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NATURAL VEGETATION OF BIHAR

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Abstract:-Naturally growing vegetation in any specified region is called natural vegetation which refers to the ground cover provided by plants to a particular taxon, life forms, structure, special extent or any other specific botanical or geographical characteristics.

Keywords: Natural Vegetation , structure , geographical characteristics , woody vegetation.

INTRODUCTION:

The word foresee is derived from Latin word 'fores' meaning outside, the reference being to a village boundary or fence and it must have included all uncultivated land (Sagreja, 1994, p82) Ecologically, a forest is a plant community predominantly of tree and others woody vegetation, usually with a closed canopy.

STUDY AREA:

Bihar, a land locked state, located in eastern part of India is the twelfth largest state in terms of size with an area of 94165km² between 20°20'10"N latitude to 27°17'15"N latitude and 82°19'50"E longitude to 88°17'40"E longitude. It is bounded on the north by the international boundary of Nepal, on the east by state boundary of West Bengal, On the south by Jharkhand and on the west by the state of Uttar Pradesh. River Ganga flowing through its middle part divides it into two halves : North Bihar plain and South Bihar plain. Physiographically another important land mark is the projection of Sivalik hills in the extreme north western part of Bihar.

Administratively, Bihar is divided into nine commissionaires and thirty eight districts. According to 2011 Census total population of the state is 103804037 persons and ranks third in terms of population size.

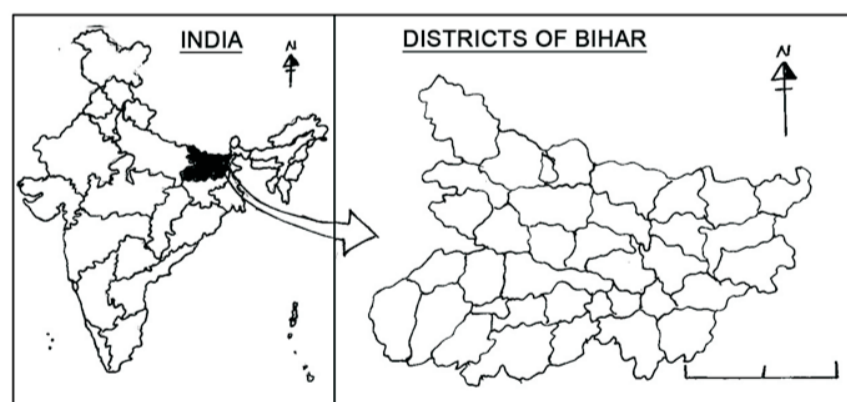


FIG. 01

The breakup of area under land cover of the state is as follows

TABLE - I

Land Cover Categories	Percentage Share	In °
N.S.A.	59.00	212.4°
Forest	7.27	26.17°
Barren Land	4.60	16.56°
Land Put to Non agriculture use	17.73	63.83°
Tree and Orchard	2.60	9.36°
Pastor Land	0.20	0.72°
Cultural waste Land	0.50	1.8°
Current Fallow	1.13	4.07°
Other Fallow	7.00	25.2°

Source : Director of Statistics & Economics, Govt. of Bihar - 2012

It is obvious from above table No. 1 that the area under forest cover is only 7.27 percent and if we add the area under parterre land and tree and orchard under the class category of forest is exactly 10 percent. However national forest policy, the minimum desired area which is considered safe for a tropical country like India is about 33 percent.

