

12.2. ECOLOGY AND ENVIRONMENT

A: Overview

Introduction

Environmental conservation is an integral part of the socio economic development. The growing population, high degree of mechanisation and steep rise in energy use has led to activities that directly or indirectly affect the sustainability of the environment. The various kinds of pollution/pollutants may be broadly categorized as (a) Air pollution, (b) Water pollution, (c) Solid waste and (d) Industrial and hazardous waste. The sustainable use of bio-diversity is fundamental to ecologically sustainable development. India is one of the 12 mega diversity countries of the world.

The survival and well being of any nation depends on sustainable social and economic progress that satisfies the needs and aspiration of the present without compromising the interest of future generations. Environmental problems are largely the by-products of affluence marked by resource wasteful life style. Recycling of solid and liquid wastes, bio-composting, tree planting, etc. are important for environmental conservation.

2. Ecological Security

Spiraling population and increasing industrialisation are posing a serious challenge to the preservation of the terrestrial and aquatic ecosystems. Environmental protection is the key to ensuring a healthy life for the people. Environmental problems are on the increase and are more pronounced in densely populated cities. Creation of awareness regarding the ecological hazards among the public is absolutely essential. Environmental conservation and abatement of pollution are critical for sustainable development.

3. Department of Environment

The Department of Environment was created in 1995 as the nodal Department for dealing with environmental management of the State. The Department is entrusted with the implementation of major projects like pollution abatement in the Cauvery, Vaigai and Tamiraparani rivers, pollution abatement in Chennai city waterways, National Lake Conservation Programme and all aspects of environment other than those dealt with by Tamil Nadu Pollution Control Board.

One of the main objectives of the department is to implement Environmental Awareness Programme Wide publicity is being given on World Environment Day, Ozone day and on Bhogi Day to create environmental awareness among the general public. Due to the concerted efforts, the level of air and noise pollution has been brought down to the tune of 20-25% in the last three years.

To create environmental awareness among the school and college studies, 1260 eco-clubs have been formed in all the districts of State involving selected educational institutions and NGOs. It is proposed to strengthen these existing eco-clubs. The outstanding NGOs, experts and individuals are honoured with environmental awards in recognition of their excellent contribution in the field of environment.

4. Tamil Nadu Pollution Control Board

The Tamil Nadu Pollution Control Board enforces the provisions of the Water (Prevention and Control of Pollution) Act, 1974 as amended, the Water (Prevention and Control of Pollution) Cess Act, 1977 as amended, the Air (Prevention and Control of Pollution) Act, 1981 as amended and the relevant provisions/rules of the Environment (Protection) Act, 1986 to prevent, control and abate pollution and for protection of environment. The Board functions with its Head Office at Chennai. There are 25 District Offices and 14 Environmental Laboratories established by the Board.

Monitoring of industries

The Board has inventorised about 28,000 industries. The Board has prescribed standards for discharge of effluent, ambient air quality and gaseous emissions from various industries and the industries have to take necessary pollution control measures to meet the standards prescribed by the Board. For effective monitoring, the Board has classified the industries into red, orange and green, based on their pollution potential.

Procedure for issue of consent

The Board issues consent to industries in two stages under the Water Act and the Air Act for establishment and operation of industrial units. Consent to establish is issued depending upon the suitability of the site, before the industry takes up the construction activity. Consent to operate is issued after installation of effluent treatment plant and air pollution control measures, before commissioning production. Consent is issued subject to general conditions and specific conditions.

Common effluent treatment plants

The Board plays an important role in the establishment of Common Effluent Treatment Plants (CETPs) for clusters of small polluting industries in various parts of the State. Tamil Nadu is a pioneering State in India in establishing CETPs. So far, proposals for 50 CETPs have been formulated. Of these, 33 CETPs are under operation and 17 CETPs are under various stages of implementation. Towards the implementation of CETPs, State subsidy is granted by Government of Tamil Nadu, upto 25% of the project cost and Central subsidy is granted by Government of India, upto 25% of the project cost. The details of CETPs are as follows:

Sl. No.	Sector	No. of CETPs formed	No. of CETPs under operation
1	Tanneries	24 schemes	14 schemes
2	Textile Bleaching and Dyeing	25 schemes	18 schemes
3	Hotels and Lodging Houses	1 scheme	1 scheme
	Total	50 schemes	33 schemes

Cleaner technologies & Water and energy conservation

With active support and encouragement from the Board, industrial units in Tamil Nadu have started switching over to cleaner technologies and also started water and energy conservation measures.

