



15.1

FOREST AND WILDLIFE

இருபுனலும் வாய்ந்த மலையும் வருபுனலும்
வல்லரணும் நாட்டிற்கு உறுப்பு

– திருக்குறள் 737

Waters from rains and springs, a mountain near,
and waters thence; These make a “land”,
with fortress sure defence.

- Thirukkural 737

Introduction

Forests provide the basic life support system to all the living entities of mother earth including mankind. Forest ecosystems provide fresh air, water resources, fertile soil and agriculture, bio-diversity and environment. Vast sections of rural society, including a majority of the tribal, are directly dependent on forests for their livelihood. Forest degradation will have adverse impact on these life supporting systems.

Escalated levels of human impact on the forest resources and their consequent effect on our approach and strategy to forest management have necessitated the identification of certain specific thrust areas for the Twelfth Five Year Plan. The priority areas for the sector, even while focusing on conservation, augmentation and development of forest and tree resources within the existing forests and outside forest areas of the State, will have to be in tune with the National Forest Policy and the State Forest Policy imperatives, besides reflecting managing Environment and Ecology.

“What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another.”

– Mahatma Gandhi

Forest and Wildlife in Tamil Nadu- Fact Sheet

The State’s forests serve as the source of livelihood and development needs for over 50 lakh people, particularly the poor and women, living in 3072 forest fringe villages in the State. Tamil Nadu has a rich tradition of forest management, forest protection practices, legislations and policies. The unique geographic location of the State enables it to host a wide range of forest biomes across the length and breadth of the State. The forests and vegetation types in the Western Ghats, Eastern Ghats and the Coastal plains are unique and have evolved over millions of years.

Tamil Nadu has 23,625 sq. km. of forest cover, which is 18.16 percent of the



geographical area of 1, 30,058 sq. km. of the State. The forest and tree cover is 28,343 sq. km., which is 21.79 percent of the total geographical area of the State as assessed by the Forest Survey of India (State of Forest Report 2011) as against 33 percent envisaged in National Forest Policy, 1988. The State has 9 out of 16 principal forest types of the country and about 36 forest sub types, hosting a rich biodiversity, as compared to all other southern States. In terms of abundance of both flora and fauna, the State is highly rich. India accounts for one third of the flowering plants recorded on earth, with about 17,672 species. Of this, 5,640 species are found in Tamil Nadu, which gives it the pre-eminent position in angiosperm diversity.

The State has recorded 165 species of fresh water fishes, 76 species of amphibians, 177 species of reptiles, 454 species of birds and 187 species of mammals. Many of the faunal species are endemic to Tamil Nadu. The Protected Area Network spreading over 5,464 sq. km. accounts for 23.9 percent of the State's forest area.

“A nation that destroys its soils destroys itself. Forests are the lungs of our land, purifying the air and giving fresh strength to our people.”

— Franklin Delano Roosevelt

Biodiversity Richness and Wildlife in Tamil Nadu

The Western Ghats in the State has been identified as one of the global bio-diversity hotspot by Conservation International, an internationally recognized NGO. Approximately 25 percent of the Western Ghats is located in Tamil Nadu and is extremely rich in both floral and faunal diversity. The list of Sanctuaries, National Parks, Biosphere Reserves and Conservation Reserve etc. in the State are furnished in Annexure 15.1.1.

Two more Tiger Reserves, namely Anamalai in Coimbatore and Tiruppur districts and Mudumalai in the Nilgiris were notified during 2007.

Tamil Nadu has been taking constant efforts to preserve the habitats and corridors of elephants occurring in the State by undertaking various habitat improvement and protection measures. Taking the migratory pattern of elephant population between different forest divisions into account, four Elephant Reserves (ER) namely, Nilgiri ER, Coimbatore ER, Anamalai ER and Srivilliputhur ER have been declared during 2003, covering entire elephant ranges in the State from Hosur in the north to Kanyakumari in the south. These ER portions in Tamil Nadu are part of the larger elephant habitats, falling in more than one State viz, Tamil Nadu, Karnataka and Kerala with a view to maintain the habitat continuity and to provide for free movement of the larger herbivore, a free-ranging animal.

Mangrove wetlands function as breeding, feeding and 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. Tamil Nadu is having four mangrove formations, namely Muthupet in Tiruvarur district, Pichavaram in Cuddalore district and Kazhuveli in Villupuram district.

In Tamil Nadu, major coral reef formations are found in the Gulf of Mannar, which has been notified as Marine National Park.

For promoting ex situ conservation, breeding of endangered animal species and for creating eco awareness on importance of wildlife through zoo-outreach, large to small size zoos have been formed across the State. They are Vandalur Arignar Anna Zoological Park, Udhagai Deer Park, Kurumbapatti Zoological Park in Salem, Deer Park at Yercaud and Amirthi mini Zoo in Vellore.



A new Zoological Park has been sanctioned at MR Palayam, Tiruchirapalli and is under establishment.

Forest Corporations

There are three forestry based Corporations functioning under the Tamil Nadu Forest Department viz., Tamil Nadu Forest Plantation Corporation Limited (TAFORN), Tiruchirappalli, Tamil Nadu Tea Plantation Corporation Limited (TANTEA), Coonoor and Arasu Rubber Corporation Limited, Nagercoil.

Performance of Forest and Wildlife Sector in Eleventh Five Year Plan Period

Against the actual financial target fixed for various plan years, the actual expenditure during the Eleventh Plan was remarkably more in 2009-10. Details are furnished in Table 15.1.1

Table 15.1.1: Target and Achievement during Eleventh Plan
(₹ crore)

Year	Physical (in ha)		Financial	
	Target	Achievement	Target	Achievement
2007-2008	55295	55295	189.67	172.42
2008-2009	59832	58991	183.78	198.21
2009-2010	7734	8444	157.48	178.15
2010-2011	38954	38244	200.40	138.11
2011-2012	450	450	185.14	206.71

Source: TN-Working group report on Forest and Wildlife for the 12th FYP

The redeeming feature of forestry development is that the State has registered an increase in the total forest and tree cover during the Plan period, as afforestation targets were fully achieved. There has been marked improvement in the population of flagship wild animal species like Tiger, Elephant, Lion

Tailed Macaque, Nilgiri Tahr, Grizzled Giant Squirrel etc.

