

DEMAND No.54

POLICY NOTE 2020-2021

FOREST DEPARTMENT

INTRODUCTION

‘காடுகள் செய்வோம்
நல்ல நாடுகள் செய்வோம்
காக்கை குருவி எங்கள் ஜாதி
காடும் மலையும் எங்கள் வீடு’

Great Tamil Poet Bharathiyar states,

"By creating good forests let us create good country",

"Birds are our creed, Forests and mountains are our home"

Accordingly, Tamil Nadu Government is committed to conserve, protect and grow healthy forests and biodiversity.

Forests are among the top natural resources bestowed upon humankind. The survival and well-being of any nation depends on sustainable social

and economic progress, which satisfies the needs of the present generation without compromising the interest of future generation. In order to ensure ecological security to the mankind, clean water and fertile soil are essential. Forests ecosystems provide fresh air, water resources, fertile soil, biodiversity and environment. They provide us with both tangible and intangible resources without which the existence of living beings would be threatened. Vast sections of rural society including a majority of the tribal are directly dependent on forests for their livelihood. Forests preserve soil and humus content which act as a porous reservoir for retaining water and gradually releasing it in a sustained flow over a period of time.

Forests provide a diversity of ecosystem services including recycling carbon-dioxide, acting as a carbon sink, aiding in climate regulation, purifying water, mitigating natural hazards and

serving as a genetic reserve. Forests also serve as recreational areas. They influence local weather patterns, lowering scorching temperatures in the tropics and driving local cloud systems that provide life-giving rainfall.

Forest degradation will have adverse impact on these life supporting systems. Ever increasing population and growing industrialization are posing a serious challenge to the preservation of our terrestrial and aquatic ecosystems. Overexploitation of our resources due to rapid population growth has led to degradation of forests and conversion of agricultural lands. Rapid urbanization has resulted in mushrooming of slums, disappearance of wetlands, polluted air and water due to overflow of sewerage. Therefore, eco-friendly development is the need of the hour. A balance has to be struck between

the growth of the economy and the maintenance of the balanced ecosystem.

The Government of Tamil Nadu recognizes the prospects of a balanced ecosystem in advancing the socio-economic development of the State. The State continues to be equally concerned about vulnerability of natural resources on account of climate change and is committed to conserve and sustainably manage forests and wildlife, while meeting the livelihood needs of the forest dependent communities.

The Forest department with its full wisdom, is in the continuous process of formulating schemes to achieve the objectives mentioned under the umbrella of National Forest Policy 1988, State Forest Policy 2018, Sustainable Development Goals (SDGs) and the Vision 2023 document.

The scope of increasing forest and tree cover lies in bringing more areas outside forests under

tree cover and realizing the current situation, the Forest Department is taking all efforts in this direction. At the same time, focus is given to improve the quality of forests by restoration of degraded forest areas, soil and moisture conservation works, habitat improvement, empowerment of local communities and public at large by creating awareness and infusing encouragement by way of participation in workshops and their capacity enhancement.

2. NATIONAL FOREST POLICY, 1988

The National Forest Policy, 1988 was launched with the principal aim of ensuring environmental stability and maintenance of ecological balance including atmospheric equilibrium, which is essential for the sustenance of all life forms - plants, animals and humans. The main mandate of the National Forest Policy is to bring one third of the country's geographical area under forest and tree cover.

3. STATE FOREST POLICY, 2018

In consonance with National Forest Policy, the Tamil Nadu Government fully recognizes the challenges and has formulated its State Forest Policy 2018 with specific emphasis on the following principles:

- Nurturing a rich heritage and preserving ecology of distinct geographical characteristics of the State;
- Enhancing the forest and tree cover;
- Enriching wildlife habitats on scientific principles, without sacrificing the livelihood needs of the local communities specially the tribal communities and the other forest dwellers.

4. SUSTAINABLE DEVELOPMENT GOALS

Sustainable Development Goals (SDGs) were conceived at the United Nations Conference on

Sustainable Development in Rio de Janeiro in 2012. The objective was to produce a set of universal goals that meet the urgent environmental, political and economic challenges facing our world. There are 17 Sustainable Development Goals and 169 Targets. The Sustainable Development Goals are universally acceptable goals that balance 3 dimensions of sustainable development, namely, Environmental, Social and Economic. Niti Aayog has brought Central Sector Scheme introduced as Sustainable Development Goals implementing through the Planning and Development Department and announced the scheme during 2019-20. Most of the goals and targets in the SDGs have environmental dimensions. Twenty five specific targets have been identified for priority implementation by the Ministry of Environment, Forests and Climate Change (MoEF&CC).

Government of Tamil Nadu is committed to achieve the SDGs, which is reflected in the integrated approach of development plans and thrust on conservation. Goal No.14 (Life below water) and Goal No.15 (Life on Land) are related to Forest Department.

SDG 14 aims to promote use of our ocean resources sustainably and aims to protect the marine and coastal ecosystems from pollution and ocean acidification. Tamil Nadu is undertaking serious efforts to protect and improve its marine and coastal ecosystems including coral reefs, mangrove conservation, estuaries, tidal flats, islands and sandy beaches.

The targets under Goal 15 by 2030 is to increase the trees outside forests, improve and protect the forest cover in forest areas, restoration of degraded areas, protect the bio-

diversity on land and water for achieving the goal of 33% forest and tree cover.

Goal No. 14 and Goal No.15 are linked to all other goals directly or indirectly. A multi-pronged strategy has been designed with the involvement of all the line departments to fulfil the agreed commitments by 2030.

The Forest Department proposes to implement new schemes such as establishment of Marine Elite Force, restoration of Ennore Mangroves, conservation of mangroves under various schemes, to enhance the area under mangroves as well as to maintain the existing area under coral reefs by the year 2020, in order to achieve the SDG Target 14.2, apart from the ongoing schemes. The Gulf of Mannar Biosphere Reserve supports the conservation of Marine biodiversity and enhancement of livelihood for the local communities. Conservation and Management

of Mangroves and wetlands are a priority area of the Tamil Nadu Forest Department.

To conserve atleast 10 per cent of coastal and marine areas (SDG Target 14.5), Forest Department has proposed to bring Kazhuveli wetland under Protected Area Network. Kazhuveli is an old mangrove forest located in Villupuram District which has been degraded over a period of time. It is one of the prioritized wetlands of Tamil Nadu.

Conservation, restoration and sustainable use of terrestrial and inland fresh water ecosystem and their services in particular forest, wetlands, mountains and dry lands are the target under SDG 15.1. Forests play an important role in maintaining hydrological balance and river flows particularly in lean season. The multitude of forest catchment is being protected through massive soil

and water conservation programmes and treatment measures.

To arrest the deforestation, restore the degraded forests and substantially increase afforestation and reforestation globally (SDG 15.2), Forest department is implementing Massive Tree Planting Programme (MTP), Teak plantations in Padugai lands, planting programme in National Highways Authority of India (NHAI) lands, State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT) lands, Tree Cultivation on Private Land (TCPL) under Tamil Nadu Biodiversity Conservation and Greening Project (TBGP). The India State of Forest Report 2019 (ISFR) indicates that the Forest Cover (Tree patches in area of > 1 ha) in Tamil Nadu has increased by 8,302 ha. as compared to the previous assessment reported in ISFR 2017. Tree cover (scattered trees and Tree in patches occurring in area of < 1 ha. outside forests) in Tamil Nadu is presently 4,83,000 ha.

which has increased by 15,900 ha. as compared to the previous assessment reported in India State of Forest Report (ISFR) 2017. Main reason for the increase in forest and tree cover is due to State Government's sustained efforts in undertaking plantation and conservation activities. Sincere efforts are being taken to combat denudation and degradation and about 6,89,000 ha. of area has been afforested under Joint Forest Management (JFM).

In order to significantly reduce the impact of invasive alien species on land and water ecosystems and to control and eradicate the more problematic species (SDG 15.8), the Forest department has taken up this activity under various habitat improvement works including Special Area Development Programme.

State Government is committed to achieve the SDG Targets by effectively implementing

various schemes and programmes as set for 2020 and 2030.

5. TAMIL NADU STATE ACTION PLAN ON CLIMATE CHANGE 2.0

The Tamil Nadu State Action Plan on Climate Change (SAPCC) has been prepared in sync with Nationally Determined Contribution, which India has committed under the Paris Agreement in 2015. The Department of Environment, Government of Tamil Nadu is Nodal department for Climate Change related activities. In light of India's Nationally Determined Contributions (NDCs) to UNFCCC, Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India have advised to revise the State Action Plan on Climate Change. Accordingly, the Department of Environment has prepared the draft Tamil Nadu State Action Plan on Climate Change 2.0 with the technical support from GIZ and with the involvement of all the line departments.

The seven sectors highlighted in the draft action plan include forest and biodiversity, coastal area management. The draft plan recognizes impending dangers to coastline due to rising temperature, degradation of coral reefs and mangroves including marine biodiversity adversely impacting the livelihood of the local communities. The draft document also mentions that the development in the State has been analysed with the help of key policies which are in place vis-à-vis performance of the State. The draft SAPCC states that forests in Tamil Nadu are managed in line with the provisions of National Forest Policy, 1988, Tamil Nadu Forest Act, 1882, Forest Conservation Act, 1980 and with various ongoing schemes. The Tamil Nadu Forest Department will continue to design and formulate such schemes like Massive Tree Planting Programme, Raising Teak Plantation, Sandal Plantations, Rejuvenation of River Basins, Agro-forestry, Compensatory Afforestation and Management and Planning Authority (CAMPA) funds, TBGP, etc. to address the issues on Climate

change in tune with Tamil Nadu State Action Plan on Climate Change.

6. TOWARDS ACHIEVING GOALS

Tamil Nadu Government has realized that, effective protection, conservation and management of forests has yielded desired results as established by various independent surveys and evaluations conducted from time to time.

7. Key result areas

Forests play a vital role in the overall development of the State. The State Government have identified Key Result Areas which impact the ecological and socio-economic security of the State. Accordingly, the Government of Tamil Nadu have identified the following 10 key result areas for the Forest department;

- i) Forest Protection and Consolidation.

- ii) Control and Management of Forest Fires.
- iii) Rehabilitation and Restoration of Degraded forests.
- iv) Conservation of Biodiversity and their genetic resources.
- v) Effective Management of Human and Wildlife conflict.
- vi) Conservation and Management of Coastal and Marine eco systems.
- vii) Mitigating / Adopting climate change through enhancement of tree cover inside and outside forests.
- viii) Water augmentation maintaining hydrological balance to ensure better flow of water in the rivers.

- ix) Strengthening of Forest Administration by timely recruitment of staff, capacity building, training and research.
- x) Conservation of Education, Ecotourism and tribal development.

