

REPORT NO.

324



PARLIAMENT OF INDIA
RAJYA SABHA
DEPARTMENT-RELATED PARLIAMENTARY STANDING COMMITTEE ON
SCIENCE & TECHNOLOGY, ENVIRONMENT & FORESTS

THREE HUNDRED TWENTY FOURTH REPORT

STATUS OF FORESTS IN INDIA

(Presented to the Rajya Sabha on 12th February, 2019)

(Laid on the Table of Lok Sabha on 12th February, 2019)



Rajya Sabha Secretariat, New Delhi
February, 2019/ Magha, 1940 (Saka)

**Website : <http://rajyasabha.nic.in>
Email: rsc-st@sansad.nic.in**

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** To be appended at printing stage*

COMPOSITION OF THE COMMITTEE

(2018-19)

(Constituted on 1st September, 2018)

1. Shri Anand Sharma — *Chairman*

RAJYA SABHA

2. Shri Prasanna Acharya
3. Shri S.R. Balasubramoniyam
4. Shri Anil Baluni
5. Shri Rajkumar Dhoot
6. Shri Hishey Lachungpa
7. Dr. Raghunath Mohapatra
8. Shri Parimal Nathwani
9. Shri Sharad Pawar
10. Dr. T. Subbarami Reddy

LOK SABHA

11. Maulana Badruddin Ajmal
12. Shri Muzaffar Hussain Baig
13. Shri E.T. Mohammed Basheer
14. Shri Prabhatsinh Pratapsinh Chauhan
15. Kumari Sushmita Dev
16. Shri Ninong Ering
17. Shri Laxman Giluwa
18. Dr. K. Gopal
19. Shri Sunil Kumar Jakhar
20. Shri Ramesh Chander Kaushik
21. Shrimati Vasanthi M.
22. Shri Daddan Mishra
23. Shri Chirag Paswan
24. Shri Shivaji Adhalrao Patil

25. Shri Hari Narayan Rajbhar
26. Shrimati Sandhya Roy
27. Shri Kirti Vardhan Singh
28. Shri Vikram Usendi
29. Shri Prabhubhai Nagarbhai Vasava
- #30. Vacant
- #31. Vacant

SECRETARIAT

1. Shrimati Sunita Sekaran, Joint Secretary
2. Shri T. N. Pandey, Director
3. Shri S. Rangarajan, Additional Director
4. Shri Mohd. Salamuddin, Additional Director
5. Shri Rajiv Saxena, Under Secretary

INTRODUCTION

I, the Chairman of the Department-related Parliamentary Standing Committee on Science & Technology, Environment & Forests, having been authorized by the Committee to present the Report on its behalf, present this Three Hundred and Twenty-fourth Report on “Status of Forests in India”.

2. In its meetings held on the 9th April, 14th May and 10th October 2018, the Committee heard the views of the representatives of the Ministry of Environment, Forest & Climate Change, Ministry of Tribal Affairs and non-official witnesses from WWF-India, Environment Support Group, The Energy and Resources Institute (TERI), Ashoka Trust for Research in Ecology and the Environment and Bombay Natural History Society (BNHS). During its study visits, the Committee also visited the Tadoba-Andhari Tiger Reserve, Chandrapur, Maharashtra on the 25th April 2018 and Corbett Tiger Reserve, Uttarakhand on the 1st June 2018 and held discussions with the representatives of some local NGOs, Governments of Maharashtra/Uttarakhand and Union Ministry of Environment, Forest & Climate Change on the environmental issues specific to the Tadoba-Andhari Tiger Reserve and Corbett Tiger Reserve.

3. The Committee expresses its thanks to the officers of the Ministry of Environment, Forest & Climate Change, Ministry of Tribal Affairs, State Governments of Maharashtra and Uttarakhand and the non-official witnesses for placing before the Committee the required material and replying to the clarifications sought by the Members on the subject.

4. In its meeting held on 8th February, 2019 the Committee considered the draft report and adopted the same.

New Delhi:
8 February, 2019
Magha 19, 1940(Saka)

(ANAND SHARMA)
*Chairman,
Department-related Parliamentary Standing Committee
on Science & Technology, Environment & Forests,
Rajya Sabha.*

REPORT

INTRODUCTION

1.1 The natural environment is the basis of all life on earth; we derive most of our basic needs from the natural environment. A lot of these needs such as clean air, water and fertile soil directly affect our everyday lives. Forests are an integral part of the natural environment and are crucial for the maintenance of the ecological balance necessary for human life. After oceans, forests are the world's largest storehouses of carbon. They provide ecosystem services that are critical to human welfare, which include absorbing harmful greenhouse gasses that produce climate change; providing clean water for drinking, bathing, and other household needs; protecting watersheds and reducing or slowing the amount of erosion and chemicals that reach waterways; serving as a buffer in natural disasters like flood and rainfalls; providing habitat to more than half of the world's land-based species etc.

1.2 Forests are a boon for the mankind. Forests have enormous environmental, social, cultural and economic value. India especially has been blessed with some of the most beautiful forests that are home for many rare species of birds and animals. In India, forests are viewed as being a part of our natural and cultural heritage and they have a great significance for most Indians. However, in recent times, our forests have come under threat from a wide variety of sources. Rising demand of rapid economic growth has often come at the expense of the environment, especially forests.

1.3 Forests have borne the brunt of unsustainable development practices. Pressure on forests and forest lands have grown manifold due to demands of industry and agriculture alike. Various natural and mineral resources are found within forest areas, further increasing the pressure on forests. Furthermore, a very large number of people are directly and indirectly dependent upon forests for their sustenance. Increasing demand for fuel wood and other forest produce has meant that forests have to be carefully nurtured and conserved. Another major challenge facing us in the long and short term is Climate Change. India is at the forefront of the global fight against climate change and as part of its various international commitments against climate change, forests have a crucial role to play. In light of these facts, it becomes imperative to understand the nature of challenges that we currently face.

1.4 The challenges facing the environment, especially by forests and the status of forests in the country, attracted the attention of the Department-related Parliamentary Standing Committee on Science and Technology, Environment and Forests. The Committee, therefore, took up the subject 'Status of Forests in India' for detailed examination. During the examination of the subject, the Committee noted that the Ministry of Environment, Forest & Climate Change had come out with a revised draft of the National Forest Policy namely, Draft National Forest Policy, 2018 which was placed in public domain for a month till 14th April, 2018 for comments. Since the policy, when finalised, would have a direct bearing on the state of forests in the country, the Committee decided to look into the Draft National Forest Policy, 2018 too to assess its impact on the status of the forests in the country. The Committee, accordingly, held meetings on the subject on the 9th April, 14th May and 10th October 2018 and heard the views of the representatives of the Ministry of Environment, Forest & Climate Change, Ministry of Tribal Affairs and non-official witnesses from WWF-India, Environment Support Group, The Energy and Resources

Institute (TERI), Ashoka Trust for Research in Ecology and the Environment and Bombay Natural History Society (BNHS).

General Facts about Forests in India

2.1 In its first meeting held on the subject on the 9th April 2018, the Committee heard the representatives of the Ministry of Environment, Forest & Climate Change on the subject. In their background note submitted to the Committee on the subject, the Ministry of Environment, Forest and Climate Change informed the Committee as under:

2.2 “Forest in India is a tract of land that is legally proclaimed to be one under Indian Forest Act, 1927. There are three types of forests: Reserved forests (RF), Protected Forests (PF) and Unclassed Forests (UF). Besides RFs and PFs, the recorded forest area may also include all such areas, which have been notified as forests in the revenue records or have been constituted so under any State Act or local laws. India has a notified forest area of 76.79 million hectares (m ha), comprising 43.47 m ha of Reserved, 21.94 m ha of Protected and 11.38 m ha of Unclassed (unclassified) Forests

2.3 The Reserved Forest is an area notified under the Indian Forest Act or a State Forest Act enjoying a higher degree of protection (human activities are prohibited unless expressly permitted); Protected Forests are also notified under the Forest Acts but the restrictions are less stringent (human activities are permitted unless expressly prohibited). Unclassed Forests are forests which have not been included in reserved or protected forest categories. The tenurial status of such forests varies widely. The State/UT-wise details of Reserved Forests (RF), Protected Forests (PF) and Unclassed Forests are at **Annexure-I**.

Definition of Forest

2.4 The Ministry informed that as far as the “definition of forest” is concerned, the Ministry has followed the definition as given in the order of Hon’ble Supreme court dated 12th December 1996 in W.P. (C) No.202/1995. According to which the word forest must be understood according to its dictionary meaning. The description covers all statutorily recognized forests, whether designated as reserved, protected or otherwise for the purpose of section 2(i) of the Forest (Conservation) Act, 1980. The term “forest land” occurring in section 2, will not only include “forest” as understood in the dictionary sense, but also any area recorded as forest in the Government record irrespective of the ownership. This is how it has to be understood for the purpose of section 2 of the Act.

Types of Forest in India

2.5 The forests of the country have been grouped into 5 major categories and 16 types according to biophysical criteria by Champion and Seth (1968). The distribution of these groups indicates 38.20% subtropical dry deciduous, 30.30% tropical moist deciduous, 6.7% subtropical thorn and 5.8% tropical wet evergreen forests. Other categories include subtropical pine (5%), tropical semi-evergreen forests (2.5%) and other smaller categories. Temperate and alpine areas cover about 10% of the forest areas in the Himalayan region. From the point of view of forest utilization value, the important forest regions include the Central Southern region with predominantly teak forests, the Eastern region with *Shorea robusta* (sal) dominated forests and the Western Himalayan region with coniferous species like pine, cedar, spruce and fir. The northern plains and foothills of the Indian Himalayan region support *Shorea*, *Dalbergia*, *Terminalias Gmelina*, *Albizias*, etc. while the North-Western arid areas bear *Prosopis* and *Anogeissus* dominated vegetation, interspersed with grassy rangelands. The North-Eastern region of the country is rich in tropical and subtropical moist forests with much diversity of hardwood and softwood species. Similar composition of forests in the Western Ghats and

in the Andaman and Nicobar Islands has been an important source of wood and wood products. Other specific ecologically important regions include sandalwood habitats in the southern dry belt, red sanders in Andhra Pradesh, shola forests in Nilgiris, mangroves in the Sundarbans in West Bengal, rain forests in the Andaman and Nicobar Islands and Himalayan alpiners.

Forest Cover assessment

2.6 India is one of the few countries of the world to have a robust and scientific system of periodic forest and tree cover assessment and inventory of forest and Trees Outside Forest (TOF). Forest Cover assessment is done on a two-year cycle and results are published in biennial report of Forest Survey of India (FSI), Dehradun as India State of Forest Report (ISFR). The result of the latest 15th cycle of assessment has been published in the ISFR-2017.

2.7 Forest cover assessment is carried out using a remote sensing based exercise in which wall to wall mapping is done using Indian remote sensing satellite data supported by intensive ground verification and field data from national forest inventory. The wall to wall mapping of forest in the entire country is based on the image interpretation of the indigenous IRS-LISS III sensor. The tree cover estimation is a sampling based exercise and estimated partly through High Resolution Satellite data and partly through field inventory data of Trees Outside Forest (TOF). The information on growing/carbon stock and other important characteristics are estimated through field inventory data of forest and TOF under the regular inventory programme.

Forest Cover and Recorded Forest Area

2.8 The term 'Forest Cover' as used in ISFR refers to all lands more than one hectare in area with a tree canopy of more than 10 %, irrespective of land use, ownership and legal status. It may include even orchards, bamboo, palm etc and is assessed through remote sensing. On the other hand, the term 'Recorded Forest Area' refers to all the geographical areas recorded as 'Forests' in Government records as Reserved Forests (RF) and Protected Forests (PF), which have been notified under the provisions of Indian Forest Act, 1927 or its counterpart State Acts. Besides RFs and PFs, the recorded forest area may also include all such areas, which have been recorded as forests in the revenue records or have been constituted so under any State Act or local laws.

2.9 Recorded forests may have blank areas with tree density less than 10 % such as degraded lands, wetlands, rivers, riverbeds, creeks in mangroves, snow-covered areas, glaciers and other snow covered areas, alpine pastures, cold deserts, grasslands etc. As per the definition of forest cover, such areas are excluded from the assessment of forest cover. On the other hand, there are areas outside the recorded forests with tree patches of one hectare and more with canopy density above 10%. For example, plantations on the private/ community lands, road, rail and canal sides, rubber, tea, and coffee plantations etc. Such areas also constitute forest cover and are included in the forest cover assessment.

Forest Cover of India as per ISFR-2017

2.10 The total forest cover of the country, as per current assessment is 7,08,273 sq. km. which is 21.54% of the geographical area of the country. The tree cover of the country is estimated to be 93,815 sq km which is 2.85 percent of the geographical area. The total forest and tree cover of the country is thus 8, 02,088 sq km which is 24.39% of the geographical area of the country. In the current assessment, there is an increase of 6,778 sq km in the Forest Cover and 1,243 sq km in the Tree Cover of the country as compared

to 2015 assessment. Therefore, the total Forest and Tree Cover of the country has increased by 8,021 sq km (1%). The density class-wise forest cover, as per ISFR-2017, is as under:-

Class	Area (sq km)	Percent of Geographic Area
Very Dense Forest (> 70 % canopy density)	98,158	2.99
Moderately Dense Forest (40-70% canopy density)	3,08,318	9.38
Open Forest (10 to 40% canopy density)	3,01,797	9.18
Total Forest Cover *	7,08,273	21.54
Scrub	45,979	1.40
Non-Forest	25,33,217	77.06
Total Geographic Area	32,87,469	100.00

*Includes 4,921 sq km under Mangrove Cover

The State/UT-wise details of forest cover, as per ISFR-2017, are at **Annexure-II**

Definition of Forest

3.1 The Committee noted that the word “Forest” has not been defined anywhere in the Draft National Forest Policy, 2018. The Committee desired to know as to why the Ministry was not working towards a clear definition of Forest and whether any difficulty was being faced by the Ministry on this count. In response, the Ministry in its written reply to the Committee stated that as far as the “definition of forest” is concerned, the Ministry has followed the definition as given in the landmark judgment of Hon’ble Supreme Court dated 12th December 1996 in Writ Petition (C) No.202/1995 in T.N. Godavarman Thirumulkpad vs Union of India & Ors. The order of the Hon’ble Supreme Court of India stated that:

“The word ‘forest’ must be understood according to its dictionary meaning. This description covers all statutorily recognized forests, whether designated as reserved, protected or otherwise for the purpose of Section 2(i) of the Forest (Conservation) Act, 1980. The term “forest land”, occurring in Section 2, will not only include “forest” as understood in the dictionary sense, but also any area recorded as forest in the Government record irrespective of the ownership. This is how it has to be understood for the purpose of Section 2 of the Act. The provisions enacted in the Forest (Conservation) Act, 1980 for the conservation of forests and the matters connected therewith must apply clearly to all forests so understood irrespective of the ownership or classification thereof”.