Recognizing the need to protect, propagate and develop wildlife and its environment in the forest areas of Sathyamangalam division, an extent of 887 sq. km of forest area has been declared as Sathyamangalam wildlife sanctuary during 2011-2012, in view of the area's floral, faunal, geomorphological, natural and ecological significance.

Concerns and Current Trends in Forest and Wildlife Sector

In consonance with the principles of National Forest Policy 1988, the Tamil Nadu State Forest Policy (draft policy) emphasizes on ecological stabilization, protection and maintenance of natural forests, conservation of wildlife, the genetic resources and ecosystems, enhancement of forest productivity and enrichment of the water resources and also on increasing the State's Forest Tree Cover. Current thinking in the area of forest management recognizes the forests as life-support system, particularly for the tribal and forest fringe communities. The need for meeting the livelihood requirements of forest products for forest dependent communities, without depleting the natural capital or jeopardizing its ability to produce such benefits in a sustainable manner continues to be the primary area of concern. Earnest steps are therefore required to synergize the development and livelihood needs of tribal and forest dwelling communities in the State vis-à-vis protection of forests. Participatory and Joint Management of forests are particularly emphasized for restoration of degraded forests in which the role of women and their empowerment are also reinforced.

Forests are increasingly considered as a natural resource, from which communities will derive ecological services rather than economic returns. This thinking is entirely in tune with the National Policy framework. Forests serve as the major carbon sink.



The intangible benefits accruing to the communities from well-maintained forests are in the form of clean air, water supply, agriculture and allied services, aesthetic values etc. In this backdrop, valuation of ecosystem services assumes relevance. Major international and national environmental and forest issues such as global climate change, threat to wild biodiversity engage the attention of our policy planners and are as critical in recent times as in the past. Forest Department has a pre-eminent role in ensuring climate change mitigation by enhancing the carbon sequestration potential of the natural forests and by creating additional tree resources.

As for the biodiversity conservation, the Protected Areas account for only 4.20 percent of total geographical extent of the State, against the national average of 4.82 percent. Thus, there is a need to increase the Protection Area Network in the State. Many species-specific conservation programmes and landscape-based wildlife management initiatives have already been introduced in conserving the State's biodiversity resources.

The sustained efforts in forest conservation and wildlife protection by the Forest Department has led to significant increase in the number of flagship species like Elephant, Tiger, Nilgiri Tahr, Lion-tailed Macaque etc. Increases in number of wild animals has on the other hand introduced another serious problem to the forest dwelling and forest fringe communities by way of escalated human- animal conflict situations, resolution of which also needs to be attended judiciously.

Sufficient efforts will be taken for addressing all these significant issues during the Twelfth Plan period.

Objectives of the Twelfth Five Year Plan

The forests of Tamil Nadu will continue to be managed with the following broad objectives:

- Biodiversity and genetic resource conservation by protection of forests and wildlife.
- Augmentation of water resources in forest areas.
- Rehabilitation and restoration of degraded forests for improvement of forest cover.
- Enhancing tree cover outside forests for livelihood security and climate change mitigation.
- Welfare of tribal and forest fringe communities to ensure economic prosperity and ecological stability.

Thrust Areas

- Biodiversity and Genetic Resource Conservation
- Establishment of permanent water storage structures in the forest and adjacent non-forest areas
- Enhancing Climatic Resilience in moderately dense and open forests
- Forest protection
- Increasing Tree Cover Outside Forests
- Socio-Economic Development of Forest fringe villages
- Tribal Development
- Eco-tourism
- Infrastructure Development
- Research, Transfer of technology and Extension
- Application and Development of GIS, MIS & e-Governance
- Human Resource Development.

Tamil Nadu will care for its ecology and heritage by preserving and wherever possible, improving the quality of the environment and nurturing the cultural heritage of the State. This is outlined as an essential ingredient of Vision Tamil Nadu 2023 document.



“We—human beings—are part of ‘biodiversity’. We are dependent on the whole food chain down below us”.

- Darrell Merrell, Heirloom vegetable farmer

Biodiversity and Genetic Resource Conservation

Tamil Nadu Forest Department is striving to achieve this major mandate, so as to provide higher conservation status to the endemic, endangered and threatened flora and fauna.

The objectives of the State level biodiversity conservation efforts are to be in tune with that of the National and International efforts. They are: Biodiversity inventorization covering the major forest types in the State, identification of threats and frequent scientific assessments of the ecosystems, strengthening protection of species, habitats, representative eco-systems and genetic variability by networking of the existing Protected Areas and addition of more forest areas into PA network, Prevention and eradication of invasive alien species that threaten ecosystems, habitats or indigenous species and restoration of wildlife habitats and management of biological resources outside the protected areas for sustainable use.

Recommended Action Plan to be adopted to attain the objectives is as follows:

- Strict enforcement of the Wildlife (Protection) Act, 1972, Tamil Nadu Forest Act, 1882 and Environment Protection Act, 1986.
- Habitat restoration and improvement measures including fire prevention and control in and around wildlife habitats.
- Eco development work in and around protected areas to provide essential benefits to the occupants of enclosures and villages respectively to ensure their

support and willing participation in wildlife conservation.

