6. Forests, Wildlife and Environment
6.1. Forests and Wildlife

Eat your food to satisfy your hunger, and drink to satisfy your thirst. Satisfy the necessities of life like the butterfly that sips the flower, without destroying its fragrance or texture

- Lord Buddha

6.1.1. Introduction

The forest is a complex ecosystem consisting mainly of trees that buffer the earth and support a myriad of life forms. The scientific reasons for the need to protect forest for the benefits of mankind is well known. The Jainism and Buddhism are celebrated as the first religion to propagate rational thinking and ethical values. Saint Vardaman preached that materialism and religion are interwined and the plants and birds have life. Gautama Buddha preached against killing of living beings. Buddha attained bliss under the tree after renouncing the nation and wandering through the forests. Two thousand years before, Tamils have classified lands into five categories and named the forestlands as ‘Mullai’. The Arthasastra written during the Mauryan rule classified forests into three and framed rules to protect them. The trees help create a special environment which, in turn, affects the kinds of animals and plants that can exist in the forest. Trees are an important component of the environment. They clean the air, cool it on hot days, conserve heat at night, and act as excellent sound absorbers. People began life on this Planet as forest dwellers. They were food gatherers and depended on the forest for all their needs: food, clothing, and shelter. They gradually became food growers, clearing a small patch in the forest to grow food. But they continued to depend on forests to meet many of their needs. Even today people depend on the forest for paper, timber, fuel wood, medicine, and fodder.

Tamil Nadu State is spread over a geographical area of 1,30,058 sq.kms. It has a recorded forest area 22,877 sq. kms. accounting for 17.59% of its total geographical area. The Forest cover in the State is 22643 sq. kms. i.e., 17.41% and tree cover in the State is 4991 sq. kms. i.e., 3.84%. Total Forest cover and Tree cover in the State is 27634 sq. kms. which is 21.25% of the geographical area of Tamil Nadu. This proportion is very much below the National Forest Policy stipulation of 25% by 2007 and of 33.33% by 2012 and also below the
national average of 21.16%. The recorded forest comprises of 19285 Sq. Kms. of Reserve forest, 2254 Sq. Kms. of Reserve land and 1306 Sq. Kms. of unclassified forests. In terms of per capita measure of forest land, the figure for Tamil Nadu is 0.04 hectare as against the national average of 0.08 hectare. These basic indicators of forest estimates clearly highlight the scarcity of forest resources in the State.

The forests of Tamil Nadu have undergone drastic changes over the period. The scientific forest management began in 1806. The British managed forests for timber, followed by establishment of Plantation forestry, with silvicultural practices. The forests were managed by bringing the forest administration under state control and through well drawn out Working Plans. Yet the dependency on forests for fuel wood, small timber, fodder from the fringe villages continued unabated, leading to degradation of the forest resources and the ecosystem and also led to fragmentation of the once contiguous forests into patches. This also led to human-wildlife conflicts, which continue even today.

After independence, the state forests witnessed large scale diversion of forest land for hydroelectric projects, agriculture and industrial growth. The management of forest resources has been in tune with commercial demand for timber and firewood harvesting through felling cycles and fuel coupes, and conservation of forest resources received a set-back. This movement was supported by creation of tree resources outside and within forests by extension forestry, social forestry, interface forestry, production forestry to meet the demands of community and industries. The socio-economic dynamics of forest management took roots in the state from 1980 and gained strength and focus from 1990s, with the introduction of Joint Forest Management. The Tamil Nadu Afforestation Project Phase-I is a pioneer project in the country which took active support of the local community for restoration of degraded forests.

The National Forest Policy of 1988 principally aims at maintenance of ecological balance and environmental stability that is vital for the sustenance of all life forms, human, floral and faunal, and calls for making direct economic benefits from forests subordinate to this principal objective. The policy seeks to achieve this aim by bringing at least one third of the total land area and at least two-thirds of the total hill area of the country under forest or tree cover.
The basic thrust of the Tamil Nadu State Forest Policy is towards attaining ecological stabilisation, protection of forests, wildlife conservation, conserving the genetic resources and eco-systems and maintenance of all natural forests, enhancing forest productivity and enrichment of the forests’ water resources and also increasing the forest and tree cover in the State.

The State has nearly 16% of the forest area declared as Protected Areas. The State is also a part of the Global Mega Bio-diversity hotspots, namely the Western Ghats which are home to several endemic floral and faunal species. As on date, there are eight sanctuaries, five National parks, twelve Bird Sanctuaries, three Biosphere Reserves, one Project Tiger area, one Project Elephant area and one gene pool garden in Tamil Nadu. The State is also endowed with the unique coastal line hosting rich mangroves and associated forest types. Eastern Ghats also contribute to the richness of biodiversity of the State. The State also has very rich medicinal plants biodiversity spread across all forest types. The forests of Tamil Nadu are governed by the Tamil Nadu State Forest Act, 1882, Wild Life Protection Act, 1972 and a host of Rules formulated under the rule enabling powers of the Act. The forest legislation contains provision for the implementation of the forest policy.

6.1.2. Tenth Five Year Plan Performance

Financial performance

As against the total outlay of Rs.1762.60 crore and the State budgeted outlay of Rs.1200.00 crore, the amount spent was Rs.702.48 crore in the Tenth Five Year Plan period for implementing the forestry sector activities. The detailed break-up is given in the table below:
Table 6.1. 1

Financial Achievement during the Tenth Five Year Plan

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Scheme</th>
<th>Total outlay</th>
<th>State budget</th>
<th>Expenditure</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Social And Farm Forestry</td>
<td>224.80</td>
<td>224.80</td>
<td>471.61</td>
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<tr>
<td>2.</td>
<td>Forests Produce</td>
<td>18.83</td>
<td>18.83</td>
<td>22.18</td>
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<td>3.</td>
<td>Wild Life</td>
<td>158.94</td>
<td>13.83</td>
<td>34.50</td>
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<td>4.</td>
<td>Tribal Development</td>
<td>50.00</td>
<td>-</td>
<td>6.75</td>
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<tr>
<td>5.</td>
<td>Forest Protection</td>
<td>100.00</td>
<td>70.00</td>
<td>48.01</td>
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<td>6.</td>
<td>Research</td>
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<td>87.02</td>
<td>7.43</td>
</tr>
<tr>
<td>7.</td>
<td>Soil &amp; Water Conservation</td>
<td>24.28</td>
<td>24.28</td>
<td>3.07</td>
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<tr>
<td>8.</td>
<td>Communications and Buildings</td>
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<td>104.20</td>
<td>18.70</td>
</tr>
<tr>
<td>10</td>
<td>Extension And Training</td>
<td>53.05</td>
<td>53.05</td>
<td>4.96</td>
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<td>11</td>
<td>Special Area Management Programme (WGDP, HADP etc.)</td>
<td>337.49</td>
<td>-</td>
<td>37.01</td>
</tr>
<tr>
<td>12</td>
<td>Forestry&amp;Wildlife &amp; Forest Settlement</td>
<td>8.20</td>
<td>8.20</td>
<td>44.90</td>
</tr>
<tr>
<td>13</td>
<td>Cashew Plantation</td>
<td>-</td>
<td>-</td>
<td>0.06</td>
</tr>
<tr>
<td>14</td>
<td>Direction and Administration</td>
<td>12.17</td>
<td>12.17</td>
<td>0.03</td>
</tr>
<tr>
<td>15</td>
<td>Social Security and Welfare</td>
<td>-</td>
<td>-</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1762.60</strong></td>
<td><strong>1200.00</strong></td>
<td><strong>702.48</strong></td>
</tr>
</tbody>
</table>

Physical performance

Many innovative projects and schemes were introduced under the State Plan schemes, centrally sponsored schemes, shared schemes and externally aided projects. This Plan period witnessed the end of TAP Phase-I in 2004-05, and initiation of TAP Phase II Project from 2005-06 onwards. Wildlife conservation, particularly management of Kalakkad Mundanthurai Tiger Project received appreciation from World Bank. Aquatic biodiversity including marine bio diversity was given emphasis. The Gulf of Mannar Biosphere Reserve was declared a Trust during the period. The support from DANIDA continued through Foundation for Revitalisation of Local Health Traditions (FRLHT), Bangalore for conservation of medical plants project in the State, which ended in 2004 and led to new scheme/Plan for integration of the scheme into other programmes in the department. Increased emphasis was placed on in-situ and ex-situ conservation of endangered flora and fauna. The Arignar Anna Zoological Park (AAZP) played a major role in the conservation initiative of
Lion Tail Magague (LTM), outreach activities through zoo schools and education programmes received emphasis. The National Afforestation Programme through the Forest Development Agency supported Joint Forest Management initiatives in restoration of degraded forests. Organic tree cultivation through inputs like vermicasting, Vesicular Arbuscular Mycorrhizae and bio-fertilizers supported the restoration programmes, in the State. Forestry extension activities were strengthened across the entire state. The findings of the research were translated through demonstration plots / on farm trials, laid out in the centres and also in the farmlands. The integrated forest protection scheme was a novel approach which strengthened critical areas of forest protection and management particularly fire and other threats through better surveillance, mapping and GIS support.

