

Core forest of India is declining

*Uma Shanker Singh

University Department of Botany, Ranchi University, Ranchi, Jharkhand, India

ABSTRACT

The Indian forest is declining and its state of poor health remains unattended, undiagnosed and untreated. The state governments are adding to plantation but plantations and forests are two different concepts. The level of deforestation is extremely high and remains unchecked. In response to a parliamentary question the Government of India revealed that 1,09,75,844 trees have been allowed to be cut in between 2014 and 2019 and similarly, a total of 20314.12 hectares of forest land has been transferred for non-forestry activities during 2015 and 2018. The Western Ghats and Eastern Ghats also show a decline of interior forest to the tune of 10% and 32198.94 sq.km respectively. The encroachment of the RFA (Recorded Forest Area) has been found to the tune of 1281300 hectares in between 1987 and 2019 which constitutes about 2% of the total RFA. The encroachment rate has been found to be 40043.65 hectares per annum, which is alarmingly very high and unacceptable. According to the India State of Forest Report 2019 over 30,000 incidents of forest fires were reported in India in 2019 alone and this further reveals that more than 36 % of Indian forest cover (657,000 sq. km area) is prone to frequent forest fires and of this, 10 % are highly prone. The forest fire in the last three years have gone up by 125% and this amounts to a loss of Rs. 1,176 every year but the irony is allocation of dismal budgetary support to contain this menace. The Government of India allocates a mere Rs 45-50 crore per annum under the Forest Fire prevention and Management Fund, of which nearly 24 % of the meager forest fire prevention funds were not released and thus, remained unspent in the last two financial years. Deforestation is on an increase in the Indian forest and in North-eastern states in particular. The loss of tree cover in north-east India amounts to over 70% of all tree loss in India that occurred between 2001 and 2018. Net loss of tree cover between 2000 and 2018 in India is 16,744 sq. km. Out of this, 12,523 sq. km, a whopping 74.7%, is from the north-eastern states of Assam, Arunachal Pradesh, Meghalaya and others. There has been a consistent decline of VDF (Very Dense Forest), MDF (Moderately Dense Forest), OF (Open Forest) and SF (Scrub Forest) in the biennial cycles ranging from 2009-11 till 2017-19 to the tune of 6,634.24; 32,452.76; 39,711.28 and 25,478.34 respectively. The decline in very dense forest cover inside RFA during 2015-17 and 2017-19 are 143 sq. km. and 73 sq. km. respectively whereas the change in MDF is quite massive and found to be 5397 sq. km. and 7873 sq. km. in the years 2015-17 and 2017-19 respectively. The MDF has been declining at a much faster rate than it is expected. This has been found on a closer scrutiny of ISFR 2019, that most of the states have shown declining trend in very dense mangrove forest and moderately dense mangrove forest. The wetlands in the RFA are also decreasing in their areas at an alarming pace and this has been seen that in between the two cycles i.e. 2005-15 and 2015-19 wetland has shrunken by 260,705 hectares.

Key Words - Decline in Very dense forest, Climate change, Enhanced Carbon dioxide concentration, Loss of Grassland, CO₂ emission from Forest fire, Forest density, Decline in forest wet lands, Forest encroachment

*Corresponding author : umashankar.87@gmail.com

INTRODUCTION

The total forest cover of the country is 7, 12,249 sq. km which is 21.67% of the geographical area of the country. The tree cover of the country is estimated as 95,027 sq. km which is 2.89% of the geographical area. The total Forest and Tree cover of the country is 8, 07,276 sq. km which is 24.56% of the geographical area of the country. The current assessment shows an increase of 3,976 sq. km (0.56%) of forest cover, 1,212 sq. km (1.29%) of tree cover and 5,188 sq. km (0.65%) of forest and tree cover put together, at the national level as compared to the previous assessment done by Forest Survey of India (ISFR 2019). Forest cover has been defined as "all patches of land, with a tree canopy density of more than 10% and more than one hectare in area, irrespective of land-use, ownership and species of trees" (ISFR 2019). This has been always criticized by a large section of forest ecologists that if the above definition is stuck in principle then technically any fruit garden, coconut or coffee plantation, or even urban parks would come under 'forest cover'. So by clinging on to this definition, an incomplete picture of our forests is obtained and this will be extremely difficult to know as to what is happening in our biodiversity-rich Western Ghats or Himalayan forests. Satellite mapping also fails to give any insight into the quality of these forests or its biodiversity. Also, despite swathes of forest land being converted for non-forest use each year, the 'losses' do not reflect in the report. There are many reports and published data which shows how tens of thousands hectares of land is being diverted for non-forest use, taking away millions of trees. The problem also lies in the fact that forest has not yet been defined by the government of India. This further gets compounded by the fact that different states have different definitions of tree therefore; we are not able to get the real picture of deforestation and other related issues.

DECODING INDIA STATE OF FOREST REPORT (ISFR) 2019

Change in forest cover between the two

assessment periods in particular and its co-relationship with other parameters in general are extremely important to understand the dynamics of forest cover change. The forest cover change in the recorded forest area is also a very important to understand as to why the forest is declining in India so fast. In 2011, the total forest cover (TFC) in India was 6, 92,027 sq. km. Hence, even though the TFC increased by 20,222 sq. km or three per cent since 2011, there are some concerns over the growth pattern of our forests this decade. In terms of canopy density classes, area covered by Very dense forests (VDF) is 99,278 sq. km (3.02 per cent), moderately dense forests (MDF) is 3, 08,472 sq. km (9.39 per cent) and open forest (OF) is 3, 04,499 sq. km (9.26 per cent). A look at the forest cover this decade shows a consistent increase in the area under the OF category, which includes commercial plantations. And this seems to be happening at the cost of the MDF category, which is normally the area close to human habitations. While the area under OF increased by 5.7 per cent this decade, the area under MDF decreased by 3.8 per cent that is, from 320,736 in 2011 to 308,472 sq. km in 2019, a loss of 12,264 sq. km. India continued to lose its MDFs since 2011, but for a marginal increase of 0.04 per cent between 2017 and 2019 (ISFR). If the trend of this loss is analyzed properly then it is found that after a 0.62 per cent decrease in the area under this category between 2011 and 2013, it further decreased by 1.05 per cent between 2013 and 2015. Then, it declined by 2.2 per cent between 2015 and 2017. At the same time, India's open forests increased this decade. After a 0.86 per cent increase in area between 2011 and 2013, there was a further increase by 1.60 per cent between 2013 and 2015. The area under OF increased by 0.49 per cent between 2015 and 2017 as well. Between 2017 and 2019, the forest cover under this category went up by 0.89 per cent. Now this is important to know the internal dynamics of the forest cover change in its entirety and for this the forest cover change matrix is an extremely important tool to be fully understood as shown in Table-2.

Table-1 Loss of forest covers in decades (In Square Km)

Forest Types By Density	2019	2017	2015	2013	2011
VDF	99278	98458	85904	83502	83471
MDF	308472	308318	315374	318745	320736
OF	304499	301797	300395	295651	287820
TOTAL	712249	708573	701673	697898	692027

Source: Compilation of ISFR 2011-19

Table-2 Forest cover change matrix (Area in Square Km)

Class	2019 Assessment					Total ISFR 2017
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	97309.00	626.00	50.00	2.00	171.00	98158.00
Moderately Dense Forest	1755.00	303781.00	699.00	109.00	1974.00	308318.00
Open Forest	127.00	2244.00	289358.00	1069.00	8999.00	301797.00
Scrub	2.00	48.00	1732.00	41831.00	2366.00	45979.00
Non Forest	85.00	1773.00	12660.00	3286.00	2515413.00	2533217.00
Total ISFR 2019	99278.00	308472.00	304499.00	46297.00	2528923.00	3287469.00
Net Change	1120.00	154.00	2702.00	318.00	-4294.00	
% of Change	1.14	0.05	0.90	0.69	-0.17	

Source: ISFR 2019

Forest cover change is a dynamic process and depends on many variables namely, ecological factors and a web of complex external factors which are independent from each other. The ISFR 2019 states that in between two cycles of forest cover change assessment (2017 and 2019) VDF and MDF have increased to the level of 1.14% and 0.05% respectively. The change matrix shows that the VDF was 98158.00 square km in 2017 which has changed into 626 square km of MDF, 50 square km of Open Forest and 2 square km and 171 square km into scrub and non-forest respectively. Likewise, MDF has also changed into VDF, open forest, scrub and non-forest as shown in Table-2. There are many factors which lead to the loss of forest cover and most importantly some of them are deforestation, transfer of forest land for non-forestry activities,

encroachment of forest land, loss of wetland areas in recorded forest, change in mangrove forest and forest fire. This will be proper if these issues are also discussed at length despite not much studies have been done in India.