The aforementioned 10 key areas have guided the department in prioritizing the policy initiatives 2020-21 as detailed below:

8. Policy Initiatives DURING 2020-21

Tamil Nadu Forest Department is committed to achieve the goals of Sustainable Forest Management with the following policy initiatives for the plan period 2020-21:

8.1 Forest Protection

Tamil Nadu State is known for its unique and rich biodiversity. It's Western Ghats sector is identified as one of the most pristine biodiversity

hotspots in the country. Due to rapid urbanization and industrialization, the biodiversity of the State is under severe stress. Protection of the forests, wildlife including marine biodiversity is the primary duty of Forest Department to sustainably maintain the ecological balance. In order to ensure protection of forest resources and enhance biodiversity, the Tamil Nadu Forest Department envisages the following strategies:

- Consolidate the forest lands by survey and demarcation of forest boundaries using advanced technologies like Differential Global Positioning Systems (DGPS), Remote Sensing and Geographical Information System (GIS) technologies;
- Develop surveillance system with the advanced technologies ;

- Strengthen infrastructure by equipping the staff with modern arms and ammunitions, communication and transport facilities ;
- Improve intelligence gathering and co-ordination with other enforcement agencies;
- Strengthen Forest Protection through recruiting frontline staff and providing specialized training to enhance highly specialised knowledge and capacity.
- Strengthen marine ecosystem protection.

8.1.1. Forest fire

The forest fires are the biggest challenges for the forest management in the State. Since the State's forests cover primarily deciduous forests, the frequency and occurrence of forest fire are more and far reaching. The State's forests are also prone to frequent forest fires due to various anthropogenic factors.

Forest fires cause wide ranging economic and ecological impacts which may vary from local to global levels. It has a direct impact on life, property and biodiversity; reduction in forest cover including wildlife habitats; degradation of catchment areas; increase in greenhouse gases resulting in global warming and depletion of carbon sinks.

In order to prevent and control forest fire, the following mechanisms are to be further strengthened:

- (i) Fire alert systems from National Remote Sensing Centre and Forest Survey of India;
- (ii) Dedicated Toll free Telephone Number to receive information on forest fire;
- (iii) Wireless and communication network;
- (iv) Creation and maintenance of fire lines;

- (v) Controlled burning;
- (vi) Infrastructures such as watch towers, water hydrant structures and vehicles;
- (vii) Strategic deployment of manpower, Improving capabilities, Providing fire fighting equipments, Strengthening Rapid Response Teams and Forest Elite Force;
- (viii) Regular patrolling;
- (ix) Training and capacity building to field staff;
- (x) Awareness creation among public, signages and providing incentives for fire protection through public participation.
- (xi) Modern tools and technologies such as drones, thermal imaging cameras, e-surveillance, artificial intelligence, etc.

8.1.2. Encroachment

Encroachment of forest lands for cultivation and other purposes continues to be the most pernicious practice endangering forest resources throughout the country. Immediate steps are being taken to control and evict the encroachments as mentioned below:

- Survey and demarcation of forest boundaries ;
- Preparation of geo-referenced maps ;
- Construction and maintenance of boundary pillars ;
- Enhancing the patrolling capabilities of the front line staff ;
- Regular co-ordination with the district officials;
- Speeding up of the Forest Settlement Process.

8.1.3. Significant step in forest settlement process - Introduction of Section 16A in Tamil Nadu Forest Act, 1882

The Forest settlement process is an effort to regulate and protect the land at the disposal of the Government, wherein the intention to declare such land as forests, after settling of claims, has already been notified. Forest land is being consolidated by survey and demarcation of forest boundaries.

A step highly significant and worth mentioning towards forest protection and biodiversity conservation in the Western Ghats in general and Gudalur (Nilgiris) (Janmam land) in particular was the amendment to the Tamil Nadu Forest Act (TNPA), 1882 (Tamil Nadu Act V of 1882) by inserting section 16A during the year 2019. An area of 12,117.27 ha. (about 29942.43 Acres) of Janmam Land declared under section 53 of Gudalur Janmam Estate (Abolition and

Conversion into Ryotwari) Act, 1969 was handed over to Forest Department. These areas are located in the Western Ghats of Tamil Nadu and rich in faunal and floral biodiversity. This amendment has simplified the procedure for declaring the Section 53 areas as Reserved Forest under TNFA, 1882 and substantially reduced the time taken for RF notification and in conservation of pristine biodiversity of the Western Ghats. Action is being taken vigorously to notify all these areas under Section 16A of the TNFA, 1882.

8.1.4. Strengthening forest protection

Protection of forests and wildlife is ensured by various Forest / Wildlife Divisions in the districts. The Forest Department strategizes the following:

- Filling up the vacant posts of front line staff;

- Intelligence gathering mechanism on illegal activities supported by network of Forest Stations;
- Strengthening vigilance and protection by 12 Forest Protection Squads, 9 Enforcement Ranges and 8 Forest Stations;
- Establishment of Mobile/ Roving Check posts in sensitive areas;
- Enhancing the capacity of "Forest Elite Force" stationed at Coimbatore and Theni districts;
- Creation of specialised Marine Elite Force for surveillance and protection of marine biodiversity;
- Modernising 112 forest check posts;
- Equipping the Protection staff with arms and ammunition for self-protection;

- Providing two way radio communication facilities to strengthen protection in all sensitive Forest and Wildlife Divisions;
- Advanced training to tackle highly challenging situations in forest protection.

8.1.5. Recruitment of Frontline Staff

The department has taken all efforts to fill up the vacancies in the field staff category by direct recruitment.

In G.O.(Ms.) No.157, E&F (FR-2) Department, dated 29.06.2012, orders were issued for constituting Tamil Nadu Forest Uniformed Services Recruitment Committee (TNFUSRC) to recruit Forester, Forest Guard, Forest Guard with Driving Licence and Forest Watcher for appointment to fill up the vacancies in the Forest Department / ARC / TANTEA / TAFORN by Direct Recruitment. In the first instance, 181 candidates have been provisionally

selected for the posts of Forester / Field Assistant in Forest Department, ARC and TAFCON.

In continuation during 2018-19, 300 Foresters, 726 Forest Guards and 61 Forest Guard with Driving Licence were recruited through online examination mode. Thereafter, during 2019-20, recruitment to 564 posts of Forest Watcher that included 99 tribal youths from 18 Districts was accomplished in online mode in a record time of 55 days as compared to at least 1 year by other recruiting agencies. The salient features of the endeavour are:

- i) The entire process of recruitment starting from notification to announcement of results was planned and completed online.
- ii) The Online examinations were conducted in multiple sessions.

- iii) Question papers were generated and uploaded in encrypted form directly by TNFUSRC one hour prior to each examination session from the question bank.
- iv) Online examination was conducted in over 150 centers spread across 25 districts.
- v) Window for Online Question Answer Challenge system was made available to ensure utmost transparency.
- vi) The Endurance Test conducted for these posts was done using RFID and GPS Technologies. Due to the use of the advanced technology, timing of candidates has been obtained with precision, with no human interference, giving no room for complaints/grievances.

- vii) The allotment of candidates to Interview Boards was done randomly which was captured on video. Interview was captured live using twin cameras.
- viii) The Online Examination has saved over 5.5 Crore A4 size paper. It amounts to saving around 8,500 trees and 10 to 15 years of effort in raising them. Hence, the name 'Green Recruitment' for this endeavor.
- ix) Several Government departments in Tamil Nadu (TNeGA/ TRB, etc) have since adopted "Online Examination" mode with the objective of eradicating any scope of malpractice.
- x) The aforesaid time bound, transparent, Mega Direct Recruitment by TNFUSRC, has reposed public faith

in "Government Delivery System" /
"Good Governance".

8.2 Conservation of Forest and Wildlife Biodiversity and Genetic Resources

Tamil Nadu has been a pioneer State in setting up Protected Area (PA) Network with establishment of Vedanthangal Bird Sanctuary as the country's first Bird Sanctuary, Nilgiris Biosphere Reserve as country's first biosphere reserve and Gulf of Mannar Biosphere as South Asia's first Marine Biosphere Reserve. Notifying 30.92% (7,073 sq. km.) of the State's forest area under PA network is a milestone in biodiversity conservation. As on date the State has constituted 5 national parks, 15 wildlife sanctuaries, 15 bird sanctuaries, 3 biosphere reserves, 2 conservation reserves, 4 tiger reserves, 4 elephant reserves and one genepool garden.

The Western Ghats is one of the 30 global biodiversity hotspots and one of the 3 mega centers of endemism in India. The Eastern Ghats also contribute to the richness of the biodiversity of the State. The State is also endowed with a unique coastline hosting rich mangroves and associated forest types.

Protection and conservation of rare and endangered species, restoration and improvement in the quality of the forests are aimed at enriching the biodiversity of the State as envisaged in the National Wildlife Action Plans. Ecological requirements and landscape specific interventions - a special focus on Biodiversity Conservation at landscape level is being attempted and encouraged.

Special efforts are being taken up to remove invasive alien (non-native) species and to encourage regeneration of native species

preferred by wildlife. Removal of invasive alien species (Lantana, Prosopis, Wattle etc.) has a great impact on restoration of ecosystems such as, increasing the area with native floral vegetation, regeneration and growth of indigenous plants, increase in fodder area available for wildlife, rich biodiversity of both protected and other forest areas, improvement in wildlife habitats by restoring original vegetation and reduction in human wildlife conflict due to availability of fodder species.

Augmentation of drinking water through natural water bodies as well as by artificial means is also being promoted for the benefit of wildlife.

Recognizing the seriousness of human-wildlife conflict situation on the forest fringe areas, multi-pronged strategies have been devised to manage the problem of human-wildlife conflicts. Both traditional methods like foot

patrolling and modern tools like Geographical Information System (GIS), Geographical Positioning System (GPS), Drones, etc. are used for managing human-wildlife conflict.

The Forest department has taken several measures that benefit both the wildlife and local human communities, promoting mutually beneficial co-existence. Nonetheless, there have been some instances of conflict which are being promptly attended to by the department through its frontline staff on day to day basis. The following measures are being taken to address human-wildlife conflict:

- i) Maintenance of wildlife habitats for availability of water and fodder resources on sustained basis.
- ii) Continuous monitoring of movement of wildlife in conflict zones.

- iii) Rescue, translocation and rehabilitation of straying wild animals.
- iv) Early warning system for alerting the people in conflict zones.
- v) Sensitizing the local inhabitants.
- vi) Prompt payment of compensation to victims for the damage by wildlife.
- vii) Protocols for the rescue and rehabilitation of wildlife straying out of forest areas.
- viii) Strengthening veterinary services for wildlife through Rapid Response Team and Mobile Veterinary Units.
- ix) Deployment of Anti-depredation squads.

Infectious diseases are a concern for the conservation of wildlife species and also cause

threats to humans and cattle. Wildlife disease is being actively monitored and managed with the help of team of veterinarians and by the Advanced Institute for Wildlife Conservation, Chennai.

8.2.1. Tamil Nadu State Biodiversity Board

Tamil Nadu State Biodiversity Board (TNBB) has been constituted in 2008 to manage the biodiversity resources of the State. The Tamil Nadu Biodiversity Rules were notified in 2017 to regulate access, benefit sharing and sustainable utilisation of biological resources outside RFs and PAs. In order to implement the provisions of the Biological Diversity Act, 2002 and Rules, the TNBB has facilitated the RD & PR Department and the District Nodal Officers (District Forest Officers) to constitute Biodiversity Management Committees (BMC) in all local bodies. Accordingly, the State has constituted BMCs in 13,604 local bodies out of 13610, viz., 12524 Gram Panchayats (GP), 385

Rural Blocks, 31 District Panchayats (DP) and 664 Urban local bodies (ULB), thus showing 99.96% achievement. The BMCs are responsible for conservation and sustainable utilization of bio-resources within its area of jurisdiction. They are also responsible for the preparation of the People's Biodiversity Registers (PBRs) for their area which will become the basis for equitable sharing of benefits under the 'Access and Benefit Sharing (ABS)' principle.