**Gulf of Mannar Biosphere Trust**

Gulf of Mannar is the first Marine Biosphere Reserve not only in India, but also in South and South East Asia. The Gulf of Mannar and its 3,600 species of flora and fauna is one of the biologically richest coastal regions in all of mainland of India. The Biosphere Reserve comprises 21 islands with estuaries, mudflats, beaches, forests of the near shore environment, including marine components like algal communities, sea grasses, coral reefs, salt marshes and mangroves. As a new initiative, a Trust has been set up to enhance protection through infrastructure development, capacity building of all stakeholders through training, to create awareness, to undertake research and monitoring works on themes of resource inventories and to ensure participation of local communities and securing alternative livelihoods for them. The works carried out by the Gulf of Mannar Trust include, expanding the park infrastructure, preparation of a bio-diversity overlay for the reserve, and developing and demonstrating sustainable livelihood options for the inhabitants of the area. The works carried out under this Trust extend from the period 2002 to 2011. The stakeholders of the Trust include the UNDP, the Global Environment fund, the GOTN, the GOI as well as various Government corporations. Out of the total GOMBRT fund of Rs.121 crore, the contribution of GOTN is Rs.26.74 crore, GOI is Rs.3.78 crore, UNDP is Rs.4.50 crore and other stakeholders are Rs.85.98 crore.
Tamil Nadu Afforestation Project (TAP): PHASE-I (1997-98 to 2004-05)

In order to uplift the quality of life of villagers abutting the forest areas and to restore the degraded forests in Tamil Nadu through their participation, a massive Joint Forest Management based “Tamil Nadu Afforestation Project” Phase-I was implemented from 1997-98 to 2004-05. The Project was originally conceived for 5 years from 1997-98 to 2001-2002 at a base cost (cost at the time of project preparation) of Rs.499.20 crore for 1000 villages and an area of 3,36,106 ha. This project achieved all the physical targets without time or cost over run in 2001-2002. Due to savings in the loan amount and also due to exchange fluctuation, the project was extended to two more years i.e., 2002-2003 and 2003-2004 benefiting 258 more villages and 82400 ha. The project was carried out during 2004-2005 with State Government funds. The overall outlay of the project was Rs.688 crore with a soft loan of Rs. 483 crore from Japan Bank of International Cooperation (JBIC) and State Government funds of Rs.205 crore.

Tamil Nadu Afforestation Project (TAP): PHASE-II (2005-06 to 2012-13)

Tamil Nadu Afforestation Project Phase-II is being implemented with an outlay of Rs.567.42 crore with a soft loan of (Rs. 409.08 crore) from Japan Bank for International Cooperation(JBIC) and balance Rs 158.34 crore from State Government funds. The main strategy is to treat the area through Joint Forest Management on integrated watershed basis. Improving the quality of life of tribals is given more emphasis.
Box 6.1.1

*Tamil Nadu Afforestation Project (TAP) Phase-I*  
*(1997-98 to 2004-05)*  
*Achievements*

- Degraded forests and other lands over an area of 4.80 lakh ha. has been restored.
- 1367 Village Forest Councils have been formed.
- More than 1,75,000 forest dependents and poorer sections have benefited by alternate employment.
- About 3891 Self-Help Groups benefiting around 60,000 women were formed in all programme villages.
- Community assets like overhead tanks, borewells and hand pumps, community halls, threshing floors, ration shops, libraries, balvadis, etc. have been provided to improve the quality of life in all programme villages.
- 23454 check dams and 2201 percolation ponds have been constructed for rain water harvesting which enabled creating a capacity of more than 800 million cubic feet of water storage. It has also helped in augmenting agricultural production.
- 609 lakh person days of labour have been generated in the past eight years. To increase the tree / forest cover outside the reserved forests, 15 Forestry Extension Centres were established in this project.
- To utilize Information Technology, a Geomatics Centre was established at Chennai. Computerization in Forest Department has been done at the level of Range Offices.
- Inter-sectoral linkage was given a major thrust in the Project. District level JFM Committees have been formed in 27 districts and works worth Rs.60 crore have been implemented in 1115 TAP villages by 22 line Departments.
6.1.3 Eleventh Five Year Plan

The National Forestry Policy, 1988 has envisaged that the forest/tree cover in the country would be brought to 25% by 2007 and to 33% by 2012. The present forest/tree cover in Tamil Nadu is 21%. Though there are many sites in Tamil Nadu where potential natural regeneration and restoration is possible, much of it is under agriculture or taken over by urbanisation and industrialisation including settlements in the past few years. To bring such areas under forests and to increase the forest and tree cover remains a big challenge. There is need for bringing all available lands like government, institutional, farm lands, private lands to a large extent under tree cover fold by tree farming.

Objectives

- To enhance tree cover outside forests for livelihood security.
- To ensure environmental and ecological stability of the state.
- Conservation of biodiversity, wildlife and genetic resource.
- Conservation and management of coastal ecosystem.
- Resource management and augmentation of forest protection.
- Water augmentation through forest conservation and catchment area management.
- To ensure ecological stability and economic prosperity through tribal development.
- Technology support, research, remote sensing, GIS and extensions for scientific forest management.
- To empower women for sustainable forest management.
- Human resource management for scientific forestry management.
- To monitor efficiently the delivery mechanism through Infrastructure development.
**Strategy**

The Eleventh Five Year Plan may have to take a new path with emphasis on resource mobilization for tree cultivation outside the forest area. The thrust area of trees outside forests today has emerged as new opportunity not only to support increased tree cover but also to improve farm income for the small and marginal farmers in the State.

This Plan will for the first time seek to engage the rural landless poor and the marginal farmers into tree cultivation and also support the dynamic growth of the primary sector in the state while also assuring that the forests are protected and conserved for harnessing the expected forest based goods and services for the benefit of the people in the State. The following are the major thrust areas, which includes the important schemes of the department to be implemented during the Plan period.

**i. Increasing Tree Cover Outside the Forest Areas of Tamil Nadu**

Tamil Nadu is one of the pioneer states that initiated “Community forestry programmes” (ie) afforestation in the community lands and wastelands as early as 1960. In the seventies, in pursuance of the interim recommendations of National Commission on Agriculture, other programmes known as extension forestry, mixed Plantations and village forests were implemented to develop tree cover on all available lands for the benefit of the local community. From the year 1997, under the Tamil Nadu Afforestation Project (TAP), importance is given to restock/restore the degraded forests. About 20,000 ha of revenue / community lands have been covered under the component of “Greening community land “from 1997 to 2002. In fact, after SIDA programme no serious efforts were made to bring more area under tree cover especially outside the forest area.

With the experience and confidence gained from SIDA project and the successful module evolved for participatory approach under TAP, the forest department of Tamil Nadu can go for various community forestry programmes in the available community and wastelands such as Tankfore shore, Revenue hillocks, canal banks, Riverbeds, Road avenues, Tank bunds, etc. The project envisages to bring about 7 Lakh Ha. under tree cover during the Plan period and increase the tree cover considerably outside the traditional forest area. The total outlay proposed for this objective is Rs.375.00 crore.
The objectives are to bring all the barren community lands, wastelands, public, private lands, institution lands, etc. under suitable tree cover in order to achieve 33% of geographical area of Tamil Nadu under green cover by 2012.

By the end of the Plan period, with the support of extension services all efforts will be made to increase the tree / forest cover to 33% of the land area as envisaged in the National Forest policy. Tree based business will be given a boost in the state by providing needed technical support and encouragement to all the stakeholders.