- Voluntary relocation of human settlements from inviolate and Protected Areas.
- Prevention of outbreak of contagious diseases among wild animals by taking prophylactic measures among domestic animals entering wildlife habitats.
- Identification and restoration of corridors to facilitate free movement of animals between and around Protected Areas.
- Undertaking human- wildlife conflict prevention and mitigation measures.
- Integrate the wildlife Protected Areas on a watershed or landscape basis with other sectors like Agriculture, Rural Development, Animal Husbandry, etc., for the sustained conservation and development of the area.
- Conserve the medicinal plants in the Protected Area by creation and management of Medicinal Plants Conservation Area (MPCAs)
- Creation of Education and Interpretation Centres to facilitate education and awareness creation on biodiversity conservation.
- Ensure that each and every Protected Area has a Management Plan in place.
- Ensure that tourism demands are subservient to conservation and to the interest of the protected area and therefore wildlife tourism exists for the Parks and not Parks for tourism
- Develop ex- situ conservation centres like Zoological Parks and Gene gardens
- Encourage appropriate monitoring and research works to develop programmes and thereby tackle the identified problems.



Box 15.1.1: Tamil Nadu Biodiversity Conservation and Greening Project

To strengthen biodiversity conservation as well as undertaking tree planting outside the forest areas to increase tree cover, Forest Department will implement a Japan International Cooperation Agency assisted externally aided project named “Tamil Nadu Biodiversity Conservation and Greening Project”. The Loan agreement between Government of India and Government of Japan has been signed. The project is implemented from 2011-2012 to 2018-2019 with an outlay of ₹686 crore through creation of a Project Management Unit sanctioned by the Government.

Source: Policy Note, Department of Forests 2012-2013, GoTN

The four major components of Biodiversity and Genetic Resource Conservation are Conservation and improvement of Biological diversity including Marine biodiversity of the State, Ecosystem Restoration, Integrated development of wildlife habitats and their management and Climate change mitigation and accessing carbon funds.

Adequate steps have been initiated by the Forest Department to mitigate the situations arising out of man-elephant conflict. Provision of Elephant Proof trenches in Anaikatty and Mettupalayam areas are proposed in the Twelfth Five Year Plan. Comprehensive scheme has been approved for Asian Elephant and depredation measures in Coimbatore circle. Similarly, another scheme for Asian Elephant anti- depredation measures at a cost of ₹5.20 crore have been sanctioned for undertaking measures in Dharmapuri, Erode, Dindigul and Tirunelveli circles. Steps are taken for the feasibility of capturing and translocating problematic Elephant in isolated population found in Javadhu Hills of Vellore and Tiruvannamalai

districts. Creation of fodder resources and improvement of wildlife habitats inside the forest area to mitigate the human-animal conflict and to improve the wildlife habitats will be taken up for an amount of ₹44.33 crore.

A rejuvenation camp will be conducted for the psychological improvement of captive elephants from temples and also government departments during the plan period.

To protect the Tiger habitat areas and its adjacent areas in the Sathyamangalam wildlife sanctuary, it is proposed to declare it as State's fourth Tiger Reserve.

Wetlands offer habitat for water birds and serve as favourite feeding and nesting grounds for them. Many of the fresh water and coastal wetlands in the State, have been notified as Bird sanctuaries for the protection of resident and migratory birds. The most notable wetlands of the State include Vedaranyam big swamp, Muthupet lagoon, Kazhuveli swamp and Pallikaranai marshland.

The Pallikaranai marshland is a unique fresh water swamp located within the Chennai Metropolitan area. In order to preserve the marshland to discharge its ecological functions, a comprehensive scheme has been sanctioned for taking up various restoration activities for a period of five years from 2011-2012 to 2015-2016 at a cost of ₹15.75 crore under State fund which include the works of habitat improvement, protection, research and monitoring, public awareness, etc. The Government has also approved the setting up of a “Conservation Authority” for Pallikaranai marshland.

During the Twelfth Five Year Plan a wildlife research institute at Arignar Anna Zoological Park, Vandalur shall be established. A Special scheme has been drawn for establishing a butterfly park in Upper Anaicut Reserve forest near Srirangam at an outlay of ₹8.67 crore.



During the Twelfth Five Year Plan emphasis should be given for induction of wildlife veterinarians especially herpetologists in National parks, Wildlife sanctuaries, Zoological parks etc.

India is a signatory to three international conventions namely Convention on Biological Diversity (CBD), the Convention on Wetlands of International Importance (Ramsar Convention), and the United Nations Framework Convention on Climate Change (UNFCCC). Hence all the proposed managerial interventions are aimed at in achieving the time bound goals and targets for biodiversity conservation, conservation of wetlands and mitigation of climate change not only for international commitment but also for national security.

Biodiversity conservation has been strongly emphasized since Agenda 21 of the Rio Summit 1992. Though a good progress has been made particularly on wildlife, still much needs to be carried out with focus on flora. A particular representative area will be termed as “Biodiversity Conservation Park or Enclave” which will have each forest type demarcated in the respective forests area and set apart for in situ conservation and will also include the species of rare, endangered and threatened category.

The Strategic Goal/Targets based on the United Nations Decade on Biodiversity 2020 and its corresponding proposed action by the department is given in the Annexure 15.1.2.

Box 15.1.2 : Bio-Diversity-Strategic Goals for 2020

- Address the underlying causes of bio-diversity loss by mainstreaming biodiversity across government and society.
- Reduce the direct pressures on biodiversity and promote sustainable use.
- Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- Enhance the benefits to all from biodiversity and ecosystem services.
- Enhance implementation through participatory planning, knowledge management and capacity building

Box 15.1.3: Biodiversity Management Committees

The Biological Diversity Act provides for the establishment of Biodiversity Management Committees (BMC) in all local bodies, whether Panchayats or Municipalities throughout the State and is empowered by the Biological Diversity Act 2002 and Biological Diversity Rules 2004 passed by the Indian Parliament. The main function of the BMC is to prepare People’s Biodiversity Register in consultation with local people. A program for accelerating creation of People Biodiversity Registers (PBRs) in the country with special focus on bio-geographic, socio-economic and regional priorities should be implemented. The PBR should not be an end in themselves but be used to encourage developmental programs for food, health and livelihood security of local communities. In order to demonstrate impact, this program should be implemented on a minimum size and scale of 100 development projects in rural India.