DEFORESTATION

Deforestation is an extremely important issue as it directly connects with a disruption of ecosystem and the survival of the human being. Recently, in response to questions asked in the parliament the government of India replied that the government has permitted to cut down 1, 09, 75,844 trees between 2014 and 2019. In fact, the highest number of trees was felled in 2017-2018 (25, 52,164) and 2018-2019 (26, 91,028). Deforestation is on an increase in the Indian forest and in North-

eastern states in particular. The loss of tree cover in north-east India amounts to over 70% of all tree loss in India that occurred between 2001 and 2018. Net loss of tree cover between 2000 and 2018 in India is 16,744 sq. km. Out of this, 12,523 sq.km, a whopping 74.7%, is from the north-eastern states of Assam, Arunachal Pradesh, Meghalaya and others. Data shows that 6,867.57 sq.km of tree cover got eroded in the period between 2013 and 2018 and this is a little less than half of the loss

occurred between the periods of 2001-2018. Assam tops the chart for the period between 2001 and 2018 with 2388.46 sq.km tree cover loss, while Mizoram lost maximum trees between 2013 and 2018, amounting to an area of 1392 sq.km. The chart made using the data shows that the tree cover loss almost doubled in the last five years that is 2014 and 2018. Maximum number of deforestation occurred in the top ten states have been given in the graphs.

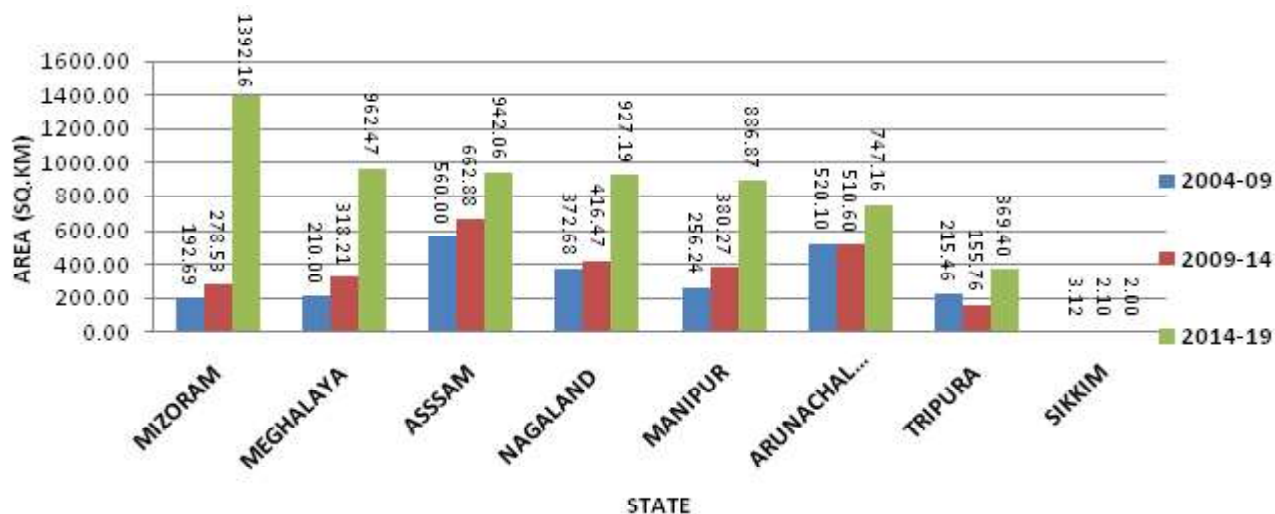


FIGURE-1 DEFORSTATION IN INDIAN STATE INN-E REGIONS (AREA IN SQ.KM)
SOURCE: GLOBAL FOREST WATCH REPORT 2019

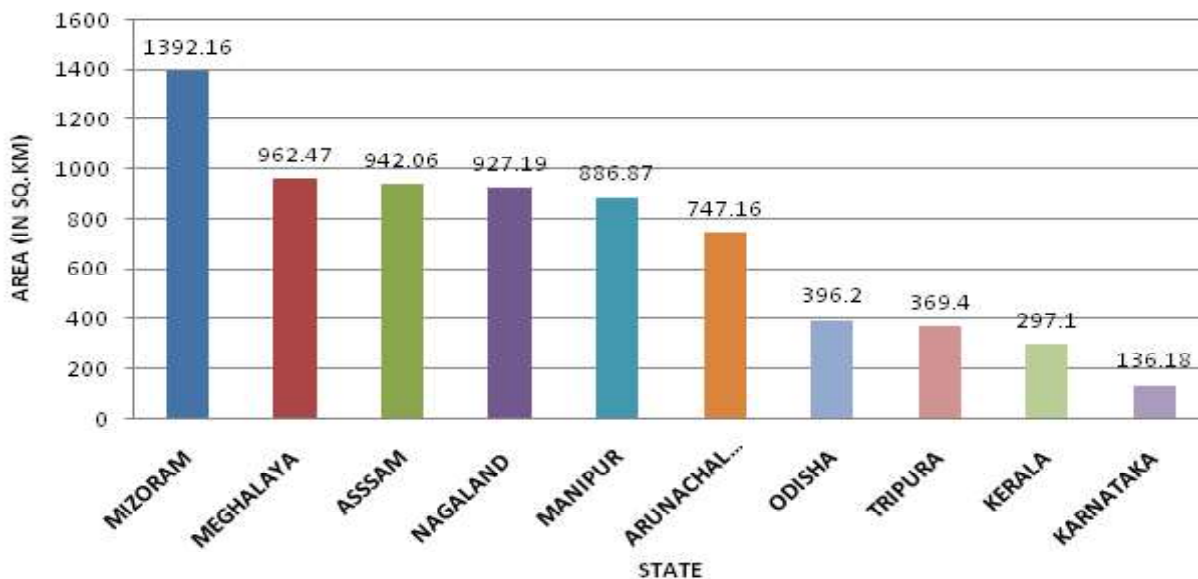


FIGURE-2 FOREST LOSS IN BETWEEN 2001-18 IN TOP TEN STATES (IN SQ.KM)
SOURCE: GLOBAL FOREST WATCH REPORT 2019

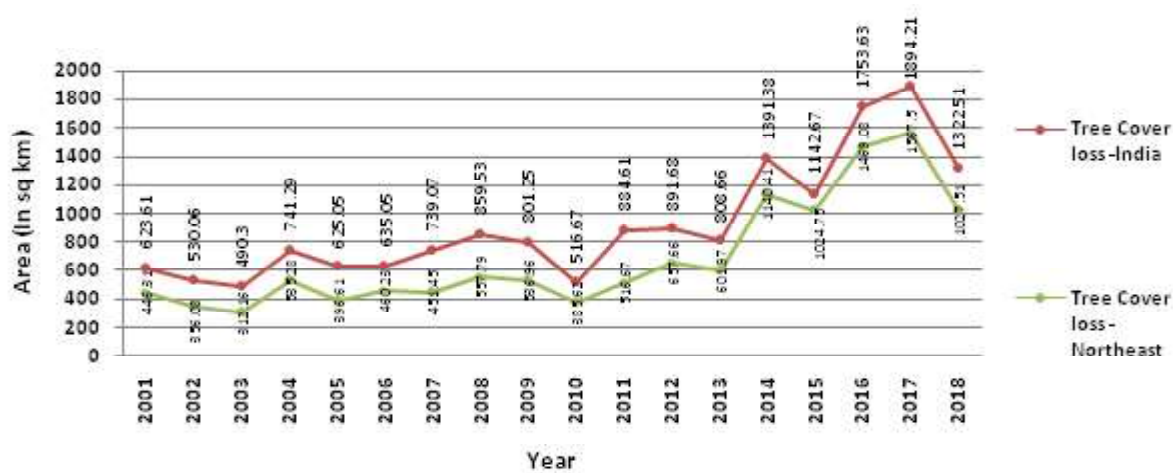


FIGURE-3 TREE COVER LOSS IN INDIA IN BETWEEN 2001-2018

Forests of Northeastern states hold critical importance for the rest of India not only because of the presence of rich biodiversity but because of the fact that the cluster of eight small states contribute about one-fourth to India's forest density. A gradual decline in Northeast's forest cover will adversely impact India's target of having 33% of its geographical area covered by forests from the current 24.39%.

Development activities, logging and shifting cultivation are widely recognized as major causes of deforestation in the Northeast. Coal mining, industries and factories like cement plants planned on the hills of Meghalaya are the main reasons for the forest cover loss in Meghalaya. The Northeast is one of the richest biodiversity hotspots in India. The destruction of forests has threatened wildlife. The Northeast is also known for the abundance of water but the destruction of forest has led this region witnessing dry spells like the North or central Indian states like Madhya Pradesh or Maharashtra. Temperature in Shillong is increasing gradually. This is mainly due to the loss of forest cover. The region has lost nearly 25,012 sq km of forest cover in a decade and this is one of the reasons behind rainfall deficit in the North Eastern states in India. (State of India's environment report 2020).