**ii. Increasing Forest / Tree Cover Inside Forests**

Even though numerous schemes were implemented, there is still scope for tree planting inside forest. Continuous efforts to afforest are the only way to reverse the negative trend.

The primary objectives of such an effort are to increase productivity of forest areas, to conserve biodiversity of the area, especially medicinal Plants to meet the livelihood needs of the local people and to provide ecological security by enhancing crop density inside forests and eco preservation and eco restoration by creating tree cover on degraded hills, rocky areas, grassy areas and patches inside forest areas, where reclamation is necessary, due to paucity of tree cover. During Plan period, it is proposed to continue the massive afforestation and ecological restoration programmes under Joint Forest Management model, wherever possible. Further the proposals under various schemes will be in tune with the working Plan prescriptions. The outlay proposed for this objective is Rs.484.11 crore.

**iii. Tamil Nadu Afforestation Project- Phase-II: (Externally-Aided Project)**

The Tamil Nadu Afforestation Project Phase-II will continue in the Eleventh Five Year Plan. Since the project is an approved ongoing project, the financial implication for the afforestation works under IWDP and ITDP including buffer zone activities for both the components from the year 2007-08 to 2011-12 is included. Similarly the physical target included is only for planting activities inside the Reserve forest (RF) in the various approved components.
iv. National Afforestation Programme (NAP): (GOI Project)

The National Afforestation and Eco-Development Board, Ministry of Environment and Forests, piloted the National Afforestation Programme (NAP) which was implemented during the Tenth Five Year Plan. Merger of various schemes such as Integrated Afforestation & Eco-development Project, Area Oriented Fuel wood and Fodder Scheme were formulated. Tamil Nadu has been implementing this programme on Watershed basis, under a decentralized institutional structure comprising the Forest Development Agencies (FDA) and Joint Forest Management Committees (JFMCs) presuming that the National Afforestation Programme will be continued in the Eleventh Five Year Plan for Tamil Nadu. The guidelines as approved by the National Afforestation and Eco-Development Board, Ministry of Environment and Forests will be followed, as it is Government of India Project.

Though the major part of the work is to be taken up under TAP II and NAP, afforestation works and forest restoration works will be taken up under the following ongoing schemes which will be continued in the Eleventh Plan period.

The following on-going schemes of Tenth Five Year Plan are to be continued during Eleventh Five Year Plan:

- Tamil Nadu Afforestation Project – Phase-II
- National Afforestation Programme
- Western Ghats Development Programme
- Hill Area Development Programme
- Sandal wood Plantations
- Bamboo Plantations
- Raising of Timber and Non-timber species
- Raising of oil seeds /bio- fuel Plantations

Afforestation Works Under TAP and NAP schemes

Self Help Groups at work in TAP schemes
V. Biodiversity and Wildlife Conservation

Tamil Nadu is a home for a rich diversity of flora and fauna, both domesticated and wild, and has set aside about 16.03% of its forest area under the protected area network comprising twenty Wildlife Sanctuaries, five National parks, three Biosphere Reserve, one Project Tiger and one Project Elephant which are the protected areas. The Tamil Nadu State has an impeccable history of being a pioneer in protecting and conserving biodiversity. Inspite of the best efforts taken over the years in the conservation of biodiversity. The State is still facing challenges to protect its indigenous biodiversity due to unchecked growth of population of humans and the livestock. This has put tremendous pressure on the existing wilderness areas, which are shrinking making space for economic development. There is also concern about the habitat from other threats both direct and indirect on the biodiversity, which include poaching, illegal smuggling of valuable endangered flora and fauna and other adverse impacts.

During the Plan period, the heterogeneity and species diversity in the various forest types in the State will be protected and conserved. Through Species Recovery Programme critically endangered species in the Western Ghats will be reintroduced into the original tracts. The ex-situ animal and Plant centres i.e., the Arignar Anna Zoological Parks, the mini zoos and the Genepool Garden will support conservation along with the in situ conservation centres. The protected area management will be fully oriented towards Research and Conservation of the rich Biodiversity. The ongoing scheme works carried out under GOMBR Trust for Gulf of Mannar Biodiversity Reserve will be continued till the year 2011. Almost all the wildlife related schemes are implemented using Government of India funding. The outlay for the state schemes under biodiversity conservation is Rs.37.93 crore.

Some of the important centrally sponsored schemes implemented for welfare of wildlife are discussed below:

Night Safari: The Night Safari will be established in Arignar Anna Zoological Park, Vandalur. The main object is to inspire empathy for the wild animals among the visitors and finally maintaining the ecological balance. The safari will be attraction for the local population, tourists from other States and abroad.
**Butterfly Park:** Butterfly Park is to be established in Arignar Anna Zoological Park, Vandalur. Important species of butterflies seen in Tamil Nadu along with their host Plants will be assembled in the Centre. It will impart education to the children about the insect world and the role of butterflies.

**Establishment of Zoo at Trichy:** To create awareness among the people about wild animals, the establishment of Zoo at Trichy is essential since there is no Zoo now at Trichy.

**Vi. Tribal Development**

With the change in time, there have been changes in the tribal life system due to socio-economic development around, but the change for tribals living within the forests have been slow. Multiple agencies like the District Administration, the Forest Department, the Adi Dravidar Tribal Welfare Department and others have attended to the needs of the tribals within the forests and outside for their development. For the tribals living within the forests, the main source of support has been from the Forest Department. Tribals living within the forest areas have not been subjected to developmental changes. However, with the frequent interaction with community outside and the market forces, there is a change in their culture and consumption pattern.

The Forest Department has implemented various programmes for the development and employment generation of tribals within the forests like providing better education to the tribal children through nineteen schools, providing solar lights, improving and laying new roads to the tribal settlements, providing safe drinking water etc. Under Tamil Nadu Afforestation Schemes, various facilities have been provided to the tribals for improving their income generation. Tribals in the forest area have been allowed for free collection of Non-timber forest produce (NTFP). The outlay for the State schemes proposed is Rs.101.01 crore.

**Vii. Forest Protection and Fire Management**

Large areas of forest lands are under encroachment. There are several ex-zamin forests worth many thousand crore of rupees under various stages of settlement. Survey and demarcation of boundaries of these lands under the control of the forest department needs to be carried out in a time bound
manner to avoid further loss of forest lands and its consequent fallouts. The works to be carried out under forest consolidation are re-fixing of forest boundaries, preparing detailed maps using GPS in the territorial divisions, planting of agave along the Reserve Forest (RF) boundaries in the territorial divisions, dibbling of Palmyrah nuts along the RF boundaries wherever necessary at two metre interval in two rows., planting of Acacia mellifera at two meter espacement will be done over 200 km per year along the RF boundaries, repair and maintenance of the existing RF Cairns wherever necessary at 4000 Nos. per year, construction of new RF Cairns at 20000Nos. per year and the identified encroachments will be evicted at Rs. 25,000/- per hectare including the cost of consolidation and re-planting by suitable trees at 20 hectare per year.

The vulnerable patches in the forest areas, particularly fragile ecosystems, which have been subjected to exotic weed infestations, and these are degrading the ecosystems by affecting the natural regeneration of the native species. Hence the unwanted grass and weeds in vulnerable areas will be removed and planted with suitable species at 1.5 x 1.5m espacement at 100 ha. per division.

Forest fire is a major problem facing most of the forest areas of the State. The problem is most acute in the hill areas of Western Ghats and Eastern Ghats. The problem is severe during the months of January to June, till the onset of monsoon. The winter ensures the desiccation of the inflammable materials in the forests and this is aided by frost. The strong winds in summer months further add to the problem. Graziers, forest abutting estates, negligent activities of the villagers in the forest abutting villages, ganja cultivators and accidental causes from tourists and along the roads passing through the forests are the major causes of the forest fires. The resultant loss to natural regeneration and biodiversity warrants greater focus to tackle this menace.