The TNBB has advised the State Government and extended the technical guidance & support to the District Nodal Officers, BMCs and the Technical Support Groups (TSG) in the preparation of PBRs. As a result, the PBRs are prepared for the 385 Blocks and 664 ULBs (1049 altogether) as on today which encompass the entire state. The efforts are being made to prepare the PBRs for all the GPs and DPs as per the Act, in a time bound manner.

The TNBB has been conducting training programmes for BMCs, District Nodal Officers, BDOs, Forest Range Officers and the Companies, in collaboration with German Society for International Cooperation (GIZ) under the purview of National Biodiversity Authority (NBA) about the provisions of the Biological Diversity Act, 2002. This will facilitate the BMCs for effective implementation of the provisions of the Biodiversity Act, 2002.

8.3 Rehabilitation and restoration of degraded forests

Degradation and vegetation changes occur continuously due to climatic and anthropogenic factors. A forest ecosystem which has lost the capacity to provide important goods and services to people and nature is considered as 'degraded forest'.

A comprehensive scheme for 'Restoration of degraded forest landscape' with community

participation is being proposed by the department at a cost of Rs.2029.13 crore and will be posed to NABARD assistance.

8.3.1. Afforestation

The State has succeeded in arresting degradation besides afforesting around 6,89,000 hectares of forest under Joint Forest Management (JFM) in the last 20 years following an ecosystem approach called "Facilitating Natural regeneration supplemented with artificial regeneration under community participation" through Externally Aided Projects. Tamil Nadu will further move towards an ecosystem approach of forest management by applying principles of "Close to Nature Forestry". Under the said approach, the focus would not only be on trees but also on shrubs, climbers, herbs, grasses, flora and fauna, soil, soil nutrients, soil moisture and the fringe human habitations that affect the ecological processes and are at the centre of ecosystem management.

The Tamil Nadu Afforestation Project (TAP) Phase I and II have shown significant result in arresting degradation of forest land, rise in groundwater level, change in cropping pattern, rise in income of the villagers.

The post project evaluation by Japan International Co-operation Agency (JICA) in 2008 for Phase I revealed that the project had a profound impact on the forest regeneration as well as the socio-economic condition of the dependent communities. TAP Phase-I was awarded overall rating of 'A' which is the highest rating given by JICA.

Phase-II evaluated during 2017-2018 revealed that the afforestation was implemented mostly according to the plan, with a high survival rate including natural regeneration and the overall rating given as "Highly satisfactory".

Besides, a Certificate of appreciation was given to Forest Department by JICA in recognition of long association and cooperation with JICA.

8.3.2. Removal of invasive and alien species

Quality of the forests depends upon the rich biodiversity it provides. Over the years, the State forests are under tremendous stress due to widespread presence of invasive and alien species and various other weeds highly impacting the habitat. Considering the importance of removal of invasive and alien species, the department is undertaking this activity under various schemes. An area of 3,028 ha. of forest land was treated at a cost of Rs 7.84 crore under Tamil Nadu Biodiversity Conservation and Greening Project (TBGP) from 2011-12 to 2018-19. Also, an extent of 1,145 ha. at a cost of Rs.2.39 crore was tackled during 2019-20 under different wildlife schemes.

8.3.3. Soil and moisture conservation works

28,725 check dams and 4,227 percolation ponds with a storage capacity of about 1,800 million cubic feet were constructed for soil and moisture conservation, besides treating various micro watersheds across the State under the Tamil Nadu Afforestation Project.

8.3.4. Community participation

Open forest land, having crown density of less than 40%, is being managed by seeking the willing participation of the local people in afforestation and protection by sharing with them the sustainable benefits accruing from such forests. Involvement of the people in improving the forests through JFM is being encouraged through the 2,317 Village Forest Committees (VFCs) in identified villages under the Tamil Nadu Afforestation Project.

Intersectoral convergence has been achieved by the involvement of other line departments in 2,147 TAP villages by undertaking of 17,618 works to the value of Rs.339.53 crore.

8.4. Trees Outside Forests (ToF)

Trees Outside Forests help mitigate climate change by storing carbon, halting land degradation, providing fuel to substitute fossil fuels and fixing nitrogen to reduce the use of fertilizers, besides increasing green cover. The projects for ToF include agroforestry systems on agricultural lands and farms, trees in the rural landscape and along roads, rivers and human settlements and trees in and around cities.

The contribution of ToF to climate change mitigation can be increased by promoting agro forestry and urban forestry. While contributing to environmental sustainability, trees provide income and a range of goods and ecosystem services thus

contributing to food security and poverty eradication. Trees in agricultural landscapes represent a globally important carbon stock: almost half of the world's agricultural land has at least 10% tree cover.

The growing stock in tree outside forests within the State of Tamil Nadu as per India State of Forest Report, 2019, is 76.30 million cu. m.

8.4.1. Agro Forestry

Tamil Nadu Forest Department is the nodal agency to implement the Agro forestry scheme in Tamil Nadu for the project "Sub-Mission on Agro forestry (SMAF) under the National Mission for Sustainable Agriculture (NMSA)" in rain deficient areas.

In order to encourage and support tree planting on private lands, the department will continuously take all efforts to make the programme people friendly by revising the Rules

and Regulations based on requirement from time to time. Web based service for processing of applications for tree cutting and transport is being provided to ensure transparency and time bound action under the "Ease of Doing Business". For encouraging tree growing in private lands a free enterprise, following specific measures will be taken:

- Formation of tree farmers cooperative societies to organize the farmers to take care of their interest and to avoid exploitation by middlemen.
- Massive awareness programmes through Panchayats, NGOs, educational institutions and media for mitigating / adapting to Climate Change within the State of Tamil Nadu.

8.4.2. Tree cultivation in Private Lands

Forest Department has been implementing people oriented scheme "Tree Cultivation in Private Lands (TCPL)" under Tamil Nadu Biodiversity Conservation and Greening Project involving, particularly the farmers, since 2012-13. This programme focusses on fallow lands and resource poor farmers. The programme aimed at planting of 7.89 crore trees of economic value and improved productivity covering a notional area of 1,43,000 ha. in 7,315 villages. Farmers have welcomed the programme as it provided remunerative land use for their fallow lands. The services of more than 100 non-governmental organizations (NGOs) spread over all the districts were utilized in the implementation of the programme. Various economically important trees like *Melia dubia* (*Malai Vembu*), *Ailanthus excels* (*Peenari*), *Tectona grandis* (*Teak*), *Gmelina arborea* (*Kumil*) amongst others were planted on

the farm lands of about 91,000 farmers spread over 1,43,000 ha. in 7,315 villages in all the districts. The farmers were encouraged to plant trees on their lands and they are rewarded by way of distribution of incentives by the department in the beginning of 3rd year of planting. So far, an amount of Rs.8.46 crore has been distributed to the farmers as incentives. The farmers are also provided technical know-how by way of giving them onsite training. The tree based assets created under TCPL are expected to improve the income of farmers considerably.

8.4.3. Urban Forestry Programme

Over the years the air quality in the urban area has deteriorated. Trees will be raised in the urban and surrounding areas under the Urban Forestry programmes with the objective of reducing air, water and noise pollution and also to improve aesthetics of these areas.

8.5 Climate change Mitigation and Adaptation

India is a signatory to different international agreements for reducing the greenhouse emissions. Climate change is affecting the world's ecosystems besides threatening the economic systems and availability of natural resources. Forest ecosystems are the primary carbon sources / sinks and are therefore integral to International Climate Policy. Carbon sequestration by growing forests has been considered a relatively inexpensive means of addressing climate change immediately.

The total Carbon stock of forests in the State including the TOF patches which are more than 1 ha. in size is 216.78 million tonnes (794.86 million tonnes of CO₂ equivalent) which is 3.04% of total forest carbon of the country.

A systematic approach for mitigating, adapting to climate change and increasing

capacity for carbon sink is being designed with various afforestation projects as mentioned in sections 8.3 and 8.4.

Climate Change mitigation is being accomplished by undertaking massive afforestation over degraded forest areas and outside forest lands such as community lands, waste lands, panchayat lands, revenue lands and farm lands, which coincide with the target under SDG 15.2. The massive effort on the part of the Government, Panchayats, Community, NGOs and others including farmers is being undertaken through multi-stakeholder partnerships and through public-private collaborative efforts.

8.6 Conservation and Management of Coastal Eco-systems:

Tamil Nadu is having a long coastline of 1,076 kms. covering 13 coastal districts. Special attention is being accorded for the management of the fragile ecosystem of coastal areas with a

thrust on mangrove forests, wetlands and the Marine National Park. Considering their vital role in the coastal ecosystem, the degraded mangrove area is being rejuvenated consistently.

The State Forest Department is taking all steps to improve and develop mangrove forests, which provide a range of ecosystem services, play a key role in stabilizing land and controlling erosion due to rising sea levels. The mangroves trap sediments, cycle nutrients, process pollutants and provide nursery for marine organisms. They also provide fuelwood, timber, fisheries, medicinal plants and are therefore valued by coastal communities. Mangroves also enhance the resilience of corals by providing a natural refuge from climate change induced thermal stress and ocean acidification.

In addition to the above functions, protection against coastal disasters such as cyclones,

tsunamis and tropical storms has been identified as an important service of mangrove ecosystems. Mangroves have important role in global climate change mitigation. They are considered significant global carbon sinks, having the largest average carbon stocks per unit area of any terrestrial or marine ecosystems.

The Gulf of Mannar Biosphere Reserve supports conservation of marine biodiversity through integration of activities of relevant departments and through community participation and adoption of scientific management principles and programmes and shall continue to provide environmental benefits to the present as well as future generations.

The coastal area along the Gulf of Mannar has more than 225 fishing villages with a population of about 2 lakh. In order to strengthen the participatory approach, 252 Village Marine

Councils (VMC) & Eco Development Committees (EDC) have been formed in the coastal villages in Ramanathapuram and Tuticorin districts. Micro credit funds were provided to the villagers for alternate income generation activities. Group enterprise activities have also been promoted through Self Help Groups (SHG) and enterprise groups. The fund support has been given on loan basis. About 2,650 SHGs are in place through this revolving fund support and 80 different alternate income generation activities / group enterprises.

8.7 Water augmentation through integrated watershed management

The State has a network of large rivers and their tributaries. Nonetheless, most rivers face different levels of challenges. Flowing eastwards, all these rivers are completely rain fed and originate from the forests in Western Ghats. There are 17 river basins, a majority of which is water stressed. There are 61 major reservoirs, about

40,000 tanks and about 3 million wells that heavily utilize the available surface water and groundwater. The average annual rainfall is about 950 mm. with bi-modal distribution. The demand for water for agricultural and non-agricultural purpose indicates a huge demand and supply gap.

Protection of forest catchment areas through massive soil and water conservation programmes are being undertaken. In order to improve the ground water table and to ensure that rivers are in healthy state, site-specific integrated watershed management plans are being prepared and implemented with active involvement of all stakeholders.