3.2 The Ministry further brought out that since the various legal issues related to forests are being adequately addressed by the Indian Forest Act, 1927, Forest (Conservation) Act, 1980 and related orders of Hon’ble Supreme Court, Ministry is not facing any difficulty for want of a definition of forest at present.

3.3 During the meeting of the Committee held on 10th October 2018, the representative of Bombay Natural History Society (BNHS), while presenting her views on the subject, opined that the definition of ‘forest’ needed to be broadened to include the natural areas i.e. ecosystems which don’t always have forest-like attributes, which include wetlands, grasslands, alpine meadows and underwater forests, like those of Sargassum species.

3.4 Responding to the concerns of the representative of BNHS, the Director-General (Forest) and Special Secretary, Ministry of Environment, Forest and Climate Change, who was also present during the meeting held on 10th October 2018, clarified as under:

“Sir, actually, if we define ‘forests’, it could create many loopholes that may be exploited. So, right now, we are going by the definition given by the Supreme Court. As of now, ‘forest’ means any area that is recorded as forest in any Governmental record irrespective of whether it is having a forest growth or not. So, it has to be recorded. The second aspect is that it includes any land area, irrespective of whether it is recorded as forest or not, if it is supporting natural forest as per the dictionary meaning of the term. So, this was the definition given by the Supreme Court, and the hon. Court wanted all the States to give their affidavits in 1996. Most of the States have given them; some are still in the process. But once we define forests, saying that forest is a community of trees, then these alpine meadows, etc., would go out of that definition. So, we are really grappling with it. A definition cannot be a two-page or three-page thing. That is why we are working on the definition very carefully. Once we come up with the definition, it has to be so foolproof that it is not misused. That is our main concern.”

3.5 The representative of TERI stated that they had been working on the definition of ‘forests’ in the Forest Policy of our country for the last 10-15 years. It came to the fore with the Godavarman case in 1996 when the Supreme Court defined it. The definition of forests, as areas notified in any of the Government records, was workable with certain exceptions. Otherwise, the main definition is sufficient. The country is so diverse, with diverse ownership and diverse kind of forests that the entire country’s diversity cannot be brought into one definition. So, though there could be some exceptions, they agreed with the main definition followed by the Ministry of Environment, Forest and Climate Change.

3.6 The Committee observes that the Ministry of Environment, Forest and Climate Change has provided the Committee with a working definition as provided by the Supreme Court. The Committee agrees that any narrow and specific definition of forests may leave out certain types of forests and open up the possibility of loopholes being exploited by vested interests. The Committee, therefore, recommends that the Ministry must come out with a comprehensive, clear-cut and legally sustainable definition of Forest to dispel any kind of doubt in this regard.

Assessment of Forest Cover

4.1 One of the major challenges facing the forest in the country is forest degradation and deforestation. According to India State of Forest Report, 2017, forest cover of the country is 70.83 million hectare which is 21.54% of the geographical area. The areas under very dense cover, moderately dense cover and open forests are 9.82 million hectare (2.99%), 30.83 million hectare (9.38%) and 30.18 million hectare (9.18%) respectively. Natural forests contribute about 95% to the forest cover of the country. The tree cover of the country is 9.38 million hectare which is 2.85% of the geographical area of the country. Total forest and tree cover in the country is 80.20 million hectare which is 24.39% of the geographical area of the country. The growing stock of India’s forests is 4218.38 million cubic meter and growing stock of TOF is 1603.99 million cubic meter (FSI, 2017). There is increase in open forests but reduction of 0.34 million hectare of moderately dense forests, which indicates forest degradation. Major driver for forest degradation is unsustainable harvest of fuel wood and minor forest produce.

4.2 During the meeting of the Committee held on the 9th April 2018, while briefing the Committee about the status of forests in the country, the Secretary, Ministry of Environment, Forest & Climate Change informed that the Ministry carried out the survey of the forests every two years, and were helped by the technology in their task. Through satellites, they were able to capture where and what nature of forests the country had. He informed that the country had approximately seven lakh plus square kilometres of forest land and additionally, there was the tree cover, which was also to be added to that. Thus, adding the two, of the total land available, the forest was about 24.39 per cent. He further stated that ideally, we should have 33 per cent forests but the country has presently only 24% to 25% and the rate of growth was not fast enough for forests in the country to reach 33% immediately. He pointed out that the forest depletion had stabilised now by and large i.e. the rate of depletion of forests was not going up. However, they had not been successful so far in creating and increasing very dense and the moderately dense forest.

4.3 The Secretary further informed the Committee that the findings in ISFR, 2017, particularly with reference to North-Eastern States, were a cause of worry. The Committee observed that ISFR, 2017 has indicated that the forest cover has decreased in most of the North-Eastern States and Sikkim.

4.4 The Committee, therefore, desired to know from the Ministry the reasons for the decline in forest cover in the North-Eastern States, except Manipur and what safeguards had been taken by the Ministry to increase the forest cover in North-Eastern States through policy interventions. In response, the Ministry in their written reply informed the Committee that the North-Eastern region of the country comprising eight States namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura, is endowed with rich forest resources and is one of the 18 biodiversity hotspots of the world. The region, with just 7.98 per cent of the geographical area of the country, accounts for nearly one fourth of its forest cover. One distinct feature of land use is the prevalence of shifting cultivation in hilly parts of almost all the States of this region. Shifting cultivation has traditionally been intricately linked to socio-cultural life of tribal people.

4.5 Total forest cover in the region as per "India State of Forest Report 2017", is 1,71,306 sq km, which is 65.34% of its geographical area in comparison to the national forest cover of 21.54%. However, there has been an actual decrease of forest cover to the extent of 630 sq km in the North-Eastern region. Decline in forest cover in the region have been attributed to shifting cultivation and other development activities and biotic pressures prevalent in the region. The reasons for the decline in forest cover in the North Eastern region are as follows:

Sl.No.	State	Reasons for change in Forest Cover of NER
1	Arunachal Pradesh	A decrease of 190 sq km observed in the forest cover of the State can be attributed to shifting cultivation and developmental activities.
2	Assam	An increase of 567 sq km in the forest cover is mainly due to the plantations mostly outside forest areas. The decrease in forest cover in some districts is mainly due to rotational felling in tea gardens, shifting cultivation and developmental activities.
3	Manipur	A net increase of 263 sq km has been observed in the State

		due to plantation and conservation, as well as regrowth in shifting cultivation areas.
4	Meghalaya	A net decrease of 116 sq km has been observed in the State due to shifting cultivation, rotational felling and developmental activities. Increase in forest cover in certain pockets is due to plantation activities.
5	Mizoram	The net decrease of 531 sq.km.in forest cover in Mizoram can be attributed to shifting cultivation and development activities. Increase in forest cover in certain pockets is due to regeneration of Bamboo and other plantations.
6	Nagaland	A net decrease of 450 sq km in forest cover observed in the State can be attributed to shifting cultivation and development activities.
7	Sikkim	A net loss of 9 sq km in forest cover observed in the State can be attributed to developmental activities.
8	Tripura	A net decrease of 164 sq km in the forest cover of the State can be attributed to shifting cultivation, harvesting of mature rubber plantations and other development activities.

4.6 The Committee was also informed that in order to arrest the decline in forest cover, the Ministry is supporting the States with the Intensification of Forest Management Schemes by which protection and improvement of forest areas especially from forest fires and strengthening of protection measures are undertaken. Further, the National Afforestation Programme (NAP) has also been supporting the NE Region for treatment of degraded forest areas. With these interventions, it is expected that the forest and tree cover will further improve in the NE States in future. The new policy envisages to maintain and enhancing the forest cover and provide alternatives to shifting cultivation by giving special emphasis on the management of forests in NE region.

4.7 During the meeting of the Committee held on the 9th April 2018, while further informing the Committee about the forest cover of the country, the Secretary, Ministry of Environment, Forest & Climate Change, stated as under:

“We, as a country, come in the first ten countries globally which have large forest cover. We are the eighth in the globe in terms of the percentage gain in forest cover that we are making. Our per capita forest is still low. It is pretty low compared to the global average. It is 0.058 hectare per capita here whereas globally it is 0.59 hectare per capita.”

4.8 The Committee also desired to know from the Ministry of Environment, Forest & Climate Change about the scientific techniques used by the Ministry for increasing forest cover. In response, the Committee was informed that the Ministry is focussing on increasing forest and tree cover through various afforestation programmes such as Green India Mission and National Afforestation Programme. Various technologies and standardized silvicultural practices including production of Quality Planting Materials, improved nursery technologies, pest & disease management etc. are used by the State Forest Departments in this regard. Forest Survey of India, Dehradun assesses the inventory of forest resources periodically and as per its assessment during 2017, there has

been an increase of 6778 sq. km of forest cover and 1234 sq. km of tree cover over its assessment in 2015.

4.9 It is evident that the anthropogenic pressure endured by nation's forest is enormous. With rapidly growing population, this pressure is set to rise in future. This will seriously affect the quality of forests and their sequestration potential. The Committee is of the view that in a developing nation, the demand for development imperatives and for creation of infrastructure will always be there. The need is, therefore, that our policies are geared to judicious use of forests so that this resource is not depleted and the pace of increase of forest cover in the country continues in future too. The Committee, accordingly, recommends that Ministry of Environment, Forest & Climate Change should judiciously manage the forests in the country, if required through necessary policy interventions, and ensure that whatever forest depletion is there or diversion of forest land is permitted, we are able to make up more than the area depleted/permitted for diversion so that the forest cover of the country remains intact. Environment and Development are supplementary and complementary as the two sustain each other. The need, therefore, is to strike a fine balance between the two and to pay due attention on both, within sustainable development framework.

4.10 The Committee is also concerned about the decline in the forest cover in the North-Eastern States, which is 65.34% of its geographical area in comparison to the national forest cover of 21.54%. The Committee recommends that the concerned State Governments and the Union Ministry of Environment, Forest & Climate Change must look into the factors responsible for the decline in the forest cover and take all necessary steps to ensure that the trend of decline in forest cover in these States is arrested at the earliest.

4.11 During its meeting held on the 9th April 2018, the Committee observed that in the ISFR, 2017, the term 'Green-wash area' has been used. The Committee desired to know as to what is the Green-wash area and on what basis the Green wash area is determined. The Committee was informed by the Ministry that the forest cover of the country is assessed irrespective of ownership, legal status and land use. This information provides qualitative and quantitative attributes for better and effective forest management and for devising appropriate conservation strategies. The major portion of the forest cover, however, falls within the recorded forests. The assessment of area of the forest cover within the recorded forests is subject to availability of digitized boundaries of the RFA from the State Forest Departments. Till date, digitized forest boundaries of RFA are available from 16 States only and accordingly have been used for analysis and calculation of Forest Cover in the present ISFR. These States/UTs are Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tamil Nadu, Telangana, Uttarakhand, Andaman & Nicobar Islands, Goa, West Bengal, Maharashtra and Odisha. The Ministry further informed that due to non-availability of digitized boundaries of RFA from many States, it is not possible to give forest cover inside and outside the recorded forest area of such States. Thus, in the absence of digitized boundaries of the RFA, green wash areas have been taken as proxy to RFA. The green-wash refer to the portions of Survey of India topographic sheets representing the forest at the time of survey carried out to prepare such topographic sheets. This green-wash by and large corresponds to recorded forest area of the country. In the report, FSI has given information on forest cover in and outside green wash area for those States from where the digitized boundary of RFA is not available.

4.12 The Committee notes that only 16 States/Union Territories have been able to provide details of digitized boundaries of Recorded Forest Area for incorporation in the India State of Forest Report, 2017 and as such, it has not been possible to give forest cover inside and outside the recorded forest areas of such States. The Committee recommends that the Ministry of Environment, Forest & Climate Change should impress upon the all the concerned remaining States/Union Territories to complete the task of digitization of forest boundaries of the Recorded Forest Area in their respective States/Union Territories in a time-bound manner, so that a more accurate picture of the forest cover area of the country can be made available.

Degradation of forests in the country

5.1 Forest degradation remains a key concern for quality of forests in India. In its meeting held on the 10th October 2018, the Committee heard the representatives of some non-official organisations working in the field of forests and ecology in order to have the benefit of their views on the subject. With regard to the degradation of forests, The Energy and Resources Institute (TERI) was of the view that India has successfully addressed the problem of deforestation. Forest Conservation Act, 1980 has played a key role in keeping a balance between conservation and development. Between 2003 and 2017, continuous improvement has been reported in India's Forest cover as it has increased by 21,506 square kilometres or 3.13%, whereas the Growing Stock in Forests (GS) reduced significantly by 563.03 million cubic meters or 11.78%. The reduction in growing stock despite increasing forest cover is an indicator of forest degradation. Within the recorded forest, 94.96% of forest is prone to crop injuries, 39.94 percent has inadequate regeneration, and 5.05 percent has no regeneration. Despite improved forest cover; sharp reduction in Growing Stock of Forests, inadequate regeneration, soil erosion and significant crop injuries underline deteriorating forest health in India.

5.2 The Committee desired to know as to what extent programmes such as National Afforestation Programme, Green India Mission, etc. have helped the country in improving the quality of degraded forests and whether any comparative study had been conducted by the Ministry to assess the impact of these programmes. In response, the Committee was informed that the Ministry of Environment, Forest & Climate Change is implementing the National Afforestation Programme, Green India Mission, etc. for afforestation and improving the quality of degraded forests. The details of National Afforestation Programme (NAP) and Green India Mission (GIM) are as under:

(i) National Afforestation Programme (NAP), a flagship Centrally Sponsored Scheme, implemented for the eco-restoration of degraded forests in the country through a set up involving the Joint Forest Management Committees (JFMCs) at the village level, the Forest Development Agencies (FDAs) at the Forest Division level and the State Forest Development Agency (SFDA) at the State level, has been the biggest and the most successful afforestation scheme of the Ministry since its inception in 2000-01.