Air quality monitoring

As per the provisions of the Air Act, the entire State of Tamil Nadu has been declared as air pollution control area. The Board is monitoring the ambient air quality

in Chennai (3 stations), Coimbatore (3 stations), Thoothukudi (3 stations), Madurai (3 stations) and Salem (1 station) under the National Ambient Air Quality Monitoring Programme. Under the State Ambient Air Quality Monitoring Programme, the Board has established 5 ambient air quality monitoring stations in Chennai city and 5 in Tiruchirapalli. Towards preparation of the environmental management plan for Chennai city, ambient air quality surveys have been conducted at 41 stations in Chennai to identify the most sensitive locations with respect to air pollution.

The Board has established 6 continuous ambient air quality monitoring systems at Cuddalore, Thoothukudi, Ranipet, Manali-Thiruvallur, Royapuram-Chennai, Kathivakkam-Thiruvallur to assess the level of pollutants in the ambient air and the adequacy of air pollution control measures provided by the industries in the vicinity.

Vehicle emission monitoring

The Board is carrying out the vehicle emission monitoring in Chennai, Dindigul, Palani, Udhamandalam and Chengalpattu. In addition, private agencies have been authorised by the Transport Department in Chennai city to check the emission level of the vehicles. The Board has upgraded and computerised all its vehicle emission monitoring stations for testing diesel driven vehicles. The Transport Corporations have also been instructed to closely monitor the emission levels of their buses. For controlling vehicular emission, cleaner fuel like unleaded petrol, petrol with 3% benzene and low sulphur fuel (0.05%) have been introduced in Chennai Metropolitan Area. Passenger cars complying with Bharat stage-II norms alone are registered in Chennai since July 2001. 2T oil auto dispensing system have been provided in retail outlets. The Board is also participating in a research project with a non governmental organisation and the Civil Supplies Department to study the use of gas chromatograph to detect fuel adulteration. Action has already been taken to introduce auto liquefied petroleum gas in Chennai as it is a cleaner fuel. Steps are being taken to popularise the use of liquefied petroleum gas for autorickshaws, call taxis and other private vehicles which will help in improving air quality.

(1)	Vehicle Emission Monitoring Stations provided by the Board.	8 Nos.
(2)	Vehicle Emission Monitoring Stations provided by the Board in MTC Depots.	6 Nos.
(3)	Emission Checking Stations provided by Private Agencies.	236 Nos.
(4)	Auto Liquefied Petroleum Gas Dispensing Stations commissioned in Chennai.	12 Nos.

Noise level monitoring

Towards controlling noise pollution in urban areas, about 52,586 air horns were removed as of December 2004 from buses and lorries throughout the State. All the districts have been declared as air horn free districts. For noise level monitoring at the district level, sophisticated noise level meters have been provided to the District Offices of the Board.

Water quality monitoring

Pollution of major rivers in the State is caused by the discharge of untreated sewage from the urban local bodies and panchayats and untreated or partially treated effluent from industries. In case of industrial pollution, it is the responsibility of the industrial units to provide the required effluent treatment plants either

individually or collectively so as to achieve the standards. Various pollution abatement schemes are being implemented under the National River Conservation Programme under the coordination of the Department of Environment.

Water quality monitoring programmes

Under the Global Environmental Monitoring System, the Board is closely monitoring the quality of water in the Cauvery basin at Mettur, Pallipalayam, Musiri and ground water quality at Musiri. Similarly, water quality of rivers Cauvery (16 stations), Tamiraparani (7 stations), Palar (1 station) and Vaigai (1 station) and the three important lakes in Udthagamandalam, Kodaikkanal and Yercaud are being monitored under the Monitoring of Indian National Aquatic Resources System by the Board. The Board is continuously monitoring the Chennai city water ways to prevent pollution due to discharge of trade effluent from industries and sewage from local bodies and is collecting and analysing samples of river water and outfalls at regular intervals, since 1991.