8.7.1. Management of wetlands

Tamil Nadu has a vast network of inland and coastal wetlands. However, most wetlands including the lakes and other water-bodies and generally, those in and around the urban areas,

are facing serious threats of siltation and encroachment. These wetlands and lakes perform not only multiple ecological functions but also significant economic contributions. They are rich in biodiversity, recharge ground water and provide habitat for several flora and fauna. Suitable measures are being taken to protect these water bodies and conserve them so that they continue providing environmental and economic benefits to the present as well as future generations.

In Tamil Nadu so far, 141 wetlands have been identified and are being studied. As per the estimates, these wetlands comprise of about 9,02,524 hectares, which constitute 6.92% of the total geographical area of the State. The Tamil Nadu State Wetland Authority was established under the Wetland [Conservation and Management] Rules, 2017 and is mandated with the task of policy development, implementing

regulatory functions, capacity building, research networking, communications, awareness and raising funds for wetland management. Restoration of Pallikaranai marsh land in Chennai is a pioneer effort in this direction.

8.8 Welfare of Tribal and other forest fringe communities

Forests and tribal communities are inseparable. They naturally complement each other and thus have evolved over thousands of years. Active partnership of Forest Department and tribal communities with mutual respect and trust will be beneficial for both. Tamil Nadu has 7.21 lakh tribal population as per 2011 census which constitutes 1.10% of the total population.

The people living in the forest fringe villages have always been perceived as equal partners by the Forest Department. These villages are dependent on forests for wood, food, water and livelihood security. The Forest Department will

continue its efforts towards socio-economic development of forest fringe villages by, (i) facilitating sustainable livelihood options for the fringe and forest dwelling communities, (ii) revitalising the established institutions of Joint Forest Management and (iii) promoting primary level processing and storage facility for Non-timber Forest Produce (NTFP) and marketing support and (iv) providing educational opportunities to the tribal children.

For the holistic development of tribal living in inaccessible areas, the Forest department is running 20 tribal schools in Jawadhi hills of Vellore & Tirupattur and the Anamalais in Coimbatore. Due to sincere efforts taken by Forest Department to improve the quality of education, the pass percentage of tribal children studying had been tremendously improved.

During 2018-19, the pass percentage has increased to 91% in 10th Standard, similarly, the total pass percentage has risen to 93.43% in 12th Standard bettering even the pass percentage of plain areas. Many of these tribal students have gone for higher education in professional institutions like engineering and medical. Some of them have been selected by the TNPSC for various jobs. Modern infrastructure facilities like smart classes, hostels, etc. are being provided to these tribal schools for improving educational facilities. The department has undertaken several other infrastructure development schemes like building additional class rooms, labs, toilets, compound wall, hostels and providing drinking water facilities under NABARD funding to the tune of Rs.997.33 lakh during 2019-20.

Further, drinking water facilities are being provided in 4 tribal settlement villages in Kanyakumari, Vellore, Namakkal and Villupuram

districts at a cost of Rs.22.00 lakh during 2019-20. To develop infrastructural facilities such as construction of 333 houses and improvement of 3 roads in tribal areas, an amount of Rs.16.00 crore is sanctioned during 2019-20.

Raising non-timber forest produce (NTFP) plantations including medicinal plants provide livelihood opportunities to local people including rural women folks.

Forest Department is committed to create opportunities for providing livelihood options to the tribal community without adversely affecting the local biodiversity. Following activities are envisaged:

- (i) Focusing on welfare measures by identifying specific developmental needs.
- (ii) Conducting tribal employment melas with private companies for providing employment opportunities to tribal youths.

- (iii) Capacity building of tribal youth in eco tourism activities and conservation of medicinal plants.
- (iv) Improvement of road network in tribal areas for better accessibility.

8.9 Technology Support

8.9.1. Information Technology

Information Technology is used in planning, implementation, monitoring and evaluation of various forestry programmes and schemes. In order to strengthen field-based applications of Remote Sensing and Geographical Information System, Tamil Nadu Forest Department is making full use of the latest technologies. As an initiative, DGPS survey of notified forest lands of the State of Tamil Nadu is being undertaken by digitising the forest boundaries more accurately. Tamil Nadu Forest Department is monitoring forest fires on a real time basis using MODIS sensor data

since 2005 and SNPP - VIIRS. For each fire season, fire burnt area is assessed by analyzing multi-spectral satellite images.

In order to have an impact of Information Technology applications in the department, web based applications were developed on a priority basis for the benefit of the department and public. With a view to give an impetus to enhance technological skill and to have reliable information on forestry for its management and protection, a customized web-based user friendly MIS software for the department is developed and is fully functional now. Online application has been developed for issue of permits for Tree felling and Tree Transit including property mark registration. This system has improved transparency. Concurrent video-conferencing facility for review and monitoring has been established at 45 locations by linking circle / division level offices with head office.

Mobile Apps such as Treepedia, Save Dugong, etc. have been developed for Android and Apple mobile phones by the department for use by the public. Online ticketing facility has been introduced in Arignar Anna Zoological Park, Vandalur for the benefit of the public.

8.9.2. Forest Research

Forest Department has made landmark achievements in the areas of forest research. There are 51 research centres spread over in all 7 agro-climatic zones and are located in all districts across Tamil Nadu. During 2019-20, study on earthworm species for qualitative and quantitative production of vermicastings, standardizing biodegradable and eco-friendly containers to develop alternative to synthetic polybags, establishing Rare, Endangered and Threatened (RET) medicinal plants restoration garden, retrieval of selected RET Species, selection and identification of heartwood in Pterocarpus

santalinus, research on forest seed - directory and certification, hedge stool nursery for *Khaya senegalensis* and *Maesopsis eminii*, study on cooling effect of shade trees in urban areas, identification of effective wind barrier to protect the crop from physical damage due to heavy wind in farmer's land for improving productivity of crops by effectively reducing the velocity of dessicating wind are the major research activities that are under progress. Universities and scientific institutions are also being involved in conducting useful plant based research. Modern labs comprising of molecular genetics, tissue culture, and phyto-chemical sections have been established at the State Forest Research Institute at Kolapakkam have been set up conducting advanced level research. The genetic resources tree park has been further upgraded with a highly improved interpretation centre and green house promoting orchid conservation.

Under Tamil Nadu Innovative Initiative Schemes, Research on molecular analysis (transcriptome) of anthocyanin pathway in red tamarind, Research on generation of molecular markers in *Terminalia chebula* for genetic & photochemical markers assisted selection of elite clones in order to enhance the public health and efficacy of the herbal products, molecular and phytochemical research on elite clone of *Syzygium jambolanum* an anti-diabetic medicinal tree are under active progress.

During 2019-20, the Government has sanctioned Rs.8.35 crore for Introduction of Wildlife Studies at Advanced Institute for Wildlife Conservation at Vandalur, Chennai with setting up International Standard Hostel Facilities in Wildlife Studies through various courses at different levels. A state of art hostel and associated facilities for students, scholars, faculty and

officials who participate in various courses and study programmes is under construction.

Tamil Nadu Forest Academy, Coimbatore, Tamil Nadu Forest College, Vaigai Dam, and all the Extension Centres will have virtual class room facilities through Educate Connectivity for training and dissemination of information.

National Working Plan Code, 2014 provides for working plans to manage forest divisions. Protected Areas such as Wildlife Sanctuaries and National Parks are managed through Management Plans.

8.10 Eco-Tourism

Ecotourism is a form of travel that involves preserving and sustaining the diversity of the world's natural and cultural environments. It is intended to be low negative impact (on the environment) and a small scale alternative to commercial tourism. It focuses on socially

responsible travel to destinations where flora, fauna and cultural heritage are the main attractions.

Under the aegis of Tamil Nadu Eco-Tourism Policy, 2018, necessary provisions have been made to operate special purpose vehicle (SPV) which is as follows:

The Forest Department is the nodal agency for implementing the policy and shall create a special purpose vehicle in the form of State Eco-tourism Board (SEB) to be registered under the Tamil Nadu Society Registration Act, 1975, covering the entire State to assist in delivering the vision and the objectives of Eco-tourism Policy mainly in the protected areas and other forest areas.

Ecotourism management strives for:

- Eliciting the public support for the cause of conservation without disturbing the pristine nature of the forest ecosystem.
- To involve local communities in ecotourism for their economic prosperity and well being.
- To provide an environment to appreciate wilderness, provide educational cum recreational experience.

The Tamil Nadu Forest Department has developed 25 community based ecotourism sites under Tamil Nadu Bio-diversity Conservation and Greening Project.

Following strategies for promoting Ecotourism shall be implemented under the overall guidance of State Ecotourism Policy:

- Forest Department promoted Ecotourism based on appropriate guidelines and conducted within carrying capacity of the location.
- Participatory approach through Forest Department-Local Community linkages, and involving local Government institutions.

Based on the National Tiger Conservation Authority (NTCA) guidelines, eco-tourism activities are implemented in the Tiger Reserves. Around 8.24 lakh people visited the 4 tiger reserves and the revenue earned was Rs. 1056.67 lakh during 2019-20 (upto 31st December 2019).

The Tiger Conservation Foundation in each Tiger Reserve was formed as per Section 38-X of the Wildlife (Protection) Act, 1972 (amended in 2006). The sources of funds for the foundation are income generated from levying forest entry

fee, vehicle charges, rest house rents, camera fee, compounding fees and other charges for the eco services generated like eco-preservation charges. The Foundation has also been authorised to accept donations, gifts from the donors towards management of the resources. Apart from other activities, the funds of the foundations are also utilised to provide livelihood opportunities for tribal / local people living in buffer zone and fringe areas of Tiger Reserve such as Financial assistance to Eco Development Committees for livelihood support, vocational training, educational assistance to tribal school children, providing health support to tribal school children, eco-education, eco-awareness, etc.

The Government of Tamil Nadu issued orders for regulating the Trekking in Reserved Forests and Wildlife Areas in Tamil Nadu under Regulation of Trekking Rules, 2018 in G.O (D) No.296, Environment and Forests (FR.14) department,

dated 12.10.2018. As per this Rules, no person shall undertake trekking without obtaining permission from the competent authority. Every group intending to undertake trekking shall apply for permission to the competent authority to trek on a linear route. The competent authority if satisfied that the requirements of these Rules are fulfilled, shall grant permission for trekking and require the group leader to pay the fees prescribed. So far, three tour operators have registered with Forest Department for trekking in forest and wildlife areas.

8.11 Human Resource Development

In order to overcome new challenges due to the increased responsibilities, protection and management challenges, capacity building in the Forest Department needs continuous upgradation. Key areas of the interventions are - i) Filling up the vacancies through Direct Recruitment,

Promotions, etc. ii) Capacity building, training and skill upgradation for field staff.

8.11.1. Filling up of vacancies

- In order to protect the forest and wildlife habitats, 14 Assistant Conservators of Forests, 154 Forest Apprentices have been recruited through Tamil Nadu Public Service Commission by Direct recruitment.
- 300 Foresters, 726 Forest Guards, 61 Forest Guards with Driving Licence and 564 Forest Watchers have been recruited through Tamil Nadu Forest Uniformed Services Recruitment Committee (TNFUSRC) by direct recruitment.
- 196 Supernumerary Plot Watchers / Supernumerary Anti-Poaching Watchers have been regularised as Supernumerary Watchers post in the scale of pay for the post of Mali.