Plantation undertaken through NAP contributes to about 15-20% of the total afforestation efforts in the country. Most of the afforestation and eco-restoration work under NAP is taken up in the forest areas for improvement and restocking of existing forests. The major benefits accrued are successful afforestation activities in degraded forest land, soil and moisture conservation works, significant impact in improvement of livelihoods, assets creation in village, etc.

No comparative study has been conducted by the Ministry to assess the impact of NAP. However, the mid-term evaluation study on NAP by Indian Council of Forestry Research and Education (ICFRE), Dehradun during 2008 has stated that the scheme has been successful in protection of about ten million hectare forests, under joint control from threat of illicit grazing, and forest fires. As a result, these forests are regenerating with vigour.

Further, the India State of Forest Report (ISFR), 2017 reveals that during the last 30 years, the forest cover of the country has increased by 2 percentage point i.e. 19.49% as per ISFR 1987 to 21.54 % as per ISFR 2017 which partly coincides in later half period with the implementation period of NAP from 2000-02 to till 2017-18. This by any means is not a small achievement considering the ever increasing biotic pressure on forests and necessity for development projects, etc.

The ISFR 2017 also pointed out that the positive change in forest cover can be attributed to consistent afforestation/tree plantation drive under various schemes especially Centrally Sponsored Schemes (CSS) like NAP and to partnership in forest conservation and management involving the forest department and the local communities through Joint Forest Management Committee (JFMC) mechanism.

- (ii) Further, National Mission for a Green India (GIM) is one of the eight Mission outlined under the National Action Plan on Climate Change. It aims at protecting, restoring and enhancing India's forest cover and responding to Climate Change. GIM India has a target to increase forest cover on 5 million hectare and improve quality of forest cover on another 5 million hectare including enhanced annual CO₂ sequestration by 50-60 million tonnes by 2020. GIM is being implemented through revamped State Forest Development Agencies, revamped Division/District Forest Development Agencies and revamped Joint Forest Management Committees/Gram Sabhas at the village level.

5.3 GIM got operational in FY 2015-16 after due approval of Implementation Guidelines in November 2014. So far, fund amounting to Rs.157.64 Crore have been released under GIM to nine States for carrying out GIM activities. The State-wise information regarding area approved for afforestation and corresponding funds released under GIM is at **Annexure-III**.

5.4 The Committee takes note of the schemes/programmes initiated by the Ministry of Environment, Forest and Climate Change for improving the quality of degraded forests in the country. The mid-term evaluation study on National Afforestation Programme by ICFRE during 2008 had highlighted the successful implementation of the plan as a result of which these forests were regenerating with vigour. The Ministry has also informed the Committee that the forest depletion has by and large stabilized now. However, the Committee wishes to point out that nearly 10 years have passed by since the evaluation had been conducted by ICFRE. The Committee, therefore, recommends that the Ministry should undertake a study to assess the impact of National Afforestation Programme and Green India Mission in improving the quality of degraded forests so that their actual impact on the forest cover is known and further strategies in this regard could be drawn accordingly.

Management of Forests

6.1 The Committee observed that encroachment, illegal tree felling, invasive weed, grazing, etc. were some of the issues plaguing the forests in the country. The Committee desired to know from the Ministry of Environment, Forest and Climate Change about the scientific and technological innovations made by the Ministry to address these issues.

6.2 Responding to the query of the Committee, the Ministry of Environment, Forest and Climate Change informed that the responsibility of protection, conservation and management of the forests primarily lie with the respective State and Union Territory Governments. Role of the Ministry is limited to policy and technological assistance through its technical organizations in the management of forests and wildlife. The Ministry also issues advisories and policy guidelines from time to time to address the issues related to encroachment, illegal tree felling etc.

6.3 The Committee was further informed that the Ministry has developed and launched an e-Green Watch and Decision Support System, a web-GIS based system for effective monitoring and evaluation of various forestry activities especially for regulating the diversion of forest areas for developmental purposes, etc. Further, digitization and demarcation of forest boundary is strengthening the mechanism to deal with the issues related to encroachments. Participation of local communities through existing mechanism of JFMCs has also helped significantly in dealing with the issues of encroachment, illegal felling of trees and management of forest fires, etc.

6.4 The Committee sought to know as to how the Ministry was handling the issue of grazing/overgrazing in the forest areas. In response, the Committee was informed that the State/Union Territory Forest Departments deal with the issue of grazing in forest areas as per the provisions of the extant Acts, rules and regulations. On the issue of invasive weed, insects, pests etc., it was informed that institutes of Indian Council of Forestry Research and Education (ICFRE), Dehradun have worked on different aspects of invasive species. ICFRE and its regional research institutes assist the State Forest Departments by providing effective and feasible solutions to the problems of pests and diseases by undertaking region-specific research programmes. Besides this, the State Forest Departments also take the assistance of the State Agricultural Universities and other research institutions working in the areas of pests and disease management.

6.5 The Committee was informed that ICFRE has developed bio-composite using combination of natural fibre of *Lantana* and thermo-plastics, Oriented Strand Board (OSB) from *Lantana* for use as composite wood material, a cellulose and hand-made paper from *Lantana* and *Parthenium* and a product named 'Samridhi' from weeds for silkworm rearing which helps in reducing cocoon spinning time, improves quality of leaf fed, reduces cost and improves quality of silk thread. The product is patented. Coloring dye has also been extracted from *Lantana*, *Parthenium*, *Eupatorium*, *Ageratum* and Water hyacinth.

6.6 Institute of Wood Science & Technology (IWST) Bengaluru, has successfully analysed the calorific value and fuel properties of *Lantana camara* and *Prosopisjuliflora*, the invasive weeds and prepared biomass briquettes. These briquettes can be used by industries to produce fuel. Earlier, ICFRE had made furniture out of *Lantana*. The Council has also carried out study on 'Impact of *Prosopisjuliflora* on biodiversity, rehabilitation of degraded community land in Rajasthan. Another study on spatial mapping and modelling of wattle invasion for sustainable management of Shola grassland ecosystem of Tamil Nadu is under progress. Risk analysis assessment of *Lantana camara*

using spatial distribution modeling approach in Latehar district of Palamu forest region of Jharkhand has also been carried out.

6.7 An all India coordinated Research Project entitled “Assessment and monitoring of invasive plant species in India and formulation of strategies for management of key Invasive Alien Plant Species (IAPS) in different regions of the country” has been approved. The project will be focusing on four important species i.e. (i) *Prosopis juliflora*, (ii) *Mikania mircrantha*, (iii) *Lanatan camara*, and (iv) *Acacia spp.* (Wattles).

6.8 The Committee notes that Indian Council of Forestry Research and Education (ICFRE), Dehradun and its regional research institutes *inter alia* work towards providing effective and feasible solutions to the problems of pests and diseases by undertaking region-specific research programmes. Their research programmes have positively contributed to containing some of the ailments faced by our forests. The Committee hopes that ICFRE, in coordination, with the State Agricultural Universities and other research institutions working in the areas of pests and disease management, would continue to provide solutions to important forestry research needs of the country.

6.9 During the meeting of the Committee held on 9th April 2018, the Committee also drew attention of the Ministry of Environment, Forest & Climate Change to the reduction of forest area of 3 sq. Km. in the ISFR, 2017 compared to ISFR, 2015 in the Shravasti District of Uttar Pradesh, due to illegal cutting of trees in forest near border area of Nepal. The Committee desired to know the action plan prepared by the Ministry to control this illegal cutting of construction timber. In response, the Committee was informed that no specific action plan had been prepared by the Ministry for this particular region and the Ministry had not received any report in this regard from the Uttar Pradesh Forest Department so far.

6.10 The Committee is constrained to note that no action plan has been prepared by the Ministry of Environment, Forest & Climate Change for controlling the illegal cutting of trees in forests. On the one hand, the Government is spending crores of rupees for environmental protection, while, on the other hand, illegal cutting of trees and transportation of the wood has been plaguing our forests in a big way. The Committee is of the view that the Ministry of Environment, Forest & Climate Change must take due cognizance of the illegal felling of trees in the different parts of the country and, in coordination with the concerned State Governments/Union Territory administrations, prepare an action plan for tackling this menace. The Ministry should impress upon all the concerned forest management authorities to take necessary action and utilize the constitutional provisions to restrict this illegal practice. Further, the report on illegal cutting of construction timber in forest near border area of Nepal in the Shravasti District of Uttar Pradesh, from the Uttar Pradesh Forest Department, should be shared with the Committee at the earliest.

6.11 The Committee also desired to know from the Ministry of Environment, Forest and Climate Change whether there was any working/management plan to deal with the issue of deforestation. The Ministry informed the Committee that National Working Plan Code 2014 was adopted for sustainable management of forests and biodiversity in India. Working Plan is a tool for scientific management of forests and is extremely useful in evaluating the status of forest resources, assessing the impact of past management practices and deciding about suitable management interventions for the future. All forests are to be sustainably managed under the prescription of Working Plan/Scheme. The National Forest Policy clearly states “no forest should be permitted to be worked without an approved Working Plan by the competent authority.” The same provision has been

retained in the new Forest Policy. It is the duty of the manager/owner (private forest) of the forest area to ensure the preparation of the Working Plan/Scheme. The authority as designated by the Ministry, will approve the Working Plan and ensure its implementation. Even working schemes have all major elements of a working plan and these schemes also need the sanction of the competent authority of the Ministry.

6.12 The Committee observed that under National Afforestation Programme, there had been a decline in progress in terms of area covered under the programme from 80583 hectare in the year 2013-14 to 35986 hectare in the year 2015-16. The Committee desired to know the reasons behind this decrease and steps taken by the Ministry to improve the said position. Replying to the observations of the Committee, the Ministry informed the Committee that in the 10th, 11th and 12th Plan period, Rs.1205 crores, Rs.2000 crores and Rs.2500 Crores respectively had been allocated under the NAP scheme. However the overall outlays in the annual plans were restricted each year which led to less fund availability for afforestation. With the increase in wage rate in the States and low allocations, the target area for afforestation has been steadily decreasing over the years.

6.13 As per approved outlay for the 12th Plan, annual allocation for NAP should have been of the tune of Rs.500 crore each year. However during 2012-13, the allocation in the annual plan was Rs.318.15 crores, which itself was less than the proportionate annual outlay and which was further reduced to Rs.218.15 crore at the RE stage. Likewise during 2013-14 though the allocation was Rs.318.15 crore, it was reduced to Rs.257.62 crore. Similarly, in the year 2014-15 also, the Budget was reduced to Rs.243.78 crore at RE stage. This had adversely affected not only the plantation and maintenance activity of that year but also the afforestation works carried out in the previous years, which had led to serious constraints in successful implementation of the scheme as the approved annual work programme could not be followed by the States.

6.14 Moreover, the funding pattern also changed from 100% Centrally sponsored to sharing pattern in 2015-16 as 60: 40 :: Central: State. With Rs.100 crore budget allocations for 2015-16, Rs.60 Crore for 2016-17 and changed funding pattern led to budget constraints for achieving the targeted area of afforestation annually which has already declined gradually over the last 4 years. Only 35,986 ha. new areas could be sanctioned during 2015-16 due to change in the funding pattern and budget constraints.

6.15 Further, due to budget insufficiency ancillary activities like strengthening of JFMCs, soil moisture conservation, fencing, awareness generation, monitoring and evaluation, etc. could not be supported properly which adversely affected the very purpose of this scheme viz. preservation of forests by participatory approach. During 2017-18 afforestation over 39,847 ha. has been targeted and Rs.80 crores has been released. The scheme is demand driven and several proposals from some States could not be approved due to want of budget allocation in 2017-18.

6.16 Forests in India are treated primarily as a social and environmental resource and sustain full or partial livelihood for more than 300 million rural population. In this backdrop, the Committee is concerned to note that insufficient budget allocation to National Afforestation Programme has been hampering achieving the annual targeted area of afforestation during the last few years, which has already declined gradually over the last 4 years. The Committee, therefore, recommends that the Ministry of Environment, Forest & Climate Change must ensure that adequate allocation is made for the National Afforestation Programme and the targets under the programme are achieved. Further, the concerned State Governments should also provide their share of the changed funding pattern to make the National Afforestation Programme (NAP) a success.

6.17 The Committee also brought to the notice of the Ministry that there had been concerns from various sections of society regarding diversion of forest land for mining and other purposes. The Committee desired to know in detail about the mechanism being thought out by the Ministry to ensure that forest land does not get diverted for industrial activities. In response, the Ministry informed the Committee that mining in forest areas is taken up only after getting the Forest Clearances under Forest (Conservation) Act, 1980; Environmental Clearances under Environment Protection Act, 1986 and consent to operate under Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. To compensate the loss of trees and ecosystem services, compensatory afforestation is done on non-forest and degraded forest land and NPV is collected. The status of compensatory afforestation and compliance of other stipulation of the approval is monitored regularly through different Regional Offices and also through third party.

6.18 The Committee also desired to know as to how many approvals had been granted by the Ministry during the last five years for industrial activities in the forest areas throughout the country. The Committee was informed that the Ministry has granted approval of 3226 number of cases in all categories during the last five years from 2013-14 to 2017-18 under the Forest (Conservation) Act, 1980, which involve 70920.61 ha. diversion of forest land for non-forestry purposes.

6.19 The Committee also desired to know as to how much of the forest land has been diverted for infrastructure projects in the last fifteen years and what was the annual rate of such diversions. The Committee was informed by the Ministry that in the last 15 years (from 01.01.2013 to 20.06.2018), an area of 2,39,572.16 hectare forest land has been diverted for infrastructure projects under FCA, 1980. The annual rate of diversion of forest land for infrastructure projects is 15971.48 hectare per year. The details are at Annexure-IV.