The preventive measures which are proposed to be taken up are RF level fire prone area maps for all the Reserve forest, formation of village protection committees, special camps for the eradication of ganja and other illegal activities, reward to informers training programme to field staff, providing water storage facilities, creation of water impounding structures, mass awareness camps, creation of cattle ponds, engaging watchers for fire season, fire tracing, fire line clearing and maintenance and purchase of fire fighting equipments.
The infrastructure development proposed the formation of warning centres and fire watch towers included during the Plan period in the vulnerable areas, construction of camping shed, construction of check post building, purchase of ammunition and repair and replacement of available weapons and repair and replacement of wireless and communication equipment. The proposed outlay for forest protection is Rs.140.82 crore

Viii. Infrastructure Development

Forest resource management requires a large spectrum of infrastructure which include roads, transport, communication, housing, interpretation centres, rest houses, inspection sheds, hospitality facilities in sanctuaries and national parks for efficient protection and management of the valuable resources in the State. Today there are nearly 148 IFS Officers and 5848 field staff which includes DCFs, ACFs, Rangers, Foresters, Forest gaurds and Forest watchers. There are 1307 office staff in the forest department. To improve the efficiency and efficacy of the forest protection machinery of the state and to support in all the fields of forestry so that the resource is put to its best use and also support better conservation by improving the chain of infrastructure facilities required for staff and officers, rest houses and inspection sheds are needed. The outlay for the State schemes for Infrastructure development especially for the improvement of forest roads network is Rs.100.00 crore.

ix. Transfer Technology through Research and GIS Forestry Research

The goal of the research wing of the forest department also will be to meet the requirement of wood based industries from the produces obtained from trees outside forest area by stimulating the tree growing activity among the farming community. The forest research will also focus in ensuring that the farmers who take up this activities should be able to get a minimum return of Rs.20, 000/- per acre per annum. This is aimed at reversing the urban migration from rural areas. The goal will be to provide prescription for development of rural economy through forestry, which will result in arresting the depletion of land resources, and thereby alleviate poverty and increase the contribution of rural sector in the GDP.

All the research centres will be strengthened to continue research on thrust areas like tree improvement, seedlings and clonal orchard, plantation
forestry, soil nutrient management, organic tree farming, nursery technology, medicinal plants post-harvest technology and silvicultural research. Research on industrial wood species to support veneer, match, dye and other industrial sector will continue. Research on important agro-forestry species will be strengthened.

There is need to use geomatics as a technology in dealing with the issues like natural resource assessment, survey and demarcation, developing monitoring protocols, disaster management and planning various mitigation measures. The primary objective of the Geomatics Centre is to strengthen field-based applications of Remote Sensing and GIS by making use of latest Information Technology and also contributing to the interpretation, planning, monitoring and evaluation of various decisions. All levels of field functionaries will be exposed to this frontier technology of GIS for better resource monitoring, surveillance and threat control. By establishment of regional GIS Labs, the scientific management of forestry practices will be strengthened. The outlay for the State schemes for forest research and GIS is Rs.26.03 crore.

x. Human Resource Management

Capacity building programmes proposed in this proposal are essential and this will bring in a sea change in the working atmosphere of the department on the whole. The technical and managerial training and infrastructure facilities proposed in the project will bring considerable change in the skill and capacity of the personnel working in the Forest Department. This will also provide better working environment to the individuals who will facilitate to achieve the objectives and mission of the Department. By this capacity building activities about 3500 ministerial staff, 1350 forest watchers, 2200 forest guards, 1300 foresters, 590 rangers, 50 ACF’s and 140 senior officers will get a chance to improve their working quality and their personal development. Thus the overall working environment and the quality of working will improve substantially and this will definitely help to the mission and vision of the Forest Department during the Plan period. The outlay for the State schemes for human resource management is Rs.10.10 crore.

xi. Empowerment of Women through Forestry

In many forestry schemes based on JFM also, women participation in project activities is being limited to a labourer / client relationship mostly
centered around nursery and plantation activities with general exceptions. The active participation of women in bio-diversity and forest development will help improve their family, promote greater equity and contribute to their overall empowerment. Hence, this thrust area of women empowerment is proposed to be included in the Eleventh Five Year Plan. Women will be involved and their perspectives will be reflected in the policies and programmes of the Forest Department for conservation gains and restoration of degraded forests. The various programmes outlined for the empowerment of women will be implemented. Women’s contribution to socio-economic development as producers and workers will be harnessed. The outlay for the State scheme is Rs 10.00 crore.

**Coastal Area Conservation And Management**

The Tamil Nadu Forest Department have taken up afforestation along the coastal line in the name of Coastal Shelter Belt Plantations since 1960. The total area under shelterbelt Plantations raised so far is 2239 ha. and the total area under mangrove Plantations is 2679 ha. Afforestation in the coastal region was also taken up under other schemes such as National Afforestation Programme and the total area covered is 4087 ha.

Most of the vulnerable sea coast stretches will be covered during the Plan period under shelterbelt. Mangrove system will be enriched through restoration and mangroves established to strengthen the coastline and the livelihood security and safety will be ensured to people living in the coastal areas through interventions by the end of the Plan period. The afforestation works will be taken up with the funding from JBIC and other external agencies.

**Catchment Area Management**

In Tamil Nadu, there are 32 river systems, 71 reservoirs, 2,391 canals and 40,319 tanks and majority of their catchment areas lie in forestlands. To improve the forests, an Integrated Watershed Development approach is being implemented by undertaking afforestation and soil and water conservation measures in the affected watersheds. Massive soil and water conservation activities are being taken up, as an integral part of all treatment plans at macro as well as micro levels. These steps would ensure prevention of floods and droughts in the adjacent plains besides benefiting vegetation and wildlife in forest areas. The works shall be taken up with the funding from Government of India (Rs.129.43 crore), NABARD and other external agencies.
<table>
<thead>
<tr>
<th>S.No</th>
<th>Scheme</th>
<th>State Outlay</th>
<th>Centrally sponsored schemes</th>
<th>Total Outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Increasing Tree Cover Outside Forest</td>
<td>375.00</td>
<td>0.00</td>
<td>375.00</td>
</tr>
<tr>
<td>2.</td>
<td>Increasing Tree Cover Inside Forest</td>
<td>484.11</td>
<td>58.02</td>
<td>542.13</td>
</tr>
<tr>
<td>3.</td>
<td>Biodiversity Conservation</td>
<td>37.93</td>
<td>203.23</td>
<td>241.16</td>
</tr>
<tr>
<td>4.</td>
<td>Tribal Development</td>
<td>101.01</td>
<td>60.60</td>
<td>161.61</td>
</tr>
<tr>
<td>5.</td>
<td>Forest Protection</td>
<td>140.82</td>
<td>45.00</td>
<td>185.82</td>
</tr>
<tr>
<td>6.</td>
<td>Infrastructure Development</td>
<td>100.00</td>
<td>0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>7.</td>
<td>Research and GIS</td>
<td>26.03</td>
<td>0.00</td>
<td>26.03</td>
</tr>
<tr>
<td>8.</td>
<td>Human Resources Management</td>
<td>10.10</td>
<td>77.18</td>
<td>87.28</td>
</tr>
<tr>
<td></td>
<td><strong>New Scheme</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Women Empowerment</td>
<td>10.00</td>
<td>0.00</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1285.00</strong></td>
<td><strong>444.03</strong></td>
<td><strong>1729.03</strong></td>
</tr>
</tbody>
</table>
6.2. Ecology and Environment

One can look at history from two sides and divide it into the history of nature and the history of men and the two sides are however, inseparable; the history of nature and the history of men are dependent on each other so long as men exist.

- Karl Marx and Fredrick Engels
(Collected Works, Vol.5, Page.28)

6.2.1. Introduction

Environmental conservation is an integral part of the socio-economic development. The growing population, high degree of urbanization and steep rise in energy use have affected the sustainability of the environment. Deforestation results in the reduction of the sink for carbon dioxide and increases soil degradation. Industrialization leads to water and air pollution. The water resources get polluted due to the discharge of untreated or partially treated wastes from industry, domestic sewage and fertilizer and pesticide run off from agricultural fields.

Conservation is not opposed to development, since it includes both protection and rational use of natural resources. One of the greatest challenges is how to accelerate economic growth without exhausting natural resources.

Environment is influenced by a variety of factors, hence environmental management is a complex issue. A benchmark survey of the present status of various factors that govern the environment is a pre requisite to formulate an appropriate environmental policy. The Tamil Nadu Government has prepared a ‘State of Environment Report’, which has broadly outlined the environmental issues in various sectors and possible approaches to tackle them. The key sectors in Tamil Nadu are concerned with the environment are agriculture and horticulture, forests and wildlife, water resources, coastal and marine environment, energy, industrialization, urbanization and archaeology and tourism.