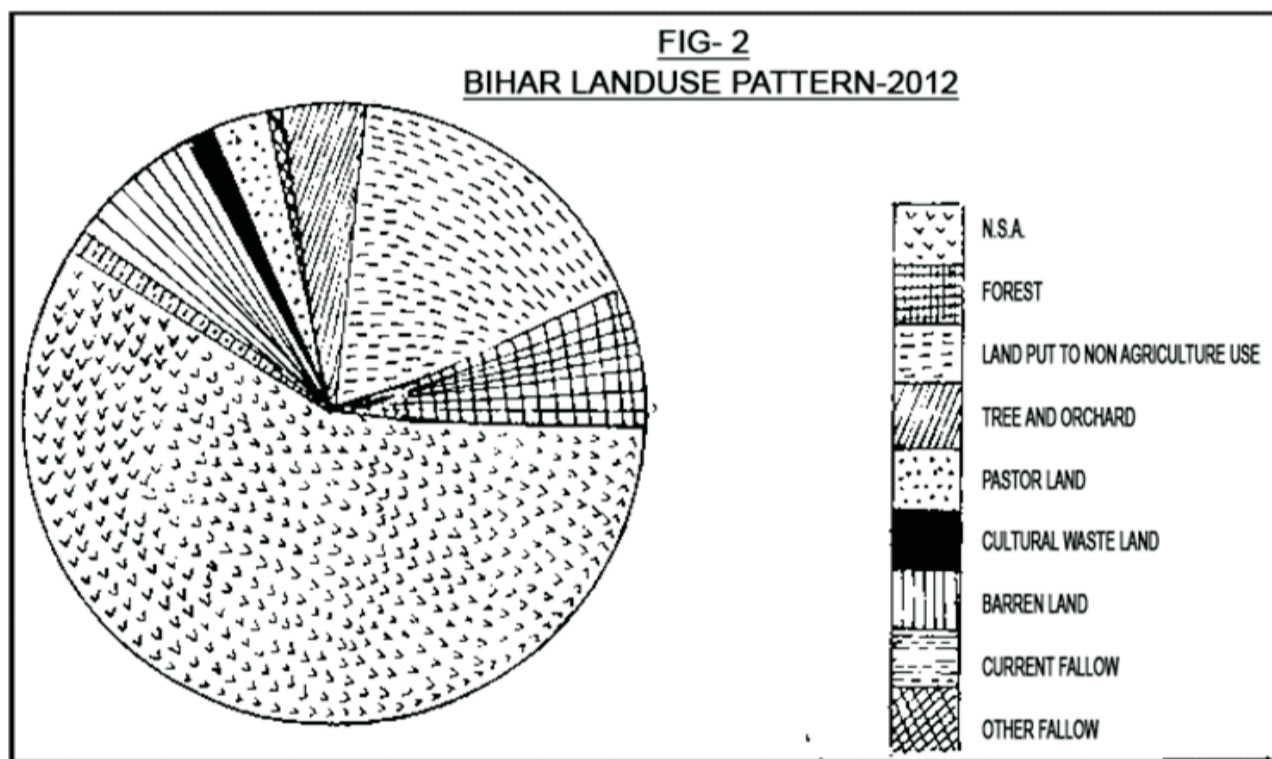


TABLE NO. - II

State / UTS	Total Geographical area	Forest area in KM ²	Percentage of total geographical area	Ranking of Forest	
				In Area	In percent
Madhya Pradesh	308245	94689	30.72	1	16
Andhra Pradesh	275069	63614	23.20	2	20
Maharashtra	307713	61939	20.13	3	21
Chhattisgarh	135191	59772	44.21	4	10
Orissa	155707	58136	37.34	5	14
Arunachal Pradesh	83743	51540	61.55	6	7
Karnataka	191791	38284	19.96	7	22
Himachal Pradesh	55673	37033	66.52	8	5
Uttrakhand	55483	34651	64.79	9	6
Rajasthan	342239	32639	9.54	10	26
Assam	78438	26832	34.21	11	15
Jharkhand	79714	23605	29.61	12	18
Tamil Nadu	130058	22877	17.59	13	23
Jammu & Kashmir	222236	20230	9.10	14	27
Gujarat	196022	18927	9.66	15	25
Manipur	22327	17418	78.01	16	4
Mizoram	21081	16717	79.30	17	3
Uttar Pradesh	240928	16583	6.88	18	30
West Bengal	88752	11879	13.38	19	24
Kerala	38863	11265	28.99	20	19
Meghalaya	22429	9496	42.43	21	11
Nagaland	16579	9222	55.62	22	9
Andman Nikobar	8249	7171	86.93	23	1
Bihar	94163	6845	7.27	24	29
Tripura	10486	6294	60.02	25	8
Sikkim	7096	5841	82.31	26	2
Punjab	50362	3058	6.12	27	31
Haryana	44212	1559	3.53	28	32