6.20 The Committee then drew attention of the Ministry to the fact that the general perception of the public was that the new draft forest policy overemphasized to commercialize forests to serve the interests of industry and to bring the private sector for the actual management of forests through the so-called Public Private Partnership Model. The Committee desired to know the response received from the public/stakeholders on this issue and the views of the Ministry thereto. The Ministry responded that the basic objectives, principles and goals of previous policy have been retained in the New Policy. Stress on conservation of natural forests is same as that of the previous Policy of 1988. Production forestry for enhancing the forest cover in the country and meeting national needs was also highlighted in the previous Policy of 1988 including raising of trees outside forests through public or private sources with appropriate safeguards. The present policy has only further elaborated the production forestry in detailed manner as a new thrust for growing more wood, which is a carbon neutral renewable resource.

6.21 The policy promotes for afforestation in PPP mode only in scrub/degraded forest areas which are not wildlife habitats or of any substantial ecological importance and also in areas outside forests. Further, promotion of trees plantation in degraded areas will help in reducing the dependency on import of timber and its products by the country. Afforestation in PPP mode emphasises that the communities, *Van Sanrakshan Samiti (VSS)*, Joint Forest Management Committees (JFMCs) will be equal partner in the process and will get their due share from the harvest. It was further brought out that all the forestry operations in forests take place as per approved working plans. The same has been highlighted in the present Draft Policy that management of forests will be done only as per the Central Government approved Working /Management Plans. Therefore, there is

no major shift in the management of forests in the proposed Draft Policy compared to the previous Policy of 1988. The Ministry also stated that it was examining the comments received from various stakeholders regarding their acceptability and feasibility.

6.22 The Committee then desired to know as to what safeguards had been taken in the new draft forest policy in order to prevent diversion of forest lands for non-forestry purposes without ensuring compensatory afforestation. The Ministry informed the Committee that para 2.7 of the Draft National Forest Policy, 2018 envisages to safeguard forest land by exercising strict restraint on diversion for non-forestry purposes, and strict oversight on compliance of the conditions. Further, the Forest (Conservation) Act, 1980 and Forest conservation rules and guidelines framed thereunder have necessary safeguards in order to prevent unsubstantiated diversion of forest land for non-forestry purposes. The Ministry has detailed and comprehensive guidelines in place for preventing diversion of forests for non-forestry purposes and ensuring compensatory afforestation. It was further informed that an assessment of the Net Present Value (NPV) of the forests being diverted in each case is also made to quantify the eco-system services that may be lost due to diversion. The NPV amount then collected is provisioned to be utilized so that eco-system services to that extent may be recovered from the existing forests.

6.23 The Committee is of the view that although compensatory afforestation is ensured and Net Present Value (NPV) is collected, there is a need for striking the right balance between the developmental aspirations of the country on one hand and the conservation needs on the other. The Committee, therefore, recommends that while the developmental aspirations of the nation are not to be compromised, it should be ensured that forest land may be diverted for non-forestry purposes, if and only if, it is absolutely unavoidable and essential and, in lieu of the diverted lands, adequate compensatory afforestation is done as per the prevalent guidelines/provisions and sufficient amount of Net Present Value is collected.

6.24 During the meeting of the Committee held on the 9th April 2018, the Ministry of Environment, Forest & Climate Change informed the Committee that fuel wood and fodder collection were among the factors which put pressures and threat to the forests. The Committee was further informed that Ujjwala Scheme of the Government of India was helping in reducing the pressure on the forests. The Committee desired to know as to how the Ujjwala scheme has reduced the pressure on forests, especially in forest areas and what was the status of the implementation of the Ujjwala scheme?

6.25 In their written reply furnished to the Committee, the Ministry of Environment, Forest & Climate Change informed the Committee that as per the information provided by Ministry of Petroleum and Natural Gas, in order to provide clean cooking fuel to Below Poverty Line (BPL) households especially in rural areas, the Government has launched 'Pradhanmantri Ujjwala Yojana' (PMUY) on 01.05.2016 through which deposit free LPG connections to 8 crore women belonging to the BPL households are to be provided. Identification of beneficiaries under PMUY is made through Socio-Economic Caste Census (SECC)-2011 list and additionally, it covers SC/STs households, beneficiaries of Pradhan Mantri Awas Yojana (PMAY) (Gramin), Antyoday Anna Yojana (AAY), Forest dwellers, Most Backward Classes (MBC), Tea and Ex-Tea Garden Tribes and people residing in islands/river islands, whose names do not appear in SECC list and subject to fulfilment of other terms and conditions. It was further informed that under 'Pradhanmantri Ujjwala Yojana', 2.00 crore and 1.55 crore connections were provided to BPL households during Financial year 2016-17 and 2017-18 respectively. As on 23.07.2018, more than 4.83 crore connections have been provided under the yojana. It

was further stated that forest dwellers are mainly dependent on forests for their source of firewood used in cooking. Switching over to LPG by these households would lead to reduced dependency on the forests.

6.26 The Committee is of the view that the LPG cylinders are still not available to a large number of forest dwellers and BPL households in many areas of the country. Further, the cost of the cylinders has gone up in absence of the subsidy on the cylinders. The Committee recommends that Ministry of Environment, Forest & Climate Change should impress upon the Ministry of Petroleum and Natural Gas to make efforts to bring more and more households under the Ujjwala scheme to reduce the pressure on forests.

Forest fires

7.1 Forest fires have emerged as an important threat in recent times and that there is a need for understanding the issues involved in the matter. In India, due to anthropogenic pressure on land most forest fires are directly or indirectly influenced by humans. Like other tropical areas, in India local communities set most fires, not least because it is a cheap and simple land management tool but often because it is the only option available to them. The reasons for setting fire include clearing areas for shifting cultivation, clearing forest floor for NTFP collection, and for hunting/poaching purposes (Source ISFR 2017). Uncontrolled fires are a cause of concern and are a major source of degradation of forests; in many cases these fires can cause damage on a scale similar to illegal logging of forests. Unfortunately, forest fires are often seen as mere incidents of fire and the focus is on firefighting alone, whereas it is a complex problem that requires a comprehensive and long term policy.

7.2 As per the India State of Forest Report, 2017, there are some aspects of forest fires we cannot control and that we cannot stop all fires, some are necessary and some are useful also. In addition, accidents or deliberate fire-setting will always occur to some extent. However, effective land and forest management could help in managing the ways and extent to which people create conditions that encourage fire, particularly the build-up of inflammable material.

7.3 The Committee in its meeting held on 9th April, 2018 while hearing the views of the Ministry of Environment, Forest and Climate Change, had expressed its concern over the death of twenty-one workers & trekkers in Theni district, Tamil Nadu in the Kurangini hills. Incidents of forest fire had also been reported in Haridwar, Uttarkashi, Tehri Garhwal, Pauri Garhwal, Rudraprayag, Chamoli, Nainital, Bageshwar, Champawat and Almora in Uttarakhand in the year 2018. The Committee had observed that there are incidences of forest fires all over the world but there are mechanisms to tackle the situation. Trekkers are either forewarned or permits are not given to ascend. In Tamil Nadu, there are no permits required unlike adjacent States like Kerala or Karnataka. That is one important factor for which there are Forest Departments and concerned officials need to be sensitized.

7.4 The Committee commented that it is said that there are fund constraints in Ministry, but there are instances where funds are not utilized by the States in a manner in which they should have been. This was a failure of the system, particularly on the part of the State Forest Department. These lives could have been saved but were lost. When major forest fires occur, these are areas which are not easily accessible especially when it is dense, we don't have roads or any ways to get in there. The forest staffs have very rudimentary techniques to extinguish forest fires. Non-availability of water too becomes

an issue. In many developed countries, helicopters are pressed in to contain the forest fires. The Committee enquired whether we have any such mechanisms which the foreign Forest Departments have and whether there is any coordination of the Forest Department with the NDMA, Air Force, etc. The Committee further observed that we appear to be working as one country, but we are not working as an integrated whole. The system is working in silos. Forest Department will do one thing; NDMA will come in when lives are lost and when things go beyond control. Air Force will be called in by the time much damage is done. The Committee observed that the Secretary of the Ministry may in consultation with Cabinet Secretary put in place some coordination mechanism in which State Chief Secretaries are also included. The local Air Force Commander and NDMA should also be involved so that all efforts are put together to act in time so that incidences such as Kurangini are not repeated.

7.5 Responding to the queries of the Committee, representatives of the Ministry accepted that human deaths due to fire in Kurangini hills was a failure of the system. It was informed that the Ministry has a system of three passes of the satellite every day and through SMS, alerts are given. But, unfortunately, in Tamil Nadu the registered number of mobiles is very less. It is one of the lowest in the country. The alerts are based on the temperatures. These are done by Moderate Resolution Imaging Spectroradiometer (MODIS) satellite, an American satellite and the Indian Institute of Remote Sensing (IIRS) satellite. The MODIS has four passes a day and there is a thermal band which actually senses the heat beyond a particular range. There is an earth station at the National Remote Sensing Centre at Hyderabad. The Forest Survey of India, Dehradun is linked with NRSC and they get the information immediately, within a couple of minutes to their fire centre at Forest Survey of India. The Ministry has also encouraged all the States to register with the FSI data base as much as possible. Many States have more than 2000 registered users right up to the beat guards, but there are some States even after a lot of persuasion the number of registered users are less such as Tamil Nadu and it is one of the reasons the information could not be given directly to the persons concerned. The Committee was further informed that Government of India has been alerting State Forest Departments through Forest Survey of India about forest fire locations detected by the MODIS sensor and assisting the forestry professional in the country in many ways to deal with the problems associated with forest fires. Forest fire management related initiatives of the Ministry covers the following areas:-

- Near real time forest fire alerts;
- forest fire pre-warning alerts; and
- Burnt-scar studies, etc.

7.6 The Committee notes with concern the loss of lives in forest fires besides the severe degradation of forests & irreparable losses to valuable flora & fauna, there is a crucial need for developing an integrated approach for firefighting. The Committee feels that there should be a proper co-ordination mechanism between the State Governments, Forest Departments, National Disaster Management Authority (NDMA), local Air force authorities and the Central Ministry for quelling forest fires. The Committee also feels that public awareness programmes should be conducted periodically in the vulnerable forest fire areas about the safety measures. Further, all State Governments should make the registration of the mobile numbers of the concerned areas mandatory and ensure that the data base of the registered mobile numbers of the State Forest Departments is kept up-to-date so that any information/alert is passed on to the maximum number of persons.

7.7 The Committee also feels that lack of human resources in the Forest Departments of the respective States is one of the very crucial reasons in its inability to deal with the forest fires affecting large stretches of the forests. Therefore, the Committee is of the view that Forest Departments of the State Governments should look into this aspect very seriously and fill the vacancies after completing the due procedures & approval of competent authorities. The Central Ministry of Environment, Forest and Climate Change should monitor this important aspect for tackling the forests fire effectively.

7.8 The Committee also notes that it had presented a detailed and exhaustive report i.e. Report No. 293 on ‘Forest Fires and its Effect on Environment, Forests, Bio-Diversity and Wildlife and Remedial / Preventive Measures’ to the both Houses of Parliament on 16th December, 2016 which could be a guiding force for the concerned agencies/ local authorities/ State Governments and their respective Forest Departments and Central Ministry of Environment, Forest and Climate Change for effectively tackling the forest fires.

Compensatory Afforestation and CAMPA Funds

8.1 The Compensatory Afforestation Fund Act 2016 was passed on the 3rd August, 2016. The Act provides for the establishment of funds under the public accounts of India and the public accounts of each State and crediting thereto the monies received from the user agencies. The monies is to be utilized for undertaking artificial regeneration (plantations), assisted natural regeneration, protection of forests, forest related infrastructure development, Green India Programme, wildlife protection and other related activities. During the examination of the Demands for Grants of the Ministry of Environment, Forest & Climate Change in February 2018, the Committee had been informed by the Ministry that CAMPA has come into being with effect from 3rd August, 2016 and the Ministry has sought extension upto 03.08.2018 for notification of Compensatory Afforestation Fund Rule. The Committee understands that the Compensatory Afforestation Fund Rules, 2018 have since been notified vide Notification dated 10th August 2018.

8.2 The Committee desired to know from the Ministry of Environment, Forest & Climate Change the mechanism and criteria to select sites for compensatory afforestation. The Ministry informed the Committee that as per para 3.2 of handbook of FCA rules and Guidelines, the Compensatory Afforestation shall be done over equivalent area of non-forest land on the following terms and conditions:

- (a) As far as possible, the non-forest land for compensatory afforestation should be identified contiguous to or in proximity of Reserved Forest or Protected Forest to enable the Forest Department to effectively manage the newly planted area.
- (b) In the event that non-forest land for purpose of Compensatory afforestation is not available in the same district, non-forest land for compensatory afforestation may be identified anywhere else in the State/UT as near as possible to the site of diversion, so as to minimize adverse impact on the micro-ecology of the area.
- (c) Where non-forest lands are not available or non-forest land is available in less extent to the forest area being diverted, compensatory afforestation may be carried out over degraded forest twice in extent to the area being diverted or to the difference between forest land being diverted and available non-forest land, as the case may be.

- (d) The non-availability of suitable non-forest land for compensatory afforestation in the entire State/UT would be accepted by the Central Government only on the Certificate from the Chief Secretary to the State/UT Government to that effect.

8.3 The Committee brought to the notice of the Ministry of Environment, Forest & Climate Change that some news reports suggested that compensatory plantation or afforestation was done on common lands, cultivable lands, pastures etc. In response, the Ministry merely stated that Compensatory Afforestation area is site specific and selected by State Government prior to obtaining final approval under FCA, 1980.

8.4 The Committee feels that since the Compensatory Afforestation Fund Rules, 2018 have now been notified, the Central/State Governments would be able to utilise the amount available in the fund for the intended purposes. The Committee is also hopeful that the above rules will not give any scope for mis-utilisation or embezzlement of the funds by any of the stake holders. The Committee recommends the Ministry of Environment, Forest & Climate Change to devise a stringent monitoring mechanism for proper utilization of the funds.