Source: UPC Report of the Working Group on Ecosystem Resilience, Biodiversity and Sustainable Livelihoods for the Twelfth Five-Year Plan



The Tamil Nadu Biodiversity Board should be strengthened and awareness should be created on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits arising out of the utilization of biological resources.

Climate change is one of the most significant threats to human civilization at present. Forests are one of the world's major carbon sinks. The forests contribute significantly to assimilation of global carbon dioxide accumulated from past emissions in the atmosphere and sequester it in soil, vegetation and wood biomass. While the various forest enhancement activities for climate change mitigation will be tackled under different afforestation components, efforts will be taken to estimate the benefits of afforestation and reforestation in climate change mitigation and the scope for accessing carbon funds will be explored through appropriate consultancies, for which a provision has been made.

“The good news is we know what to do. The good news is, we have everything we need now to respond to the challenge of global warming. We have all the technologies we need; more are being developed. And as they become available and become more affordable when produced in scale, they will make it easier to respond. But we should not wait, we cannot wait, we must not wait”.
— Al Gore

Initiatives Related to Climate Change in Forestry Sector

- State of Forests Report 2011 shows continued rise in Tamil Nadu's forest cover.
- Green India Mission: New Mission under NAPCC to fast-track re-forestation.
- Capacity Building in Forestry Scheme: Human Resources Development in the forestry sector.

- Intensification of Forest Management to improve forest management, infrastructure, fire control etc.
- Integration of Forestry operations within MGNREGA.

Policy Development

- Expert Group on Low Carbon Economy: Planning Commission-led Group set up to develop strategy for India as a low carbon economy to feed into Twelfth plan process.
- State Action Plan on Climate Change.

The State outlay of the biodiversity and genetic resource conservation thrust area is ₹232.33 crore.

Establishment of Permanent Water Storage Structures in the Forest and Adjacent Non-Forest Areas

Tamil Nadu is among the first few States to have taken timely cognizance of the enormity of soil erosion problem in the catchment areas of principal rivers. Given the encouraging results obtained through these schemes and other afforestation projects, it is proposed to expand these activities in a holistic and intensified manner within and outside forest areas during the Twelfth Five Year Plan. Recommended strategies to be adopted to attain the objectives are as follows:

- Protection and management of untreated forest areas (upper reaches and lower slopes) by establishing engineering structures and vegetative barriers to prevent erosion and run-off.
- Improvement and maintenance of soil and moisture conservation (SMC) structures erected under TAP Phase I and Phase II in the programme area.
- Undertaking appropriate and improved agronomic practices in the immediate forest buffer areas to boost agricultural income.



Establishment of permanent water storage structures like percolation ponds, check dams and catch water pits is expected to improve the soil moisture regime, recharge ground water aquifer and result in overall improvement in the availability of water for cultivation activities. It is proposed to undertake rain water harvesting works in the forest and adjacent non-forest areas with the assistance of NABARD commencing from 2012-13.

The State outlay in this thrust area is ₹ 439.30 crore.

Enhancing climatic resilience in moderately dense and open forests

In today's context of climate change, the carbon storage capacity of forests and their role in climate change mitigation is receiving increasing attention. The international negotiations in this regard have now recognized the value of ecosystem-based adaptation. Protecting primary forests and restoring degraded forest ecosystems make a vital contribution to both reducing anthropogenic pressure and aiding adaptation to unavoidable climate change. It is the resilience inherent to intact forest ecosystems – fully functional units of plants, animals, micro-organisms, and fungi– that provides the best insurance against climate change prospects. It must be recognized that certain degraded forests, especially those with invasive alien species, may be stable and look resilient, and these forests can pose serious management challenges, if attempts are not made to re-establish the natural ecosystem.

The ever growing human population and cattle / livestock population is exerting ever increasing and constant pressure on these forests for fodder, fuelwood, timber, Non-Timber Forest Produce (NTFP), medicinal plants, etc. This has led to considerable quantum of degradation and depletion in the natural richness in biodiversity of these forests. The systematic removal of selected species of flora and fauna has altered ecological functions and processes, thus leading to degradation in forest types,

particularly in the Eastern Ghats. Hence, there is an urgent need for management intervention to restore the local biodiversity in these forest areas and thus assist the forest resilience.

The broad objectives are:

- To arrest and eradicate invasive exotic species and restore local biodiversity richness.
- To assist natural regeneration through suitable interventions.
- To enhance ecological functions and processes.

Recommended strategies to be adopted to attain the objectives are as follows:

- Assess the risks / threats faced by moderately dense and open forest in respect of their conservation, ecological process, biodiversity richness etc., by involving stakeholders and scientific community at regular intervals.
- Forest consolidation and enhanced protection in ecologically fragile and sensitive forest areas.
- Prevention, arrest and removal of invasive, non local / exotic species of flora.
- Involving all the stakeholders in the process of protection, conservation and non consumptive utilization of forest resources.
- Prevention and eradication of spread of pests and diseases through integrated approach at regular intervals.
- Evolve suitable policy for sustainable conservation of biodiversity and the ecological services in open and moderately dense forests of Tamil Nadu.

Forest Protection

Tamil Nadu State has over a dozen rigid Acts for the protection of forest and wildlife and these Acts are implemented in letter and spirit. The strict implementation of acts and



laws in Tamil Nadu and cooperation of people through implementation of developmental schemes have improved the status of forest protection in State. The international trade in wildlife produce have compounded the problem of protection of wildlife especially for highly endangered species like tiger, elephant etc., but implementation of International treaties like CITES (Convention on International Trade in Endangered Species of Flora and Fauna) has helped in controlling the menace of International trade in wildlife produce.