LOSS OF FOREST LAND AND BIODIVERSITY IN EASTERN GHAT

The forestry sector has not been fully researched therefore; it has not been found how much biodiversity has been lost in the process of unplanned development. This has been estimated that ~75% of the natural forest area around the world has been badly impacted by the humans for the development since the last ice age (MEA, 2005; McGill, 2015). There may be many reasons for the loss of forest cover but at the center of everything is the economic reason leading to depletion of forest cover and loss of biodiversity. This has been estimated that globally, ~40 percent of deforestation has occurred in the tropics and subtropics due to large-scale commercial agriculture (FAO, 2020). A study was carried out in order to understand the habitat suitability and threat perception of endemic species in Eastern Ghats over a period of ~100 years and the study revealed that, by and large, the Eastern Ghats have lost 15.83% of its forest area over a span of ~100 years. For the study period from 1920 to 2015, it is estimated that about 7.92% of forest area was converted into agriculture, and up to 3.80% into scrub/grassland respectively. Also, it was found that the total number of forest patches has been increased from 1509 in 1920 to 9457 in 2015, core area has declined from 93461.05 sq.km in 1920 to 61262.11 sq.km, and edge length has increased to 2.20 sq.km in 2015 as compared to 0.82 sq.km in 1920 (R.M. Ramachandran *et al.* 2018). The habitats of rare endangered and threatened (RET) and

endemic species were either reduced or degraded due to human activities. The habitats of RET species, in particular, "fragmented alarmingly.

DECLINE IN WESTERN GHAT FOREST

Global warming with the increasing anthropogenic greenhouse gas (GHG) emissions (415 parts per million from 280 ppm CO₂ emissions of pre-industrial era) has altered climate, and has also eroded the forest ecosystem productivity. Forests are considered as the major carbon sinks (about 45%) that help in mitigating global warming. Land use, land-use change and forestry (LULUCF) dynamics are the prime driver of climate change due to the loss of carbon sequestration potential as well as emissions. The Western Ghats are extremely important ecosystem and one of the thirty six global biodiversity hotspots. A study was done which shows the decline of evergreen forest by 5% with an increase in agriculture, plantations and built-up area. The study further reveals that interior or intact forests have declined by 10%, and they are now confined to protected areas. The simulation also shows that the regions of Western Ghats will have only 10% evergreen cover and 17% agriculture, 40% plantations and 5% built-up in the most likely changes in the future. Large scale deforestation has contributed to an increase in mean temperature by 0.5°C and decline in rainy days.

ISFR ALSO REVEALS LOSS OF FOREST AND WETLANDS IN RECORDED FOREST AREA

The analysis of volume-II of ISFR (from the year 2009-11 till 2017-19) reveals a very interesting result. The matrix change of each of the state and union territories was examined in detail and this was found that there are many states which have shown decline in VDF and MDF. The following table (Table-3) depicts the state wise decline in VDF, MDF, OF and Scrub. There are states like Maharashtra, MP, Kerala, Manipur, Odisha, Nagaland, West Bengal and Arunachal Pradesh which have shown consistent decline in VDF and MDF. The total decline in the VDF is 286 sq.km, 409 sq.km, 981 sq.km, 4111.24 sq.km and 847 sq.km for the year 2009-11, 2011-13, 2013-15, 2015-17, and 2017-19

respectively. Similarly, a loss of 3861.31 hectares, 2541.13 hectares, 6207.94 hectares, 17036.4 hectares, 10064.5 hectares in the open forest and another loss of scrub forest to the tune of 16238 hectare, 696.19 hectares, 1674.54 hectares, 4505.42 hectares and 2364.19 hectares in the years 2009-11, 2011-13, 2013-15, 2015-17 and 2017-19 respectively have been noticed. Therefore, there is consistent decline in open forest and scrub over the years and yet this issue has not been flagged prominently in order to be able to contain it effectively. Forest ecosystem is not like a financial company where the loss of one company is compensated against a profit making unit and at the end of the day in the balance sheet of the umbrella company is shown in profit. The country may increase in its plantation area but a plantation can never substitute an old forest ecosystem which takes hundreds and thousands of years to build. The wetlands in the recorded forest area have also alarmingly shrunken in between the two cycles i.e. 2005-15 and 2015-19. In terms of total shrunken area in the year 2005-15 and 2015-19, the wetland stands at a loss of 143466 hectares and 404171 hectares respectively. The loss is roughly four times higher in 2015-19 compared to the losses incurred in 2005-15. The state of Karnataka (-108881) and Uttar Pradesh (-59576) have shown the maximum rate of area loss in the wetlands. The other states are Chattisgarh which has lost from 7700 hectares to roughly a little more than 28302 hectares in between the two cycles that is 2005-15 and 2015-19. Madhya Pradesh also lost to the tune of 69327 hectares of wetland areas in the year 2015-19, substantially bigger chunk of area. Wetland and forest is intricately related with each other and their independent existence can never be thought in an ecosystem. An examination of the hydrological cycle reveals how forest conservation and management are closely linked to the health of water basins and the quality of water downstream. The forest not only captures water but also conserves it to be used in lean period when rest of the ecosystem run water dry. Wetlands also play a critical role in maintaining many natural cycles and supporting a wide range of biological diversity.

TABLE 3- CHANGE IN FOREST COVER IN VDF AND MDF IN STATES/UTS (IN SQ.KM)

Sl.No	STATE	VDF CHANGE					MDF CHANGE				
		2009-11	2011-13	2013-15	2015-17	2017-19	2009-11	2011-13	2013-15	2015-17	2017-19
1	Andhra Pradesh	0	-2	0	0	-5	-144	-214	-75	-1216	-381
2	Arunachal Pradesh	-5	-40	-24	-95	-358	-58	-110	-121	-257	-154
3	Assam	-8	-3	-3	-323	-2	-205	-73	-78	-608	-43
4	Bihar	0	-3	0	0	0	-9	-112	-3	-38	-109
5	Chhattisgarh	0	-11	-1	0	-6	0	-49	-19	-56	-45
6	Delhi	0	0	0	-0.24	0	-0.36	-0.1	-4.01	-3.6	-0.01
7	Goa	0	—	-1	0	0	0	—	-6	-4	0
8	Gujarat	0	-3	0	0	0	-18	-22	-1	-2	-122
9	Haryana	0	0	0	-3	0	-6	-4	-1	-96	-1
10	Himachal Pradesh	0	0	0	-269	-22	-6	0	0	-148	-74
11	Jammu & Kashmir	0	0	-382	-409	-170	0	-1	-1274	-1206	-238
12	Jharkhand	0	-39	0	-3	-11	0	-295	-8	-8	-10
13	Karnataka	0	0	-1	-361	-1	-3	0	-178	-2607	-306
14	Kerala	-1	-2	-7	-21	-55	-16	-148	-184	-492	-93
15	Madhya Pradesh	-7	-16	-3	-23	-10	-22	-107	-19	-286	-212
16	Maharashtra	-3	-16	-8	-394	-17	-19	-50	-25	-1217	-109
17	Manipur	-2	-4	-3	-47	-3	-540	-66	-224	-480	-124
18	Meghalaya	-50	0	0	0	-15	-1345	-174	-232	-205	-134
19	Mizoram	0	-4	0	-4	-1	-63	-273	-42	-52	-53
20	Nagaland	-43	-9	-2	-7	-6	-601	-187	-41	-112	-54
21	Odisha	-18	-88	-218	-56	-10	-159	-130	-90	-150	-24
22	Punjab	0	0	0	0	0	-42	0	-1	-110	-5
23	Rajasthan	0	0	0	-2	0	-10	-28	-2	-723	-31
24	Sikkim	0	0	0	-1	-1	0	-4	-1	-90	-2
25	Tamil Nadu	-141	-38	-63	-1096	-120	-560	-205	-502	-2347	-283
26	Telangana	—	—	0	-55	0	—	—	-200	-2362	-104
27	Tripura	0	-10	0	-30	-2	-18	-147	-28	-605	-11
28	Uttar Pradesh	0	-3	-17	-187	0	-5	-9	-671	-563	-17
29	Uttarakhand	0	-10	-31	-693	-1	-11	-52	-568	-1512	-18
30	West Bengal	-3	-101	-25	-27	-31	-3	-815	-29	-43	-24
31	A&N Island	-5	-7	-192	-5	0	-8	-3	-112	-3	0
32	Chandigarh	—	—	0	0	0	—	—	0	-0.1	0
33	Dadra & Nagar Haveli	—	0	0	0	0	—	-114	-40	0	0
34	Daman & Diu	0	0	0	0	0	0	0	-0.49	0	-0.13
35	Lakshadweep	0	—	0	0	0	-0.37	—	0	-1.31	-1.19
36	Puducherry	0	0	0	0	0	-0.79	-0.17	-6.31	-16.8	-0.04
	Grand Total	-286	-409	-981	-4111.24	-847	-3872.5	-3392.27	-4785.81	-17619.81	-2782.37

TABLE 4- CHANGE IN FOREST COVER IN OPEN FOREST AND SCRUBIN STATES/UTS (IN SQ.KM)