8.5 The Committee also sought to know whether the Ministry of Environment, Forest & Climate Change has carried out any field survey to determine the total area/land available in the country for afforestation. The Ministry informed that they had not carried out any study to determine the total area/ land available in the country for afforestation. As per India State of Forest Report 2017, it is estimated that 24.39 per cent of the geographical area of the country is under forest and tree cover as against the target of one-third of geographical area under forest or tree cover, in the National Forest Policy. The balance of 9% can be achieved through taking up plantation/afforestation outside the forests and restocking /plantation on scrub forest. The Committee was also informed that as per ISFR 2017, the country is having about 3,01,797 sq.km of open forest land having density between 0.1 to 0.4, which constitute 9.18% of the geographical area of the country. In addition, 45,979 sq km areas have scrubs i.e. with density less than 0.1 which are not considered as a part of green cover. Most of these degraded forest lands are situated in Madhya Pradesh, Maharashtra, Odisha, Chhattisgarh, Jharkhand, Telangana, Andhra Pradesh, Karnataka, Tamil Nadu and West Bengal etc. Such areas may not be considered degraded always as those might also be providing eco-system services. However, a large chunk of these areas are in various stages of degradation and need to be attended to for qualitative enrichment. Hence, these States require innovative policy / legal mechanism to bring such degraded forest land under wise-use. Most of these degraded forest land can also be taken up for afforestation and production forestry.

8.6 In addition, identifying additional 9% of the land outside forest areas suitable for afforestation is a very difficult task due to the limited land availability and competing demands of land for other land use. However, a large chunk of potential culturable waste land and other lands in the shape of linear strips are available in the country for taking up plantations. As per the Wasteland Atlas of India, 2011, an extent of 467021.16 sq. km is reported as wasteland (2008-09). About 12.6 million ha land falls under culturable agricultural wasteland. Approximately, 1.62 lakh ha land can be brought under green cover along the National Highways network. The total area of land under Railway network is 4.61 lakh hectare (Year 2015), out of which 4.14 lakh hectare is under operational and allied use and 46333 hectare land is vacant. The Ministry also expressed the view that the new Forest Policy will provide sufficient policy guideline support for taking up plantation/ afforestation on these lands to achieve the multiple objectives of the policy.

8.7 The Committee observes that the Ministry had not undertaken any field survey to determine/identify the total area/land available in the country for afforestation. The Committee, therefore, recommends that necessary action in this regard should be taken at the earliest so that the field survey could provide the necessary data to the State Governments to chalk out the necessary strategies for taking up the afforestation activities in their respective States.

8.8 During the meeting of the Committee held on the 10th October 2018, the representative of The Energy and Resources Institute (TERI) also made the following submission/suggestions before the Committee for strengthening of afforestation process in the country:

- Market support is the major constraint for motivating farmers for large scale plantations. The Government of India should come up with Minimum Support Price Scheme (MSP) for wood/timber of minimum 10-15 trees species which are remunerative for agro forestry. The Institutional Mechanism for implementing MSP scheme is needed.
- Government of India needs to make provision of funds to the tune of Rupees 10,000 crores per annum for quality planting material, institutional strengthening, capacity building and loss in the implementation of MSP Scheme for timber and other wood products.

8.9 The Committee recommends that the suggestions made by The Energy and Resources Institute should be duly considered by the concerned Ministries/Departments of the Central Government to strengthen the afforestation process of the country.

Wildlife Management and Conservation

9.1 Wildlife protection is one of the most important pillars of conservation of our biodiversity and therefore it needs to be given utmost priority in any consideration with respect to status of forest in the country. Wildlife plays an important role in balancing the ecosystem and provides stability to different natural processes of nature.

9.2 The country's wildlife is preserved in 120+ national parks, 515 wildlife sanctuaries, 26 wetlands, and 18 bio-reserves, out of which 11 are part of the World Network of Biosphere Reserves (Kanchenjunga Biosphere reserve being the most recent inclusion). This biodiversity and the consequent threat to it bring forward the need for wild life management which is concerned with the protection, propagation, and judicious control of population of rare species of animals and plants in their natural habitats.

Causes of Wildlife Destruction: Man-animal conflict, Poaching, Fragmentation of Habitat

9.3 There are two types of destruction of wildlife by man, direct and indirect. The direct destruction entails species destruction by human interference through poaching of wildlife and capturing of animals for sale of animal parts in global markets. Human beings have also indiscriminately killed wild animals for entertainment, flesh, fur, feathers and trophies etc.

9.4 The indirect destruction of wildlife is due to many reasons, out of which, habitat destruction is the most important reason for the decline of wildlife. Another important problem confronting us in the present times is global warming induced climate change, this has enormous effects on availability of food for animals to alteration in migration patterns to destruction of animal life due to alteration in temperature and precipitation. Deforestation, destruction and alteration of natural habitat is often caused due to

indiscriminate felling and logging of trees with wild animals bearing the brunt of this devastation.

9.5 Land use transformation along with industrialization, rapid urbanization and mining is causing fast depletion of plant and animal life even within protected areas. Due to all these factors, we are also witnessing increasing incidents of man-animal conflicts. In recent times, we have witnessed numerous incidents of animals straying into human habitations due to fragmentation of their habitats and rapid and unplanned urbanization. This is now a serious cause of concern because man-animal conflict can have a detrimental effect on conservation efforts, as such conflicts can undermine respect for animal life that has hitherto defined Indian cultural attitudes to animal life.

9.6 The Committee notes with serious concern that wildlife is increasingly coming under pressure in all parts of the country. Reports of man-animal conflict threaten to tear apart the respect for wildlife that has traditionally been the hallmark of conservation in India. The Committee feels that community led solutions must be explored in order to prevent fragmentation of habitats of wild lives besides policy interventions of the Ministry.

9.7 The Committee is also of the view that wildlife protection requires concerted efforts and that growing incidents of poaching, encroachment and habitat destruction should be tackled in an effective manner and it also requires implementation of various Acts such as Wildlife Protection Act, 1972 etc. and statutes in letter and spirit.

9.8 The Committee in its meeting held on 9th April, 2018 had observed that forest lands are diverted due to construction and expansion of new highways, rail tracks, creation of infrastructure and many times elephants and tigers are killed in accidents. The Committee enquired from representatives of the Ministry of Environment, Forest and Climate Change that whether the Ministry or Committee concerned, before giving the approval, analyses the consequential loss of forests, forest lands and wild lives etc. Responding to the query, the representative of the Ministry submitted that Wild Life Institute of India, Dehradun has prepared a manual on how to make roads or any linear infrastructure and what care should be taken for wild life. National Board of Wildlife has made it mandatory that any linear projects whether it is a rail tracks, roads or canals or transmission lines, they have to follow the guidelines when the clearance is given particularly in the eco-fragile and wild life areas.

9.9 It was also submitted that Ministry has taken up this issue with the Ministry of Road Transport and Highways and persuaded them to invest little extra if required but spare the natural resources and wherever possible take a detour and completely leave it.

9.10 During the meeting, the Committee observed that some sanctuaries have roads / highways within its periphery such as Mukundra Hills in Rajasthan and as such lives of the animals remain under threat. There should be proper planning to construct bye-pass outside the sanctuaries.

9.11 The Committee notes that there exists a manual prepared by Wildlife Institute of India, Dehradun for making roads or any linear infrastructure and what care should be taken for wildlife and National Board of Wildlife has also made it mandatory that any linear projects whether it is a rail tracks, roads or canals or transmission lines, they have to follow the guidelines when the clearance is given particularly in the eco-fragile and wildlife areas. However, the Committee feels that this is not being followed in right earnest and even some national parks/ sanctuaries have roads / highways within its periphery. Therefore, the Committee recommends

that prior to approval of any infrastructural/ development projects, this aspect must be looked into by the competent authorities or the concerned agencies. Further, the Committee hopes that Ministry shall sensitize the Ministry of Road Transport and Highways while considering the highway projects, and persuade them to spare the natural resources as well as wildlife sanctuaries/ national parks/ animal corridors etc. at the planning stage itself and wherever possible take a detour and completely leave it.

9.12 The Committee observed that lion population in Gir forest, Gujarat is decreasing due to one reason or the other. There are many unprotected wells; lions sometimes fall down in these wells, leading to their deaths. Frequent fights amongst the lions and man-animal conflicts can also be attributed for reduction in number of lions. Besides, poaching of tigers is going on unabated and consequently, Sariska had become tiger less a few years back. However, a real effort was made to populate it again.

9.13 The Committee also observed that there is scarcity of water in some States like Rajasthan and as such wild animals of sanctuaries face problem of availability of drinking water. There is no mechanism or arrangement for providing drinking water to animals. They have to solely dependent on rain water. This problem leads to deaths of several wild animals.

9.14 The Committee hopes that unprotected wells of all wildlife sanctuaries/ national parks of the country including the Gir Forest in Gujarat would be covered properly in order to save the wild animals falling into these wells and losing their lives. Also, the Ministry should take up the issue of non-availability of drinking water in various sanctuaries/national parks with the State Governments and their respective Forest Departments in order to make necessary arrangements for providing drinking water to animals.

9.15 The Committee sought status report from the Ministry of Environment, Forest and Climate Change regarding recent deaths of 23 lions in Gir forest, Gujarat within a very short span of time i.e. September- October, 2018. In response, the Ministry submitted status note to the Committee wherein it was informed that Ministry had sent a team which had reported that cause of deaths of these lions were infighting, infanticide and ill health that could be diagnosed by proper investigation by wild life health experts. The samples collected from the lions were sent to National Institute of Virology, Pune, Indian Veterinary Research Institute, Bareilly, U.P., Veterinary College, Junagarh and Forensic Science Laboratory, Junagarh which confirmed that 4 lions died due to Canine Distemper Virus (CDV). The Committee was further informed that intensive administrative efforts were initiated to import the vaccine from US which was received by Govt. of Gujarat on 5th October, 2018. Thereafter, the situation was under control.

9.16 The Committee expresses its deep concern over the deaths of 23 nos. of lions within a short span of time i.e. September- October, 2018 in Gir forest, Gujarat. Out of these 23 lion deaths, 4 nos. had Canine Distemper Virus (CDV). The Committee recommends that Ministry should direct the various State Governments and their respective Forest Departments to take all necessary preventive measures in all the wild life sanctuaries across the country to avoid the situation like Gir forest in Gujarat. The Committee is also of the opinion that requisite steps to contain spread of any type of virus should be taken. The patrolling mechanism and constant vigil inside the wildlife sanctuaries and national parks also needs to be strengthened.

9.17 The Committee also observes that infighting amongst the lions of Gir forest, Gujarat might be due to over population of the lions in specific areas. The Committee recommends that wild life experts may be consulted for exploring re-locating/shifting some of the lions in nearby areas/other sanctuaries, if feasible.

Status of Tiger Reserves

9.18 India is known to encompass several lush green forests. Many of these have even been turned into tourists spots. People from far and wide visit these to experience the wilderness and enjoy the serenity they offer. As a part of the study on the subject, the Committee visited the Tadoba-Andhari Tiger Reserve, Chandrapur, Maharashtra on the 25th April 2018 and Corbett Tiger Reserve, Uttarakhand on the 1st June 2018. The Committee also held discussions with the representatives of some local NGOs, Governments of Maharashtra/Uttarakhand and Union Ministry of Environment, Forest & Climate Change on the environmental issues specific to the Tadoba-Andhari Tiger Reserve and Corbett Tiger Reserve.

Tadoba-Andhari Tiger Reserve

9.19 The Committee was informed that Tadoba-Andhari Tiger Reserve is situated in the Eastern part of the Maharashtra State. It consists of core area and the buffer area. The core area of Tadoba-Andhari Tiger Reserve consists of Tadoba National Park (116.55 sq. km) and Andhari Wildlife Sanctuary (508.85 sq. km). The total area of the Tiger Reserve including Core and Buffer area is 1727.17 sq. km. It includes 1101.77 sq. Km of forest area and 401.49 sq. Km of revenue area. It has important source population of tigers. Besides, 80 species of mammals, 280 species of aves, 54 species of reptiles, 11 species of amphibians and 84 species of pisces are found in Tadoba-Andhari Tiger Reserve. 667 species of flora are also found in Tadoba-Andhari Tiger Reserve. Tadoba-Andhari Tiger Reserve is an important catchment area of Irai and Andhari river and is a major source of livelihood to the people living in its surroundings.

9.20 The Committee sought to know about the population of tigers in the park and prey species in the tiger reserve. The Committee was informed that long term monitoring of tigers, co-predators and prey species in Tadoba-Andhari Tiger Reserve is being carried out since last 5 years. There had been a healthy rise in the population of tigers and prey species in the past 5 years. The estimated tiger population in the park was as under :

Year	Estimated Tiger Population
2012	49
2013	61
2014	72
2015	88
2016	86
2017	86

9.21 The Committee desired to know about the tourism activities in the Tadoba-Andhari Tiger Reserve. The Committee was informed that in the past 5 years, Tadoba-Andhari Tiger Reserve has seen rise in the number of tourists. Tourism is an important source of livelihood for guides, gypsy owners, drivers and people working in resorts and other facilities. It was also informed that indirect employment avenues have also been generated due to eco-tourism in and around Tadoba-Andhari Tiger Reserve. The

representatives of Government of Maharashtra present in the meeting also provided the following details of the tourists and income generated through tourism :

Year	No. of Tourists	Revenue (in Rs.)
2012-13	86557	1,75,36,384
2013-14	105844	2,33,47,448
2014-15	111608	3,33,97,502
2015-16	131869	4,82,87,668
2016-17	140294	6,00,70,779
2017-18	172904	6,78,18,095

9.22 The Committee notes with satisfaction that the number of tourists has been steadily increasing in the Tadoba-Andhari Tiger Reserve since 2012-13 and it has positively impacted the revenue generation through wildlife tourism, thereby creating indirect economy in the area. However, the Committee would like to caution that the tourism in the tiger reserve must be regulated as per the guidelines of the National Tiger Conservation Authority (NTCA) only. Further, the income generated from tourism should be ploughed back in the development of the tiger reserve and for the development of the villages located in the buffer area of the tiger reserve.

9.23 Some of the representatives of the NGOs present during the meeting drew attention to the fact that the wildlife in Tadoba-Andhari Tiger Reserve is susceptible to threats such as poaching, encroachment, forest fires, electrocution, drowning in open wells, epidemics, illicit felling, grazing etc. The Committee desired to know as to what steps had been taken to provide safety to the wild animals from the above mentioned threats. In response, the Committee was informed of the following measures being taken by the park administration:

- (i) Three squads of STPF (Special Tiger Protection Force) regularly patrol the entire area. There is a network of 61 protection huts manned by forest staff and locals. Regular patrolling is being carried out by the staff located at protection huts.
- (ii) The cases of encroachment are being dealt with in accordance with the provisions of Forest Rights Act and Indian Forest Act, 1927.
- (iii) All the open wells in buffer (420 nos.) have been covered with parapet walls.
- (iv) To reduce the incidences of electrocution, regular patrolling is carried out along the electricity lines. Solar fencing have been supplied to 1502 farmers.
- (v) Regular immunisation of the cattle around the periphery of the park is carried out.
- (vi) In order to reduce the illicit felling of bamboo, alternative employment opportunities are being provided to the locals in tourism, making value added products, etc.
- (vii) Grazing passes are being provided to the locals and the grazing is limited for these cattle only.