The State, while planning for social and economic progress that satisfies the present needs of the citizen, has the moral obligation to pass on the
nature’s gifts to the future generation. One of the critical activities in this regard is preservation of our environment.

The Tamil Nadu Pollution Control Board and the Department of Environment are the two agencies dealing with the environmental concerns of the State.

6.2.2. Tamil Nadu Pollution Control Board

The Tamil Nadu Pollution Control Board (TNPCB) was constituted in the year 1982 in pursuance of the Water (Prevention and Control of Pollution) Act, 1974. It enforces the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Water (Prevention and Control of Pollution) Cess Act, 1977, the Air (Prevention and Control of Pollution) Act, 1981, and the rules made under the Environment (Protection) Act, 1986.

The officers of the Board inspect the industries periodically to assess the adequacy of pollution control measures provided by the industries to treat sewage, to treat effluent and emissions and to monitor their performance. For effective monitoring, industries are categorized as Red, Orange, and Green according to their potential to create pollution. Depending upon the category and size, the frequency of monitoring of industries is decided.

Air Pollution Control

The Air (Prevention and Control of Pollution) Act 1981 as amended in 1987 was enacted to prevent and control air pollution and preserve the air quality. With the increased industrial and commercial activities in the vicinity of major cities, the air quality is affected by emissions from the industries and from the ever-increasing vehicular population. As per the provisions of the Air Act, the entire State of Tamil Nadu has been declared as “air pollution control” area.
Water Pollution Control

The Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 was enacted to prevent and control water pollution and to preserve or maintain or restore the quality of water. As per the provisions of this Act, the local bodies and industries, which discharge sewage / trade effluent are required to apply and obtain consent from the Board.

Noise level Monitoring

Noise pollution due to use of air horns in heavy vehicles and bursting of crackers during Diwali are being monitored. Awareness is being created to use firecrackers, which are within the approved noise level and within the approved time. Towards controlling noise pollution in urban areas, about 52,586 air horns have been removed as of December 2004 from buses and lorries throughout the State. All the districts have been declared as air horn free districts. The Metropolitan Transport Corporation, Chennai was the first to declare its corporation 'air horn free'.

Hazardous Waste Management

All hazardous wastes, which were dumped in open areas earlier have been cleaned under the supervision of TNPCB officials and are now stored in covered godowns or closed stores with relevant records. As no infrastructure was available, these wastes were earlier disposed especially by small-scale units in low-lying areas and on roadsides along with the municipal solid wastes. After notification of the rules, the TNPCB has taken efforts to identify such generators and make them store the wastes within their own premises or in designated areas. Captive secure landfills have been provided by 17 units. The total land fillable waste disposed in captive land fills works out to nearly 2 lakh tonnes. However, the efforts to set up a centralized TSDF (Transport Storage Disposal facility) for processing and disposing the hazardous waste are yet to materialize due to public objection and litigation. Proper management and disposal of hazardous waste is one of the priority areas for TNPCB during the Eleventh Plan period.
Table 6.2. 1

Financial Achievements of Tenth Five Year Plan

<table>
<thead>
<tr>
<th>S.No</th>
<th>Ongoing Schemes</th>
<th>Outlay (Rs. in crore)</th>
<th>Achievement (Rs. in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hazardous Waste Management</td>
<td>0.47 *</td>
<td>0.450</td>
</tr>
<tr>
<td>2.</td>
<td>Strengthening of TNPCB Lab.</td>
<td>1.50</td>
<td>2.150</td>
</tr>
<tr>
<td>3.</td>
<td>Environmental Information System</td>
<td>0.50 *</td>
<td>0.510</td>
</tr>
<tr>
<td>4.</td>
<td>Coastal Monitoring Programme</td>
<td>0.05</td>
<td>0.005</td>
</tr>
<tr>
<td>5.</td>
<td>Education and training</td>
<td>2.50</td>
<td>0.580</td>
</tr>
<tr>
<td>6.</td>
<td>Air quality monitoring</td>
<td>2.00</td>
<td>0.820</td>
</tr>
<tr>
<td>7.</td>
<td>Environmental management</td>
<td>1.10 *</td>
<td>0.210</td>
</tr>
</tbody>
</table>

Grand Total | 56.470 | 9.239 |

* Funds from CPCB

Box 6.2.1.

A Success Story on

Municipal Solid Waste Management in Namakkal Town

Namakkal has the distinction of becoming the only zero garbage town in the country. In order to achieve this, the urban local body has practised door to door collection, introduced night sweeping, beautified parks and burial grounds, removed encroachments on all the roads and streets, prevented road side hotels and shops, encouraged green belt development on highways, levied charges for hotels, marriage halls, commercial complexes and garbage generating industries, and started the manufacturing of vermi-compost from organic waste. This experiment has been successful due to a holistic approach with all agencies cooperating together under the leadership of the Municipal Commissioner and the District Collector.

6.2.3. Performance of Tenth Five Year Plan

Out of the proposed Plan outlay of Rs. 56.470 crore, Rs. 9.239 crore were spent using the Board’s own sources of funds. The important areas of expenditure include Solid Waste Management with specific reference to Hazardous Waste Management which was monitored by a committee set up by Supreme Court. Air quality monitoring, especially Vehicle Emission Monitoring in the cities was given priority. The Air Quality in Chennai city...
was also monitored by a Committee constituted by Supreme Court. Water quality monitoring, strengthening of labs and environmental education and training were also given importance during the Tenth Five Year Plan.

In addition to the above schemes/programmes, the Tamil Nadu Pollution Control Board took up various other Pollution control activities during the Tenth Five Year Plan period. They include monitoring of 17 categories of highly polluting industries, establishment of 9 common biomedical waste treatment and disposal facilities by the private entrepreneurs, establishment of municipal solid waste processing facility by a private firm, creation of awareness on the environmental hazards, formation of Local Area Environment Committee for studying and conserving the Pallikaranai marsh area, as well as conducting massive campaigns for the protection of environment at the district level especially in pilgrim and tourist centres.

6.2.4. Eleventh Five Year Plan

Programmes and Schemes of TNPCB

Tamilnadu Pollution Control Board has all along been carrying out most of its activities from the Board funds. It also undertakes specific schemes covering Spatial Environmental Planning and Water/Air Quality Monitoring of critical areas in the State using funds provided by the Central Pollution Control Board. The Board plays an important role in the establishment of Common Effluent Treatment Plants (CETPs) for clusters of small-scale industries in various parts of the State, for which 25% of the project cost is provided by the Central Government.

The following are proposed for implementation during the Eleventh Plan:

**Ongoing schemes to be carried over from Tenth Five Year Plan**

**Formation of New District Offices**

Due to rapid industrial development in the State a need has arisen to bifurcate some of the district offices so as to enhance the level of monitoring whether industries comply with pollution control regulations. Further, the Board will construct its own buildings in order to accommodate the district offices which are now functioning in private buildings, in order to improve its corporate image and efficiency.
**Construction and upgradation of TNPCB Laboratories**

Buildings for housing the district laboratories will be constructed along with the offices of District Environmental Engineers. In order to improve the analytical capabilities of the Board, in the light of the growing awareness on new air pollutants like VOC (volatile organic compound), POP (persistent organic pollutants) instrumentation facilities in the laboratories will be augmented.

**Solid Waste Management**

TNPCB has undertaken several works for sensitising the local bodies and the general public regarding the need for reduction of solid waste generation at source, source segregation, effective recovery and recycling of non-biodegradable waste and composting of organic, biodegradable part of the wastes. The Board contributed by way of grant-in-aid to the Municipalities and Town Panchayats for creating wider awareness on Municipal Solid Waste Management and also funded the successful model Solid Waste Management Project in certain Municipalities during the Tenth Plan. It is proposed to extend the funding for developing successful Solid Waste Management models in Five Municipalities of the State during the Plan period at a cost of Rs.1 crore.

**Research and Development**

During the Eleventh Plan period, it is proposed to resume the sanction of financial assistance for research projects related to environment pollution abatement. University and college departments as well as autonomous institutions will be identified to undertake the research work. The total outlay for this proposal is Rs 0.50 crore which will be met out of the Water Cess funds available with the TNPCB.