Sl.No	STATE	OF CHANGE					SCRUB				
		2009-11	2011-13	2013-15	2015-17	2017-19	2009-11	2011-13	2013-15	2015-17	2017-19
1	Andhra Pradesh	-160	-178	0	-1523	-1019	-56	-315	-19	-1514	-1148
2	Arunachal Pradesh	-85	-142	-203	-227	-206	-16063	-1	-1	-15	-12
3	Assam	-283	-160	-213	-711	-186	-3	0	-1	-71	-3
4	Bihar	-7	-12	-5	-7	-243	0	-5	0	0	-29
5	Chhattisgarh	-4	-43	-25	-18	-63	0	-2	0	-31	-6
6	Delhi	-0.83	-2	-3	-8.52	-0.42	0	0	0	-0.42	-0.11
7	Goa	0	-	0	-26	0	0	-	0	0	0
8	Gujarat	-46	-38	0	-9	-883	-13	-13	-2	-6	-213
9	Haryana	-17	-21	-2	-172	-5	-6	0	0	-27	-1
10	Himachal Pradesh	-6	0	0	-84	-71	0	-30	1	-6	-44
11	Jammu & Kashmir	0	-3	-1741	-1024	-473	0	0	-1387	-190	-60
12	Jharkhand	-5	-4	-9	0	-28	-1	-13	-1	-1	-3
13	Karnataka	-12	-68	-513	-2041	-1209	-1	0	-44	-230	0
14	Kerala	-7	0	-299	-945	-1105	0	0	-8	-12	-1
15	Madhya Pradesh	-15	-156	-40	-113	-963	-6	-8	-6	-164	-331
16	Maharashtra	-6	-32	-18	-1711	-440	0	0	0	-573	-45
17	Manipur	-439	-253	-666	-378	-483	0	0	0	-97	-16
18	Meghalaya	-862	-244	-294	-120	-209	-19	-25	-48	-12	-30
19	Mizoram	-87	-15	-272	-495	-417	0	0	0	0	0
20	Nagaland	-576	-155	-239	-505	-191	0	-1	0	-65	-5
21	Odisha	-599	-83	-75	-325	-41	0	-47	-5	-73	-9
22	Punjab	-28	-8	0	-90	-13	0	0	0	-16	-1
23	Rajasthan	-57	-58	-14	-1636	-418	-9	-177	-12	-807	-329
24	Sikkim	0	-1	0	-14	-1	0	-52	0	-15	-2
25	Tamil Nadu	-526	-91	0	-1699	-934	-59	0	-8	-64	-32
26	Telangana	-	-	-184	-1050	-304	-	-	-13	-102	-35
27	Tripura	0	-86	-38	-248	-12	0	-1	-11	-9	0
28	Uttar Pradesh	-3	-24	-1025	-1251	-69	0	-3	-89	-234	-2
29	Uttarakhand	-19	-20	-114	-465	-18	0	-3	0	-159	-3
30	West Bengal	-5	0	-128	-124	-57	0	0	-1	-12	-4
31	A&N Island	-4	-547	-57	-4	0	-2	0	-18	0	0
32	Chandigarh	-	-	0	0	0	-	-	-0.13	0	0
33	Dadra & Nagar Haveli	-	-97	-27	0	-1	-	0	-1	0	0
34	Daman & Diu	0	-0.08	-1.52	0	-0.07	0	-0.19	-0.41	0	-0.08
35	Lakshadweep	-0.08	-	0	-1.25	0	-0.03	-	0	0	0
36	Puducherry	-2.4	-0.05	-2.42	-11.58	-2.01	0	0	0	0	0
	Grand Total	-3861.31	-2541.13	-6207.94	-17036.4	-10064.5	-16238	-696.19	-1674.54	-4505.42	-2364.19

TABLE 5- LOSS OF WETLAND AREA IN RECORDED FOREST (Area in hectare)

Sl. No.	State/UT	Change (2005-15)	Change (2015-19)
1	A & N Island	-43	88781
2	Andhra Pradesh	31700	-21942
3	Arunachal Pradesh	-19500	29322
4	Bihar	-800	-408
5	Chandigarh	4	-89
6	Chhattigarh	7700	-28302
7	Dadra & Nagar Haweli	10	-1422
8	Daman & Diu	63	-271
9	Delhi	-37268	-414
10	Goa	800	-7375
11	Haryana	-500	285
12	Himanchal Pradesh	5300	-37279
13	Jharkhand	6400	-4572
14	Karnataka	12700	-108881
15	Kerala	7100	-14143
16	Madhya Pradesh	38900	-69327
17	Maharashtra	43200	-37963
18	Punjab	700	-632
19	Tamil Nadu	27900	-27981
20	Telangana	35700	-94561
21	Tripura	3600	-7421
22	Uttar Pradesh	-20200	-59576
Total		143466	-404171

DECLINE IN VDF AND MDF IN RFA-

The situation is recorded forest area is even worse. The forest supposedly under the control of forest department has shown decline in all departments, be it wetlands, inside RFA, increase in the intensity of forest fire or forest cover itself. The inventory of recorded forest area (RFA) has begun in the year 2017 therefore, a close scrutiny of the data provided by the FSI in ISFR (2019) reveals that twenty one state shown decline in the VDF, MDF and OF categories. There are some states like MP, Maharashtra, Manipur and Nagaland. Which have shown consistent decline in VDF and MDF. Open forest is subject physical verification because and of two possibilities-

- (i) Some degradation in VDF and MDF areas may have led to an-increment of the open forest or
- (ii) Plantation in some other areas may have added to in increment in the OF areas.

The decline in very dense forest cover inside RFA during 2015-17 and 2017-19 are 143 sq.km. and 73 sq.km. respectively whereas the change is MDF is quite massive and found to be 5397 sq.km. and 7873 sq.km. in the years 2015-17 and 2017-19 respectively. The MDF has been declining at a much faster rate than it is expected.

TABLE 6- CHANGE FOREST COVER INSIDE RFA (IN SQ.KM)

Sl. no.	State	VDF CHANGE		MDF CHANGE		OF CHANGE	
		2015-17	2017-19	2015-17	2017-19	2015-17	2017-19
1	Andhra Pradesh	—	—	—	-167	553	—
2	Arunachal Pradesh	—	—	—	-402	—	—
3	Assam	—	-2	—	—	—	—
4	Bihar	—	—	—	—	—	—
5	Chhattisgarh	—	—	-1834	-8	—	34
6	Delhi	—	—	—	—	—	—
7	Goa	—	—	—	—	—	1
8	Gujarat	—	-1	—	-43	156	93
9	Haryana	—	—	—	—	—	5
10	Himachal Pradesh	—	—	—	—	—	38
11	Jammu & Kashmir	—	—	—	-39	—	—
12	Jharkhand	—	—	-2	—	23	30
13	Karnataka	—	—	-402	—	—	17
14	Kerala	—	—	—	—	441	—
15	MP	-123	—	-1020	-156	—	319
16	Maharashtra	—	-12	—	-42	—	—
17	Manipur	—	-3	—	-113	—	—
18	Meghalaya	—	—	—	-7364	—	—
19	Mizoram	—	—	—	-60	—	—
20	Nagaland	—	-5	—	-35	—	—
21	Odisha	—	—	—	—	—	—
22	Punjab	—	—	—	—	—	0
23	Rajasthan	—	—	—	—	1766	7
24	Sikkim	—	—	—	-18	—	0
25	Tamil Nadu	—	-51	—	—	—	40
26	Telangana	—	—	-3999	—	854	54
27	Tripura	—	-2	—	-9	—	6
28	Uttarakhand	—	—	-346	-76	167	4
29	West Bengal	—	—	—	—	—	1
30	A & N Island	-20	—	-32	—	—	1
Total		-143	-73	-5397	-7873	3960	650

MANGROVE FOREST IS ALSO DECLINING

Mangroves are extremely important bio-resources which are not only crucial to the coastal environment but a great sink for carbon dioxide. Mangroves are declining rapidly but they don't get reflected in the ISFR, published by Government of India. India has lost 40% of its mangrove area during the last century. A study was carried out in order to assess and trend of loss of Mangrove India during 1987-2013 and this was found that the mean annual change during the period is 24.25 ± 82.57 km₂. On a closer scrutiny of ISFR 2019, this has been found that most of the states have shown declining trend in very dense mangrove forest and

moderately dense mangrove forest. Tamil Nadu, West Bengal, A&N islands have shown a declining trend and they have lost 1.55 sq.km, 3.38 sq.km, and 0.59 sq.km respectively. Similarly four states namely, Gujarat, Karnataka, Kerala and A&N islands have lost moderately dense mangrove forest to the tune 2.64 sq.km, 0.18 sq.km, 0.31 sq.km and 0.22 sq.km respectively (Table-7). There is a decline in very dense mangrove forest in the state of A & N Island in the year 2009-11 also to the size of roughly two square km and in the year between 2011 and 2013 the loss further expanded to 45 sq.km and 7 sq.km in the state of west Bengal and A&N islands.