9.24 During its visit to the Tadoba-Andhari Tiger Reserve, the Committee observed a very good representation of women in the staff of the reserve and enquired about the same during the meeting. The Committee was informed that in Tadoba-Andhari Tiger Reserve, 33% of the staff is women. It is due to the prevalent policy of the Maharashtra Government that the women are represented adequately in the frontline staff as well as in officer cadre. The presence of women staff has resulted in gender sensitive

administration while dealing with villagers of the Eco-development Committees. Women have also played better role in protection.

9.25 During the meeting, the Committee stressed upon the need to ensure the availability of sufficient drinking water in the tiger reserve for the wildlife. The Committee was informed that in order to ensure that sufficient drinking water to the wildlife during the summer, various initiatives have been taken by the Tadoba-Andhari Tiger Reserve administration. There are 76 natural and 33 artificial water holes in the core area. While there are 97 natural water holes and 86 artificial water holes in the buffer area. 18 water holes in the core area and 83 water holes in the buffer areas have been desilted in the last three years. 46 solar pumps in the core and 41 solar pumps in the buffer area have been installed on the water holes to ensure availability of water during the pinch period.

9.26 The Committee takes note of the steps taken to provide safety to the wild animals from the various threats in the forests and to ensure the availability of sufficient drinking water in the tiger reserve for the wildlife. The Committee appreciates the involvement of women in forest force in tiger reserves and recommends that the Ministry of Environment, Forest & Climate Change should impress upon other State Governments to follow suit and take requisite steps for the induction of women in the forest departments, especially in wildlife sanctuaries.

9.27 The Committee then sought to know about the important environmental issues concerning the Tadoba-Andhari Tiger Reserve. The Committee was informed that an irrigation project is proposed on the Human River which has the potential to cut-off the tiger corridor between Tadoba-Andhari Tiger Reserve and Bramhapuri Forest Division that connects Satpuda-Maikal Landscape. Further, the Chandrapur-Mul-Gadchiroli road and Nagpur-Umred-Nagbhid-Bramhapuri road were proposed to be four-laned which may result in blocking of movement of animals across the corridors. It was further informed that there are coal mines of Western Coalfields Limited (WCL) and a thermal power plant of Chandrapura Thermal Power Station (CTPS) along the southern border of the tiger reserve.

9.28 The Committee observes that Tadoba-Andhari Tiger Reserve has emerged as one the most important tourist destinations for wildlife lovers and enthusiasts as a result of which the revenue generation by the tiger reserve has seen a consistent increase during the last few years. The tiger reserve has also become an important source of livelihood for a large number of people in the area. In this backdrop, the Committee is constrained to note the environmental issues pertaining to the Tadoba-Andhari Tiger Reserve brought to the notice of the Committee and is of the view that these issues deserve a serious consideration. The Committee, accordingly, recommends that while establishing the irrigation project on the Human River, it should be ensured that the tiger corridor between Tadoba-Andhari Tiger Reserve and Bramhapuri Forest Division that connects Satpuda-Maikal Landscape is not cut-off. Similarly, it should be ensured that movement of animals across the corridors is not the least restricted while four-laning the Chandrapur-Mul-Gadchiroli road and Nagpur-Umred-Nagbhid-Bramhapuri road. The Committee also recommends that the environmental assessment of the coal mines of Western Coalfields Limited and the thermal power plant of Chandrapura Thermal Power Station located along the southern border of the tiger reserve on the activities of the wildlife needs to be carried out at the earliest and remedial measures in respect of adverse impact of the same be taken on priority. The Ministry should also consider

carrying out environmental assessment of other wildlife sanctuaries/parks affected by such industries/power plants.

Corbett Tiger Reserve

9.29 The Committee was informed that Corbett is located on the foothills of Himalayas in Uttarakhand, spread over three districts, viz. Pauri, Nainital and Almora. The rivers Ramganga, Pallaen and Sonanadi flow through the valleys. By and large, the reserve is spread over Bhabar and lower Shivalik region with a deep water table. The tract is porous with boulders and sand deposits. Total area of the tiger reserve is 1288.31 sq.km., out of which area of core is 821.99 sq.km. and that of buffer is 466.32 sq.km. The faunal diversity is tremendous and around 40 threatened species have been documented (4 critical, 10 endangered and 26 vulnerable). Tiger and elephant are the charismatic mammals, besides a large array of co-predators (leopard, small carnivores), ungulates (sambar, hog deer, spotted deer), birds, reptiles (gharial, crocodile) and fishes.

9.30 During the meeting of the Committee held on the 1st June 2018 with the representatives of some local NGOs, Government of Uttarakhand and Union Ministry of Environment, Forest & Climate Change, the representatives of the Civil Society/NGOs/local representatives present during the meeting brought out the following points:

- (i) There had been massive encroachment in the national park area and the corridors. Not only the villagers but some of the Government Departments have also encroached upon the national park area.
- (ii) Increase in tourism was stressing the infrastructure available. Since there were already a large number of hotels in the area, no further expansion in the number of hotels should be allowed.
- (iii) Some hotels and resorts were dumping waste into Kosi river which is considered to be the lifeline of Corbett Tiger Reserve.
- (iv) There were a very small number of toilets in the area and most of the people went to relieve themselves in the open only.
- (v) There was an urgent need of a proper solid waste management system and garbage disposal should also be suitably attended to.
- (vi) Instances of man-animal conflict were cited. Some people complained that wild animals entered their houses. A solar fencing had been erected earlier which is no longer functioning and needs to be repaired.
- (vii) There was water scarcity in the area and people had to get water from tankers.
- (viii) Norms for noise pollution were not being followed. However, no action was being taken by the local authorities on the complaints made in this regard.
- (ix) Tourism industry has directly and indirectly provided employment to thousands of people. Policies of the administration should not be biased towards them.

9.31 The Committee feels that the genuine demands of the local people must be looked into administratively by the local authorities. The requirement of toilets for the people of the area must be given priority. Further, necessary action also needs to be taken for providing a proper garbage disposal and solid waste management system.

9.32 The Committee desired to know about the population of tigers in the park. The Committee was informed that the reserve has the highest tiger density in the country and is an important tiger source area for the entire landscape. As per the 2014 country level assessment using the refined methodology, the tiger estimate for the Corbett landscape is 215 (ranging from 169-261) with an increasing trend. The forest divisions surrounding the reserve like West Terai, Lansdowne and Ramnagar divisions also support resident tigers. Elephant is also one of the prime species here. It was also informed that since the Corbett landscape has high tiger density, monitoring tiger source populations in Corbett and surrounding divisions is an important issue. The ongoing M-STriPES and Phase-IV monitoring in Corbett is being mainstreamed in the adjoining divisions with creation of camera trap tiger ID data base with periodic tallying.

9.33 The Committee was further informed that there has been a significant reduction in the anthropogenic grasslands owing to submergence under Kalagarh Dam, besides gregarious growth of woodland species. This changed ecological setting has dispersed the hog deer population to small pockets. The elephants also contribute towards manipulation of the habitat by bringing down the woodland species. The core/critical tiger habitat is free of all human habitations after the Gujjar resettlement, carried out in 2013-14.

9.34 In response to a query regarding the buffer area of the tiger reserve, the Committee was informed that the buffer area of the reserve has been brought under the administrative control of the tiger reserve management in the recent past and comprises of forests subjected to past working for timber exploitation, besides plantations. The forestry operations at present are not intense and only extraction of dead and fallen timber by the Uttarakhand Forest Development Corporation has been permitted. There are few villages in the buffer zone, besides a large number (around 46) of abandoned revenue patches. However, the periphery of the buffer has many villages and human-wildlife interface issues and conflicts are numerous and frequent. Such areas have heavily used public infrastructure in the form of roads, markets, electrical transmission lines and related development. The tourism is confined largely to the eastern and southern boundary of the reserve with a large number of tourism related infrastructure.

9.35 The Committee desired to know about the encroachments in the corridor and tiger reserve area and the action taken in this regard. The Committee was informed that as many as 44 resorts and hotels in the vicinity of the Corbett National Park were facing action for encroaching revenue and forest land around the tiger reserve, including the catchment area of the Kosi river that passes through the Corbett Tiger Reserve. However, none of the encroachments were inside the tiger reserve. It was also informed that 20 years ago, the area had only 20 resorts which had grown to 150 resorts now. The Uttarakhand High Court has put restrictions on establishment of resorts within 2 km. area of the Corbett reserve.

9.36 The Committee is constrained to note that there has been massive encroachment in the revenue and forest land around the tiger reserve, including the catchment area of the Kosi river. The reports of some hotels and resorts dumping waste into Kosi river, which is considered to be the lifeline of Corbett Tiger Reserve, are also equally disturbing. The Committee recommends that the concerned authorities must take all lawful action in this regard and ensure that there is no further deterioration of environment in Corbett National Park and the commercial activities around the national park are regulated.

9.37 During the meeting, attention of the Committee was also brought to fact that there are several old plantations of the sixties and seventies in the forests, which include species like teak, *Eucalyptus*, *Ailanthus* and sisso. However, such plantations are largely confined to the buffer area of the reserve and several invasive weeds like *Lantana* and *Cannabis* were prevalent in the habitat. Further, the connectivity of the corridor with the Rajaji National Park was fragmented and required improvement. It was also informed that the linear development of tourism infrastructure along the highway from Ramnagar to Almora on the banks of Kosi has impacted the habitat matrix.

9.38 The Committee is aware that with majestic and swift tigers, Corbett Tiger Reserve is known as the most prestigious and oldest national park in the country. The Committee feels that the issues emerging out of the discussions of the Committee must be accorded due consideration. The Committee recommends that immediate attention should be paid to the eradication of invasive weeds like *Lantana* and *Cannabis* prevalent in the habitat to ensure conducive environment for herbivores. The connectivity of the corridor with the Rajaji National Park is crucial and should be taken up on priority. Further, all efforts should be made to ensure that the linear development of tourism infrastructure along the highway from Ramnagar to Almora on the banks of Kosi does not adversely impact the habitat matrix.

Draft National Forest Policy, 2018 and related aspects

10.1 The Committee was informed by the Ministry of Environment, Forest & Climate Change that the National Forest Policy 1988 was a quite comprehensive document encompassing all the essential policy directives for forests and wildlife management in the country. The Ministry has not observed any major flaws and shortcomings in the Policy as it has resulted in stabilizing the forest and tree cover in the country. The forest cover has increased from 6, 38,804 sq km (19.43%) as per ISFR 1989 to 7, 08,273 (21.54%) as per ISFR 2017. The assessment of tree cover was started since 2001. The total tree cover outside forests of the country was estimated 81,472 sq km (2.48%) as per ISFR 2001 which has been increased to 93,815 sq km (2.85%) as per ISFR 2017 assessment.

10.2 Further, National Forest Policy, 1988 (NFP) was enacted with the basic objectives of maintenance of environmental stability, restoration of the ecological balance. It laid emphasis on people's participation through Joint Forest Management Programme and together with Forest (Conservation) Act, 1980 helped in stabilization of country's forest area over the last two decades in spite of huge demand on forest land for development and the ever increasing pressure for forest produces.

10.3 In addition, implementation of Joint Forest Management (JFM), which came into effect in 1990 pursuant to the National Forest Policy, 1988 and its growth over the last three decades leading to creation of over 118, 213 JFM Committees across the country managing 22.94 million ha of forests. The impact of JFM on forest management and conservation has been commendable. Further, the Policy has succeed in bringing ecosystem based approach reflected in a number of central programme - like DPAP, NAP, GIM, IWMP, etc. This shows that the National Forest Policy 1988 has been a success by all means. Further, the NFP 1988 has been appreciated by the Supreme Court of India in Lafarge Judgment of 04.7.2011 in the W.P. (C) 202/1995. As such, principal aims and fundamental objectives of the NFP 1988 are still valid and the same has been considered in the new Draft National Forest Policy, 2018.

10.4 However, developments affecting forestry sector at national and international levels have necessitated incorporation of some of modifications in the forest policy, which include issues like (a) Global Warming triggered due to climate change (b) increasing demand for wood and wood products by the country (c) emphasis on use of wood as a carbon neutral renewable resource (d) making the rivers clean and perennial (e) water security and ground water recharge, etc. Accordingly, the efforts for reviewing the Policy were started in 2012.

10.5 The Committee was also provided with a brief note on Draft National Forest Policy, 2018 by the Ministry which is as under:

- The Draft National Forest Policy, 2018 has been framed in the same format as of National Forest Policy, 1988 [i.e. in 4 Major Sections- Preamble, Goal and Objectives, Essentials Principles of Forest Management and Strategy].
- Draft National Forest Policy envisages having one-third of the Geographical Area (GA) under forest and tree cover and two-third of the GA under forest and tree cover in mountainous region [Same target as of NFP 1988].
- Draft National Forest Policy, 2018 has 16 major objectives whereas previous Policy had 9 major objectives. New Policy has included additional objectives which would be helpful to safeguard the ecological and livelihood security of people, of the present and future generations, and in contributing towards achieving the national goal and ecological security of the country. The present Policy has seven essential principles of forest management. The new Policy has 15 Major Strategies spelt out in a very systemic, clear and crisp manner to achieve the objectives of the Policy.

10.6 The Committee in its meeting held on 14th May, 2018 heard the views of the representatives of the Ministry of Environment, Forest and Climate Change. Initiating the discussion, the Committee observed that the Draft National Forest Policy, 2018 emphasizes the role of forests in carbon sequestration and mitigation of climate change and it actually undermines the importance of natural forests and their other ecological and social services by equating forests with tree cover using the two terms interchangeably.