**Environmental Education**

An awareness cell has been established in the head office, Guindy, Chennai to promote environmental awareness. Various awareness campaigns, workshops, rallies are being conducted regularly to highlight important environmental issues.
A special awareness campaign is regularly conducted against air and noise pollution during festival seasons such as Deepavali and Bhogi. The noise level monitoring and air quality survey are conducted during Deepavali in the important cities, viz. Chennai, Salem, Madurai, Coimbatore, Vellore, Hosur, Tiruppur, Cuddalore, Tirunelveli and Trichy. A special ambient air quality survey on pre-bhogi and post-bhogi days are conducted in Chennai. These campaigns were found to be quite successful in reducing the level of noise and improving the quality of ambient air compared to the previous years. Awareness programmes are on broadcast regularly through Anna F.M. of Anna University every month.

Theme based mass education and awareness campaigns will be organised throughout the year by the Awareness Cell of the Board for which an outlay of Rs.50 lakh has been provided.

**New schemes**

**Upgradation of existing CETPS and provision of new CETPS to achieve zero liquid discharge in textile and tannery sector**

Proper treatment and disposal of effluents from leather and textile units is essential for the prevention of environmental degradation. There are already 760 functioning tanneries which are connected to 16 CETPs. Of these, four CETPs have received financial assistance from the Department of Industrial Policy and Promotion, Government of India, for setting up Reverse Osmosis (RO) Plants, secure land fill (SLF) system, etc., for which Government of India has provided 75% of the project cost as financial grant. Of the remaining 12 CETPs, two CETPs are yet to furnish a full fledged project proposal for setting up RO and SLF. In respect of the remaining 10 CETPs covering 483 tanneries, the State Government is taking action to provide secure landfill system under the ASIDE (Assistance for State Infrastructure Development for Exports) scheme. These 10 CETPs urgently require Reverse Osmosis Plants. A project has been prepared for constructing RO Plants for these 10 CETPs. The total cost is estimated as Rs.116.16 crore. Following the earlier precedent, it has been proposed to Government of India to extend 75% of the project cost, i.e. Rs.87.12 crore as grant for setting up RO Plants in these 10 CETPs.

As regard the dyeing units, there are at present 8 existing CETPs at Tirupur requiring upgradation to provide Zero Discharge System. The total
project cost for this is estimated at Rs.264 crore. There is also a need for setting up of 11 additional CETPs with provision for Zero Discharge System. This would cost an additional Rs.329.27 crore. Thus, the total financial requirement is estimated to be Rs.593.27 crore. The Government of India has been requested to provide financial assistance on a 75:25 sharing pattern (similar to the CETPs for leather units) for implementing these schemes at a cost of Rs.444.95 crore.

Therefore, the Central share of the cost of setting up and upgrading CETPs is anticipated to be Rs 532.0 crore and the beneficiary contribution from CETPs will be Rs.177.4 crore. The TNPCB will continue to play a facilitation role in setting up of the CETPs with Central assistance.

**Remediation of contaminated site under hazardous waste management**

About 2.27 lakh tons of hexavalent chromium bearing waste has been accumulated at a Plant site near Ranipet. Land, soil and ground water in the surroundings have been contaminated with chromium. A provision of Rs. 5.00 crore has been made to carry out containment of chromium pollutants and remediate the contaminated site for which additional fund support will be asked for from CPCB.

**Water quality monitoring**

The basic objective of the Water (Prevention and Control of Pollution) Act, 1974 is to maintain and restore the wholesomeness of water. The TNPCB is monitoring the inland water quality under two major programmes, namely, Monitoring of Indian National Aquatic Resources (MINARS) and Global Environmental Monitoring System (GEMS). Under the MINARS programmes, the rivers Thamiraparani, Palar and Vaigai and lakes such as Udhagamandalam lake, Kodaikanal lake and Yercaud lake are being monitored. Under GEMS and MINARS programmes the river Cauvery is being monitored. The Central Pollution Control Board, Delhi funds the programmes. A provision of Rs.0.50 crore has been made to strengthen the water quality monitoring including electronic data transfer to the CPCB for which necessary fund support will be obtained from CPCB.
**Air quality monitoring**

Tamil Nadu Pollution Control Board is operating eight ambient air quality monitoring stations in Chennai under two monitoring programmes.

1. National Air Quality Monitoring Programme (NAMP)

2. Chennai Ambient Air Quality Monitoring (CAAQM) Programme

Under NAMP, three ambient air quality-monitoring stations are functioning on 24 hours basis, twice a week. Under CAAQM Programme, TNPCB is operating five monitoring stations on 24 hours basis twice a week. Ambient air quality monitoring is also being carried out on a regular basis in Thoothukudi, Coimbatore, Salem, Madurai and Trichy towns.

The scope of air quality monitoring has to be expanded so as to cover the unconventional air quality parameters like Volatile Organic Compounds (VOCs), Poly Aromatic Hydrocarbons (PAH) and other Persistent Organic Pollutants (POPs). Such monitoring is required in industrial clusters with Petrochemical and Chemical industries. The present capacity with Pollution Control Board is not commensurate with the requirements. Therefore the services of accredited private laboratories and laboratories in academic institutions will be availed for testing air samples in critical areas through the method of outsourcing. Simultaneously efforts will be taken to upgrade the Board’s laboratories. It is proposed to extend the scheme for critically polluted areas including certain industrial clusters by providing continuous ambient air quality stations at an outlay of Rs.2.00 crore.

**Environmental training**

One of the functions of the State Board as enumerated under the provisions of Section 17 of the Water & Air Act is to collaborate with the CPCB in organising the training of persons engaged or to be engaged in the programmes relating to prevention, control or abatement of water and air pollution and to organise mass education programmes relating thereof. In the areas of Environmental Training and Environmental Management, various institutions of excellence like Anna University, I.I.T., Chennai, Zonal Laboratory of NEERI (National Environmental Engineering Research Institute), National Productivity Council etc., are being consulted. During the Plan period, action
will be taken to complete updation of training modules of various training courses run by the Environmental Training Institute by involving the above institutions. Action will be taken to develop new training modules and conduct the training programmes through ETI as per Annual Training Plan for which a provision of Rs.0.50 crore has been made.

**Environmental information system**

Continuous computerisation of the Board’s activities including financial and human resources management, issue and renewal of consent orders, electronic data transfer, net working among the Board’s offices and laboratories is a felt need. A provision of Rs.1.00 crore has been made for this activity.

**Environmental management**

CPCB supported the development of GIS based Spatial Planning including the preparation of District Environmental Atlas, Zoning Atlas, Environmental Management Plans, etc., during the Tenth Five Year Plan. The CPCB has suggested that the spatial Planning activities of the Board will have to be taken as a Board’s activity during Eleventh Five Year Plan. Besides, preparation of Environmental Management Plan for larger cities of the State will also be taken up. An outlay of Rs.1.00 crore has been provided for undertaking these works.
### Table 6.2. 2

**Outlay for TNPCB Under Eleventh Five Year Plan**

(Rs. in crore)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Projects / Schemes</th>
<th>State</th>
<th>Central</th>
<th>TNPCB’s own fund</th>
<th>Beneficiary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Formation of New District offices and Construction of District Office Buildings</td>
<td>-</td>
<td>8.00</td>
<td>-</td>
<td>-</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>Construction and Upgradation of TNPCB labs of Solid Waste Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research &amp; Development of Environmental Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Schemes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Upgradation of existing CETPs and provision of new CETPs to achieve zero liquid discharge in textile and tannery sector</td>
<td>-</td>
<td>532.07</td>
<td>177.36</td>
<td>709.43</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Remediation of contaminated legacy sites under Hazardous Waste Management</td>
<td>-</td>
<td>5.00</td>
<td>-</td>
<td>-</td>
<td>5.00</td>
</tr>
<tr>
<td>3.</td>
<td>Water Quality Monitoring</td>
<td>-</td>
<td>0.50</td>
<td>-</td>
<td>-</td>
<td>0.50</td>
</tr>
<tr>
<td>4.</td>
<td>Air Quality Monitoring</td>
<td>-</td>
<td>2.00</td>
<td>-</td>
<td>-</td>
<td>2.00</td>
</tr>
<tr>
<td>5.</td>
<td>Environmental Training, Environmental Information System, Environmental Management</td>
<td>-</td>
<td>2.50</td>
<td>-</td>
<td>-</td>
<td>2.50</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>-</td>
<td><strong>539.57</strong></td>
<td><strong>177.36</strong></td>
<td><strong>727.43</strong></td>
<td></td>
</tr>
</tbody>
</table>