Wastes management

Hazardous wastes management

The Board has identified and inventorised 2,177 units generating hazardous wastes and compiled a computerised data base of hazardous waste streams in respect of existing units as per the Hazardous Wastes (Management and Handling) Rules, 1989 as amended in 2000 and 2003.

Municipal solid waste management

With increasing urbanisation and rising levels of municipal solid wastes, an urgent task is to evolve scientific approaches to segregate, handle and dispose the solid wastes in urban areas. Tiruppur municipality has started segregation of waste at source and has engaged a private agency for composting the segregated waste. All the municipalities have started segregation and collection of waste at source and the composting work has begun. The Board has issued no objection certificates to 56 municipalities and to one corporation for their site identified for composting of municipal solid wastes. Out of this, authorizations have been issued to 11 municipalities to commence their composting works.

Plastic wastes management

Realizing the environmental problems caused by indiscriminate use and disposal of plastics, awareness has been created regarding reduction in the use of throwaway plastics through various campaigns. Exhibitions on eco-friendly alternatives to plastics have been arranged in Chennai and Districts. Billboards educating people against the use and disposal of throwaway plastics were placed on Metropolitan Transport Corporation buses, in Chennai. Awareness campaigns are conducted in tourist towns and other pilgrim centres. As an alternative to plastics, 12 training programmes for the production of palm leaf products have been conducted to self help groups through the Central Palmgur and Palm Products Institute of Village Industries Commission.

Biomedical wastes management

The Board enforces the Biomedical Waste (Management and Handling) Rules, 1998 as amended in 2000. Towards establishing common biomedical waste treatment and disposal facilities for the private health care units, 11 sites have been identified by the Indian Medical Association. These 11 common facilities have been

issued authorization out of which 6 common facilities in Kancheepuram district (2 facilities), Vellore district, Thanjavur district, Ramanathapuram district and the Nilgiris district are under operation. 5 common facilities in Coimbatore district (2 facilities), Salem district, Virudhunagar district and Tirunelveli district are under establishment.

Other activities of the board

Applied research and development

The Board has established an applied research and development wing in the Advanced Environmental Laboratory at Chennai for developing cleaner technologies that would reduce the generation of pollution. The Board has established a research fund from cess fund of the Board to assist various institutions for conducting research studies in the field of environmental protection, pollution control and development of cleaner technologies.

Environmental training institute

The Board has established an Environmental Training Institute with Danish assistance of Rs.4 crores at its head office to impart training to industries, local bodies, non governmental organisations and the staff of the Board to enable to monitor and advise on pollution abatement and prevention techniques.

Year	No. of Training Programmes Conducted	No. of Participants
2002-2003	18	2,548
2003-2004	24	1,674

Environmental awareness

An environmental pavilion has been set up at Periyar Science and Technology Centre, Chennai wherein various painting, essay writing and oratorical contests on environmental issues are conducted and video films and short films are screened. The Board has established a pollution awareness and assistance cell in the Corporate office. Environmental awareness programmes are being conducted regularly. Special awareness campaigns are conducted against air and noise pollution during festival seasons such as Deepavali and Bhogi. These campaigns have been quite successful. During the year 2004-2005, the Board with the District Collectors has taken up the activity of promoting eco-friendly pilgrim centers and for creating awareness regarding various environmental issues engaging non governmental organisations, environmental activists and volunteers.

Green awards

Green awards are given to the District Collectors based on the assessment of the personal contribution of the Collectors to the promotion of environmental protection and sustainable development. Green awards were also given to the municipal commissioners. Green Innovators Award was given during the year 2003 to an industrial unit, which has contributed innovatively in tackling a major industrial pollution problem in the textile processing industry.

Complaint cell

An active 'Complaint cell' is functioning in the corporate office, Chennai to take appropriate action against complaints received from various individuals/organisation/NGOs etc., regarding water, air, noise and vehicular pollution.

Preparation of Environmental Atlas

The Board with assistance of the Central Pollution Control Board is implementing the spatial environmental planning programme for preparing district environmental atlas in respect of Thiruvallur, Kancheepuram, Coimbatore, Vellore and Thoothukudi districts. The environmental management plan for Chennai city has also been prepared and submitted for finalisation to the Central Pollution Control Board.