Source : Survey India 2013, www.currentaffairssurvey.com

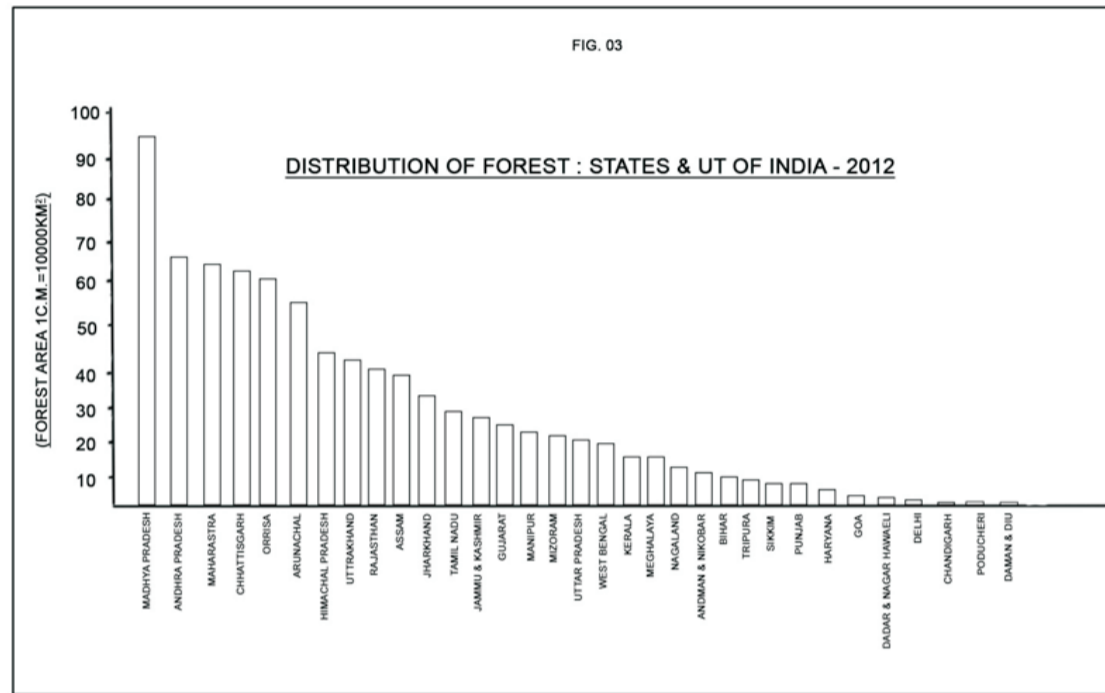


TABLE NO. -III

Showing Class category of states and Union territories under forest cover.

CLASS CATEGORY	NAME OF STATES AND UNION TERRITORIES
>30 Percent	Andman Nikobar (86.93), Sikkim (82.31), Mizoram (79.30), Manipur (78.01), Himachal Pradesh (66.52), Uttarakhand (64.79), Arunachal Pradesh (61.55), Tripura (60.02), Nagaland (55.62), Chhattishgarh (44.21), Meghalay (42.43), Dadar & Nagar Haweli (41.55), Orissa (37.34), Assam (34.21), Goa (33.06), Madhya Pradesh (30.72).
20-30 Percent	Chandigarh (29.82), Jharkhand (29.61), Kerela (28.99), Andhra Pradesh (23.20), Maharashtra (20.12)
10-20 Percent	Karnataka (19.96), Tamilnadu (17.59), West Bengal (13.38)
< 10 Percent	Gujarat (9.66), Rajasthan(9.54), Jammu & Kashmir (9.10), Daman & Diu (7.38), Bihar (6.87), Punjab (6.12), Delhi (5.73), Haryana (3.53), Pondicherry (2.7), Lakshadweep (00)