Short term goals and the activities for the plan period are:

- Creation of Forest Protection Force in every Forest Circle (on the lines of Rapid Action Force of Police Department) for preventing illicit removal of timber, cultivation of marijuana, illicit arrack distillation, encroachment etc.. The force will also be responsible for preventing wildlife poaching and organized smuggling and trade in flora and fauna at domestic and international level.
- Creation of Tribal Forest Friend Force in each Forest Protection Committee for collection of information on illicit trade / smuggling of flora and fauna.
- To carry out detailed field survey, demarcate the forest boundaries by using modern tools like GPS (Global Positioning System) and GIS (Geographical Information System) to prevent forest encroachment.
- Mapping of entire reserve forest areas including National Parks and Sanctuaries into three categories: highly fire sensitive, fire sensitive and less fire sensitive areas for effective forest fire control and management.
- Skill development and upgradation of front line personnel in protection of forests against all forms of crimes.
- Infrastructure development (vehicle,

communication, arms and ammunition) for ensuring effective protection.

- To create a Secret Service fund at Division level for use of District Forest Officer for intelligence gathering.

With a view to enhance the surveillance of vulnerable interior areas, installations of sophisticated monitoring devices like Thermal imaging cameras, installation, commissioning and networking of advanced surveillance will be undertaken at five sites of the State at a cost of ₹8.25 crore during the Plan period.

Box 15.1.4: Creation of Crime Data Bank in the State

A crime data bank like Police crime data bank will be established in office of the Principal Chief Conservator of Forests, Chennai at an outlay of ₹0.50 crore for development of specialized software, engaging of professionals etc. for effective investigation into organized inter-state and international smuggling of forest and wildlife products.

Source: TN-Working group report on Forest and Wildlife for the 12th FYP

The State outlay of the Forest Protection thrust area is ₹59.90 crore

Increasing tree cover outside forests:

The overall demand for wood in Tamil Nadu has been estimated as 23.35 million m³ for fuel wood and 5.133 million m³ for timber (Madras School of Economics, 2008). Against this demand, supply from the trees outside forests accounts nearly for 46.2 percent of timber and 40.9 percent of fuel wood. In respect of timber, the study reveals that the total demand for timber under various scenarios would vary from 5.4 to 6.5 million m³ by 2013 and between 5.7 and 7.7 million m³ by 2018. Therefore, in case of timber,



we have to bridge the supply-demand gap by undertaking tree planting outside forest areas.

Recognizing the fact that Trees Outside Forest (TOF) contributes significantly to socio-economic and ecological status of a country, Food and Agriculture Organization of United Nations has given prominent place to TOF in its Global Forest Resources Assessment Report.

Box 15.1.5: National Mission for a Green India

Government of India has taken initiatives by formulating National Mission for a Green India (GIM) as one of the eight Missions under the National Action Plan on Climate Change (NAPCC) coinciding with the 12th and 13th Five Year Plan Period.

GIM has been conceived as a multi-stakeholder, multi-sectoral and multi-departmental mission that climate change phenomena will seriously affect the distribution type and quality of natural resources of the Country and the associated livelihoods of the people.

GIM puts the “greening” in the context of climate change adaptation and mitigation, meant to enhance ecosystem services like carbon sequestration and storage (in forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, small timber through agro and farm forestry, and NTFPs.

Source: UPC working group report on Forests and Sustainable Management of Natural Resources for 12th FYP

The State has a huge potential for undertaking extensive tree planting in other common lands like the tank foreshores, other poromboke lands, road, railway margins and canal banks.

Main objectives of this thrust area are:

- To create tree resources outside forest areas for meeting the increasing needs for tree products.
- To meet various environmental benefits relating to the abatement of air pollution, reduction of noise pollution, carbon sequestration and aesthetics in urban areas and prevention of soil erosion in rural areas.
- To augment the income levels of the farmers by promoting tree cultivation in private lands.
- To enhance revenue from tree based resources to the local bodies.

The various programmes to be implemented based on the Green India Mission are

Incentive for tree cultivation

By providing an incentive of ₹3 per one year old seedling, ₹2 per 2 year old growing seedling and ₹12 per 3 year old grown seedling, it is proposed to plant about 10 crore of timber and Casuarina seedlings and also provide survival incentive.

Green Village Programme: Homestead Planting in Villages

There are about 64,434 villages and hamlets in the State. These village and hamlets are not presently with much tree cover and there is enormous scope to take up homestead planting. Even if 20 villages/hamlets are selected for this programme in a district under this project, about 640 villages can be covered in the State in a year. The proposal involves planting of seedlings in 3200 villages during the plan period.



Box 15.1.6: Green Cover to Safeguard Biodiversity in Tamil Nadu



With a view to protect the nature and natural resources of Tamil Nadu and to increase the forest cover and to safeguard bio-diversity in the State, the Government has been taking various steps. To achieve the National target of bringing one-third of the land under green cover, the Hon'ble Chief Minister directed that a massive scheme of Tree Plantation to be implemented to increase the greenery in Tamil Nadu. 64 lakh saplings were planted throughout the State at the rate of two lakh saplings in every district. The saplings were planted at a cost of ₹151.80 crore in the premises of schools and colleges, office complexes of Government and private establishments, factories and roadsides. Saplings of traditional trees of Tamil Nadu, which are considered to be suitable for the State would be planted. Tamil Nadu Pollution Control Board allocated the funds for the above scheme. The Hon'ble Chief Minister inaugurated the Scheme on 23rd February, 2012.

Institutional Planting by Supplying Seedlings

Seedlings generally have to be supplied through Forest department or recognized Self Help Groups. This activity will facilitate the participation of the SHG members in raising seedlings and thus more people will participate in tree planting programme.

The programmes based on Green India Mission would be implemented at the cost of ₹10.00 crore

There are 125 Municipalities and 529 Town Panchayats. There are many vacant spaces available for greening viz., roadsides, parks, public places (including Government institutions) and in urban locations. It is therefore, proposed to plant tall (minimum of 1.50 m height) and sturdy saplings, which are of browsable height, in the available



Fig. 15.1.1: Casuarina Plantation under TCPL



Fig. 15.1.2: Teak Plantation under TCPL

spaces. Thus, planting programme involves both avenue planting and block planting depending on the location. It is proposed to plant 5,000 seedlings / per year in each



of the 10 Corporations. In each of the Municipalities, it is proposed to plant 1,000 seedlings per year, whereas 500 plants will be planted in each of the Town Panchayat every year. Overall, 23.925 lakh seedlings will be planted at an outlay of ₹ 8.61 crore during the plan period. TCPL (Tree Cultivation in Private Lands) is usually practiced in fallow and marginal lands and also along the agricultural field bunds. By this practice, the tree growers meet their requirement for fuel wood, green manure, fodder as direct benefit flow besides additional income. In addition, the productivity increase of their agricultural land will be an extra benefit for them.