10.7 The Committee also observed that the general perception of the public is that the Draft Policy emphasizes the commercialization of forests, particularly refer to as the degraded forests, so as to serve the interests of industry and to bring the private sector in for the management of forests through the means of Public Private Partnership Model. Similarly, apprehensions have been conveyed by various stakeholders that the Draft Policy envisages curtailing of rights of tribals, and tribal communities and Traditional Forest-Dwellers in ownership and control of non-timber forest produce as also in community resources. Concerns are also being expressed that the Draft Policy aims to take away the rights of *Gram Sabhas* for management of forests and instead hands it over to the proposed centrally-controlled Corporations. The Committee feels that if too much emphasis given to Private Partnership Model in management of forests in the proposed DNFP, we might end up with losing the forest lands whether it is degraded or otherwise. The Committee, therefore, recommends that adequate safeguards be taken after due consultations with the stakeholders in order to protect the forests from over exploitation by private parties alongwith the legitimate rights of tribals and Gram Sabhas.

10.8 The Committee sought to know from the Ministry of Environment, Forest & Climate Change as to what are the basic differences in the new Draft National Forest

Policy 2018 as compared to the Forest Policy, 1988. The Committee was informed by the Ministry that the basic and essential principles, goals and objectives which were envisaged in the National Forest Policy (NFP), 1988 have also been retained in the new Draft National Forest Policy of 2018. The overall aim of the Draft NFP, 2018 is to safeguard the ecological and livelihood security of people, of the present and future generations and enhanced supply of ecosystem services that flow from forests. Vision of sustainable management of forests has also been incorporated in the new policy. Besides retaining the essential features related to management, conservation and protection of forests for environmental and ecological security, the new Draft Policy of 2018 has also incorporated few new features, in view of addressing the drastic changes in the environmental imperatives at national and international level. The new Policy attempts to deal specifically with the issues which pose challenge to the forest governance in general and sustainable forest management in particular and for the attainment of the objective of achieving the required forest and tree cover and also for meeting the Nationally Determined Contributions (NDC) of the country. The basic difference between the previous Policy and new features of the present Policy, inter-alia, includes the following:-

- Achieving the NDC targets of India as part of the climate change mitigation.
- Laying stress on forest hydrology; moisture conservation through landscape based catchment treatment plans so as to provide sustainable ecosystem services,
- Promoting agro-forestry and farm forestry in non-forest areas to enhance income of farmers and incentivizing people to actively participate in forest management and growing trees,
- Integrating Climate Change mitigation and adaption measures in forestry practices,
- Giving special attention on the management of forest in NE region for arresting degradation of forest land in the region and for maintaining forest cover and biodiversity,
- Promoting urban forestry, peri-urban forestry
- Promoting growth of wood, wood products and other forest produce and enhance their market value through value addition and certification
- Economic valuation of ecosystem services provided by the forests,
- Developing National Forest Ecosystem Management Information System,
- Ensuring effective translation of this Policy into actions and putting in place a robust monitoring and evaluation framework,
- Enhancing cooperation and inter-sectoral convergence, simplification of procedures and conflict resolution through establishment of a National Board of Forestry and State Board of Forestry,
- Good governance, skill development, implementation framework and periodic reviews.
- Enhancing productivity of forests and utilizing open and scrub forest areas which are not providing ecosystem services for meeting demands of timber,
- Afforestation in PPP mode with communities as partners in limited areas (in open and scrub forest areas and areas recorded as forests but not having forest growth only to enhance productivity and in areas outside forest)

10.9 The Committee enquired from the Ministry whether the steps envisaged in the Draft National Forest Policy, 2018 by the Ministry of Environment, Forest and Climate Change in the direction of Essential Principles of Forest Management and Strategy are adequate enough to safeguard the ecological and livelihood security of our people and in contributing towards achieving the national goal and ecological security of the country. The Committee also observed that the Ministry of Environment, Forest and Climate Change on its own, should not have taken this initiative to bring about this policy or propose a policy without the Ministry of Tribal Affairs being fully in agreement. This is very clear in the Allocation of Business Rules, 1961. The Committee further observed that actually no stakeholders' consultations had been held while preparing this Draft Policy. The Committee also observed that clear cut definition of forest should be included in the Draft Policy and there must be synergy with Forest Rights Act, 2006 and other relevant Acts which affect the tribals and other forest dwellers predominantly dependent for their livelihood on the forests.

10.10 The Director-General (Forest) and Special Secretary, while sharing the views of the Ministry on the subject, informed the Committee that the existing National Forest Policy of 1988 has completed 30 years and lot of changes have taken place calling for review and to bring a new forest policy as per the changed scenario and meeting requirement of the present and future needs. He informed the Committee that the Indian Institute of Forest Management (IIFM), Bhopal was assigned the task for preparation of a policy document after wider consultation and the report was submitted by IIFM in 2016, which after internal consultations held in Ministry of Environment, Forest and Climate Change and by the Committee constituted by the Ministry, placed in public domain for comments. The Committee was informed that the Draft National Forest Policy 2018 was circulated to all the State Governments and to all concerned Central Ministries/Departments for consultation. It was submitted that comments from Governments of Odisha, Karnataka, Kerala, Uttarakhand and Tamil Nadu have been received alongwith the comments from the Ministry of Agriculture and Farmers Welfare and Ministry of Panchayati Raj. It was submitted that the Draft National Forest Policy 2018 envisages having one-third of the Geographical Area (GA) under forest and tree cover and two-third of the GA under forest and tree cover in mountainous region. It was submitted that the Draft Policy aims to safeguard the ecological and livelihood security of the people, of the present and future generations; checking denudation and soil erosion; preservation of natural forest; reverse degradation; protection of catchment; improving productivity; increasing tree cover outside forest; ensuring people's participation in forest management; wildlife conservation and management; conservation of biodiversity; forest fire prevention; forestry extension; research and education; etc.

10.11 The Committee its meeting held on 14th May, 2018 and 10th October, 2018 respectively also heard the views of some of the non-official witnesses/NGOs/ members of civil society working in the field of environment and ecology which may be summarized as under:

10.12 The representative of Ashoka Trust for Research in Ecology & Environment (ATREE) submitted before the Committee that in India at least 25 crore people, mostly adivasis and poor, derive their livelihood from forest products. The Committee was informed that before the National Forest Policy 1988, forests had been considered as a source of raw material for industry and economic development and that large forest areas were diverted for infrastructural requirements of the country.

10.13 The Forest Policy of 1988 marked a landmark revision of forest policy. For the first time, it was acknowledged that forests served multiple goals apart from economic development, such as ecological balance, local livelihoods and industry. He submitted that Forest Policy of 1988 clearly stated that ecological balance was primary but local needs were to be given priority over industrial requirements. Furthermore, it was postulated that industries must tie-up with farmers to produce forest products on private lands, the Forest Policy 1988 articulated the need for people's involvement.

10.14 He further submitted before the Committee that the idea of ecological balance was implemented through ban on green felling in many States. Highlighting the major lacunae in the Draft National Forest Policy 2018, the Committee was informed that the draft Policy proposes to shift away from the goals laid down in National Forest Policy 1988 and prioritize production forestry. It was conveyed to the Committee that the New Draft Forest Policy proposes the idea of public private partnership in forest sector to divert the forest lands to the private players; it is also silent on the issue of usage of CAMPA funds; etc. To bridge the gaps, it was suggested that the Government should follow the road map laid down by the Joint Committee of Ministry of Environment, Forest & Climate Change and Ministry of Tribal Affairs and to strike a balance between production, livelihood needs conservation, hydrology and carbon sequestration and to allow local communities to make decision through democratic processes.

10.15 Representative of the NGO namely Environment Support Group submitted before the Committee about the lacunae in the Draft National Forest Policy 2018 and suggested that the policy has to be made jointly by the Ministry of Environment, Forest and Climate Change and Ministry of Tribal Affairs as required under Allocation of Business Rules 1961 and also keeping the synergy between the proposed policy and the Forest Right Act 2006.

10.16 It was further suggested that the policy should also be based on due consultations with all required Central Ministries, all State Governments and Union Territories and local Governments as is mandated under the provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996, Constitutional 73rd Amendment (Panchayat Raj) Act, 1992 and Constitutional 74th Amendment (Nagar Palika) Act, 1992. It was also suggested that the Ministry of Environment, Forest and Climate Change and Ministry of Tribal Affairs must develop a working paper detailing features and circulated to all the concerned Government agencies for wider consultation in the matter.

10.17 The representative of The Energy and Resources Institute (TERI) submitted before the Committee that ecological security of the nation, sustenance and livelihood needs of the people living in and around forest have the first right on forest and any economic derivative is subordinate to these objectives.

10.18 The representative of the NGO namely WWF-India stressed the need to strengthen the implementation of legal and policy instruments. To make it more robust, the environmental impact assessment process is required to be done. He also emphasized for creation of greater ownership for local communities and other stakeholders in forest development and management.

10.19 The representative of Bombay Natural History Society referring to tribal aspect, opined that there should be a thorough review of the rights that are considered and used in relation to the present and predicted livelihood options that are available to our tribal and we also need to look at the trends in rural demography vis-à-vis implications of

Government policies under implementation and the policies which are under consideration keeping in view of the increased population and present scenario.

Concerns of Ministry of Tribal Affairs

10.20 As part of its consultative process, the Committee heard the views of the representatives of the Ministry of Tribal Affairs in its meeting held on 10th October, 2018 and also sought the views of the Ministry of Tribal Affairs about its concerns regarding the Draft National Forest Policy (DNFP), 2018 in writing. Subsequently, the Ministry sent a detailed Background Note outlining the major concerns of the Ministry. The Committee was informed that the DNFP disregards the role of tribals in conservation efforts and that it does not reflect the paradigm shift in forest governance, management and conservation by the enactment of the Forest Rights Act 2006 (FRA) and the Panchayat Extension to Scheduled Areas Act, 1996 (PESA). Furthermore, it was informed that the DNFP goes against the spirit of amendment made in GoI (Allocation of Business) Rules, 1961 on 17th March 2006 whereby all matters relating to the rights of forest dwelling Scheduled Tribes on forest lands was brought under the purview of the Ministry of Tribal Affairs.

10.21 The Ministry also pointed out that a general impression that the DNFP gives a thrust to increased privatization, industrialization, and diversion of forest resources for commercialization. The Ministry conveyed to the Committee that the Public Private Partnership Models for afforestation as detailed under the Draft National Forest Policy, 2018, would open up areas over which tribals and forest dwellers have legal rights under FRA, 2006 leading to an effective dilution of the Act.

Clarifications by Ministry of Environment, Forest and Climate Change

10.22 The Committee in its meeting held on 10th October, 2018 again heard the views of representatives of the Ministry of Environment, Forest and Climate Change and the Ministry clarified its stands on certain issues of the DNFP, 2018 with regard to the concerns raised by the various stakeholders including the Ministry of Tribal Affairs. The representatives of the Ministry submitted before the Committee that concerns of the Ministry of Tribal Affairs regarding DNFP, 2018 were received by them during March-May, 2018 in different phases. Subsequent to placement of the draft policy in public domain, more than thousand suggestions/ comments were received by the Ministry and all of them have been considered. All concerns of the various stakeholders including public consultations have been taken into account while overhauling the draft policy.

10.23 They further submitted that broadly, the main concern of the Ministry of Tribal Affairs was about natural forests. The policy mainly talks of the main deliverables from the forests not the forest produce; it is basically the clean air and water security to the country. Hence, the Ministry has two-pronged approach- i.e. existing natural forests that is about 22 per cent, tree and forest coverage of 24.39 per cent, the 22 odd per cent which are natural forests which will be managed exclusively for ecosystem services and only if any timber be a by-product and where the concern of the Ministry of Tribal Affairs, that it will be in consultation with the Tribal Affairs Ministry and Gram Sabhas, has been very clearly spelt out in the policy. Only the production of timber, because timber being the only resource, which is carbon neutral, will be grown in the areas outside the forests, not in natural forests. Hence, the proposed policy permits growing trees outside the forests for meeting the timber needs of the country because the Country used to import timber and timber products to the tune of Rs.42,000/- crores annually. Therefore, the Ministry of Environment, Forest and Climate Change encourages the agro-forestry systems, farm forestry systems that will be done; the natural forests where the tribals mostly settle or they have their rights, those will be managed for conservation, for meeting the requirement of the local people and the communities, and in consultation with the

Ministry of Tribal Affairs. Regarding concern about the diversion of forest land for mining and other purposes, we have a very strong mechanism in place, as there is the Forest Conservation Act which looks into that. That also will be taken into consideration and only as a last priority; the forests will be diverted for non-forestry purposes.

10.24 The Committee was informed that during the formulation stage of DNFP, the Ministry of Tribal Affairs wasn't consulted. It was also informed that many provisions of the FRA, 2006 and PESA, 1996 have been diluted or disregarded. Therefore, the Committee recommends that Ministry of Tribal Affairs must be taken on board for wider consultation alongwith State Governments/ Local Bodies/ NGOs/ Civil society members before finalizing the Draft Forest Policy and notifying it. Further, adequate safeguards must be taken for the protection of vulnerable forest communities such as tribals and other communities who are dependent on the forest for their sustenance and survival.

Conservation of Biodiversity

11.1 India is one of 17 mega diverse countries of the world having varieties of floral and faunal species and it contributes to about 8% of the known global biodiversity. There are 16 major forest types, varying from alpine pasture in Himalayas to temperate forests, sub-tropical forests, and mangroves in the coastal line. There are 18 notified biosphere reserves in India spread over 89530 sq km. India currently has 26 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 689,131 hectares. Today there are 769 Protected areas (Pas) including 103 national parks and 544 wild life sanctuaries, covering 1,62,072.49 sq km (4.93% of total geographical area). Seven of these Protected Areas (Great Himalayan National Park Conservation Area, Western Ghats, Nanda Devi and Valley of Flowers National Parks, Sunderbans National Park, Kaziranga National Park, Keoladeo National Park and Manas Wildlife sanctuary) are designated as Natural World Heritage sites in India by UNESCO. The conservation efforts particularly in the field of Tiger Conservation have been successful. As of now India has 50 tiger reserves. The tiger population has gone up to 2226, which constitute about 70% of world' wild tiger population.