TABLE NO. - IV

Districts	Total Geographical Area KM ²	Forest area (in KM ²)	Percentage of Forest Area	Ranking of Forest	
				In Area	In percent
Kaimur	381	1062	30.41	1	1
West Champaran	5228	921	17.62	2	6
Rahtas	3832	706	18.42	3	5
Jamui	3107	632	20.34	4	3
Gaya	4976	630	12.66	5	8
Nawada	2494	510	20.45	6	2
Munger	1347	265	19.67	7	4
Banka	1347	265	19.67	7	10
Lakhisarai	1356	194	14.31	9	7
Darbhanga	2279	185	8.12	10	9
Muzaffarpur	3172	177	5.58	11	11
East Champaran	3968	171	4.31	12	14
Aurangabad	3305	151	4.57	13	12
Madhubani	3301	136	3.88	14	18
Supaul	2432	100	4.11	15	16
Sitamarhi	2071	90	4.35	16	13
Araria	2830	88	3.11	17	20
Vaishali	2036	86	4.22	18	15
Kishanganj	1884	75	3.98	19	17
Katihar	3057	62	2.03	20	23
Samastipur	2904	57	1.96	21	24
Saran	2641	55	2.08	22	22
Purnia	3229	47	1.46	23	26
Begusarai	1918	43	2.24	24	21
Bhagalpur	2567	42	1.64	25	25
Nalanda	2367	28	1.18	26	28
Madhepura	1788	26	1.45	27	27
Bhojpur	2390	19	0.79	28	29
Shivhar	572	19	3.32	29	19
Patna	3202	16	0.50	30	32

Source : Director of Economics and Statistics, Govt. Of Bihar, 2012

DISTRIBUTION OF FOREST IN BIHAR:

Such is the poor state of distribution of forest cover in our state. At national level Bihar stands at 24th rank amongst states of the country in areal coverage and at 29th in percentage cover (Table II&III) the situation is more grim at district level out of the total area under forest i.e. 6845 KM² or 7.27 percent the percentage share of reserve and protected forest is 17.28 and 82.69 percent, remaining 0.03 percent area under forest is unclassified in comparison to national level of 23 percent with 7.27 percent forest cover is far behind. If we look out at overall distribution of forest at district level only following districts have significant natural forest namely Kaimur, West Champaran, Rohtas, Jamui, Gaya, Nawada, Munger, Banka, Lakhisarai, Aurangabad and Nalanda. The distribution of forest is very uneven in the districts of Bihar. The forest are very conspicuous by their absence where they are needed the most. A large area of north Bihar Plain is devoid of natural forest. On the name of forest some trees are found along the roads and canals. Almost all the districts of North Bihar plain excluding West Champaran some parts of Tarai Land almost all the districts such as Saran, Siwan, Gopalganj, Madhepura, Sitamarhi, Vaishali, Darbhanga, Madhepura, Samastipur, Begusarai, Khagaria, Saharsa, Supaul and Madhubani are representative districts.

1. Taking into consideration the total percentage coverage of forest land as hundred percent column IV been prepared to compare the ranking of the respective districts with percentage share of Areal coverage but 6th in percentage coverage. Rohtas is at third position in areal coverage but at fifth in percentage coverage. Jamui is fourth position in areal coverage but third in percentage. Gaya, Nawada, Munger, Banka, Lakhisarai and Darbhanga are successively at fifth, sixth, seventh, eighth, ninth and tenth position in areal coverage but they are eighth, second, fourth, tenth, seventh and ninth in percentage coverage. Dividing Bihar with north and south Bihar plain the share of south Bihar is 54882 km² or 65.47 percent and the districts of north Bihar plain is 2365 km² or 34.55 percent.

Kaimur with 1002 Km² area under forest ranks first in areal coverage with just 31.41 percent followed by Nawada with 20.45 percent area. The district of Jamui, Munger, Rohtas.

West Champaran, Lakhisarai, Gaya, Darbhanga, Banka, Muzaffarpur, Aurangabad, Sitamarhi, East Champaran, Vaishali, Supaul, Kishanganj, Madhubani, Sheohar, Araria, Begusarai, Saran, Katihar, Samastipur, Bhagalpur, Purnia Madhepura and Nalanda follow the ranking order. Bhojpur, sharsa, Khagaria, Patna, Gopalganj, Jehanabad, Buxar, Siwan, and sheikhpura are such districts which have less than one percent of their geographical area under forest. Taking into consideration the national average 23 percent only district of Kaimur with has 31 percent of forest cover. The districts of Bihar has been classified with the following class categories on the basis of the percentage coverage of area.