The species selected are those which are in demand and are even being imported by wood based industries like *Ailanthus excelsa* (match wood) *Melia dubia* (veneers and plywood) Teak (furniture) *Casuarina* (scaffolding and firewood) etc. Demand driven and readymade market ensures profitability. Further, the timber from most of the species is not perishable in short period of time like other annual cash crops or food grain crops and that with demand more than supply implies that a buy-back arrangement or support price is not needed at present. If need arises in future, buy -back arrangement with the wood based industries will be considered.

The Thane cyclone had caused extensive damage to the tree assets created along the river/canal banks and on the coastal belts by the Forest Department. It is proposed to restock an extent of 5,535 ha of the affected areas with tree species like teak, *causarina*, *eucalyptus* etc., commencing from 2012-13.

Enactment of Tree Act

Necessary rules will be framed under the provision of Tamil Nadu Forest Act, 1882 for regulating the felling of trees in all the Government lands except *Prosopis juliflora*. A Tree Authority will be constituted to regulate the felling of trees and to ensure the planting of new trees in lieu of trees felled.

The outlay for the thrust area “Increasing Tree cover outside forests” inclusive of Externally Aided Project share is given in Table 15.1.2

Table 15.1.2 : Financial outlay for “Increasing Tree cover outside forests”

S.No	Activities	(₹ Crores)
1	Tree cultivation in private lands including incentives	149.60
2	Urban Planting	8.61
3	Road Avenue and Canal plantation	48.13
4	Greening the villages	9.80
5	Tank foreshore plantations	280.34
6	Massive tree planting programme	151.80
7	Establishment of Central nurseries	10.00
8	District level tree growers’ society	0.90
Total		659.18

Source: TN-Working group report on Forest and Wildlife for the 12th FYP

Socio-Economic Development of Forest Fringe Villages:

The Forest Department has to coordinate with the other government agencies in generating more resources and opportunities for the fringe or forest dwelling communities for their development. The ultimate goal is conservation of forests and marked improvement in living standard and life style of forest fringe dwellers through social capital formation in them and their willing participation in various programmes devised in this plan.



Main objectives of this thrust area:

- To remove anthropogenic pressure of forest fringe dwellers by providing them alternative livelihood options and improving their life style so that they are weaned away from subsistence living.
- To provide minimum basic civic amenities such as housing, education, health care, drinking water, communication, sanitation etc. to poor and landless fringe dwellers.
- To improve productivity of agricultural lands through land improvement, provision of irrigation, and capacity building
- To provide alternate livelihood opportunities like establishing rural micro – enterprises.
- To bring the forest fringe dwellers to the mainstream of society.

The above strategy is based on two premises: i) building the social capital by way of enhancement of individual income and ii) augmenting natural capital by way of promoting natural resource based activities. The schemes/projects sanctioned to address the above concerns will be implemented with trained forestry personnel supported and backed by research and extension. Projects will be implemented with the active cooperation of key stakeholders most importantly the forest fringe dwellers. The activities aiming at the development of social capital and natural capital are classified as given in Table 15.1.3.

Table 15.1.3 : Activities for Development of Social and Natural Capital

Social Capital	Tree Based Natural Capital
Educational	Bamboo Plantation
Health Care	Sericulture
Infrastructure Development	Agroforestry
Micro enterprises	Silvipasture

Social Capital	Tree Based Natural Capital
Institution Building	Horticulture
Skill Development Training	Energy Plantation
Housing	Medicinal Plant Cultivation
Market Linkages	Other Natural Resource Based
Micro Credit	Fishery, Ornamental Fish Farming, Non-Timber Forest Product Processing, Vermicasting, Bee Keeping, Agriculture Development, Dairying etc.,

Tribal Development

The present forest management of Tamil Nadu is centered on using modern technology and management options without compromising the sustainable use of forestry resources and economic values associated with this. The Convention on Biological Diversity (CBD) insists that the value of the bio-resources should go to the under privileged who protect them, therefore, the conservation of biological diversity is intrinsically linked to socio economic development of tribals.



Fig. 15.1.3: Tribal Forest Village

As per the 2001 population census, Tamil Nadu has a tribal population of 6.51



lakhs which comprises 1.04 percent of the total population. There are 36 tribes and sub tribes in Tamil Nadu most of whom are cultivators, agriculture labourer or dependent on forests for their livelihood. There are six primitive tribes namely Toda, Kota, Paniyan, Kurumba, Irula, Kattunayakan in Tamil Nadu. With the change in time, there have been changes in the tribal life system due to socio economic development, but the change for tribals living within the forests has been slow. Multiple agencies like the District administration, the Forest Department, the Adi dravidar and Tribal Welfare Department and others have attended to the needs of the tribals within and outside the forests. The tribal settlements require better infrastructure. There is a strong need for improvement in the quality of life, provision of all basic amenities, health care and nutritional back up to the tribal settlements. The tribal have to be given proper educational services to remove illiteracy. Poverty alleviation through enhancement of bio productivity to appropriate levels is also important.

The main objectives of this thrust area:

- To meet livelihood needs of the tribals
- To provide health, education, electricity, drinking water supply, housing and approach roads and thereby improve the standard of living of tribals within forest areas.
- To provide and promote agricultural development activities in their lands;
- To establish partnerships with tribals for their development, empowerment and engaging them in conservation and management of the forest wealth in the State.
- To develop required skills in tribals and utilize their knowledge for augmentation of the forest resources.