- 272 persons have been appointed through Tamil Nadu Public Service Commission by direct recruitment in the Tamil Nadu Ministerial Service such as Assistants, Junior Assistants, Steno-Typists and Typists.
- 58 legal heirs of deceased Government Servants have been appointed on compassionate grounds.

8.11.2. Capacity building

Forestry training institutions at Tamil Nadu Forest Academy, Coimbatore and the Tamil Nadu Forestry College, Vaigai Dam are being strengthened to inculcate professionalism in the service. Organizational needs of the Forest Department and the needs of the personnel are being analyzed and matched to develop appropriate capacity building programmes including training. Training courses have been

revised with inputs of modern forest management trends. With a view to impart regular training to front line staff, newer areas and techniques will be identified.

Following training have been imparted during 2019-20:

- Six months induction Training for 545 newly recruited Forest Guards and 268 Foresters;
- One month inservice Training for 144 Forest Range Officers;
- One week refresher course on forest fire prevention and management for 368 Forest Guards and 364 Forest Watchers ;
- Two days training on Mock drill for Fire prevention to 600 Forest Guards and Forest Watchers ;

- One week compulsory training to 50 Forest Range Officers sponsored by Directorate of Forest Education ;
- Six months induction Training is underway for 101 newly recruited Forest Guards and Forest Guard with Driving Licence; and
- One week refresher course for 257 Forest Range Officers and Foresters conducted at National Disaster Response Force, Arakkonam.

8.11.3. Welfare of Forest Personnel

Considering the welfare of Forest Personnel working remote forest areas, the Government have issued orders for providing mandatory Master health check up once in a year free of cost at Government hospitals in respective District Headquarters as followed in Police Department for those who have completed 30 years of age.

Welfare measures have been taken for providing better health, education, housing and other facilities for the forest personnel.

8.12 Infrastructure development

To effectively manage the forest wealth of the State, there is an imperative need to provide proper infrastructure to the manpower deployed in protection and management of forests and wildlife. The main components of infrastructure are communication, transport facilities, buildings, surveillance instruments like Drones and weapons etc. Steps are being taken to strengthen the forest protection by using the latest equipments like Drones, Global Positioning System(GPS), Differential Global Positioning System(DGPS) etc to effectively tackle the emerging challenges. Infrastructure will be created for functioning of all Forest offices in Government buildings.

9. PROGRAMMES

In order to achieve the policy initiatives, SDGs and Key Result Areas, the following programmes are aligned accordingly and are being implemented in the Department:

9.1. Major State Schemes

9.1.1 Tamil Nadu Biodiversity Conservation and Greening Project

Japan International Co-operation Agency (JICA) aided Tamil Nadu Biodiversity Conservation and Greening Project (TBGP) with an expenditure of Rs.510.02 crore was implemented as a eight year project, from 2011-12 to 2018-19. The project has been instrumental in reducing the threats to the native biodiversity of the State and in enhancing the natural resource base besides improving the capacity of the field staff. 7.89 crore seedlings have been planted under the scheme - Tree Cultivation in Private Lands, from the beginning of the project covering an area of

1.43 lakh hectare farmland benefiting 87,299 farmers. (An amount of Rs.10.00 crore has been provided for the year 2020-21).

A proposal for Rs.34.00 crore has been sent to the Japan International Co-operation Agency (JICA) for biodiversity conservation for increasing the natural resource base and the institutional capacity development out of the unspent amount under TBGP Phase-I for its implementation up to 31.12.2020. Further, under Japan International Co-operation Agency (JICA) aided phase II of the TBGP, a proposal for an amount of Rs.920.56 crore with project period of six years i.e. from 2020-21 to 2025-26 has been sent to the MoEFCC, Government of India which is under active consideration.

This scheme is one of the key schemes for achieving SDG Nos.14 and 15.

9.1.2 Massive Tree Planting Programme

Tamil Nadu Forest Department conceived the project of Massive Tree Planting Programme (MTP) with aims to increase green cover, mitigate the adverse effects of various environmental pollutants among others. This programme is being implemented continuously from 2011-12 onwards. From 2011-12 to 2018-19, the planting and maintenance of 4.69 crore seedlings in all districts throughout Tamil Nadu has been achieved. During 2019-20, the scheme was continued with a target of 71 lakh seedlings, whereas 64 lakh seedlings are being planted by the Rural Development and Panchayat Raj department under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and 7 lakh seedlings by Forest Department in degraded forest areas. During the year, 2020-21, the scheme shall continue with a target of 72 lakhs seedlings whereas 64 lakhs seedlings shall be planted by

the Rural Development and Panchayat Raj Department under MGNREGS and 8 lakhs seedlings shall be planted by the Forest Department in degraded forest area.

This scheme will facilitate to achieve the SDG Targets 15.1, 15.2 and 15.3 under Goal No.15.

9.1.3 Teak Plantations

In order to enrich the tree cover and timber resources of the State, the scheme of Raising Teak plantations, over an area of 6000 ha, is being implemented from 2017-18 for 8 years at a total outlay of Rs.52.64 crore. An area of 2345 ha (planting target 4,69,000 seedlings) was covered during 2017-18 and 2018-19 at a cost of Rs 8.38 crore. The scheme has been continued during 2019-20 at an outlay of Rs 7.85 crore covering an area of 1200 ha. This scheme will be continued during 2020-21 with an outlay of Rs.7.97 crore.

This scheme will help to achieve the SDG Target 15.1 under Goal No.15.

9.1.4 Sandal Plantations

The scheme of Raising of Sandal Plantations in RFs in the traditional natural sandal bearing areas of Jawadhi Hills, Shervaroyan hills, Kolli Hills, Pachamalai hills and Chitheri hills for a period of 10 years from 2015-16 to 2024-25 with an outlay of Rs.100 crore is being implemented actively. Until 31st March 2019, the scheme was implemented at a cost of Rs.8.94 crore by planting 7.10 lakh seedlings. The scheme is being continued during 2019-20 at an outlay of Rs.14.37 crore. An amount of Rs.7.55 crore has been provided for the year 2020-21.

This scheme will assist to achieve the SDG Target 15.2 under Goal No.15.

9.1.5 Rejuvenation of Vaigai and Noyyal Rivers

The NABARD assisted scheme of Rejuvenation of Vaigai and Noyyal Rivers has been conceived for reducing pollutants and preventing flow of heavy load of silts into the water bodies. The scheme is being implemented from 2017-18 for 3 years at a total outlay of Rs.24.58 crore. Soil and Moisture Conservation activities and a small component of planting work that includes sowing of grass seeds were taken up under this scheme. This scheme is expected to improve fodder and water availability inside the RFs which will in turn help mitigating human-wildlife conflicts in the forest fringe areas. During 2018-19, the scheme has been implemented with an outlay of Rs.6.79 crore. The scheme is being implemented during 2019-20 as well with an outlay of Rs.9.03 crore.

This scheme will enable to achieve the SDG Target 15.4 under Goal No.15.

9.1.6 Rejuvenation of Palar river

The scheme of Rejuvenation of Palar river assisted by NABARD is being implemented from 2019-20 for 2 years at a total outlay of Rs.13.02 crore. It is proposed to construct 13 Nos. of check dams and 10 Percolation Ponds, water harvesting trenches to a length of 78 kms. and to construct 26 Nos. of gully plugging. The scheme is under implementation during 2019-20 with an outlay of Rs.6.26 crore. The scheme will propose to continue during 2020-21 with an outlay of Rs.6.76 crore.

This scheme will facilitate to achieve the SDG Target 15.4 under Goal No.15.

9.1.7 Asian Elephant depredation and mitigation measures

As a result of increasing human wildlife conflict, it has become essential to take up various mitigation measures by adopting a multi-pronged strategy involving habitat improvement and augmenting water sources, improving fodder resources for wildlife inside the forest area, formation of physical barriers along the forest boundary, as well as awareness creation amongst the local people. The construction of barriers like elephant proof trench along forest boundaries to prevent human wildlife conflicts has been found to be effective and has been appreciated by the local people. The scheme is proposed to be implemented at a cost of Rs.4.50 crore during 2020-21.

A proposal for Rs.7.62 crore namely "Resolving Human-Elephant Conflict through remote based technology" has been sanctioned

based on the Announcement by the Hon'ble Forest Minister. This will ensure real time monitoring of the elephant movement in the Human Elephant conflict prone areas through high resolution thermal cameras as well as artificial intelligence mechanism in offices of Range officers and DFO of Coimbatore District. It will also reduce the response time in deployment of anti-degradation squad for mitigating the conflict situation.

This scheme will assist to achieve the SDG Target 15.4 under Goal No.15.

9.1.8 Compensation for the damages caused by wildlife

Mitigating Human-wildlife conflict is one of the greatest challenges faced by the Forest Department. Several steps are taken to avoid conflicts including augmenting of fodder and water resources in the wildlife habitats. In case of any loss of life, injury or damages to agriculture

crops and property caused by the wild animals, the department pays compensation to the affected people. The compensation has been paid at an enhanced rate since 2016-17. The compensation amount for human death and permanent incapacitation is Rs.4.00 lakhs and for the major injuries, Rs.0.591 lakh. An amount of Rs.6.78 crore was sanctioned under the State scheme and Rs.1.33 crore were sanctioned under centrally shared schemes for payment of compensation during 2019-20. An amount of Rs.3.63 crore under State fund has been provided during 2020-21.

9.1.9 Eco-restoration of Nanmangalam RF

Out of 320 Hec.of Nanmangalam Reserve Forest, an area of 18 Hec. is demarcated to create a near natural man made forests by undertaking high density planting with native indigenous species to improve the biodiversity of the area and at the same time to create green lungs in and

around Chennai to ameliorate the micro-climate. The Scheme was sanctioned for a period of five years from 2018-19 to 2022-23 at a total cost of Rs 2.50 crore. During 2018-19, an amount of Rs.0.80 crore was spent for raising nursery and construction of compound wall. 15,250 seedlings are being planted during 2019-20 with an outlay of Rs. 0.97 crore. The Scheme is proposed to continue during 2020-21 with an outlay of Rs.0.37 crore.

This scheme will assist to achieve the SDG Targets 15.2 and 15.3 under Goal No.15.

9.1.10 Eco-restoration of Pallikaranai Marshland

The State Government is committed to protect the Pallikaranai marshland, which is a unique fresh water swamp located within the Chennai Metropolitan Area and is major ground water recharging wetland. The Conservation Authority of Pallikaranai Marshland has been

constituted to monitor all restoration activities. An area of 690.65 ha is under the control of Tamil Nadu Forest Department. Restoration activities like habitat improvement, protection, research, monitoring, publicity and awareness have been undertaken under the scheme. The scheme has been implemented since the year 2018-2019 and will continue until 2022-2023, at a budget outlay of Rs.165.68 crore under the National Adaptation Fund for Climate Change.

This scheme will provide support to achieve the SDG Target 15.1 under Goal No.15.

9.1.11 Construction of Concrete Wall and bio-fencing to protect RF in and around Chennai from encroachment/ garbage dumping

"Providing Concrete and live fencing for the protection of the Reserved Forests around Chennai city" to prevent encroachments and from polluting the forest area due to urbanization, at a

cost of Rs.25.00 crore is being implemented for three years from 2019-20 to 2021-22. The work of construction of compound wall to a length of 14.2 km and bio-fencing to a length of 75 km is being taken up during 2019-20 with an outlay of Rs.10.778 crore. The scheme is proposed to continue during 2020-21 with an outlay of Rs. 7.72 crore.