TABLE NO. -V

PERCENTAGE CATOGORY	CLASS	NAME OF DISTRICTS
>1		Bhojpur, Saharsa, Khagaria, Patna, Gopalganj, Jehanabad, Buxar, Siwan, Sheikhpura
1-10		Darbhangha, Banka, Muzaffarpur, Aurangabad, Sitamarhi, East Champaran, Vaishali, Supaul, Kishanganj, Madhubani, Sheohar, Araria, Begusarai, Saran, Katihar, Samastipur, Bhagalpur, Purnia, Madhepura, Nalanda.
10-20		Munger, Rohtas, West Champaran, Lakhisarai, Gaya.
20-30		Kaimur, Nawada, Jamui

Source : Self Calculated from Table – III

It is obvious from the no. V that such districts which have their 20 to 30 percent of total area under forest are only three and they are kaimur, Nawada and Jamui within 10 to 20 percent of their land under forest are only Five they are Munger, Rohtas, West Champaran, Lakhisarai and Gaya. While 20 districts of Bihar have 1 to 10 percent of their total area under forest. The districts of Bhojpur, Saharsa, Khagaria, Patna, Gopalganj, Jehanabad, Buxar, Siwan and Sheikhpura have insignificant area under forest rather less than one percent.

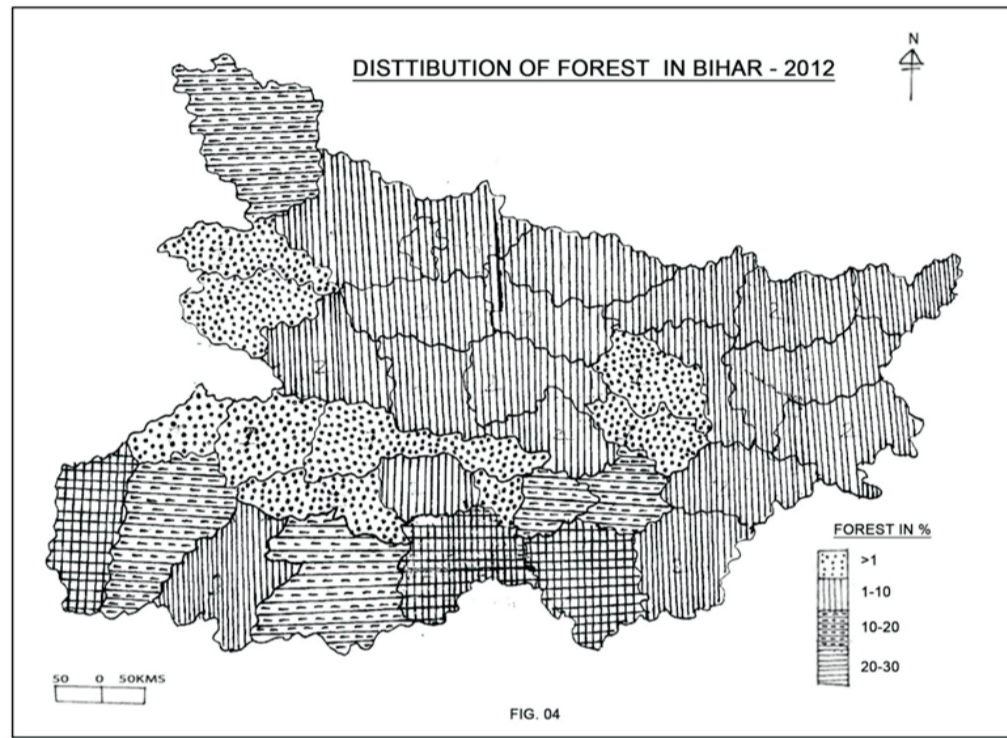


TABLE - VI
STATE OF INDIA

State/UTS	Area under Forest (in hec.)	Population	Per head share of forest (in hec.)	Rank
Arunachal Pradesh	5154000	1382611	3.72	1
Andaman Nikobar	717100	379944	1.89	2
Mizoram	167100	1091014	1.53	3
Sikkim	709600	607688	1.17	4
Manipur	1741800	2721756	0.64	5
Himachal Pradesh	3703300	6856509	0.54	6
Nagaland	922200	1980602	0.47	7
Uttra khand	3465100	10116752	0.34	8
Meghalaya	949600	2964007	0.32	9
Chhattisgarh	5977200	25540196	0.23	10
Tripura	629400	3671032	0.17	11
Jammu & Kashmir	202300	12548926	0.16	12
Orissa	5813600	41947358	0.14	13
Madhya Pradesh	9468900	72597565	0.13	14

