therefore may be estimated as the sum of extent of forest cover outside the recorded forest areas (RFA) and tree cover as given in the preceding section.

**TABLE 11.26.14** Extent of TOF in Telangana (in sq km)

Forest Cover outside the RFA/GW	Tree Cover	Extent of TOF
2,313	2,514	4,827

**11.26.7 Growing Stock in Telangana**

Growing stock in the recorded forest areas (RFA) in Telangana is given in the table 11.26.15. Diameter class-wise distribution of top 5 species in numbers derived from the forest inventory data is presented in the table 11.26.16

**TABLE 11.26.15** Growing Stock in Telangana (in m cum)

Growing Stock (GS)		% of Country's GS
Growing Stock in Recorded Forest Area	80.96	1.89
Growing Stock in TOF	41.45	2.52

**TABLE 11.26.16** Diameter class distribution of top five species inside RFA in Telangana (in '000)

Sl.No.	Species	Dia class (cm)		
		10-30	30-60	>60
1.	<i>Tectona grandis</i>	56,011	5,435	282
2.	<i>Chloroxylon swietenia</i>	31,471	942	0
3.	<i>Xylia xylocarpa</i>	25,880	2,818	71
4.	<i>Anogeissus latifolia</i>	24,861	2,422	0
5.	<i>Lannea coromandelica</i>	19,562	4,776	141

**11.26.8 Carbon Stock in Forest**

The total Carbon stock of forests in the State including the TOF patches which are more than 1 ha in size is 151.84 million tonnes (556.75 million tonnes of CO<sub>2</sub> equivalent) which is 2.13% of total forest carbon of the country. Pool wise forest carbon in Telangana is given in the following table

**TABLE 11.26.17** Forest Carbon in Telangana in different pools (in '000 tonnes)

AGB	BGB	Dead wood	Litter	SOC	Total
41,389	17,227	333	2,031	90,862	1,51,842

**11.26.9 Growing Stock of Bamboo**

Bamboo bearing area and growing stock inside the recorded forest area (RFA)/ Green Wash which include culms of 1 year age and above are given in the table 11.26.18.

**TABLE 11.26.18** Growing Stock of Bamboo in Telangana

Growing Stock (GS)		% of Country's GS of Bamboo
Bamboo bearing area inside RFA/Green wash (in sq km)	5,438	3.40
Total number of culms (in millions)	926	2.35
Total equivalent green weight (in 000' tonnes)	6,781	2.44

**11.26.10 Dominant tree species in Trees Outside Forests (TOF)**

Top five species in numbers in Trees Outside Forests in Telangana in Rural and Urban areas are given in the table 11.26.19 and table 11.26.20 respectively



**TABLE 11.26.19** Top five tree species in TOF (Rural) in Telangana

Sl. No.	Species	Relative Abundance (%)
1.	<i>Mangifera indica</i>	41.63
2.	<i>Azadirachta indica</i>	11.78
3.	<i>Butea frondosa</i>	5.21
4.	<i>Acacia Arabica</i>	4.38
5.	<i>Borassus flabelliformis</i>	3.56

**TABLE 11.26.20** Top five tree species in TOF (Urban) in Telangana

Sl. No.	Species	Relative Abundance (%)
1.	<i>Azadirachta indica</i>	18.94
2.	<i>Mangifera indica</i>	8.84
3.	<i>Leucaena leucocephala</i>	7.04
4.	<i>Tectona grandis</i>	6.72
5.	<i>Bongamia glabra</i>	6.49

**11.26.11 Major NTFP and Invasive Species**

Major NTFP and invasive species as assessed from forest inventory data are presented in the table 11.26.21 and table 11.26.22 respectively.

**TABLE 11.26.21** Major NTFP species in the State of Telangana

Sl. No.	Species	Plant Type	Relative Abundance (%)
1.	<i>Paris polyphyia</i>	Herb	23.16
2.	<i>Oscimum bassilicum</i>	Shrub	12.78
3.	<i>Calamus longietus</i>	Herb	12.14
4.	<i>Solanum nigrum</i>	Shrub	11.82
5.	<i>Desmodium gangeticum</i>	Shrub	7.19

**TABLE 11.26.22** Major invasive species in the State inside the RFA/Green wash in Telangana (in sq km)

Sl. No.	Species	Estimated Extent
1.	<i>Lantana camara</i>	259
2.	<i>Chromolaena odorata</i>	247
3.	<i>Senna occidentalis</i>	153
4.	<i>Cassia tora</i>	52
5.	<i>Argemone mexicana</i>	50

Major NTFP species are given in terms of relative abundance whereas invasive species are given in terms of their estimated extent.

**11.26.12 Quantified estimation of Dependence of People living in forest fringe villages on forests in Telangana**

Through a nation-wide study, FSI has done estimation of dependence of people living in the villages close to forest for fuel wood, fodder, small timber and bamboo in quantified terms for each State & UT of the country (Please refer to Chapter 10 in Vol. I for details). The estimated quantities of the four produce for Telangana is given in the table 11.26.23

**TABLE 11.26.23** Estimation of Dependence of People in Forest Fringe Villages on Forests in Telangana

Fuelwood (tonnes)	Fodder (tonnes)	Bamboo (tonnes)	Small Timber (cum)
19,68,863	1,59,57,527	6,861	1,541