

14. ENVIRONMENT

The inter-relationship between the environmental degradation and the socio-economic development has stressed the Government to give prime focus on the environmental issues. Several initiatives have been taken up by the Government through its agencies viz., Department of Environment (DOE) and Tamil Nadu Pollution Control Board (TNPCB). While the Department of Environment looks after the abatement of pollution in rivers and lakes apart from creating environmental awareness, the TNPCB looks after the monitoring of pollution of industrial activities. Many private agencies and organizations are also involved in making the city / towns green. Most of the industrial buildings are going green to provide sustainable environment to the present and future generations. The sustainability of the site, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality and innovation and design identifies a green building. Going green has become fashionable and a business mantra to attract the public and the Government.

Plan Outlay for 2008-09 to Environment Sector:

Table -1: Plan Outlay for the year 2008-09

(Rs. in lakhs)

Sl. No.	Scheme	2007-08 (BE)	2007-08 (Actuals)	2008-09 (RE)	2008-09 (BE)
	Plan Schemes				
1.	Environmental research and Ecological Regeneration - Environment Department	166.55	163.00	133.79	135.37
2.	World Bank Assisted scheme under Emergency Tsunami Reconstruction Project	817.73	131.37	776.54	636.47
3.	Grants to the Centre for the study of climate change	--	--	100.00	100.00
4.	Formation of environmental clubs in all Government and Government aided educational institutions.	--	-	60.00	60.00
	Total	988.48	294.37	1070.33	931.84
	Non-Plan-Schemes				
5.	Non-plan scheme for Prevention and control of pollution	9.11	6.15	7.75	9.41
7.	Centrally Sponsored Scheme for improvement of river Cauvery.	--	--	4.40	--
		993.59	300.52	1082.48	941.25

Source: Performance Budget of Environment Department, 2009-10.

The above table presents the plan outlay for the year 2008-09 of the Ecology and Environmental sector. A comparative analysis of the budget estimate of the year 2008-09 with that of 2007-08 reveals that the proposals made for environmental research and ecological regeneration had been reduced by 18.7 per cent and the assistance given by the World Bank for ETRP by 22.2 per cent. But the Revised Estimate of the ETRP scheme indicates a 22 per cent rise in the assistance extended by the World Bank. As a part of global warning, new schemes such as formation of environmental clubs and study centres for climate change had been proposed at a total cost of Rs.160 lakh.

For the environmental improvement and the pollution control efforts at the River Cauvery, the Central Government has provided a sum of Rs.4.40 lakh (2008-09 RE) and the State Government expenditure had increased from Rs.6.15 lakh to Rs.7.75 lakh during 2008-09 (RE) as a non-plan expenditure.

Performance of Major Schemes during the year 2008-09:

The prime focus of the environment sector from its inception is the promotion of environmental awareness among the general public. All the major schemes of the environment protection efforts other than those dealt with by the TNPCB are taken care of by the Directorate of Environment sector. The performance of the major schemes are presented in the following table and are discussed in brief.

Table – 2: Performance of Major Schemes during 2008-09

(Rs. in crores)

Sl. No.	Nature of Scheme	Funding Pattern	Achievements	
			2007-08	2008-09
1.	National River Conservation Plan (5 polluted stretches)	Centrally Sponsored	0.13	0.22
2.	Chennai City River Conservation Project	Centrally Sponsored	5.41	1.40
3.	National Green Corps	Centrally Sponsored	1.87	1.87
4.	National River Conservation Programme (7 additional towns)	50% Centre and 50% State	27.79	21.2
5.	National Lake Conservation Programme	70% Centre and 30% State	--	8.78

Source: Policy Note of Forest and Environment Sector 2009-10

Performance of Various Schemes during 2008-09:

1. Abatement of Pollution in Five Polluted Stretches of River Cauvery:

While interception, diversion and sewerage treatment plants are implemented in Erode, Bhavani, Komarapalayam, Pallipalayam and Tiruchy towns by the Tamil Nadu Water Supply and Drainage Board under core activities, construction of low cost sanitation facility, crematoria and river form developments have been undertaken by the local bodies under non-core activities with a sum of Rs.0.22 crore during the year 2008-09.

2. National River Conservation Programme in 7 additional towns:

The integrated projects of the 7 additional towns viz., Srirangam, Thanjavur, Kumbakonam, Inam Karur, Mayiladuthurai, Madurai and Tirunelveli envisages the provision of underground sewerage system, sewerage treatment plants, low cost sanitation and solid was management. Around 249.55 MLD of sewerage can be effectively treated through the implementation of the above projects under non-core activities by the local bodies. Under core activities, while the scheme of underground sewerage system at Tirunelveli had been completed, the other core works in the rest of the 7 towns were under implementation at a cost of Rs.21.2 crore during 2008-09. With this a total of Rs.460.24 crore has been committed under this scheme till 2008-09.

3. Chennai City River Conservation Project:

This project aimed at the effective treatment of 264 MLD of sewerage at Perungudi (54 MLD), Koyambedu (60 MLD), Nesapakkam (40 MLD) and Kodungaiyur (110 MLD) at a cost of Rs.1.4 crores during 2008-09. An additional quantity of 264 MLD would be treated after the completion of the above project.