Natural Vegetation Of Bihar

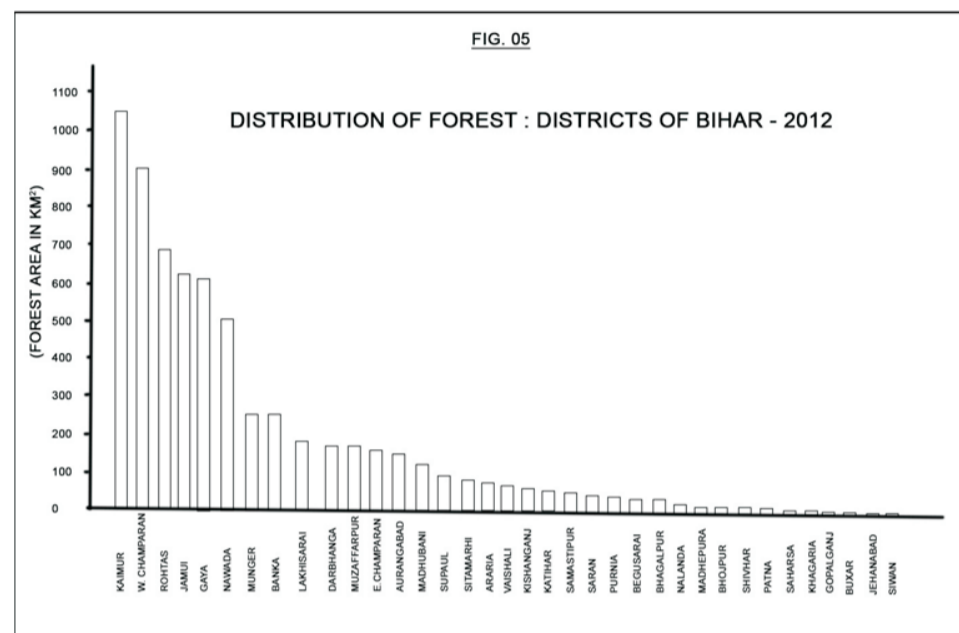
Goa	122400	1457723	0.083	15
Kerala	1126500	33387677	0.033	16
Gujarat	1892700	60383628	0.031	17
West Bengal	1187900	91347736	0.013	18
Punjab	305800	27704236	0.011	19
Assam	2683200	31169272	0.09	20
Jharkhand	2360500	32966238	0.07	21
Andhra Pradesh	6361400	84665533	0.07	22
Dadar & Nagar Haweli	20400	342853	0.06	23
Karnataka	3828400	61130704	0.06	24
Maharashtra	6193900	112372972	0.05	25
Rajasthan	3263900	68621012	0.05	26
Tamilnadu	2287700	72138958	0.03	27
Uttar Pradesh	1658300	199581477	0.008	28
Haryana	155900	25353081	0.006	29
Bihar	684500	103804637	0.006	30
Chandigarh	3400	1054686	0.003	31
Daman & Diu	800	242911	0.003	32
Delhi	8500	16753235	0.0005	33
LakshawEEP	000	000	000	00
INDIA	76951200	1210193422	0.063	00