This scheme will help to achieve the SDG Target 15.1 under Goal No.15.

9.1.12 Gulf of Mannar Biosphere Reserve Trust (GOMBRT)

Gulf of Mannar, located along the south-east coast of India, is a globally unique marine ecosystem, significantly rich in biodiversity. The Gulf of Mannar Biosphere Reserve Trust (GOMBRT) was a pioneering initiative of the Government of Tamil Nadu in collaboration with the United Nations Development Programme (UNDP) to achieve a co-ordinated approach with all

concerned stakeholders to link biodiversity conservation with sustainable utilization of marine resources with an aim to improve the livelihood security of coastal communities in the region. In 2019-20, the Government sanctioned Rs.1.50 Crore (including unspent amount pertaining to the previous year) to carry out the Annual Work Plan. The scheme is proposed to continue at an outlay of Rs.1.50 crore during 2020-21.

This scheme will enable to achieve the SDG Targets 14.2 and 14.5 under Goal No.14.

9.1.13 Arignar Anna Zoological Park (AAZP), Vandalur

Arignar Anna Zoological Park is spread over an extent of 602 Ha. of forest area and is located at Vandalur near Chennai. The park exhibits 2644 wild animals, which includes 46 species of mammals, 90 species of birds, 35 species of reptiles in all numbering 171 species. Over the past 35 years since its establishment, this

zoological park has emerged as successful ex-situ conservation and captive breeding centre for many endangered species such as the Royal Bengal tiger, Lion tailed macaque and the Nilgiri langur.

This zoological park has recorded visitor footfalls of 20.49 lakhs during 2018-19. The total revenue of AAZP was Rs.13.96 crore during 2018-19. 24x7 Animal Live Streaming of 14 animals was introduced last year for the benefit of the visitors through the website. More than 3 crore page views were recorded in one year testifying an overwhelming response from people. The Zoo has strengthened its protection by means of installing about 165 CCTV cameras for the visitors and the animals. The mechanism is called Zoo e-eye surveillance. After 30 years, a pair of Indian one-horned rhinoceros was brought to the Zoo through Animal Exchange Programme during 2019-2020. The Zoo has also recorded birth of a

Indian Gaur calf, a Royal Bengal tiger cub, a grey wolf cub, a Wild ass cub, Ostrich, Nilgai, Mouse deer etc., Otteri lake, located inside AAZP was rejuvenated during 2019-2020 leading to greater sightings of water birds by the visitors. New initiatives were also taken to improve the green cover of the Zoo during 2019-20 benefitting the Zoo animals and the visitors.

Online ticketing system and digital payments are available as amenities for the visitors. More than 1000 rescued animals were rehabilitated at the Zoo. The Zoo school conducts several awareness programmes such as Zoo Ambassador for school children, Special themed workshops for adults, Zoo outreach activities. Through these programmes more than 400 Zoo Ambassador were titled last year and about 20000 people were given awareness talks. Zoo school also conducted a certificate course on Bird Identification and Basic ornithology, funded by the MoEFCC,

Government of India. Students benefited from this course.

The Zoo has introduced several facilities such as Vandalur Zoo Mobile Application, YouTube channel, Virtual reality shows, Zoo souvenir shop and Purified drinking water for the benefit of the visitors. Facilities, like modern electric incinerator, solar fencing, cloak room, lactating mother room, digital x-ray, new animal enclosure were provided for the better management of the Zoo animals.

9.1.14 Advanced Institute For Wildlife Conservation (AIWC)

The State of Tamil Nadu took a pioneer step to set up the Advanced Institute for Wildlife Conservation in the Tambaram Reserve Forest area under the current management control of the Arignar Anna Zoological Park. The late Hon'ble Chief Minister of Tamil Nadu, Dr J.Jayalalitha, laid the foundation stone for the project on

15.03.2013 at Arignar Anna Zoological Park, Vandalur at Chennai.

AIWC was set up as a highly advanced state of the art labs for Animal Care Sciences, Wildlife Forensic Sciences, Conservation Education and Wildlife Research with a initial cost of Rs.7.31 crore. The Institute has commenced basic wildlife forensic research and diagnostic operations in Morphometry, DNA and Scat DNA laboratories under the Centre for Wildlife Forensic Sciences (CWFS). Morphometry laboratory of CWFS is involved in developing reference repository of wild animal samples ranging from skulls, long bones, horns, antlers, ivories, hair samples, feathers, hide and skin samples for morphological comparative studies, to establish standards that aid in species identification.

Advanced Institute for Wildlife Conservation has also conducting hands-on training programme

in wildlife crime scene investigation for the field staff, monthly guest lecture by eminent scientists in key areas of wildlife conservation and management, annual capacity enhancement training for zoo animal keepers in captive animal management, and outreach training to college students in wildlife conservation.

During 2019-20, Hon'ble Minister for Forests made an announcement on the floor of Assembly for setting up of "Introduction of Wildlife Studies with establishment of an International Hostel" at a cost of Rs 8.35 crore for the students, scholars, scientists and others who come to attend various study and research programmes of AIWC during 2019-20. The AIWC has already begun the study programme with demand for the courses rising day by day across India and internationally. The PWD has already commenced the construction process for implementation of the Announcement. The World Bank also has approved a new plan of

the Institute to set up within its campus the Tamil Nadu Marine Forest Academy - India's first, and a most relevant initiative in conservation on this date, at a cost of Rs. 25 crore for the years 2020-24.

9.1.15 Rejuvenation Camp for Elephants

With an objective of monitoring and improving the health of elephants belonging to temples and mutts, a Special Health and Rejuvenation camp is organized by the department with the support of Hindu Religious and Charitable Endowments department every year. The rejuvenation camp facilitates the elephants to revive their socialization skills and provide them joyful experience, which results in psychological improvement of the elephants, otherwise stressed most of the time. For the year 2019-20, a new camp for 28 temple and temple mutt elephants was inaugurated on 15th December 2019, which was continued for

48 days till 31st January 2020 at a cost of Rs.1.41 crore which was provided by the Hindu Religious and Charitable Endowments department.

The Forest Department has commenced one more rejuvenation camp for 62 elephants from 06.02.2020 which will continue till 24th March 2020 for 48 days at a cost of Rs.0.70 crore for achieving the same objectives. Forest Department will also continue to conduct elephant rejuvenation camps during 2020-21 with an outlay of Rs.0.30 crore.

This scheme will facilitate to achieve the SDG Target 15.5 under Goal No.15.

9.2 SHARED SCHEMES

These schemes are implemented with fund shared by Government of India and the State Government in a ratio of 60:40.

The major centrally sponsored schemes are as follows:-

9.2.1 Integrated Development of Wildlife Habitats

Integrated Development of Wildlife habitats has following components:

- Support to Protected Areas (National Parks, Wildlife sanctuaries, Conservation Reserves and Community Reserves).
- Protection of wildlife outside the PAs.
- Recovery programmes for saving critically endangered species and their habitats.

The Nilgiris Tahr which is endemic to the Western Ghats of Tamil Nadu and Kerala has been identified under the said recovery programme. The Government of India has sanctioned funds for 30 schemes for the developmental activities in National Parks, Wildlife Sanctuaries and Conservation reserves. The scheme has been

implemented with an outlay of Rs.8.76 crore for the year 2019-20. This scheme will be continued during 2020-21.

This scheme will help out to achieve the SDG Target 15.5 under Goal No.15.

9.2.2 Project Tiger

Tiger, being the top carnivore, importance of its conservation lies in the fact that its presence in a natural forest habitat is an indicator of the overall health of the forest ecosystem. Various steps to conserve tigers and their habitats have been taken up by the Forest Department in the four Tiger Reserves viz., Kalakad-Mundanthurai Tiger Reserve in Tirunelveli district, Anamalai Tiger Reserve in Coimbatore and Tiruppur districts, Mudumalai Tiger Reserve in Nilgiris district and Sathyamangalam Tiger Reserve in Erode district. The scheme provides assistance for works relating to habitat conservation and

protection including fire prevention, eco-development, improvement of water sources, tourism development, mitigating human wildlife conflicts and improvement of infrastructure facilities in the Tiger Reserves. To reduce the anthropogenic disturbances in Critical Tiger Habitats in Tiger Reserves, 435 families have been relocated from core area of Mudumalai Tiger Reserve. Further with respect to recurring works the funds are sanctioned in the ratio of 50:50 by the Central and State Governments. During 2019-20 the scheme has been implemented at a cost of Rs.41.56 crore. This scheme will continue during 2020-21.

This scheme will assist to achieve the SDG Target 15.5 under Goal No.15.

9.2.3 Project Elephant

Tamil Nadu is one among the leading states implementing the Project Elephant programme of

the Government of India, pursuing scientific management and habitat conservation. The elephant population in Tamil Nadu has been estimated as 2761 individuals in May 2017. The Project Elephant scheme is implemented in large contiguous elephant landscapes categorized for management as Elephant Reserves and these Reserves have no separate legal status. The scheme in Tamil Nadu is being implemented in the four elephant Reserves to protect the elephants and improve their habitats. The scheme also includes payment of compensation to farmers for the crop damages and loss of human lives caused by human wildlife conflict and further to take necessary steps to minimize such conflicts. During 2019-20 the scheme has been implemented at a cost of Rs.6.01 crore. Around 4000 man-days were generated out of implementation of this scheme. The Scheme will

continue at an outlay of Rs.0.72 crore during 2020-21.

This scheme will enable to achieve the SDG Target 15.5 under Goal No.15.

9.2.4 Nilgiris Biosphere Reserve

Nilgiris Biosphere Reserve is a Biosphere Reserve in the Western Ghats and Nilgiris range of Southern India. Nilgiris Biosphere Reserve contains following forest types: Moist evergreen, Semi-evergreen, Thorny, Savana, Shola and grass land. Out of 3,300 species of flowering plants, 132 species are endemic to the Nilgiris Biosphere Reserve. Fauna of the Nilgiris Biosphere Reserve includes about 100 species of reptiles and amphibians, 300 species of butterflies, 31 amphibians and 60 species of reptiles are endemic to the Western Ghats. The Reserve encompasses 5,520 sq.kms in the 3 southern states of which Tamil Nadu portion is about 2537.6 sq.kms. It

forms an almost complete ring around the Nilgiris Plateau. The Tamil Nadu Part covers parts of the Nilgiris, Erode and Coimbatore districts. This area is very rich in Flora and Fauna. The scheme has been implemented at an outlay of Rs.2.95 crore during 2019-20. The scheme will continue during 2020-21.

This scheme will assist to achieve the SDG Targets 15.1, 15.4 and 15.5 under Goal No.15.

9.2.5 Gulf of Mannar Biosphere Reserve

The Gulf of Mannar Biosphere Reserve known for its chain of 21 coral-rich islands along with coast line from Rameswaram to Thoothukudi which was declared as Marine National Park in 1986 by the Government of Tamil Nadu. Later in 1989, Government of India declared it as the first Marine Biosphere Reserve of India. With its rich biodiversity of about 4,223 species of various flora and fauna, the Reserve is well endowed with coral

reefs, sea grass and mangroves. The Gulf of Mannar Biosphere Reserve supports several critically endangered species such as *Dugong dugong* (sea cow), sharks including whale shark, sea horses, green sea turtles, dolphins, and sea cucumbers among other species.