B: Tenth Five Year Plan

1. Objective

The goals / objectives for the State's Tenth Five Year Plan period were specified as follows:-

- Protection of environment and reduction of wastes at source, besides continuing enforcement and monitoring activities
- Conservation and enhancement of life support systems like land, water, forests, biodiversity, ocean and the atmosphere giving ecological security
- Properly treating or converting the pollutants into useful products and thereby reducing their negative impact
- Promotion of suitable measures and technologies for recycling/reusing
- Emphasising environmentally safe waste disposal options viz., composting of all organic wastes, common facilities for bio-medical wastes etc.
- Maintaining essential ecological processes to ensure genetic diversity and prevent environmental degradation.
- Promoting the active participation of people at all levels - from the Village Panchayat to the State as a whole - in the preservation of the environment and promotion of sustainable development through awareness campaigns.

2. Outlay

The outlay for "Ecology and Environment" sector for the Tenth Plan Period was Rs.197.20 crores, out of which the State's share outlay is Rs.113.05 crores. The details are given below. The sources of funding for the Tamil Nadu Pollution Control Board and the Department of Environment are also indicated.

(Rs. in crores)					
Sl. No.	Dept. / Agency	State fund	Central fund	Fund from Internal / own mobilisation (Board) resources	Total
1.	Tamil Nadu Pollution Control Board	---	42.02	14.40	56.42
2.	Department of Environment	113.05	27.73	----	140.78
Total		113.05	69.75	14.40	197.20

C: Annual Plan 2002-03

The actual expenditure incurred during the year 2002-03 for the Ecology and Environment was Rs.51.22 lakhs as against the budget provision of Rs.37.43 lakhs.

D: Annual Plan 2003-04

An amount of Rs.97.41 lakhs was budgeted for the year 2003-04. Against this, the actual expenditure incurred was Rs.75.69 lakhs.

E: Annual Plan 2004-05

An amount of Rs.82.92 lakhs was budgeted for the year 2004-05. Against this, the expenditure anticipated is Rs.92.18 lakhs. The performance of the new schemes sanctioned in 2004-05 is as follows:

Environmental Education - Clean and Green Streets

A pilot project has been initiated comprising of 40 school eco clubs in Chennai to adopt one street adjacent to their school premises under this scheme. The solid waste generated in the adopted streets will follow source segregation. Biodegradable wastes will be composted by forming aerobic composting/ vermi composting pits in the school premises. The natural manure prepared will be used to fertilise tree saplings planted along the adopted streets. Thus the streets adopted by Eco-club will become clean and green. The eco-club members will disseminate the message of environmental conservation. The teacher coordinator of the eco-club is incharge of the programme at the school level. An assistance of Rs.18,750/- per school is given under the programme and the entire amount of Rs.7.50 lakhs has been spent during 2004-2005.

Environment Research and Development Programme

An amount of Rs.10.00 lakhs was provided for environment research and development programme. Innovative Environmental Research projects have been promoted in the areas of bio-remediation of lakes and remediation of effluent affected sites using appropriate tree species. A Rapid Environmental Impact Assessment of Tsunami affected coastal and marine areas has been undertaken during February - March 2005 and a sum of Rs.5.13 lakhs has been spent during 2004-2005.

Establishment of Water Quality Monitoring laboratory

The Department of Environment has undertaken cleaning of the rivers and lakes in Tamil Nadu under the National River Conservation Plan (NRCP) and the National Lake Conservation Plan (NLCP). It is important to undertake a baseline survey and also monitor the water quality in the subsequent years. It is proposed to establish a small water quality monitoring lab in the Department of Environment for exclusively monitoring the water quality of these rivers and lakes by testing the samples effectively. A sum of Rs.10.00 lakhs has been provided for the above programme and this will be utilized during 2005-2006.

Conservation of Coastal Ecosystem

Coastal area forms a highly complex and dynamic eco-system, sensitive to developmental pressures such as industrialization. These could be minimized through prudent Coastal Zone Management practices. An integrated Coastal Zone Management Plan involving various departments, agencies and all the stakeholders will be prepared for the Pulicat to Palar stretch of Tamil Nadu coast during the Tenth Plan. A sum of Rs.10.00 lakhs has been provided for this proposal. The Department of Environment is also implementing CRZ notification 1991 under the Environment Protection Act 1986 and conservation of coast in line with this

notification is quite essential. Government of India have emphasized that violations along the coast should be checked by the State Government through increased surveillance. It is proposed to form a Green Squad for Coastal Conservation for checking CRZ violations. Government of India has sanctioned Rs.5.00 lakhs for this purpose with which a vehicle has been purchased. Out of the Government of Tamil Nadu allocation, a sum of Rs.5.00 lakhs has been spent under this scheme during 2004-2005 and the balance of Rs.7.00 lakhs will be spent during 2005-06.