TABLE 7 - LOSS OF MANGROVE FOREST AREA (IN SQ.KM)

Sl. no.	State	VDF CHANGE					MDF CHANGE					OM CHANGE				
		2009-11	2011-13	2013-15	2015-17	2017-19	2009-11	2011-13	2013-15	2015-17	2017-19	2009-11	2011-13	2013-15	2015-17	2017-19
1	ANDHRA PRADESH	0	0	0	0	0	0	0	3	84	0.18	-1	0	12	-47	-0.04
2	GOA	0	0	0	0	0	6	0	0	0	0	-1	0	4	0	0
3	GUJARAT	0	0	0	0	0	-6	-7	-1	-2	-2.64	18	52	5	35	39.91
4	KARNATAKA	0	0	0	0	0	0	0	0	-1	-0.18	0	0	0	8	0.22
5	KERALA	0	0	0	0	0	0	0	2	0	-0.31	1	0	1	0	0.21
6	MAHARASHTRA	0	0	0	0	0	0	0	10	9	0	0	0	26	73	16.27
7	ODISHA	0	0	0	0	-1.55	0	-9	7	-1	0.33	1	0	11	13	8.86
8	TAMIL NADU	0	0	1	0	0.04	0	0	2	7	2.24	0	0	5	-5	-6.45
9	WEST BENGAL	0	-45	-3	9	-3.38	0	-182	1	-8	0	3	169	11	7	1.49
10	A&N ISLAND	-2	-7	123	0	-0.59	-1	-3	-90	1	-0.22	5	-3	-20	-1	0.09
11	DAMAN & DIU	0	0	0	0	0	0.12	0.02	-0.14	0	0	0.44	0.05	1.51	0	0.1
12	PUDUCHERRY	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-0.36
	TOTAL	-2	-52	121	9	-5.48	-0.88	-200.98	-66.14	89	-0.6	26.44	218.05	57.51	83	60.3

FOREST LAND ENCROACHMENT IN INDIA

The data on forest encroachment is extremely difficult to obtain as the Ministry of Environment, Forest, Wildlife and climate change does not keep any record of it. An RTI application was filed in 2019 by an environmental activist and it revealed that around 1281300 hectares of the country's forests have been encroached in between 1987 and 2019 which constitutes nearly 2% of the total forest land. Madhya Pradesh tops the list with 5, 34,717.28 hectares of forest land under encroachment, followed by Assam at 3, 17,215.39 hectares and Odisha with 78,505.08 hectares. However, it also revealed that the forest data on forest encroachment is not available in Forest Survey of India since 1947. The rate of encroachment in the country is very alarming and it comes to around 40043.65 hectare per annum therefore, there is an urgent need to dismantle the structure behind the encroachment of forest land. In one of the hearing in Supreme Court on the level of encroachment of forest land on account of FRA when the court asked Forest Survey of India to apprise them of the latest status of encroachment then FSI swore in its affidavit that it would take around 19 years to find out the status. This will be very tough to understand what will happen after 19 years as the complete perspective may change. The impact of encroachment on forest ecosystem has been devastating and most of the time its effect is not immediately felt but with the passage of time it

becomes irreparable. A study was conducted by Dhananjay Medhi and Bimal Kumar Kar on the encroachment in Gonbina Reserved Forest in Goalpara district of Assam. The Gonbina reserve forest has an area of 126.25 hectares and covered with dense Sal forest. The reserve forest was surrounded by built-up lands and agricultural fields from all around. Since the last two decades, Gonbina reserve forest suffered from deforestation at an alarming rate and considerable encroachments in the form of roads, settlements, rubber plantations and establishments of weekly markets. The recent satellite imagery reveals that there is hardly any patch of thick forest cover, and settlements and rubber plantations have replaced the whole area. The study does not reveal the level of underground water, bio-physical changes in the soil but this must have deteriorated substantially. Loss of forest cover has altered the flora and fauna of the area and severe conflicts have arisen from time to time between man and wild animals elephants, monkeys, etc. A large scale encroachment always combines with complete deforestation over a period of time and the deforestation leads with the increased CO₂ concentration in the atmosphere and changes in the mass balances and surface energy can result in climate change at the local. Clearing tree cover and vegetation leads to increase in albedo of the region as bare soil reflects more solar radiation than vegetation, which again is a factor for altering

regional radiation flux. One of the noticeable changes in regional climates occurs when the cloud

formation shifts to higher elevations from lowland plains as a result of deforestation in the later area.

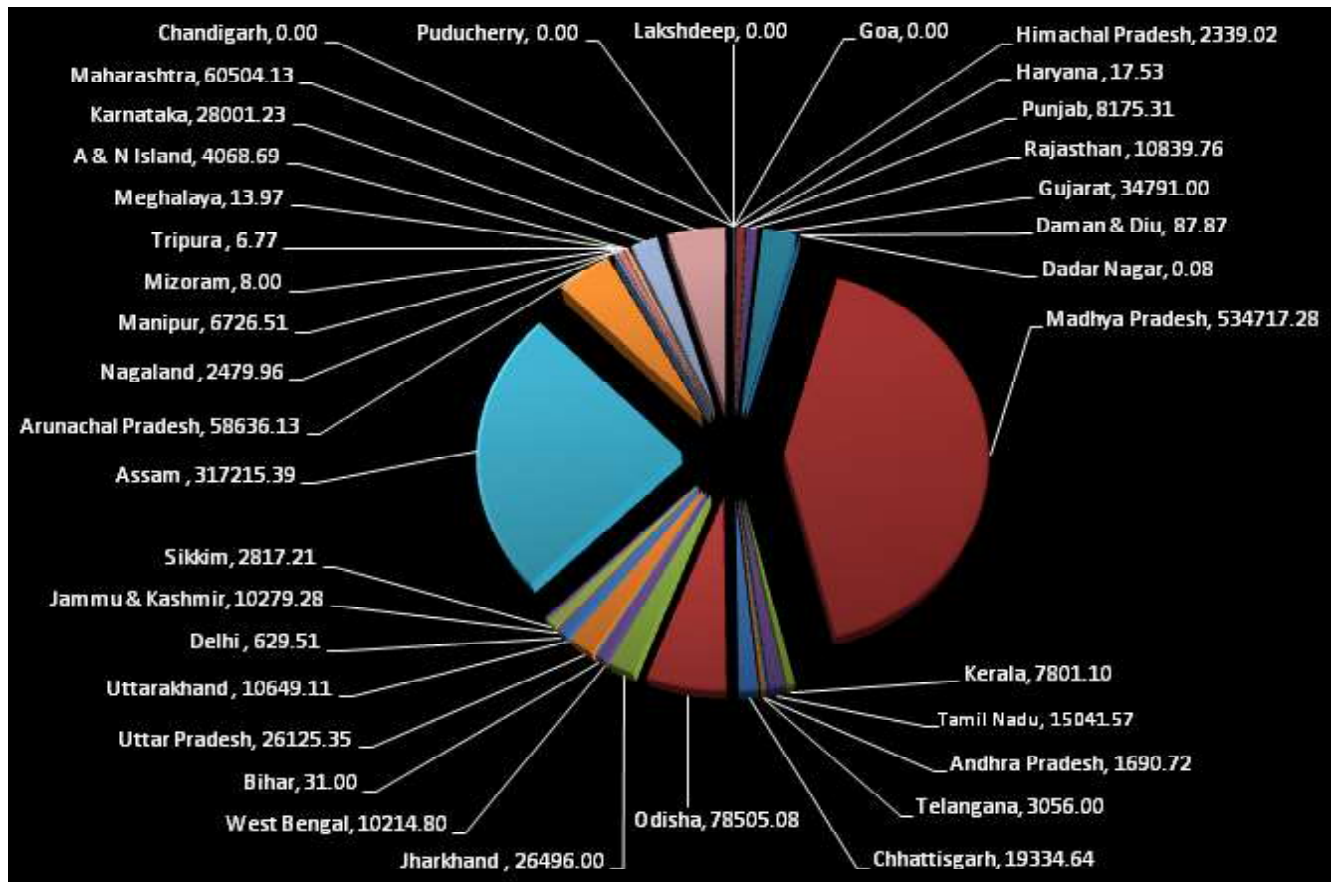


FIGURE 4- FOREST AREA UNDER ENCROACHMENT (IN HECTARE)

HISTORY OF FOREST DESTRUCTION

In India, human population has increased more than six-fold from 200 million to 135 billion during 1880-2021 and the country has developed also in term of GDP and infrastructure. The forestry sector has been often relegated therefore not much of database has been kept in the past. A study was carried out in order to be able to understand the loss of forest due to developmental activities and this was found that a significant loss of forests (from 89 million ha to 63 million ha) has occurred during the study period. Interestingly, the deforestation rate was relatively much higher during the British rule (1880-1950s) and in the early years of after independence, and then Forest conservation Act was brought in 1980 which decelerated the transfer of forest land to a great deal. The destruction of forest land has coincided with the expansion of

farm mechanization, electrification, and introduction of high yielding crop varieties as a result of government policies to achieve self-sufficiency in food production. The cropland area also increased to the tune of 140.1 million hectares from 92 million hectares in the period between 1880 and 2010. The rate of urbanization was slower during 1880-1940 but significantly increased after the 1950s probably due to rapid increase in population and economic growth in India.