The Gulf of Mannar Biosphere Reserve Trust was established in 2001 with a view to ensure speedy and efficient implementation of the GEF UNDP funded project on '*Conservation and sustainable use of the coastal biodiversity of Gulf of Mannar Biosphere Reserve*'. The activities under the project were implemented for 10 years from 2003 to 2012 and the activities were further continued from State Government funding from 2013 onwards. The major achievements have been Awareness generation, institution building and strengthening of EDCs/VMCs, decreasing biotic pressure, enhancing livelihood options, strengthening park management and research

activities. The microfinance corpus fund of Rs.8.93 crore created for EDC/VMCs has earned a profit of Rs.4.49 crore by way of interest from beneficiaries of microfinance and Rs.2.27 crore by way of interest accrual from bank since inception. These accomplishments will be further consolidated by mainstreaming this programme with the regular schemes and programmes of the Government of India and that of Tamil Nadu State.

The Government of India sanctions funds for the Gulf of Mannar Biosphere Reserve under two separate schemes viz. Gulf of Mannar Biosphere Reserve and Conservation and Management of coral reefs. The scheme has been implemented with an outlay of Rs.4.87 crore during 2019-20. The scheme will continue during 2020-21.

This scheme will enable to achieve the SDG Target 14.2 under Goal No.14.

9.2.6 Agasthyamalai Biosphere Reserve

The Agasthyamalai Biosphere Reserve has been included by UNESCO in the World Network of Biosphere Reserves considering the presence of its rich and unique ecosystems and landscapes. The total area of the Biosphere reserve is 3500.36 sq.kms, of which 1828 sq. kms. is in Kerala and 1672.36 sq. kms. fall in Tamil Nadu in Tirunelveli and Kanniyakumari districts in Tamil Nadu. The scheme has been implemented at an outlay of Rs.3.57 crore during 2019-20. The scheme is proposed to continue during 2020-21.

This scheme will assist to achieve the SDG Targets 15.1, 15.4 and 15.5 under Goal No.15.

9.2.7 Wetland Conservation and Development

Wetlands are integral to a healthy environment. They help to retain water during dry periods, thus keeping the water table high and

relatively stable. During the period of flooding, they act to reduce flood levels and to trap suspended solids and nutrients. Ecosystem services offered by wetlands include floodwater storage and control, recharge of aquifers, treatment of waste water and pollution abatement, general water quality improvement, habitats for fish, birds and plant species. In addition, wetlands are of high aesthetic and heritage values providing opportunities for recreation, research, and education.

In Tamil Nadu, this scheme is being implemented in Point Calimere, Kazhuveli and Pallikaranai wetlands. Major activities involved in Wetland management are Habitat improvement, Wildlife Protection, Eco-development activities, Awareness creation, Research and Monitoring and Nature Education. The Scheme has been implemented during 2019-20 with an outlay of Rs.2.44 crore and will continue during 2020-21.

This scheme will enable to achieve the SDG Target 14.2 under Goal No.14.

9.2.8 Conservation and Management of Mangroves

Mangroves are plants that survive high salinity, tidal regimes, strong wind velocity, high temperature and muddy anaerobic soil – a combination of conditions hostile for other plants. Mangrove ecosystem constitutes a bridge between terrestrial and marine ecosystems. Mangrove functions as breeding, feeding, nursery grounds for most of the sport and commercial fishes found in the deep coastal waters and inshore waters. They also provide breeding ground for birds, reptiles and mammals. The mangroves such as Muthupet, Pitchavaram and Ramanathapuram, constituted as Reserve Forests, are under the control of Forest Department. Habitat improvement measures such as mangrove restoration in degraded lands, maintenance of

older plantation, removal of invasive species, protection, eco development activities, awareness creation, monitoring and evaluation etc. are the major activities. The scheme has been implemented at an outlay of Rs.1.89 crore during the year 2019-20 and the scheme will continue during 2020-21 and an amount of Rs.0.76 crore is provided.

This scheme will enable to achieve the SDG Target 14.2 under Goal No.14.

9.2.9 Forest Fire prevention and management

The scheme of Intensification of Forest Management Scheme has been modified by Government of India to Forest Fire Prevention and Management Scheme with focus on fire prevention, detection and management. The scheme provides support for procurement of firefighting equipment, controlled burning, fire line clearing, maintenance of fire lines, soil and

moisture conservation works, awareness creation, capacity building of local community, research, monitoring etc. The scheme was implemented during 2018-19 at a cost of Rs.1.64 crore. The scheme was sanctioned by GOI with an outlay of Rs.3.34 crore during 2019-20. This scheme will continue during 2020-21.

This scheme will enable to achieve the SDG Target 15.1 under Goal No.15.

10. FOREST REVENUE AND EXPENDITURE DETAILS

10.1. Forest Revenue

Major sources of revenue are by sale of Timber and sale of social forestry plantations (Annexure-I). Mature teak trees aged over 30 years are being harvested every year. Supply of pulpwood raw materials is made from matured plantations of Eucalyptus and Wattle

which are allotted by the Government to the paper mills and other wood based industries.

10.2. Expenditure

All the developmental programmes including afforestation, soil and water conservation, habitat improvement works in various sanctuaries and Tiger reserves, intensive care towards protection of forest wealth, creation of awareness among the rural people have been continued in an effective manner. The necessary provisions for schemes made in the budget are narrated in Annexure-II.

11. CORPORATIONS

11.1. Tamil Nadu Forest Plantation Corporation Limited (TAFORN)

11.1.1. Established in the year 1974, TAFORN's mandate is to raise, maintain and harvest Eucalyptus pulpwood and cashew to meet the needs of industries, to increase the productivity of forests, to provide rural

employment, to conserve soil and moisture and to supply firewood to fulfill the needs of the rural people.

11.1.2. This Corporation has an authorized share capital of Rs.10 crore and a paid up share capital of Rs.5.64 crore held by the Government of Tamil Nadu. Tamil Nadu Forest Department has leased 71,540.50 ha, of Reserved Forests to TAFORN. As per Government orders, TAFORN pays 30% of the annual turnover as lease rent to the department.

11.1.3. By adopting modern techniques such as high yielding clones, mechanization of planting activity, irrigation etc., TAFORN has been successful in increasing productivity. The details of the plantations raised and expenditure involved during 2018-19 and 2019-20 are given in Annexure-III.

11.1.4. The pulpwood supplied to paper mills during 2018-19 and 2019-20 are given in Annexure-III.

11.1.5. TAF CORN has been extending due emphasis to cashew plantation to increase its per hectare returns in the recent past. It is the second major revenue earner State Corporation in Tamil Nadu. The details of revenue realized are given in Annexure-III.

11.1.6. The revenue and expenditure details of the corporation for 2018-19 and 2019-20 and the Budget Estimate for 2020-21 are given in Annexure-IV.

11.1.7. The details of fresh plantations to be raised and cost involved during 2020-21 are given in Annexure-IV.

11.2. Tamil Nadu Tea Plantation Corporation Limited (TANTEA)

11.2.1 The Tamil Nadu Tea Plantation Corporation Limited was formed by the Government as a 'Rehabilitation Scheme' to rehabilitate the Repatriates from Sri Lanka under Shastri-Srimavo Pact, 1964. This Corporation has plantations of 4053.758 ha of tea on the land leased out by Government of Tamil Nadu.

11.2.2 During the year 2019-20, this Corporation has produced 239.65 lakh kg of green tea leaf and 58.28 lakh kg of made tea.

11.2.3 TANTEA has been trying to increase its retail footprint to fetch higher prices. At present the Corporation is having 168 retail dealers, 23 wholesale district dealers and 2 regional marketing agencies. It has also made tie up with M/s Tamil Nadu Civil Supplies Corporation to sell its products through Public Distribution System shops. Tamil Nadu Tea Plantation

Corporation is also participating in Government fairs and other tourism festivals etc. to advertise TANTEA products to reach a larger sphere of customers. Action is being taken to supply through Public Distribution System in the States of Kerala, Karnataka, Andhra Pradesh and Telengana. Retail sale outlets are being established in Toll Plazas of National Highways in Madurai Region. TANTEA products are being supplied to Neyveli Lignite Corporation Ltd., Steel Authority of India Ltd., Tamil Nadu State Transport Corporation, Military Canteens and TANGEDCO and to Prison department.

11.2.4. TANTEA has got organic productivity certificate from IMO Control Private Limited, Bangalore for an area of 7.5 hectare in Coonor Tea division.

The physical achievement of green tea leaves and made-tea for the years 2018-19, 2019-20

and estimated quantum for 2020-21 are furnished in Annexure V.

The Revenue and Expenditure details are also furnished in Annexure V.

11.3. Arasu Rubber Corporation Limited (ARC)

Arasu Rubber Corporation Limited (ARC) was started in 1984 under the Indian Companies Act, 1956 with the objective (i) to safeguard the future of the rubber plantations industry, (ii) to protect the interests of the workers and increase employment potential particularly for surplus rubber plantation labourers and rehabilitation of Sri Lankan repatriates, (iii) to check speculation in acquisition and management of rubber and other plantation estates and (iv) to check monopoly in rubber industry. With headquarters at Nagercoil, ARC employs 911 permanent workers including 230 Sri Lankan repatriates. It has rubber plantations over an area of 3994.595 Ha of lands

taken on lease from Tamil Nadu Forest Department in Kanniyakumari district, where the soil, climate and topography are conducive for the growth of rubber trees. The authorized capital of the Corporation is Rs.13.07 crore and the paid up share capital is Rs.13.07 crore owned fully by the Government of Tamil Nadu.

The Arasu Rubber Corporation Ltd has initiated steps to expedite slaughter tapping and sale of older unproductive rubber trees and replace these by high yielding clonal plantations. As per the revised felling schedule, 421.20 ha will be taken up for slaughter tapping and removal of senil rubber trees, during 2020-21. Target for replanting work has been fixed over an extent of 210.66 ha during 2020-21.

Production and financial achievements are furnished in Annexure-VI.

12. HIGHLIGHTS OF THE YEAR 2019-20

12.1. Increase in forest cover

As per the latest India State of Forest Report, 2019 (ISFR), the forest cover in the State is 26,364 sq. km. which is 20.27% of the State's Geographical area. Tamil Nadu has achieved an increase in forest cover of 83.02 sq. km. as compared to ISFR 2017. The India State of Forest Report is prepared by the Forest Survey of India, Dehradun (Government of India) once in two years, based on interpretation of satellite imagery.

12.2. Increase in Tree cover

Tamil Nadu has achieved an increase in tree cover of 159 sq. km. as per the India State of Forest Report, 2019 (4830 sq. km.) as compared to India State of Forest Report, 2017 (4,671 sq. km.)

Tamil Nadu stands a leading State (among large States) in continuously increasing its area under forest and tree cover.

12.3. Increase in Tiger Population

The State's sincere efforts in protection and management of tiger habitats in Western and Eastern Ghats of Tamil Nadu is indicated by increase of tiger population from 229 (2014 Census) to 264 (2018 Census).