F: Annual Plan 2005-06

For the year 2005-06, an amount of Rs.109.96 lakhs is proposed. The details of the schemes are as follows:-

Combating desertification of land

Tamil Nadu has about 3.7 million ha. of land under various stages of degradation. The main areas in the districts of Ramanathapuram, Erode, Theni, Sivagangai and Nagapattinam face the problem of desertification of land. Initially, a pilot project is proposed to be taken up in Ramanathapuram district, which will include *Oasis Plantation for stabilization of sand dunes*, construction of check dams and percolation ponds for soil and moisture conservation and formation of Self Help Groups for alternate employment generation. The scheme will also involve planting of legumes and grasses to support animal husbandry in these areas. This project may become a model for tackling larger areas in future under the "United Nation Convention for Combating Desertification Programme". A sum of Rs.15.00 lakhs has been proposed to carry out this project over 100 ha. during the year 2005-06.

Eco-City Plan For Tiruvannamalai

The objective of the programme is to incorporate environment considerations into Urban Planning and prepare an Environmental Management Plan for improving the quality of environment by mapping the environmental profile of study area and to identify the environmental pollution hotspots. To prepare an environmental management plan that includes rehabilitation and mitigation measures and to recommend guidelines for environmentally compatible land use planning. Tiruvannamalai, being a temple city attracting lot of tourists, special emphasis must be given to the carrying capacity of the city. A sum of Rs.10.00 lakhs has been proposed to carry out this project during the year 2005-06.

Greening of Sholingur Temple Hillock

Eco restoration of the degraded temple hillock was sanctioned for 2003-2004 at a cost of Rs.9.00 lakhs. Saplings have been planted at Sholingur Hillock, which are being nurtured and maintained. Afforestation over another 50 Ha. is proposed to be taken up during this year. Moreover the temple tank at the foothills will be desilted and a Nandavanam created around it. This project has been approved to be taken up at a cost of Rs.6.00 lakhs during 2005-06.

Aesthetic amelioration of temple hillock at Palani

Reversal of loss of ecology has been included as one of the components under Tenth Five Year Plan. A pilot project for aesthetic amelioration of temple hillock has already been undertaken in Sholingur Temple in Vellore District last year. For the year 2005-06 it is proposed to take up this project in the Temple Hillock of Arulmigh Dhandayutha Pani Swamy of Palani in Dindigul District. A sum of Rs.10.00 lakhs has been budgeted for this project to be carried out during the year 2005-06.

Eco-Restoration Plan for selected Lakes In Chennai City

There are about forty-six lakes in Chennai city. Most of these lakes are polluted with sewage and garbage and are environmentally degraded. Being in and around the city these lakes are also prone for encroachment. Chennai being a water scarce city, the eco-restoration of these lakes will go a long way in augmenting the water requirements of the city and also will be recharging the dwindling ground water table. During the monsoon season the residential areas around these lake areas get inundated due to blockages in the natural drains to the lakes. In order to alleviate these problems, a comprehensive eco-restoration plan for selected city lakes has been approved to be formulated at a cost of Rs.10.00 lakhs during the year 2005-06.