Strategies include

- Collection of base line data before the

project period by the involvement of NGO's and VFC's (Village Forest Council) is the prior requirement.

- Promotion drives of Entry Phase like; Promotion meetings, Awareness Camps, NGO Drive, Co-ordination meetings with Line Departments. All Training component has to be conducted in the first year.
- Activation of existing idle VFC,s and SHG,s by providing Support money.
- Health and Education aspects to be attended by collaborating with the line department as well as through Buffer zone activities in the Tribal villages.
- Formation of Common User Groups for improving Market channel efficiency, promotion of Tribal handicrafts, etc.
- Selection of site for all Development works like Construction works, Buffer Zone Activities and initiation of works.
- Employment Generation Activities like; Plantation work, Construction work, and Alternate Income Generation. Activities have to be focused by selecting beneficiaries, prioritizing to the needs of vulnerable groups first.
- NTFP collection, Value addition, marketing of the same through tie ups with the industrial firms for stream lining of Sustained NTFP collection.
- The activities of EDC's, SHG's have to be streamlined, with proper guidance for their sustainable livelihood activities and monitoring the benefit sharing.
- Periodical Review, inspection of the ongoing activities and audit.

The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 was enacted to recognize and vest forest rights in forest land to forest dwelling Scheduled Tribes and other Traditional forest dwellers who have been residing in such forests for at least three generations. The Adi Dravidar and Tribal welfare Department is the nodal Department



Box 15.1.7: Ecologically Sustainable Development in 33 Tribal Villages

33 forest fringe tribal villages have been identified that need priority attention in terms of provision of basic amenities and opportunities for alternate livelihood. The activities include village surveys, participatory planning, community development and income generation activities. Women empowerment will be given adequate thrust by encouraging their participation in all activities including considering certain reservation in the VFC Presidentship. The works are taken up under JICA assisted Tamil Nadu Biodiversity Conservation and Greening Project under the component of ecologically sustainable development in tribal villages peripheral to Reserved Forests at a cost of ₹ 5.14 crore during the Twelfth Plan period.

Source: Working group report on Forest and wildlife for the 12th FYP

for this Act and the Forest Department is facilitating the implementation of the Act. Once the tribal people are vested with the rights under this act, land development and infrastructure development will be assisted under special tribal development programmes

Traditional skill development training for Tribals

The traditional skill development training for the tribals are bee keeping and wild honey collection, making brooms, potteries, reed, cane, palmyrah and bamboo products, processing, value addition and marketing of NTFP (Nelli, Galnut, Pungan, Medicinal plants etc), Improved agricultural practices and value addition of farm products, Eco-tourist guides and helpers, carpentry and toy making, Clay modeling, tailoring, knitting and embroidery, driving of vehicles, two wheeler mechanics, electrical wiring and plumbing, computer operations and use of internets, catering services and health training (Nursing, mid-wife etc).

All activities for providing basic infrastructure and livelihood avenues to the tribal communities will be undertaken in this thrust area.

The State outlay for the thrust area “Tribal Development” is ₹139.40 crore.

Eco-Tourism

The forests, Wildlife, Sanctuaries, National parks, Seascapes covering long coast line with many unique coastal formations like mangroves, coastal sand dunes, back waters close to the hamlets of the forest and coastal dwelling communities offer immense scope for developing eco-tourism ventures. The forest fringe village communities, in the remote inaccessible forest areas are away from development mainstream and the benefits of Government schemes do not adequately reach them. There is little scope for livelihood option within these villages and therefore interventions, which will provide income generation support to them from the Government, will go a long way in reducing poverty and improving the quality of life of these people.

One such option available to them is benefits arising from Eco-tourism. The village people have the necessary innate skills and knowledge of forest and wildlife and can participate in the eco-tourism ventures through eco-tourism committees. The villages close to eco-tourism sites lack facilities and require infrastructure, training and marketing support for Eco-tourism.

Eco-tourism ventures will follow the broad principles of carrying capacity, development of eco friendly infrastructure so as to leave minimum impact at the tourism sites. Tourism management within the PAs, forest areas and adjoining non-forest locations will require infrastructure development, enhancing the skills and capacities of the forest field staff and the local communities, creation of awareness through publicity etc, for which necessary allocation has been provided. Improvements in the existing Sanctuaries and National Parks with



recent techniques involved in dissemination of information like touch screen model, short film shows etc., for the public shall be undertaken.

The State outlay of the Eco-tourism thrust area is ₹11.83 crore.

Infrastructure Development

The potential concerns facing the forestry infrastructure have been identified and guidelines to optimize the functionality of State forest infrastructure in the current planning horizon are suggested.

The objectives to meet our current and future needs of infrastructure are:

- To improve the efficacy of the forest protection machinery of the State so as to effectively manage the forest resources of the State.
- To support forest and wildlife conservation by improving a host of infrastructure facilities like buildings including office buildings, anti poaching sheds, housing facilities for staff and officers, camping/ inspection sheds, rest houses, roads, vehicles, communication facilities, office automation and other infrastructure including interpretation centres.
- To provide for creating, improving and satisfactory maintenance of the forest infrastructure that are needed to make it self sufficient for achieving better organizational efficiency.
- To provide for the ecological services from the forest areas to the people of current and future generation without compromising the ecological balance.

The State outlay for the infrastructure development thrust area is ₹78.82 crore.

Research, Transfer of Technology and Extension

The broad focus of the research wing has been on bio diversity conservation and bio productivity enhancement. The research wing from its inception mandated its activities on specific thrust areas like silviculture, tree

improvement and forest genetics, soil nutrient management, seed biology, afforestation and nursery research, plantation research, bio diversity conservation, agro forestry and organic tree farming and post-harvest technology. It is proposed to continue research in the same line and to take up research on species recovery, sacred groves, study on pollinators, biodiversity enhancement and bio-productivity etc., also during the Twelfth Five Year Plan period. Further, emphasis will be laid on collaborative research programmes with Universities, Research Organizations and Institutions, supply of quality planting material by establishing/maintaining seed production areas. New areas of research would include valuation of ecosystem services, environmental research and bioremediation.