Source : Self Calculated from table III and Census of India - 2011

**TABLE - VII
DISTRICTS OF BIHAR**

State/UTS	Area under Forest (in hec.)	Population	Per head share of forest (in hec.)	Rank
Kaimur	106200	1626900	0.065	1
Jamui	63200	1756078	0.036	2
West Champaran	92100	3922780	0.0234	4
Rohtas	70600	2962393	0.024	3
Nawada	51000	2216653	0.0230	5
Munger	26500	1359054	0.020	6
Lakhisarai	19400	1000717	0.019	7
Gaya	63000	4379383	0.014	8
Banka	2210	2029339	0.010	9
Aurangabad	15100	2511243	0.0060	10
Darbanga	18500	3921971	0.0047	11
Supaul	10000	2228397	0.0045	12
Kishanganj	7500	1690948	0.0044	13
Muzaffarpur	17700	4778610	0.0037	14
East Champaran	17100	5085868	0.0034	15
Araria	8800	2806200	0.0031	16
Madhubani	13600	4476044	0.0030	17
Sheohar	1900	656916	0.0029	18
Sitamarhi	9000	3419622	0.0026	19
Vaishali	8600	3495249	0.0024	20
Katihar	6200	3068149	0.0020	21
Begusarai	4300	2954367	0.0015	22
Purnia	4700	3273123	0.0014	23
Saran	5500	3943098	0.0014	24
Samastipur	5700	4254782	0.0013	25
Bhagalpur	4200	3032226	0.0013	26
Madhepura	2600	1994618	0.0013	27
Nalanda	2800	2872523	0.0010	28
Bhojpur	1900	2720155	0.0007	29
Sharsa	1100	1897102	0.0006	30
Khagaria	800	1657599	0.0005	31
Patna	1600	5772804	0.0003	32
Jehanabad	0300	1124176	0.0003	33
Buxar	0300	1707643	0.0002	34
Gopalganj	0400	2558037	0.0002	35
Siwan	0200	3318176	0.00006	36
Sheikhpura	0000	634927	00000	37

Source : Self Calculated from table III and Census of India – 2011



Taking into consideration the total area under forest and total population of the country and state of Bihar respectively the per head share of forest area is successively 0.06 and 0.007 hectare (table – vi& vii). In case of Bihar the per head share of forest land at district level is also very poor Kaimur with 0.065 hectare per head ranks first followed by jamui (0.036 hect.), Rohtas (0.024 hect.), West Champaran (0.0234), Nawada (0.023 hect.) Munger (0.020 hect.), Lakhisarai (0.019 hect.), Gaya (0.014 hect.), Banka (0.010 hect.), Aurangabad (0.006 hect.), Darbhanga (0.0047 hect.), Supaul (0.0045 hect.), Kishanganj (0.0044 hect.) and Muzaffarpur (0.0037 hect.). Remaining districts such as East Champaran (0.0034 hect.), Araria (0.0031 hect.), Madhubani (0.0030 hect.), Sheohar (0.0029 hect.), Sitamarhi (0.0026 hect.), Vaishali (0.0024 hect.), Katihar (0.0020 hect.), Begusarai (0.0015 hect.), Purnia (0.0014 hect.), District Samastipur, Bhagalpur and Madhepura each share 0.0013 hect. Nalanda, Bhojpur, Saharsa, Khagaria, Patna, Jehanabad, Buxar, Gopalganj, Siwan and Sheikhpura have insignificant per head share that varies from 0.001 hectare to 0.00006 hectare.

TYPES OF NATURAL VEGETATION:

The famous dictum, “Vegetation is the true index of climate” is very apt in respect of Bihar also. Temperature and rainfall determine the nature and type of natural vegetation. As Bihar lies in the tropical monsoonal climate belt. So more than eighty percent of rainfall occurs between July to October and as a result the nature of forest is tropical deciduous in general. With the beginning of the summer season the tree and plants sheds their leaves to protect themselves from transpiration to maintain the moisture control.

On the basis of temperature, rainfall soil and topography the forest of Bihar is divided into two :

(i)Tropical moist deciduous and (ii) Tropical dry deciduous. Isohyte of 120 c.m. as a boundary between tropical moist deciduous and tropical dry deciduous forest, forest north of river ganga or North Bihar plain is dominant by tropical moist deciduous forest and southern part of river ganga or southern Bihar plain by tropical dry deciduous forest.

(i)TROPICAL MOIST DECIDUOUS FOREST:

Tropical moist deciduous forest is distributed in the whole of northern Bihar plain excepted in Diara and swampy areas where grasses and Jhau are important vegetation. Again moist deciduous forest is divided into two subparts

- (a) Forest of Doon areas and forest of Tarai areas
- (b) Forest of Someshwar and “Doon” areas

This types of forest is found in foothill region of Himalaya along the northern frontiers zone of Bihar. This type of forest covers an area of 917 Km². It is dense where average annual rainfall is above than 160c.m. The length of trees is manifestation of the increasing and decreasing amount of temperature in respect of altitude. Chin. Pine.sal. deodar are in the area of high altitude and sal. Teak. Bamboo. Khair are in comparatively low altitude.