12.4. Implementation of Schemes

- Modernizing, Strengthening of Forestry Extension Centres and Interaction with Farmers-Foresters - Industrialists at a cost of Rs.2.40 crore.
- 'Rejuvenation of Palar River in Kancheepuram district' scheme is being implemented for a period of two years for 2019-20 and 2020-21 at a total cost of Rs.1302.07 lakh to ensure water security

and improve water regime in the watershed. During 2019-20, 13 Check Dams and 10 Percolation Ponds have been constructed.

- Reviving the Medicinal Plants Development Areas at Thandarai and Pulleri in Kancheepuram district at a cost of Rs.3.34 crore.
- Establishment of Biodiversity Park at Sirumalai, Dindigul at a cost of Rs.5.00 crore.
- Modernizing and Strengthening of Forest Training Institutions of Tamil Nadu at Coimbatore and Vaigai Dam at a cost of Rs.15.74 crore during 2019-20.

12.5. Forest Protection

- Forest protection and biodiversity conservation in Gudalur (Nilgiris) (Janmam land) is the amendment to the Tamil Nadu

Forest Act 1882 (Tamil Nadu Act V of 1882) by inserting section 16A during the year 2019. An area of 12117.27 ha (about 29942.43 Acres) of Janmam Land has been declared under section 53 of Gudalur Janmam Estate (Abolition and Conversion into Ryotwary) Act 1969 and handed over to Forest Department.

- Providing Concrete and live fencing for the protection of the Reserved Forests around Chennai city to prevent encroachments and from polluting the forest area due to urbanisation, at a cost of Rs.25.00 crore for three years from 2019-20 to 2021-22. The work of construction of compound wall to a length of 14.2 km and bio-fencing to a length of 75 km is being taken up during 2019-20.

- Strengthening Security by providing CCTV to Government sandalwood depot, timber storage godown, sensitive forest check posts and Government Offices in Forest department at a cost of Rs.1.03 crore.
- Strengthening Forest Protection by improving infrastructure facilities for Forest Frontline staff at a cost of Rs.30.00 crore.
- Improvement and maintenance of 107 forest roads at a length of 576.972 Km for the year 2019-20 at a cost of Rs.57.53 crore.
- Implementation of DGPS Survey of Notified Forest Areas of Tamil Nadu at a cost of Rs. 50.00 crore with the main objective of consolidation of forests.

12.6. Diversion of forest lands

- Even though there is increased demand for forest land for various developmental end

users, the forest department has ensured minimum diversion of forest lands for any non-forestry purpose. In a long span of more than 39 years, since the enactment of Forest (Conservation) Act 1980, the diversion of Forest areas for non-forestry purpose is only about 5143.72 hectares involving 437 cases.

12.7. Administration

- In order to protect the forest wealth, forest resources, wildlife habitats, etc., 14 Nos. of Assistant Conservator of Forests, 154 Nos. of Forest Apprentice have been recruited through TNPSC by direct recruitment. 300 Nos. of Forester, 726 Nos. of Forest Guard, 61 Nos. of Forest Guard with Driving License, 564 Nos. of Forest Watcher have been recruited through Tamil Nadu Forest Uniform Service Recruitment Committee by direct recruitment. 196 Nos. of Supernumerary Plot Watchers /

Supernumerary Anti-Poaching Watchers have been appointed as Supernumerary Watcher in the scale of Mali pay.

- 164 Nos. of Assistants, 48 Nos. of Junior Assistants, 22 Nos. of Steno-typist Grade-III and 38 Nos. of Typist have been appointed through TNPSC by direct recruitment.
- 35 Nos. of Junior Assistants, 3 Nos. of Typists, 6 Nos. of Forest Guards, 12 Nos. of Night watchman, 1 No. of Driver, 1No. of Electrician have been appointed through Compassionate Ground Appointment.
- Consolidated monthly wages to Anti-poaching Watchers has been enhanced from Rs.10,000/- to Rs.12,500/- per month.

12.8. Wildlife Management

- Constitution of District Level Wetland Management Committees for conservation and management of the wetlands.
- Creation of State of Art Interpretation Centre with mini auditorium / Theatre in three Tiger Reserves. (KMTR/ ATR /STR) at a cost of Rs.9.00 crore.
- Establishment of sea Turtle Conservation Centre in Nagapattinam District at a cost of Rs 2.00 crore.
- Resolving Human Elephant Conflict through remote based technology in Coimbatore at a cost of Rs.7.24 crore.
- Introduction of Wildlife Studies at Advanced Institute for Wildlife Conservation at Vandalur, Chennai with setting up of International standard Hostel facilities at a cost of Rs. 8.35 crore.

- To emphasize the significance of butterfly species in addition to already existing symbols i.e. State Tree, State Flower, State Bird and State Animal, the 'Tamil Yeoman' (தமிழ் மறவன்) butterfly species is declared as Tamil Nadu State Butterfly.

12.9. Awards

- Sathyamangalam Tiger Reserve (STR) has been awarded as the Best Tiger Reserve in India in terms of "*maximum improvement*" since the last cycle of estimation. Prime Minister handed over the award to Chief Conservator of Forests and Field Director of Sathyamangalam Tiger Reserve during the release of Tiger Estimation Results – 2018 in July 2019.
- Selvi Gurusundari, Forest Guard represented India in Kabaddi World Cup held in Malaysia and won the Gold for

which Hon'ble Chief Minister has felicitated her.

- Thiru Manimaran, Driver TAFCON represented India in Asian power lifting championship held in Hong Kong and won silver medal, for which, he was felicitated by Hon'ble Forest Minister during sports meet.

12.10. Information Technology

Ease of Doing Business

- 'Online application on issuance of permits for Tree felling and Tree Transit including Property mark registration' was made 'Go Live' on 27.05.2019 in the existing Tamil Nadu Forest Department website www.forests.tn.gov.in to ensure transparency.

GIS based multi-variable analysis to assess forest vulnerability to fire

- A book on the study "GIS based multi-variable analysis to assess forests' vulnerability to fire categorized forest areas" as per different levels of vulnerability to fire for focused attention in highly vulnerable and vulnerable forest areas was printed and released as well as guidelines on fire alert issued.

13. CONCLUSION

As the challenges in the forestry sector keep increasing leaps and bounds, and the societal aspirations for a more environmentally friendly living, and whereas forestry becomes increasingly centric to the narratives of the sustainable development in India and in Tamil Nadu, the Tamil Nadu Forest Department has geared up itself to take up those challenges in letter and spirit. In that context the department will focus

on the goals mandated under Sustainable Development Goals, *inter alia*, and will continue to design and implement various initiatives towards achieving the targets under these Goals in pursuit of a balanced growth in line with the national and the State's policies. The Tamil Nadu Forest Department works in tandem with all other concerned departments and in collaboration with various other stakeholders, particularly the communities, hand in hand, to march resolutely and committedly, on the way of accomplishing a balanced and sustainable growth where a healthy environment, to which forests and wildlife health are centric, is a prerequisite not only in the year 2020-21 but in all the years to follow.

DINDIGUL C.SREENIVASAN
MINISTER FOR FORESTS.

ANNEXURE-I

Forest revenue:

Sl. No	Source of revenue	2020-21 Budget Estimate (Rs in lakh)
1.	Sandalwood	119.26
2.	Timber	1469.64
3.	Supply of raw materials to industries	560.37
4.	Other Minor Forest Produce	68.63
5.	Farm Forestry plantations excluding refund	912.05
6.	Sale of bamboo, cashew, softwood plantations, etc.	82.26
7.	Other receipts	5091.87
	Sub total	8304.08
	Deduct recoveries (-)	35.15
	Total	8268.93

ANNEXURE-II

Expenditure:

Name of the Scheme(s)	2020-21 Budget Estimate (Rs in lakh)
State Expenditure	48089.98
Externally Aided Project	1000.00
Centrally Sponsored Schemes	148.67
Schemes shared between State and Centre	1628.28
Total	50866.93

ANNEXURE-III

Tamil Nadu Forest Plantation Corporation Limited

Achievements:

Sl. No.	Raising Plantation Species	Physical (Ha)		Financial (Rs in Lakh)	
		2018-19	2019-20	2018-19	2019-20
1.	Eucalyptus	2254	1846	1039.76	692.82
2.	Cashew	148	1605	53.64	502.82

Pulpwood supply

Year	Quantity supplied (M.T)	Revenue (Rs in lakh)
2018-19	1,86,801.539	7936.68
2019-20	1,58,430.606	7045.64
2020-21 (Budget Estimate)	1,97,730.000	8798.97

Cashew

Year	Revenue (Rs in lakh)
2018-19	1082.36
2019-20	1026.14
2020-21 (Budget Estimate)	1200.00

ANNEXURE-IV

Tamil Nadu Forest Plantation Corporation Limited Revenue and Expenditure

(Rs in Lakh)

Year	Revenue	Expenditure	Profit (+) Loss (-)
2018-19	10348.49	7565.01	(+) 2783.48
2019-20 (As per Revised Estimate)	11912.65	9375.55	(+) 2537.10 (As per Budget)
2020-21 (Budget Estimate)	11005.26	9186.86	(+) 1818.40 (As per Budget)

Proposals for plantations to be raised during 2020-21

Plantations	Physical (Ha)	Financial (Rs in Lakh)
Eucalyptus	1710	815.79
Cashew	258	113.52

ANNEXURE-V

Tamil Nadu Tea Plantation Corporation Limited

Area leased out to TANTEA

Phase	Year	Planted area (in Ha)		
		Nilgiris	Anamalai	Total
Phase I	1969-79	1747.32	..	1747.32
Phase II & III	1979-84	795.87	..	795.87
Phase IV	1990-95	554.21	956.358	1510.568
TOTAL		3097.40	956.36	4053.758

Green tea leaves and made-tea production

Details (in lakh kg)	2018-19	2019-20	2020-21 (Estimated)
Harvest of green tea leaves	255.48	239.65	293.00
Made-Tea production	60.00	58.28	67.40

Revenue and expenditure details

(Rs in crore)

Year	Revenue	Expenditure	Profit (+) Loss (-)
2018-19	56.59	153.88	(-) 97.29
2019-20	42.41	56.69	(-)14.28
2020-21 (Estimated)	76.46	85.73	(-)9.27

ANNEXURE-VI

Arasu Rubber Corporation Limited

Production and financial achievement

(Rs in lakhs)

Sl. No	Particulars	2018-19 (Actual)	2019-20 (Anticipated)	2020-21 (BE)
1.	Production of Rubber (in M.T)	1370.00	1300	1389
2.	Revenue and expenditure			
	a) Income	3184.90	2726.52	2823.40
	b) Expenditure	4102.24	3320.66	3401.25
3.	Profit (+) or Loss (-)	(-) 914.09	(-) 594.14	(-) 577.85

Biodiversity richness of Tamil Nadu

Floral diversity

- Tamil Nadu ranks first among all the States in the country with 5640 species out of 17,672 species (32% of India's)

Angiosperm diversity

- 533 endemic species
- 230 Red-listed species
- 1559 medicinal plant species
- 260 Wild relatives of cultivated plant species

Gymnosperm diversity

- 4 indigenous species
- 60 introduced species

Faunal diversity

Species	Available	Red-Listed	Endemic	Scheduled
Mammals	187	40	24	22
Amphibians	76	56	36	--
Reptiles	177	77	63	9
Birds	454	32	17	42
Fishes	165	126	--	--