LAND TRANSFER

The diversion of forest land for non-forestry purposes has acquired a frightening dimension in the recent past. The forest conservation act came into being in 1980 and since then, nearly four decades ago, a total of about 1.51 million hectares has been diverted for 27,144 projects. To put it in perspective, it means forest land equivalent to over

ten times the size of India's national capital has been diverted in the last four decades for various kinds of developmental projects. Since 2014, the Government of India has taken a series of reforms to soften the clearance process for the industry as a result of which, by the end of 2017, the average processing time for green clearances came down from 580 days to 180 days and the Government intends to bring it down under 100 days in near future. In response to a parliament question the central government revealed that, a total of 20,314.12 hectares of forest land was diverted in three years 2015-2018 (till December 13, 2018). This was further added that during this period, the ministry had received a total of 4,552 proposals and of those 1,280 (28.11 percent) got approved. The statement also underlines that state like Telangana topped the list with 5,137.38 hectares of forest land diverted, followed by Madhya Pradesh with 4,093.38 hectares and Odisha with 3,386.67 hectares of forest area diverted. The three states together account for over 62 percent (12,617.43 hectares) of the total forest land diverted during the said three-year period. The situation is worse in wildlife sector. In response to yet another question in Parliament it was stated that India's apex National Board for Wildlife (NBWL), charged with allowing forest land in Protected Areas to be diverted for industry, cleared 682 of the 687 projects (99.82%) that came up for scrutiny. Only five projects were rejected since August 2014. In response to questions asked by yet another two members of parliament, the minister of state in the ministry of environment, forest and climate change said the government cut down 1,09,75,844 trees between 2014 and 2019. In fact, the highest numbers of trees were felled in 2017-2018 (25,52,164) and 2018-2019 (26,91,028). This kind of loss is irrevocable and cannot be compensated. Compensatory afforestation over an equal non-forest land or double the degraded forest land whenever forest land is diverted for non-forestry purposes, misplaced, contentious and problematic and counterproductive. What they usually cut down are natural forests and what they are creating is an artificial plantation. To say that this will

compensate for the trees cut down is erroneous. These artificial plantations will not 'compensate' even after hundred years. The role of mature trees is far more urgent in the light of carbon sequestration.

ANALYSIS OF THE RECOMMENDATION OF FOREST LAND TRANSFER IN THE YEAR 2019

India's Forest (Conservation) Act, 1980 has been an extremely important legislation which requires that a prior approval needs to be sought from the Ministry of Environment, Forests and Climate Change (MoEF & CC) before it is implemented on the field. But before the forest clearance for the transfer of forest land is granted this is mandatory to seek recommendation from Forest Advisory Committee (FAC) (constituted at the headquarter office of MoEF & CC) or the Regional Empowered Committee (REC) (constituted across the 10 Regional Offices of MoEF & CC). Now it is pertinent to understand and analyze the recommendation for transfer of forest land state wise in the year 2019. The data reveals that of the 24 states, 7 states i.e. Andhra Pradesh, Jharkhand, Odisha, Chhattisgarh, Maharashtra, Gujarat and Madhya Pradesh accounted for 75.11% of the total forest land recommended for diversion. A total of 6,925.66 hectares (more than 69 sq. km) of forest land was recommended for diversion in these states. Out of 9,220.64 hectares of forest land recommended for diversion, 4,948.10 hectares was for linear projects such as Roads, Railways, Transmission Lines and Pipelines. These projects accounted for 53.66% of total forest land recommended for diversion. After Linear, the next major category was mining and quarrying. 2,526.09 hectares of forest land recommended for diversion for mining and quarrying projects and accounted for 27.4% of total forest land recommended for diversion. This was followed by irrigation for which 1,318.48 hectares of forest land was recommended for diversion and thereby accounted for 14.3% of forest land recommended for diversion. Put together, proposals under linear, mining and quarrying and irrigation account for 95.36% of total forest land recommended for diversion.

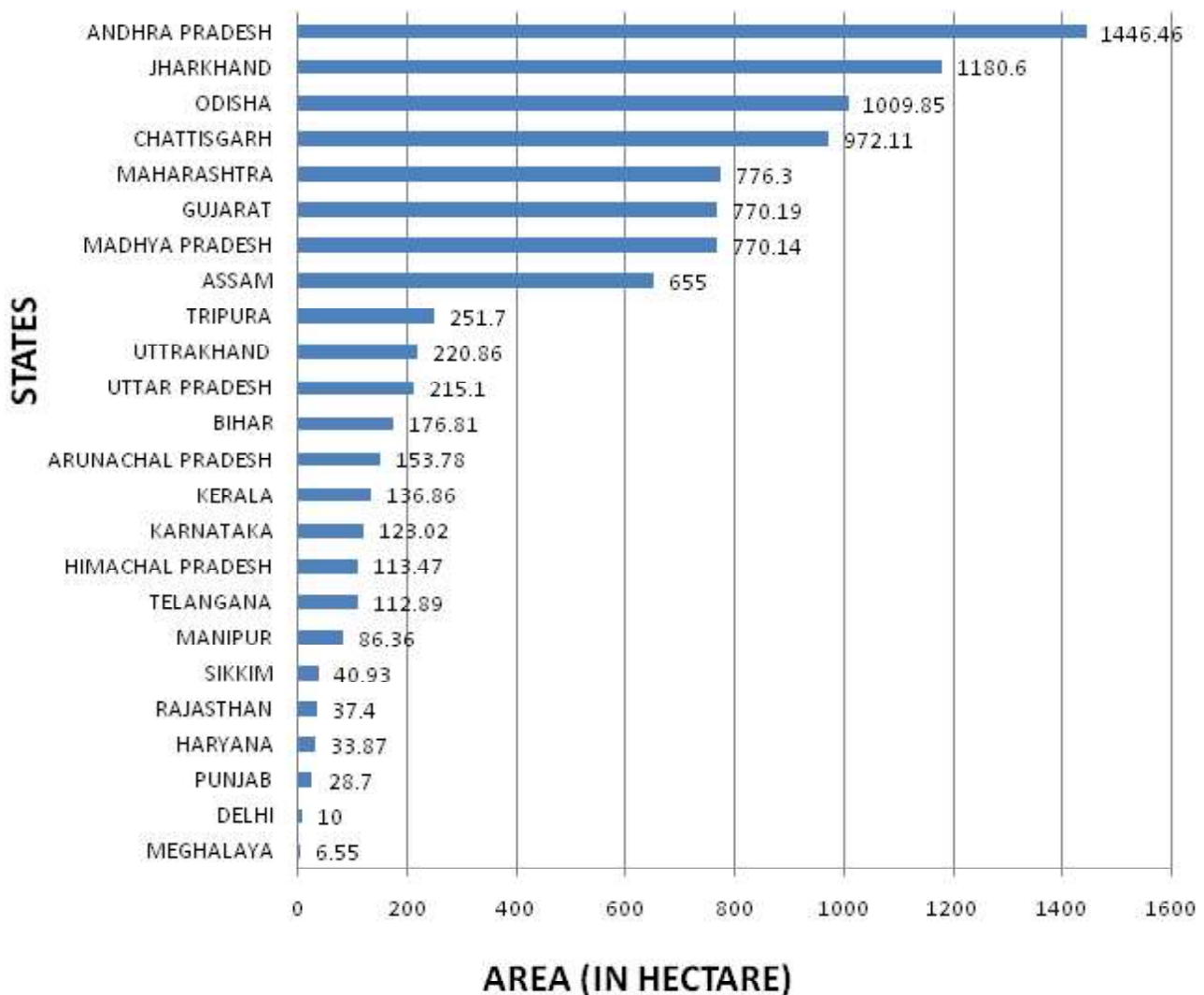


FIGURE 5-FOREST AREA RECCOMENDED FOR DIVERSION IN 2019

OVER 50,000 HECTARES OF FOREST LAND IN UTTARAKHAND DIVERTED FOR VARIOUS PROJECTS IN LAST 30 YEARS

On February 7th February 2021, flash floods in the Alaknanda river system claimed several lives and swept away two major hydropower projects in Uttarakhand's Chamoli district. While the cause of the floods is yet to be ascertained, the disaster has highlighted the danger of the numerous hydropower projects that dot the fragile Himalayan State. The cause for this slippage is again transfer of forest land for non-forestry projects without caring for the health of ecosystem. The state of

Uttarakhand diverted over 50,000 hectares of forest land to various development and defence projects in the past 30 years, the fourth highest among all States. Furthermore, Chamoli district recorded the second-highest forest area diversion among all of Uttarakhand's districts. The map shows the total forest area diverted for development and defence projects between 1991 and 2021. In this period, 58,684 hectares of forest area were diverted in Uttarakhand, the fourth highest among all States. The darker the color, the higher the diversion of forest land in the period as shown in the following map.