The research programmes will be undertaken in tune with the broad objectives viz., Bio diversity conservation and improving productivity of the trees grown outside the forests besides devising techniques for afforestation of problem sites. The objective will also include newer focus areas like studying the impact of climate change on forest types, valuation of ecosystem services of forests etc.

Post-harvest technologies such as Solar seasoning, chemical treatment, wood working, veneer peeling, match cutting, ammonia fumigation etc. are applied to the end products from various timber species for the furniture making, plywood, toys, handicrafts, and match and pulpwood industries.

It is recommended to commence a Science Park in each district and a Bio Park in Forest College and Research Institute, TNAU, Mettupalayam with a special focus on post-harvest technology of wood in lines with the Institute of Wood Science and technology (IWST) Bangalore.

The ecosystem services of forest like hydrological benefits, soil conservation, flood control, carbon sequestration, fresh air generation, climate stabilization, biodiversity conservation etc. are now accepted worldwide.



The Forestry sector needs to be looked at differently especially for ecological services rather than tangible outputs and must be compensated for the ecological services it provides so that higher quantum of funds will be invested in Forestry sector. A methodology shall be put in place for transferring the benefits of ecological services from those who derive these benefits to those who are directly involved in forest conservation including rural and tribal communities. All these ecosystem services rendered by the forests will be sought to be assessed quantitatively.

The State outlay under this thrust area is ₹60.69 crore

Forest Extension

The extension wing of the Forest department helps to take the technological findings from the Research studies to the fields. The State has a strong network of Van Vigyan Kendras and Forest Extension Centers. The infrastructure facilities in these Centers will be strengthened so as to put the facilities for enhanced outreach. Capacity building in the extension staff, training to farmers, supply of seedlings, demonstration plots etc will be carried out to maximize the benefits from the department's outreach efforts.

Application and Development of GIS, MIS & e-Governance

The real foundation for GIS in Tamil Nadu Forest Department was laid under Japan Bank for International Cooperation (JBIC) funded Tamil Nadu Afforestation Project (TAP) in 1997. The Tamil Nadu Forest Department realized the importance of Information Technology (IT) initiatives in sharing of information at low cost, lightening speed, transparency and has capitalized on the potential of IT in circumventing the digital divide and putting forestry onto a new platform of e-governance.

It is envisaged to develop the GIS database and strengthen the Geomatics Centre through its Regional units not only for various field applications but also for capacity

development. It is also suggested to strengthen the existing Management Information System (MIS) through development of the web-based application for wider coverage and sharing of data, both in Forestry and Wildlife sectors. The State outlay under this thrust area is ₹8.02 crore.

Human Resource Management

Human Resources Management is proposed to be implemented during Plan period with the major objectives of creating able and motivated workforce and to utilize such workforce to accomplish department's goals. This shall be achieved by enhancing the technical and managerial skills of the personnel working in the Department, to keep pace with the emerging needs of the forestry sector. For this purpose, emphasis will be given to develop and maintain facilities and opportunities for individual as well as group development of the staff.

Special Recruitment Cell on the lines of Uniform Service Recruitment Board

For recruitment of the Forest personnels, a Special Recruitment Cell on the lines of USRB in the Police Department will be formed in Tamil Nadu. The State outlay in this thrust area is ₹111.94 crore.

Gender issues in Forestry sector

There will be general emphasis on women empowerment in all the forestry activities during the plan period.

- There is already a provision for 50 percent membership in all the JFM (Joint Forest Management) Committees and executive committees of the JFMCs. The position of presidentship of the JFMCs is also open to women. At present, women presidents head 132 Village Forest Councils. In the project villages, 7174 SHG (Self Help Groups) have been formed till 2010-2011, benefiting 1,04,976 women members. In the Global Environment facility supported eco development project in Gulf of Mannar Biosphere Reserve, 2110 SHGs comprising



- of 68,251 members have been formed in 248 coastal villages with a financial assistance of ₹7.76 crore.
- In the development of micro enterprises to increase income of families and creation of alternate income generation activities, the focus is on the women SHGs. At present, the women members of the JFMs get the loans for enhancing their family income and alternate livelihood opportunities.
 - All the forestry programmes will be executed with an objective of generating rural employment for the women in the forest fringe villages. Their engagement with forestry related activities including collection of NTFP will provide avenue for employment of women in forestry sector activities.
 - Out of 6146 Executive staff in the Forest department, 214 are women employees.

Table 15.1.4: Twelfth Plan Outlay - Forest and Wild Life

(₹crore)

S. No.	Thrust area	State	Shared	Central	EAP	Total
1	Bio diversity and genetic resource conservation	232.33	0.75	380.49	96.50	710.07
2	Establishment of permanent water storage structures in the forest and adjacent non-forest areas	439.30	0.00	0.00	0.00	439.30
3	Enhancing climatic resilience in moderately dense and open forests	0.00	0.00	116.66	0.00	116.66
4	Forest protection	59.90	6.50	0.00	20.25	86.65
5	Increasing tree cover outside forests	498.68	0.00	0.00	160.50	659.18
6	Socio economic development of forest fringe villages	0.00	0.00	0.00	35.14	35.14
7	Tribal development	139.40	0.00	0.00	5.28	144.68
8	Eco – tourism	11.83	0.00	0.00	10.52	22.35
9	Infrastructure development	78.82	0.00	0.00	38.00	116.82
10	Research, transfer of technology and extension	60.69	0.00	0.00	29.80	90.49
11	Application and development of GIS, MIS and e-governance	8.02	0.00	0.00	20.09	28.11
12	Human resource management	111.94	0.00	0.00	12.28	124.22
	Total	1640.91	7.25	497.15	428.36	2573.67
	On-going Schemes	505.00	0.00	0.00	0.00	505.00
	Grand Total	2145.91	7.25	497.15	428.36	3078.67