Plan Outlay for the year 2005-06

An amount of Rs.109.96 lakhs is proposed for "Ecology and Environment" under State Plan schemes for the year 2005-06. The details are given below:

Sl.No.	Scheme	Outlay (Rs. in lakhs)
1.	Department of Environment- Ongoing schemes	58.94
	New Schemes	51.00
	Total	109.94
2.	Pollution Control Test Wing	0.01
3.	Environmental Education, Research and Awareness Programme	0.01
Total		109.96

Centrally Sponsored Schemes*National River Conservation Programme*

The centrally sponsored scheme of "Abatement of Pollution in five polluted stretches of river Cauvery in Tamil Nadu", Tiruchi, Erode, Bhawani, Kumarapalyam and Pallipalayam at an overall project cost of Rs.3627.75 lakhs is being implemented by the Department of Environment, since 1996-97. The project period is 10 years. A sum of Rs.1946.40 lakhs has been spent as on 31.01.2005. During the year 2004-05, an amount of Rs.165.92 lakhs was utilized for the above scheme and the work will be continued during 2005-06 also. The above project is being continued as a 100% centrally sponsored scheme. Under Non core schemes, about 95% of works in respect of construction of Low Cost Sanitation facility (LCS) an River Front Development (RFD) have been completed. Under Core-schemes, Interception and Diversion as well as Sewage Treatment works are being implemented through the TWAD Board in Erode, Bhavani, Komarapalayam, Pallipalayam and Tiruchy towns. All the Works have been completed in Tiruchy, Kumarapalayam and Erode while the works in Bhavani are under progress. Approval of detailed project report is awaited in respect Pallipalayam.

Chennai City River Conservation Project (CCRCP) (Outlay Re.0.01 lakh)

A project for Rs.1700.00 crores has been approved by the Government of India to clean the Chennai city waterways under the National River Conservation Programme, of which Rs.491.52 crores will be grant for intercepting and treating sewage in six Chennai City Waterways (Cooum, Buckingham Canal, Adyar, Otteri Nullah, Captain Cotton Canal and Mambalam drain) which is being implemented

through Chennai Metropolitan Water Supply and Sewerage Board. The project is being implemented since 2001. About 97% of the interception and diversion work and about 95% of the STP work has been completed at an cost of Rs.29766.71 lakhs. During the year 2004-05, Rs.10411.87 lakhs was utilized and the work will be continued during 2005-06 also.

National River Conservation Plan – Seven New Towns

Government of India have approved an integrated proposal for cleaning the River Cauvery, Vaigai and Tamiraparani along seven towns viz., Tiruchy-Srirangam, Thanjavur, Kumbakonam, Karur, Myladuthurai, Madurai and Tirunelveli at a total cost of Rs.575.30 crores. Of this, 50% of the cost is obtained as grant from Government of India and the rest will be met by the Government of Tamil Nadu and the local bodies and also through public contribution. A sum of Rs.224.39 crores has been spent so far under the project upto 28.02.2005. About 56% of work in Madurai, 46% in Kumbakonam, 70% in Thanjavur, 75% in Tirunelveli, 78% in Mayiladuthurai, 84% in Karur and 53% in Tiruchy-Srirangam has been completed. During the year 2004-2005, Rs.110.46 crores were utilized for the above scheme and work will be continued during 2005-2006 also.

National Lake Conservation Programme

Environmental upgradation through bioremediation of Ooty and Kodaikanal Lakes is being undertaken under National Lake Conservation Programme (NLCP) at a total cost of Rs.688 lakhs. Government of India has released Rs.171 lakhs for Ooty Lake and Rs.200 lakhs for Kodaikanal Lake. Of this, Rs.142.50 lakhs have been utilised for Ooty Lake. Works to the tune of Rs.33.40 lakhs has been completed in Kodaikanal Lake. Due to legal tangle the work has been stopped in Kodaikanal Lake. Necessary action is being taken to vacate the stay. During the year 2004-05, Rs.0.87 lakhs and Rs.1.60 lakhs was utilised for Ooty Lake and Kodaikanal Lake respectively. The scheme will be continued during 2005-06 also.

Palar River Conservation at Ambur

A novel project, the first of its kind in the state has been prepared for Ambur Municipality for diluting the treated industrial effluent containing high Total Dissolved Solids (TDS) with treated domestic wastewater at an estimated cost of Rs.25.00 crores and sent to Government of India for approval. Now a similar project has been prepared for Ranipet and Wallajah Municipalities at a cost of Rs.25.00 crores and sent to Government of India for approval. This project will be beneficial to the people of Ambur, Ranipet and Wallajah by providing underground sewerage system and minimise pollution of the river Palar besides bringing down the TDS of the treated industrial effluent. The project will be undertaken with the 70% financial assistance of the Ministry of Environment and Forests and the rest from the contribution of the Municipality (25%) and industries(5%).