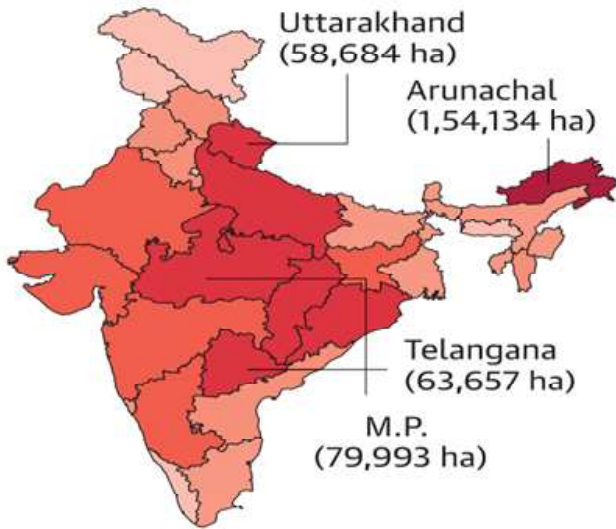


FIGURE 6-OVER 50,000 HECTARES OF FOREST LAND IN UTTARAKHAND DIVERTED FOR VARIOUS PROJECTS IN LAST 30 YEARS

SHARE OF TOTAL FOREST AREA

The chart plots the total forest area diverted between 1991 and 2021 against the diverted area's share of the total forest area as of 2019. The 58,684 hectares of forest area diverted in Uttarakhand in the last 30 years is equivalent to 2.4% of the State's total forest area as of 2019, the fifth-highest share among all States.

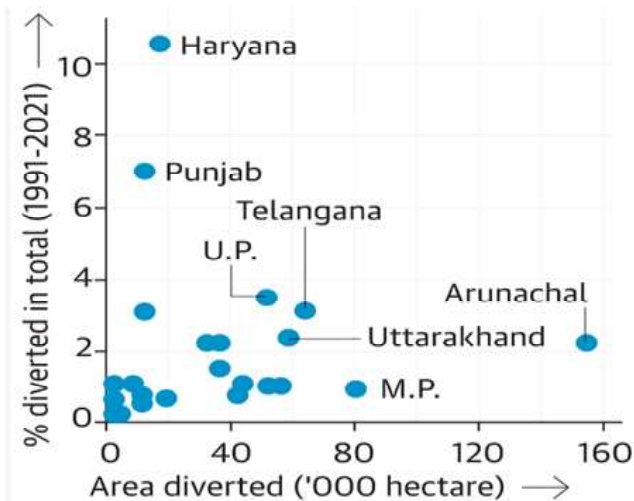


FIGURE 7-SHARE OF TOTAL FOREST AREA

REASON FOR DIVERSION

The following chart shows the various projects for which forest area was diverted in the last 30 years. Only the top 10 States with the maximum diversion in the last 30 years are considered. A significant chunk of forest land in Uttarakhand was diverted for defense projects. Land was also diverted for laying roads and transmission lines.

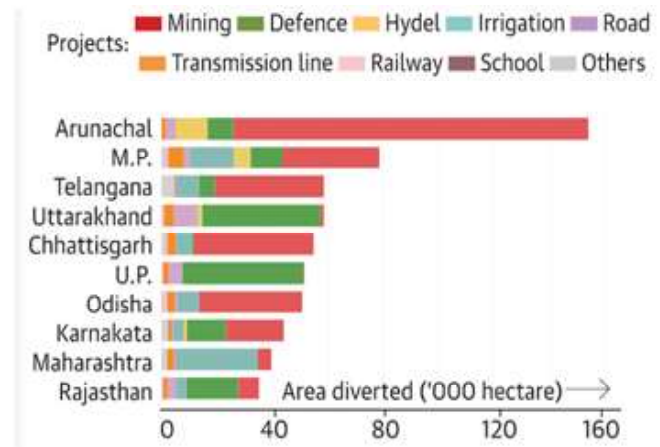


FIGURE 8-REASON FOR DIVERSION

MOST AFFECTED DISTRICT

The chart shows the amount of forest area diverted for various developmental projects in Uttarakhand's districts in the last 30 years. Chamoli district, which bore the brunt of the floods, witnessed the second-highest diversion. The majority of land was diverted for transmission lines, road laying, and hydro-electricity projects.

WHY UTTARAKHAND IS BLIND TO CATASROPHE LIKE CHAMOLI AND FLASH FLOOD LIKE 2013?

Recently, the Uttarakhand state government has framed new definition of 'deemed forests' as a land patch of 10 hectare or above with 60 per cent canopy density and 75 per cent native plant species' therefore, paving way for acquisition of forest land for various purposes including industrial and mining. This seems to be a clear attempt to dilute Forest Conservation Act 1980 and there are chances that this will have more negative impact than positive. By this change, the state government will be able to divert land without requiring any approval from the central government, especially

union ministry of environment, forest and climate change. Another side of the country is that the land will be diverted indiscriminately for government-funded projects as well as private enterprises such as mining, resort-hotels and housing projects raking crores. In year 2017, Forest Survey of India had given the definition of forest as one hectare or more land with 10% canopy cover making it almost impossible to get any land de-notified.

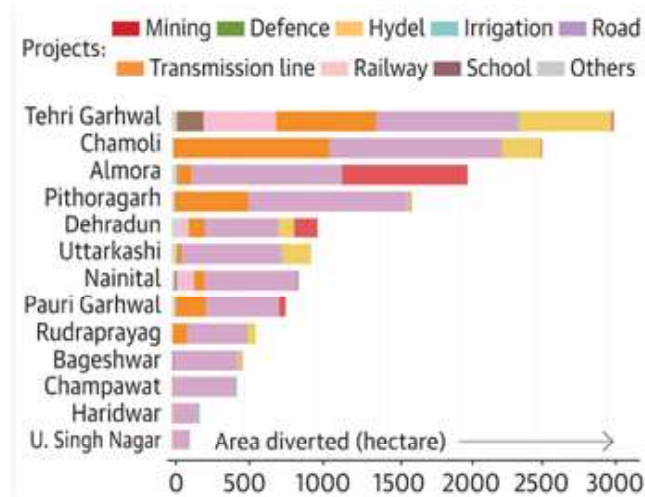


FIGURE 9- MOST AFFECTED DISTRICT
SOURCE: Ministry of Environment, Forest and Climate Change 2020-21

IMPACT OF LAND USE CHANGE ON BIODIVERSITY

Impact of land use change on biodiversity and forest ecosystem has not been fully understood as yet but a study was carried out on the impacts of past abrupt land change on local biodiversity in an ecosystem globally within time series of satellite imagery from 1982 to 2015 and this was found that the species richness and its abundance were 4.2% and 2% lower, respectively, and assemblage composition was altered at sites with an abrupt land change compared to unchanged sites, although impacts differed among taxonomic groups. Biodiversity recovered to levels comparable to unchanged sites after >10 years¹⁸. In the year 2019 a landmark new report from the Inter governmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), was

published which revealed some of the startling facts which were important from the ecosystem point of view. The report says that the average abundance of native species in most major land-based habitats has fallen by at least 20%, mostly since 1900. More than 40% of amphibian species, almost 33% of reef-forming corals and more than a third of all marine mammals are threatened. This further reveals that nearly 75% of the land-based environment and about 66% of the marine environment have been significantly altered by human actions and 33% of the world's land surface and nearly 75% of freshwater resources are now devoted to crop or livestock production. Land degradation has reduced the productivity of 23% of the global land surface.

FOREST FIRES TRIPLED IN INDIA

Forest fires differ slightly in its definition but they are commonly defined as "a fire that burns quickly and uncontrolled in areas of grass, bush or woodland". In 2019 the United Nations Inter governmental Panel on Climate Change (IPCC) published a guideline called Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The carbon emission under the accounting provisions of 2006 and the Kyoto Protocols of 1997, GHG emissions from forest fires were considered to be neutral over time and therefore, not taken into carbon accounting. The refinements, however, considered that with the increased frequency and intensity of recent forest fires globally, they are contributing to the carbon dioxide inventories regularly and adding to the concentration of carbon dioxide in the atmosphere therefore, inventory of carbon dioxide is essentially to be maintained. In a strategic paper on forest fire in Australia,¹⁰ the carbon emission from the forest fire has been calculated at a most conservative level and this has been found to be 30 tons carbon dioxide per hectare. This is also estimated that on an average 30 million hectares of forests, grass land and bushes are burnt every year in Australia therefore emitting, a total of between 150 and 900 million tons of carbon in an average year and, on occasion, between 600 and 3600 tons of carbon a year. Australia's industrial GHG emissions has been