11.2 On being enquired by the Committee regarding survey carried out and documentation of the data on biodiversity of the forest areas of the country, the Committee was informed that the Zoological Survey of India (ZSI), under the Ministry of Environment, Forest and Climate Change is mandated to carry out survey and documentation of faunal diversity of the country including forest areas. The various faunal surveys conducted by ZSI have resulted in documenting diversity among species and areas with endemism that allows demarcating areas with biodiversity hotspots. The scientific studies of ZSI generate primary data on biodiversity which contribute directly to conservation and sustainable use of natural resources.

11.3 ZSI has documented faunal diversity of 22 States, 2 Union Territories, and Checklist/Database on group-wise number of species for India prepared. ZSI, through its field based surveys and identifications of animal groups from Protozoa to Mammalia, have inventoried the known animal species of the entire country comprising 100,693 species (2016) and about 5000 species discovered new to science by scientists of ZSI. The faunistic surveys in all States and Union Territories, various Protected Areas, different ecosystems of India for taxonomic studies of faunal groups from Protozoa to Mammalia have been undertaken by ZSI, which resulted in the publication of over 1500 documents.

11.4 Further, Botanical Survey of India (BSI) is the apex research organization under the Ministry of Environment, Forest and Climate Change, Govt. of India for the carrying out taxonomic and floristic studies of wild plant resources of the country. Survey and exploration of about 75 per cent of the total geographical areas of the country has been completed for vascular plants. This has resulted into a Repository of about four million National Reference Collections plant specimens with over 22000 type specimens.

11.5 The Committee further enquired about the mechanism available with the Ministry to deal with the legal as well as administrative measures for protection of biodiversity against bio-piracy. The Committee was informed that the Biological Diversity Act, 2002 is primarily aimed at regulating access to biological resources and associated traditional knowledge from the country, so as to secure equitable sharing of benefits arising out of their use.

11.6 The Committee was also informed that the National Biodiversity Authority (NBA) was established in 2003 by the Central Government to implement India's Biological Diversity Act, 2002. The NBA is a statutory body and that performs facilitative, regulatory and advisory function for Government of India on issue of Conservation, sustainable use of biological resource and fair equitable sharing of benefits of use. NBA advises the State Government in the selection of areas of biodiversity importance to be notified under Sub-Section (1) of Section 37 as heritage sites and measures for the management of such heritage sites. The Act *inter-alia* requires an applicant to seek prior approval of the National Biodiversity Authority (NBA) before making an application for any intellectual property rights which involves an invention based on biological resource and associated knowledge from India. The NBA grants approval subject to terms and conditions, which secure equitable sharing of benefits.

11.7 The Committee hopes that ZSI and BSI would continue their good work in conserving the rich & varied biodiversity of our country through documentation of our animal and faunal diversity using modern techniques of conservation and that will also promote preservation of relic, endangered and threatened species.

International Commitments: Carbon Sequestration/Carbon stock in the Country

12.1 Climate change has emerged as the leading environmental issue globally in the recent past. The resulting variability of climate change poses serious threat to the environment and the quality of human life all over the world. It is for this reason, the parties to the United Nations Framework Convention on Climate Change (UNFCCC) have undertaken a comprehensive exercise to address the issues of climate change adaptation and mitigation. Forests play an important role in mitigation and adaptation of climate change as forests sequester and store more carbon than any other terrestrial ecosystem and are an important natural 'brake' on climate change.

12.2 The Secretary, Ministry of Environment, Forest and Climate Change during the meeting of the Committee held on 9th April, 2018 informed the Committee that one of our global commitments, for which forest is very important, is our commitment for adding an additional 2.5 to 3 billion tonnes of CO₂ equivalent by 2030. Presently, the carbon stock in the country is about 7 billion tonnes which is equivalent to 25 plus billion tonnes of CO₂ equivalent. We are growing at about 35 million tonnes every year. If this growth continues till 2030, we can add about 1.9 billion tonnes of CO₂. However, the Country will still be short of our global commitment by about 1.1 billion tonnes of carbon stock which is a cause of worry. Therefore, the Ministry are designing schemes to achieve this

target, which are being implemented by the State Governments and most of the funding is also done by the State Governments. Government of India does very little direct funding in increasing forest cover.

12.3 Further, during the meeting of the Committee held on 10th October, 2018 the representatives of the Ministry of Environment, Forest and Climate Change submitted before the Committee that land area of India is 2.4 per cent of the world, whereas, we support 17 per cent of the population and 18 per cent of the domestic cattle of the world respectively. Not only that, our population is so forest-based that their economy is very intricately linked to the forests. Despite this fact, India is among the top ten countries as far as the forest cover and the rate of increase of forest is concerned. That is because of the people's involvement with the forest and this is the main reason that the Country has been able to protect the forest although the per capita forest of India is one-tenth of world average. In broad terms, India is committed to sequestering 2.5 to 3 billion tonnes of carbon dioxide equivalent in the forests by the year 2030.

12.4 On being enquired by the Committee as how this will be achieved, the representative of the Ministry submitted that they have put in the Draft National Forest Policy to have a two-pronged approach for that. They informed that in the natural forests, the carbon dioxide is more in the soil than the ground flora and hence, New Forest Policy stresses the need of enhancing the quality of the forest. The first strategy of the Government in the policy is that we will use the natural forest as a sink to improve the quality and that will be done by a catchment area treatment plan. By treating the catchments, we can provide water security to the country and also accelerate the carbon sequestration in the natural forests.

12.5 The second strategy is that our total forest and tree cover is 24.39 per cent whereas our National Policy envisages 33 per cent. Hence, we will be focusing more on agro-forestry systems. We will have the agricultural crop, what will commensurate with those tree crops so that we grow the trees outside the forests because the trees are the carbon-neutral resource. If we are able to grow more trees outside the forest and enhance the tree cover, it will not only sequester carbon dioxide but the nation will also have more renewable resources as wood for our use. In this regard, the country's slogan is 'Grow more wood, use more wood' so that we have more wood products and then we can not only save on our foreign exchange but also enrich own forests.

12.6 **Submission of The Energy and Resources Institute (TERI):** The Committee was provided with a background note on the subject in which it was submitted that the country has the scope of converting around 30 million hectare open forests into moderately dense forests and part of moderately dense forests into dense forests through conservation approach and assisting natural regeneration. We will be able to achieve around one third of the target with conservation approach. Rest two third target could be met through afforestation on non-forest land. Since forest is a concurrent subject the responsibility of Central Government is restricted for policy formulation and planning while responsibility of State Government is management, development and conservation of forests and hence, the target has been distributed among the States on the basis of their Forest cover and total area of productive wastelands.

12.7 It was further submitted that India has potential of achieving additional 3 billion tonnes of CO₂ equivalent sequestration by 2030 with conservation and afforestation approach on forests and non-forest land. Around INR 60000 crore per annum is needed till 2030 for forest development, livelihood activities, implementing MSP scheme for agro-forestry and providing LPG to the forest dependent communities. Innovative

financial mechanism to obtain forest based carbon finance through Carbon Neutrality Policy will boost the efforts towards achieving the target. It is not possible to achieve this target without involvement of people, private sector and other Government Departments. In the recent past, some States like Uttar Pradesh, Maharashtra and Andhra Pradesh etc. have shown commitment towards having special drive for afforestation. The same kind of commitment is needed from Central Government and other State Governments on regular basis.

12.8 The Committee is in agreement with the views expressed by the The Energy and Resources Institute (TERI) as well as the Ministry that India has potential of achieving additional 3 billion tonnes of CO₂ equivalent sequestration by 2030 with conservation and afforestation approach on forests, degraded forests and non-forest land. However, the Committee feels that the Country needs to have a holistic approach and at the same time concerted efforts are required from one and all and peoples' involvement, particularly the tribals & traditional forest dwellers, for achieving this important commitment of United Nations Framework Convention on Climate Change (UNFCCC) for addressing the issues of climate change adaptation and mitigation.

GENERAL OBSERVATION

13.1 The importance of forests cannot be underestimated. Forests are more than simply picturesque retreats to enjoy. Infact, every one of us is dependent on forests for our survival. Beyond providing the wood we use for paper and furniture and the oxygen we breathe, they provide essential ecosystem services and regulate our water cycle, prevent soil erosion, protect watersheds, provide a habitat for wildlife and forest communities, sustain biodiversity and supply food and shelter. Forests also play a vital role in regulating the earth's climate. Forests contribute substantially to climate change mitigation and adaptation and to conserving biodiversity. Forests prevent land degradation and desertification, and reduce the risk of floods, landslides and avalanches, droughts, dust storms and sandstorms and other natural disasters. In many regions, forests also have important cultural and spiritual value. Forests also serve as a storehouse of genetic materials for the development of medicines, providing components for three quarters of the top-ranking global prescription medications. Ministry of Environment, Forest and Climate Change has informed that as per sector-wise contribution of GDP of India Report by Ministry of Statistics and Programme Implementation, the contribution of forestry and logging sector in Indian economy is estimated to be 1.23 % of Gross Values Added (GVA) at current price during 2013-14, which amounts to Rs.1,28,550 crores. In view of the above, the necessity of conserving our forests cannot be overemphasized. **The Committee recommends that the Ministry of Environment, Forest and Climate Change, being the Central Nodal Ministry dealing with the subject, should make all out efforts to protect and conserve our forests, wildlife as well as invaluable biodiversity and seek the cooperation of all State/Union Territory Governments and other stakeholders to see that the country does not lag behind in this monumental task.**

Recorded Forest Areas (RFAs) in States and UTs

(Area in sq. km.)

State/ UT	Geographical Area (GA)	RFA (as revised by SFDs)			Total RFA (2017)	% of GA
		Reserved forests	Protected forests	Unclassed Forests		
Andhra Pradesh	162968	31,959	5,069	230	37,258	22.86
Arunachal Pradesh	83743	10,589	9,779	31,039	51,407	61.39
Assam	78438	17,864	0	8,968	26,832	34.21
Bihar	94163	693	6,183	1	6,877	7.30
Chhattisgarh	135192	25,782	24,036	9,954	59,772	44.21
Delhi	1483	78	24	0	102	6.88
Goa	3702	253	0	972	1,225	33.09
Gujarat	196244	14,373	2,886	4,388	21,647	11.03
Haryana	44212	249	1,158	152	1,559	3.53
Himachal Pradesh	55673	1,898	33,130	2,005	37,033	66.52
Jammu & Kashmir [#]	222236	17,643	2,551	36	20,230	9.10
Jharkhand	79716	4,387	19,185	33	23,605	29.61
Karnataka	191791	28,690	3,931	5,663	38,284	19.96
Kerala	38852	11,309	0	0	11,309	29.11
Madhya Pradesh	308252	61,886	31,098	1,705	94,689	30.72
Maharashtra	307713	49,546	6,733	5,300	61,579	20.01
Manipur	22327	1,467	4,171	11,780	17,418	78.01
Meghalaya	22429	1,113	12	8,371	9,496	42.34
Mizoram	21081	4,483	0	1,158	5,641	26.76
Nagaland	16579	234	0	8,389	8,623	52.01
Odisha*	155707	36,049	25,133	22	61,204	39.31
Punjab	50362	44	1,137	1,903	3,084	6.12
Rajasthan	342239	12,475	18,217	2,045	32,737	9.57
Sikkim	7096	5,452	389	0	5,841	82.31
Tamil Nadu	130060	20,293	1,782	802	22,877	17.59
Telangana	112077	20,353	5,939	612	26,904	24.00
Tripura	10486	4,175	2	2,117	6,294	60.02
Uttar Pradesh	240928	12,071	1,157	3,354	16,582	6.88
Uttarakhand	53483	26,547	9,885	1,568	38,000	71.05
West Bengal	88752	7,054	3,772	1,053	11,879	13.38
A & N Islands	8249	5,613	1,558	0	7,171	86.93
Chandigarh	114	32	0	3	35	30.70
Dadra & Nagar Haveli	491	199	5	0	204	41.55
Daman & Diu	111	0	0	8	8	7.21
Lakshadweep	30	0	0	0	0	0.00
Puducherry	490	0	2	11	13	2.65
Total	32,87,469	4,34,705	2,19,432	1,13,881	7,67,419	23.34

Source : State Forest Departments

[#]Includes Jammu & Kashmir area outside LoC that is under illegal occupation of Pakistan and China

Forest Cover as per ISFR 2017, State-wise

State	Geographical Area as per census	2017 Assessment			
		VDF	MDF	OF	Total Forest
Andhra Pradesh	162968	1957	14051	12139	28147
Arunachal Pradesh	83743	20721	30955	15288	66964
Assam	78438	2797	10192	15116	28105
Bihar	94163	332	3260	3707	7299
Chhattisgarh	135192	7064	32215	16268	55547
Delhi	1483	6.72	56.24	129.45	192.41
Goa	3702	538	576	1115	2229
Gujarat	196244	378	5200	9179	14757
Haryana	44212	28	452	1108	1588
Himachal Pradesh	55673	3110	6705	5285	15100
Jammu & Kashmir *	222236	4075	8579	10587	23241
Jharkhand	79716	2598	9686	11269	23553
Karnataka	191791	4502	20444	12604	37550
Kerala	38852	1663	9407	9251	20321
Madhya Pradesh	308252	6563	34571	36280	77414
Maharashtra	307713	8736	20652	21294	50682
Manipur	22327	908	6510	9928	17346
Meghalaya	22429	453	9386	7307	17146
Mizoram	21081	131	5861	12194	18186
Nagaland	16579	1279	4587	6623	12489
Odisha	155707	6967	21370	23008	51345
Punjab	50362	8	806	1023	1837
Rajasthan	342239	78	4340	12154	16572
Sikkim	7096	1081	1575	688	3344
Tamil Nadu	130060	3672	10979	11630	26281
Telangana	112077	1596	8738	10085	20419
Tripura	10486	656	5246	1824	7726
Uttar Pradesh	240928	2617	4069	7993	14679
Uttarakhand	53483	4969	12884	6442	24295
West Bengal	88752	2994	4147	9706	16847
A&N Islands	8249	5678	684	380	6742
Chandigarh	114	1.36	13.82	6.38	21.56
Dadra & Nagar Haveli	491	0	80	127	207
Daman & Diu	111	1.4	5.82	13.27	20.49
Lakshadweep	30	0	17.04	10.06	27.1
Puducherry	490	0	17.6	36.07	53.67
Grand Total	3287469	98158	308318	301797	708273