### 6.2.5. Department of Environment

The Department of Environment (DoE) is the nodal agency for planning, promotion, coordination and overseeing the implementation of all the aspects of environment other than those dealt by the Tamil Nadu Pollution Control Board. The Director of Environment renders advisory functions as Member in Tamil Nadu Pollution Control Board, Tamil Nadu Road Sector Project, Hill Area Conservation Authority, Site Appraisal Committee and Committee for Beautification of Marina Beach. The Department of Environment monitors River and Lake Conservation Projects, implements various notifications and protocols including the Coastal Regulation Zone Notification at State Level, generates awareness among students through Eco-Clubs and NGC projects and disseminates environmental information on state of environment and related issues.
The following are the activities of the Department:

**Environment Management Agency of Tamil Nadu (EMAT)**

In order to coordinate with the Government of India and various implementing agencies and for effective monitoring of implementation of the works under National River Conservation Programme and National Lake Conservation Programme, an autonomous agency called “Environment Management Agency of Tamil Nadu” has been constituted in 2002. This agency plays a coordinating role to monitor the implementation of the following centrally funded activities for environment conservation. The following schemes are coordinated by Environment Management Agency of Tamil Nadu.

1. **Abatement of Pollution in five polluted stretches of River Cauvery**

   This is a centrally sponsored scheme under National River Conservation Programme and implemented since 1996-1997. Under core-activities, interception and diversion as well as Sewage Treatment Plants have been implemented through the Tamil Nadu Water Supply and Drainage Board in Erode, Bhavani, Kumarapalayam, Pallipalayam and Tiruchy towns. All the works in Tiruchy, Komarapalayam and Erode have been completed. Under non-core activities, construction of low cost sanitation facility, crematoria and river front development have been completed by the local bodies.

2. **Chennai City River Conservation Programme (CCRCP)**

   A project with Government of India grant for intercepting and treating sewage in six Chennai City Waterways is being implemented from 2001 by Chennai Metropolitan Water Supply and Sewerage Board. An important component of the project is to intercept the sewage outfalls joining the six Chennai City Waterways viz., Cooum, Buckingham Canal, Adyar, Otteri Nullah, Captain Cotton Canal and Mambalam drain. These works have been undertaken by the Chennai Metropolitan Water Supply and Sewerage Board. The other components related to these works have been undertaken by Public Works Department, Chennai Corporation and Tamil Nadu Slum Clearance Board.
3. National River Conservation Programme (NRCP) – Seven Additional Towns

Pollution abatement project in the rivers Cauvery, Vaigai and Tamiraparani along seven towns viz., Tiruchy-Srirangam, Thanjavur, Kumbakonam, Karur-Inam karur, Mayiladuthurai, Madurai and Tirunelveli is implemented from 2001. The project envisages provision of underground sewerage systems, Sewage Treatment Plants, low cost sanitation and solid waste management. The core works are being executed by Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) in Madurai and Kumbakonam. The works in respect of Karur, Mayiladuthurai, Thanjavur, Tiruchy and Tirunelveli are being implemented through Tamil Nadu Water Supply and Drainage Board.

4. National Lake Conservation Programme (NLCP)

Environmental upgradation by bioremediation of Ooty Lake and providing underground sewage scheme with Sewage Treatment Plant in localities affecting Kodaikanal Lake has been undertaken under the National Lake Conservation Programme. The works have been executed by the Tamil Nadu Water Supply and Drainage Board, the Public Works Department and the local bodies. Revival of Ooty lake has been completed.

Schemes implemented with Government of India Assistance

1. National Green Corps (NGC)

In order to strengthen environmental consciousness among students, a National Green Corps programme has been launched in 7,500 schools located in 30 districts @ 250 schools per district. This ongoing scheme will be continued.
during this year also. Nearly three lakh children are participating in this awareness movement. In order to strengthen environmental consciousness among school students, with the financial assistance of GOI, eco-clubs were started at the rate of 100 schools per district, all over Tamil Nadu, under the National Green Corps programme during the year 2002. The scheme was extended further to 50 schools additionally in each district during 2004. 150 more schools were added in each district during the year 2006-07. Under this scheme, Rs 2500 per year is given to each school for carrying out environmental awareness programmes during the Plan period.

2. Environmental Information System (ENVIS)

The Environmental Information System sponsored by the Government of India has been implemented to provide information on the State of Environment of Tamil Nadu through a web based information system. Publication of ENVIS Newsletters, organizing online chat, online quiz and conducting Environmental awareness programmes among school students are some of the activities carried out under ENVIS Centre.

3. State of Environment (SoE)

The preparation of a State of Environment Report has been undertaken with the financial assistance from the Government of India and the report was released during the year 2006. State of Environment atlas, State of Environment photo/video catalogues, and an interactive website on State of Environment of Tamil Nadu have been prepared under SoE plus project.

Externally Aided Programmes

The environment component of the Emergency Tsunami Reconstruction Project (ETRP) with World Bank assistance is being implemented by the Directorate of Environment from 2006 to 2008 with a total outlay of Rs.13.28 crore for the project period.
The Coastal Regulation Zone will cover the part of the coastal area of Tamil Nadu from Palar River Mouth to Thengapattinam in Kanyakumari District including tidal influenced water bodies. Work has been undertaken to prepare High Tide Line (HTL) demarcated digitized Coastal Village maps in the scale of 1:5000 for easy identification of CRZ areas with reference to the Coastal Zone Notification, 1991. Under the World Bank assisted Emergency/Tsunami Reconstruction Project, the work of demarcation of HTL and superimposing the same on village cadastral map has been entrusted to the Institute of Remote Sensing, Anna University, Chennai and the work is in progress and will be completed by April 2008.

**Tamil Nadu State Coastal Zone Management Authority (TNSCZMA)**

The Secretary to Government, Environment and Forest Department, Government of Tamil Nadu is the Chairman, Director of Environment and Forest Department is the Member-Secretary of the TNSCZMA. The Authority has the power to take measures for protecting and improving the quality of the coastal environment and preventing, abating and controlling environmental pollution in the coastal areas of the State of Tamil Nadu.

**Other International Protocols And Laws**

Besides monitoring International Protocols like Clean Development Mechanism (CDM) and Montreal Protocol on ozone depleting substances (ODS), the directorate is also responsible for monitoring the following central notifications like

1. Use of Fly Ash from Thermal Power Plants
3. Ozone Depleting Substance (Regulation) Rules 2000

The awareness programmes and workshops on these subjects are also conducted by the directorate largely through networking with schools and non-governmental organizations.
The financial outlay for the Department of Environment in Tenth Five Year Plan was 140.78 crore and the achievement was Rs. 4.03 crore till the end of the Plan period.

6.2.6. Performance of Tenth Five Year Plan - The major ongoing state projects

Eco Clubs in schools for Environmental Awareness

During the year 1998, with the initiative of the State Government, eco-clubs were started in 170 schools in Erode, Namakkal and Trichy Districts. At present, 1,200 eco clubs are functioning in 30 districts at the rate of 40 schools per district. Rs.1000/- per year is released to each school for carrying out awareness activities about the environment. Coverage of schools has been subsequently expanded through the National Green Corps programme which is a similar programme which is centrally funded. About 3.50 lakh students have been involved in the awareness movement through the centrally funded NGC as well as the Eco-clubs.