TARAI FOREST :

Tarai forest is mainly found in southern areas of someshwar and Doon series. It is distributed into two parts in bihar. In

north west region it stands in west champaran and north est region in Araria, supaul and kishanganj districts. Grasses are main vegetation of this region. Bamboo. Sawai. Jhau and market are general. In swampy areas sawai, Jhau and motha are important. A rarrow belt of sal trees founds in supaul, Araria and Kishanganj districts. Today this type of forest is in a critical stage and their surtain is in darger because of its heavy explosion.

TROPICAL DRY DECIDUOUS FOREST :

Dry deciduous forest founds in middle, southern and mid western region of south Bihar, where average annual rainfall is less than 120c.m. This type of forest is comparatively less dense than moist deciduous forest. Dry deciduous forest also sheds their leaves in the beginging of summer on the basis of tree type dry deciduous forest is devided into two sub types: forest in southern hilly and platea region. Near border of Jharkhand and forest of south Bihar plain. Thest is no certain boundary line between two forest bordering Jharkhand is in a continuous belt from Kaimur to Banka district. The major tree of this forest are palas. Amaltas, Sisam, Aabanus, Amla, Hassey&Bahesa, Bel, Babool and Bamboo, Grasses like Sabai, Muny, Dub are common.

SOCIAL FORESTRY :

Social forestry means the management of the forest as well as a forestation of barren lands, aimed at helping environmental, social and rural development. It is defined as, the forest of the people, for the people and by the people: The main purpose of social forestry is to realised pressure on the traditional. The significance of social forestry has been emphasised in the National forest policy in 1952 and 1988 with an aim to

- (a)Mixed plantation on barren lands.
- (b)Plantation on deforested areas.
- (c)Development of sheets belts.

FOREST PRODUCT:

Timber, Bamboo, fuel wood including charcoal and grasses are the major product of forest grasses like Saibai, Babar and Elephant are used for paper making. More than twenty five species of Bamboo are found in Bihar several types of oil are produced from trees of Mahua, Khair and others. Tans and days are also obtained from Amla, Ratanjog, Babool and other trees many type of drugs and edible fruits like Mango, Bel, Ber, Jamun, Sitafal are obtained from the forest of Bihar. Bihar provides 3.9 lack tonnes of fuel wood per year.

CONSERVATION OF FOREST:

Forest, a gift of nature, plays an important role in the economy and cultural traits of the nation as well as maintains our ecosystem but our increasing demand for forest products is carrying increasing destruction and degradation. Thereby causing heavy erosion of top Soil, Erotic and Frequent floods and chain reaction in ecosystem. Therefore conservation of forest is very necessary to maintain the ecosystem or environment.

Following steps can go a long way in making our forest healthy and sustainable one :

- 1.Plantation of trees along with roads, canals, rivers, lake and pond bank.
- 2.In village ratanjog, Zotropha trees should be planted on degraded and barren land.
- 3.Green belt should be developed in urban areas.
- 4.The development projects like mining should be in a planned way to cause minimum damage to forest.
- 5.Local people should be directly involved in the protection, regeneration and management of forest.
- 6.Forestry should be an important part of the course structure in schools and colleges.
- 7.More research should be done in forest and forestry.

NATIONAL PARK AND WILDLIFE SANCTUARY IN BIHAR:

A national park is a relatively large area of one or several eco system, in a national park human activity like hunting and grazing of animal are absolutely prohibited. A sanctuary is dedicate to protect wildlife and particular spices. In a sanctuary human activity is allowed on a limited scale.

Major sanctuary an national park of Bihar:-

- 1.Balmikinagar National park, west champaran.
- 2.Bhim Bandh Sanctuary, Munger

3. Gautam Buddha Sanctuary, Gaya
4. Bareilly Sanctuary, Vaishali
5. Kaimur Sanctuary, Rohtas
6. Rajgir Sanctuary, Nalanda
7. Udaypur, Sanctuary, West Champaran
8. Valmiki Sanctuary, West Champaran
9. Sanjay Gandhi Botanical Garden, Patna.

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