found to be on an average 155 million tons of carbon per year and in an average year the Carbon dioxide emission from forest fire slightly less than the industrial emission. When this calculation is applied globally, the proportion of wildfire to industrial production carbon is reduced but remains significant. It is estimated that annually between 350 and 450 million hectares of forest and grassland are burnt by wildfires¹¹ therefore, annually wildfires globally will produce between 1.75 and 13.5 billion metric tons of carbon. In India, the number of forest fires has gone up astronomically from 4,225 to 14,107 between November 2018 and February 2019¹². According to the India State of Forest Report 2019 over 30,000 incidents of forest fires were reported in India in 2019 alone¹ and this further reveals that more than 36 % of Indian forest cover (657,000 sq. km area) is prone to frequent forest fires and of this, 10 % are highly prone. Around 21 % of the total forest cover is highly to extremely fire prone. The dry deciduous forests, which receive low rainfall, face 5-6 dry months and have nutrient poor soil, such as those in tropical and subtropical latitude, are more vulnerable to fire compared to others. These areas are in Odisha, Chhattisgarh, Madhya Pradesh and in the southern states. Chir pine forests in hilly states are equally prone. Very few studies have been done on the impact of forest fire on the flora and fauna of the Indian forest. In a study carried out by R.K. Srivastava found that during the sixth five year plan(1980-85) 17852 forest fires were reported in India impacting 5.7 million hectares of forest land and further revealed that on average 55% of forest area in India is affected by fire and 78 percent by grazing. This also leads to a very poor regeneration or no regeneration in 72 % of forested areas. The annual financial losses have also been worked out and this was estimated at Rs. 440 crores (US\$ 107 million). This estimate does not include the loss suffered in the form of biodiversity, nutrient and soil moisture and other intangible benefits¹³. Forest fire has assumed an alarming size with the passage of time and in response to a parliamentary question in 2019 the Government of India accepted

a loss of Rs. 1,176 every year due to forest fire but the irony is allocation of dismal budgetary support to contain this menace. The Government of India allocates a mere Rs 45-50 crore per annum under the Forest Fire prevention and Management Fund, of which nearly 24 % of the meagre forest fire prevention funds were not released and thus, remained unspent in the last two financial years. Out of Rs 50 crore allocated during each year 2017-18 and 2018-19 Rs 35 crore and Rs 38 crore were released respectively¹⁴. Various anthropogenic factors combine to cause uncontrolled fires. Fires of varying intensity and extent can affect thousands of hectares of forest every year, seriously influencing factor on nutrient cycling and functioning of ecosystem. Some forest ecosystems have evolved in response to frequent fires from natural causes, but most are susceptible to the damaging effects of wildfire.

CONCLUSION

The forest policy says that India should have 33% of its geographical under forest cover but it never reveals how to attain this goal because plantation to a huge level is not going to add to depletion of core forest. There are multiple reports in the recent past which indicates that the core of the forest is declining at a rate which was never seen before. The close scrutiny of the ISFRs of some yester years reveals that there is substantial lost in VDF, MDF, Scrub and OF in many of the states where forest matters to people. Today, the country is sitting on a branch of the tree, and trying to saw it off. But the dimwitted men are sitting on the wrong end of the branch, so when they finally saw through the branch, down they tumble. This act was observed by some scholars at some point of time but today we are not able to see what is happening and where will this lead us to? We are almost at beginning of a huge catastrophe but unable to see them coming. There are many issues running parallel to each other that forest cover is bound to come down and this needs some live examples in the country to be able to make all of us aware of the core forest coming down. Kodagu is a mountainous district, bordered by six districts, three districts (Dakshina

Kannada, Hassan, and Mysore) in Karnataka state and two districts (Kasaragod and Kannur) in Kerala state. As it located on the eastern slopes of Western Ghats range the whole district covered by beautiful mountain ranges, the green trap of forest, waterfalls, the misty climate in monsoon and winter season. It has a total area of 4,102 sq km with the density of 140 per sq km. Kodagu lies on the Western Ghats range means on the highland, there are many peaks nearly touch clouds. Thadiyandamol is the highest peak, reaches 1,750 meters above sea level; Pushpagiri is the second highest peak the elevation at 1,715 meters. There are many peaks and mountain ranges in the district that reach high above the cloud. The lowest elevation is at 900 meters above sea level. According to 'state of forest' report of 2005 published by Forest Survey of India, total tree cover for Kodagu as 3024 sq. km, that is 74.72% of geographical area. In the recent past in Kodagu, 102 sq. km of tree cover has been lost. Very Dense Forests (defined as more than 70% tree cover in a patch of land) has seen a dramatic increase, which officials attribute to increase in conservation of forest patches and rejuvenation efforts. However, moderately dense (defined as between 40% and 70% tree cover in a patch of land) and open forests (10% to 40% tree cover) has reduced by over 654 sq. km. The government of India has proposed three railway lines and if they are built, they would conservatively result in tree loss to roughly 50,000 trees. The government of Arunachal Pradesh proposes to build two hydro projects on Tangon and Dri rivers and diverting the water through two separate waterway systems to utilize the available head in a common underground powerhouse located just upstream of the confluence of Dri and Tangon rivers. Heights of dams, as envisaged for diversion of Dri and Tangon rivers, are 101.5m and 80 m respectively. This project seeks to divert 1150.08 hectares of land and the project would result in felling over more than 2.7 lakh trees in the biodiversity-rich Dibang Valley, and most of them are mature trees which are repository of maximum carbon dioxide in itself. Yet another proposal for coal mining by the North-Eastern

Coalfields (NECF), a unit of government-run Coal India Ltd (CIL), inside Assam's Dehing Patkai elephant reserve was approved for the diversion of 98.59 hectares (ha) of forest land. The eastern coal field proposes to carry out open cast mining in this area. Similarly, the central government sought a diversion of 87.0185 hectare (ha) of forest land in Dehradun district for the expansion of the airport despite of the fact that out of the 87.0185 ha proposed area to be diverted, 47 ha area falls under MDF (moderately dense forest). Recently, in response to questions asked by two members of parliament, the ministry of environment, forest and climate change, replied that the government cut down 1, 09, 75,844 trees between 2014 and 2019. In fact, the highest numbers of trees were felled in 2017-2018 (25, 52,164) and 2018-2019 (26, 91,028). Without realizing that the government has cut down 71,271.71 hectares of well stocked forest which were irreplaceable and were grown over hundreds of years in a forest ecosystem. The crisis of climate change is looming large over the humanity and yet the Government has allowed to cut down such a huge number of trees in the name of developmental works is an extremely serious issue. The Government of India has taken a series of reforms to soften the clearance process for the industry as a result of which, by the end of 2017, the average processing time for green clearances came down from 580 days to 180 days and the Government intends to bring it down under 100 days in near future but this is to be kept in mind that forestry is not a trading activity where any amount of reform would enhance the prospect of forestry brighten up. This also surprises that a total of 20,314.12 hectares of forest land was diverted in three years 2015-2018 without understanding the consequences of its impact on the humanity. This has also been observed through a study in Eastern Ghats that in between a period from 1920 to 2015, about 7.92% of forest area has been estimated to have converted into agriculture, and up to 3.80% into scrub/grassland. This has also been found in one of the studies that the total forest fragmentations have increased from 1509 in 1920 to 9457 in 2015, core area has declined from

93461.05 sq.km in 1920 to 61262.11 sq.km in 2015. Similarly, in one of the studies in the Western Ghats, a decline of evergreen forest by 5% with an increase in agriculture, plantations and built-up area has been noticed and it further reveals that interior or intact forests have declined by 10%, and they are now confined to protected areas. The wetlands in the RFA are also decreasing in their area at an alarming pace and this shows that the hydrological cycle has been broken. This has been seen that the in between the two cycles i.e. 2005-15 and 2015-19 wetland has shrunk by 260,705 hectares and this is significantly high. According to the India State of Forest Report 2019 over 30,000 incidents of forest fires were reported in India in 2019 alone and this further reveals that more than 36 % of Indian forest cover (657,000 sq. km area) is prone to frequent forest fires and of this, 10 % are highly prone. The forest fire in the last three years have gone up by 125% and this amounts to a loss of Rs. 1,176 every year but the irony is allocation of dismal budgetary support to contain this menace. The Government of India allocates a mere Rs 45-50 crore per annum under the Forest Fire prevention and Management Fund, of which nearly 24 % of the meager forest fire prevention funds were not released and thus, remained unspent in the last two financial years. There has been a consistent decline of VDF (Very dense forest), MDF (Moderately dense forest), OF (open forest) and Scrub forest in the biennial cycles ranging from 2009-11 till 2017-19 to the tune of 6,634.24; 32,452.76; 39,711.28 and 25,478.34 respectively. The decline in very dense forest cover inside RFA during 2015-17 and 2017-19 are 143 sq.km. and 73 sq.km. respectively whereas the change in MDF is quite massive and found to be 5397 sq.km. and 7873 sq.km. in the years 2015-17 and 2017-19 respectively. The MDF has been declining at a much faster rate than it is expected. Therefore, this concludes that the core Indian forests are declining very fast though the plantation area is increasing but the plantation and the core forests are two different concepts.

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