Conservation of Coastal Eco-System

The Tamil Nadu coast is straight and narrow without much indentations except at Vedaranyam. Conservation and regeneration of existing mangroves along the coast is being undertaken by the Forest Department and tourism activities by the Department of Tourism. Along with Forest and Tourism

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Details</th>
<th>State</th>
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<th>Achievement</th>
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<tbody>
<tr>
<td>1</td>
<td>Establishment Charges</td>
<td>-</td>
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<td>2</td>
<td>Monitoring Green cover for clean air</td>
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<td>7.50</td>
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<td>3</td>
<td>Conservation of Coastal eco-system</td>
<td>108.48</td>
<td>-</td>
<td>108.48</td>
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<tr>
<td>4</td>
<td>Land management</td>
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<td></td>
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</tr>
<tr>
<td>a)</td>
<td>Combating desertification</td>
<td>-</td>
<td>5.50</td>
<td>5.50</td>
<td>0.15</td>
</tr>
<tr>
<td>b)</td>
<td>Scheme for reverse of loss of ecology</td>
<td>-</td>
<td>10.00</td>
<td>10.00</td>
<td>0.10</td>
</tr>
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<td>5</td>
<td>Preparation of Status of Environment</td>
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<td>0.05</td>
<td>0.15</td>
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<td>6</td>
<td>Conservation of Wetland eco-system</td>
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<td>7</td>
<td>Eco-city programme</td>
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<td>8</td>
<td>Bio-diversity Conservation</td>
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<td>-</td>
<td>0.50</td>
<td>0.05</td>
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<tr>
<td>9</td>
<td>Environment Research &amp; Development</td>
<td>1.20</td>
<td>-</td>
<td>1.20</td>
<td>0.10</td>
</tr>
<tr>
<td>10</td>
<td>Agency for Environment Project</td>
<td>-</td>
<td>2.50</td>
<td>2.50</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Environment Education and Awareness</td>
<td>1.00</td>
<td>1.50</td>
<td>2.50</td>
<td>1.15</td>
</tr>
<tr>
<td>Total</td>
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<td>113.05</td>
<td>27.73</td>
<td>140.78</td>
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</table>
Department, Fisheries, Ports and Industries have also important role in the coastal development. A pilot integrated Coastal Zone Management Plan involving various departments, agencies and all the stakeholders is being prepared for the Pulicat to Palar stretch of Tamil Nadu coast by the Institute of Ocean Management, Anna University, Chennai with a total sanctioned amount of Rs. 0.1 crore.

As part of its activities in implementing the Coastal Regulation Zone Notification, wherein 500 mts. from HTL has been defined as Coastal Regulation Zone, the Government of India, have emphasized that violation of the rules along the coast should be checked by the State Government through increased surveillance. A green squad for coastal conservation for checking Coastal Regulation Zone violations has been formed. A sum of Rs.2 lakh has been sanctioned as recurring expenditure towards the functioning of the coastal green squad.

6.2.7. Eleventh Five Year Plan

Objectives

The objectives of the Eleventh Five Year Plan are

- to evolve environmental policy framework for sustainable management of the resources of the State
- to integrate conservation and development and to bring out sound resource management for economic development of the State.
- to restore and rehabilitate the ecologically fragile and sensitive ecosystems by ameliorative management
- to deal with all aspects of environment other than those dealt with by Tamil Nadu Pollution Control Board from time to time.
• to provide web-based information through Environmental Information System on the Status of Environment of Tamil Nadu.

• to develop environmental awareness and education programmes for all sections of the society

• to coordinate and monitor environmental protocols.

**On going schemes**

**Providing free LPG double burner stoves to the poor**

This scheme was inaugurated at Chennai on 14-1-2007 and in the first phase 34,500 families were given the benefit. Free LPG connections and stoves to 3 lakh poor families are being distributed with an object to mitigate the sufferings of the womenfolk engaged in the traditional way of cooking with firewood. It has been also decided to extend the scheme to all the families who are not having LPG connection over the next Five Years. The above scheme to the poor families will result in reducing destruction of the forest for fire wood purpose besides controlling the pollution to certain extent. An outlay of Rs.80.00 crore have been provided for the scheme during the Plan period.

**Environment awareness creation through school children**

The assistance to the 1200 eco-clubs will be increased from Rs.1250 to Rs.2500 per year to undertake various awareness activities. It is also proposed to expand this network in the Chennai urban area during this Plan period. There are 1080 schools, other than primary schools in the Chennai area. Since the awareness network already exists in 290 schools, the 790 additional schools will be covered during the Plan period.

**Eco-friendly demonstration activities**

In order to create awareness among public, especially students, NGC / Eco-clubs in educational institutions have been formed in all the 30 districts. It is proposed to extend the awareness network to all the 48,400 schools in Tamil Nadu. Eco-friendly demonstration activities to control pollution at source will be carried out through the eco-clubs, for which a financial outlay of Rs.1.4 crore has been provided during this Plan period. Activities taken up under this scheme include vermi composting, tree nursery development and waste
recycling activities. This will help in carrying forward the ethics of sound environmental management in the young minds and nurture future environmentally conscious decision makers.

**Promoting Environmental Research**

Environmental research is important to understand the multi disciplinary aspects of environmental problems together with the creation of facilities and development of technical capabilities in the academic institutions. Site specific and problem solving research proposals will be evaluated by a technical committee and selected for funding. Only short-term projects of one to two year duration will be encouraged.

**Preparation of Environmental Management Plans for important localities**

During the Plan period, Environmental Management Plans (EMPs) for holistic control of all pollution, like vehicular traffic, urbanization, growth of population, pollution of water bodies, infrastructure development, change in land use pattern etc., will be undertaken for environmental hot spots in the State. These EMPs will be proposed to various agencies to seek funding for executing the required environmental Plans.

**Conducting Environmental status report studies for all Districts in Tamil Nadu**

District environmental profiles have been prepared for all the districts of the State. There is a need to update these profiles, to quantify the problems of each district and to focus on the various environmental issues that are to be taken up for amelioration. Therefore, it is proposed to take up environmental status studies for critically polluted areas in each district for which an outlay of Rs.3.00 crore have been provided during the Plan period.

**Externally Aided Programme**

The World Bank funded Emergency Tsunami Reconstruction Project (ETRP) will be executed as a continuing scheme. The project is likely to be completed by December 2008.

Two Project Implementation Units have been formed at Thoothukudi and Nagapattinam to monitor the implementation of the projects sanctioned...
under ETRP. These units are functioning with effect from April 2006. The ETRP period ends by May 2008 with a financial expenditure of Rs. 10.96 crore. An outlay of Rs. 29.44 crore is proposed for the continuation of the existing two divisions created under ETRP after the project period (i.e.) from May 2008.

**Government of India Schemes**

In continuation from the Tenth Plan, the river cleaning programmes for abatement of pollution of the river systems of the state such as the Chennai City River Conservation Project (CCRCP) and the National River Conservation Programme (NRCP) are being undertaken by TWAD Board and CMWSSB. They will continue to be coordinated and monitored by the Environment Management Agency of Tamil Nadu (EMAT) during the Eleventh Plan.

**New Schemes**

*Environmental Awareness and education*

Special focus shall be given to create environmental awareness among school students and public. A provision of Rs. 2 crore has been made for new and innovative environmental awareness schemes during the Plan period.

*Restoration of Palkeni lake at Pallavaram*

Water bodies play a major hydrological, biological and ecological role and also provide an aesthetic appeal. Rapid population increase and unplanned development has led to pollution of water by residential/ agricultural/ commercial/ industrial waste and effluents. Hence there is an urgent need for restoration of water bodies in Chennai. An outlay of Rs. 0.1 crore have been provided during the Plan period for restoration of Palkeni lake at Pallavaram in Chennai.
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Scheme</th>
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<tbody>
<tr>
<td>1</td>
<td>Provision of free LPG connection and Gas stove to poor families</td>
<td>80.00</td>
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<tr>
<td>2</td>
<td>Environment Awareness creation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Conducting competitions at Rs. 50,000 per district</td>
<td></td>
</tr>
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<td></td>
<td>b. Conducting 3 day environmental camps @ 75,000 per district</td>
<td></td>
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<tr>
<td></td>
<td>c. Conducting training / workshops/ seminars through awareness network</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Eco-friendly demonstration activities at 2 lakh for 70 activities</td>
<td>9.25</td>
</tr>
<tr>
<td></td>
<td>e. Promoting Environmental Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. Preparation of Environmental Management Plans for important</td>
<td></td>
</tr>
<tr>
<td></td>
<td>localities for 20 localities</td>
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</tr>
<tr>
<td></td>
<td>g. Conducting Environmental status report studies for all districts</td>
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<td>3</td>
<td>Continuation of the existing 2 divisions created under ETRP</td>
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<td>after the project period (ie) from May 2008</td>
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<tr>
<td>4</td>
<td>Restoration of Palkeni lake at Pallavaram</td>
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<tr>
<td>5</td>
<td>New Schemes for Environmental protection and awareness</td>
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<tr>
<td><strong>Total</strong></td>
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