4. National Lake Conservation Programme:

Revival of Ooty, Kodaikanal and Yercaud lake is the core aim of this programme. While Ooty lake has been revived at a cost of Rs.1.72 crore, the dewatering, Bioremediation and low cost sanitation works of the Kodaikanal lake has been taken up at a cost of Rs.1.32 crore during the year 2008-09. The detailed project report prepared for the revival of Yercaud lake at a cost of Rs.5.74 crore has been sent for approval by the National River Conservation Directorate.

5. Environmental Awareness Camps, Competitions and Research:

Environmental awareness among school children that has been created through 7500 National Green Corps and 1200 Eco-clubs throughout the State had been continued with the Government assistance of Rs.2500/- per school per year during 2008-09. Around 3.5 lakh school children were exposed to various environmental issues through these camps and competitions were conducted to the students community and the NGOs on Boga day and World Environment Day.

6. Environmental Information system (ENVIS) and State of Environment Report (SOE) :

The web-based environmental information services such as (SOE) Atlas, SOE photo catalogues and video films on environment were provided by the ENVIS and SOE with the financial assistance of Government of India. The ill effects of plastics and rubber materials had been reduced considerably through these schemes. In addition the Centre for Climate change and Adaptation Research, Anna University is involved in the study of impact of climate change in Tamil Nadu.

World Bank Assisted Schemes:

Among the World Bank assisted schemes, the scheme of Demarcation of High Tide Line (HTL) along the coast of Tamil Nadu from Palar River mouth to Thengapattinam had been completed at a cost of Rs.2.23 crore. Performance of the other schemes such as Erection of Stone Pillars on HTL reference points, preparation of Integrated Coastal Zone Management Plan (ICZMP) and coastal vulnerability maps and the creation of awareness on coastal vulnerability areas had been under progress.

Tamil Nadu Pollution Control Board:

The mushrooming growth of industries and the increasing vehicular emission in the State is polluting the atmosphere to a great extent. The wastes generated from the industries such as solid waste, hazardous waste and bio-medical waste, plastic waste and the e-waste need to be monitored and controlled effectively. All the above issues are

taken care of by the Tamil Nadu Pollution Control Board through effective monitoring and control measures. Fund requirements of the board are mobilized from internal sources. While the Centre and the State Governments had provided financial assistance to the board 2007-08, the financial requirements of year 2008-09 was totally mobilised by own resources to the extent of Rs.66.60 crore as follows:

Table – 3: Financial Requirement for 2008-09

(Rs. in crores)		
Sl. No.	Provisional (Subject to audit)	Financial
1.	Consent fees	29.40
2.	Consent forms	0.11
3.	Analysis, AAQS and other lab fees	3.34
4.	Interest on deposits	26.48
5.	Cess Reimbursement	6.74
6.	Others	0.62
	Total	66.69

Source: Data provided by the TNPCB

Monitoring of Industries:

For exercising effective monitoring and pollution control measures, the industries are classified into 3 broad categories as red, orange and green according to the level of their pollution. Table presented below gives a detailed picture of the period of inspection and sample collection of the industries to verify the standards of compliance.

Table – 4: Categorisation of Industries

Sl. No.	Level of Pollution	Category		Period of	
		By Colour	Scale	Inspection	Sampling
1.	Highly Polluting	a) Ultra red	Large	Monthly	Once in a month
			b) Red	i) Ordinary	Once in 3 months
		ii) Medium		Once in 4 months	Once in 3 months
		iii) Small		Once in a year	Once in 3 to 6 months
2.	Medium Polluting	Orange	Large	Once in 6 months	Once in 4 months
			Medium	Once in 6 months	Once in 6 months
			Small	Once in 2 years	Once in 6 months
3.	Less Polluting	Green	Small	Once in 2 years	

Source: Policy Note 2009-10 of Forest and Environment Department.

In case of repeated non-compliance of standards by the industries, show cause notices and closure orders are issued by the Board. The details on the number of industries for which show cause notices and closure orders were issued in 2008-09 as compared to 2007-08 are presented below:

Table -5: Issue of Show Cause Notices and Closure Orders

Sl. No.	Period	Show Cause Notices issued (Nos.)	Closure Orders issued (Nos.)
1.	2007-08	2340	596
2.	2008-09	2558	535

Source: Data collected from TNPCB

Based on the pollution control measures undertaken by the industries to treat sewerage trade effluent and emissions, the board issues consent orders to establish and operate under Water Act and Air Act every year. Compared to the year 2007-08 the number of industries issued the consent orders under Water Act and Air act had been reduced during 2008-09. Similarly, the number of closure orders issued during 2008-09 was also less as compared to the year 2007-08.

Table – 6: Issue of Consent Orders

Sl. No.	Period	Under Water Act		Under Air Act	
		Consent to establish	Consent to operate	Consent to establish	Consent to operate
1.	2007-08 (Actual)	1628	1303	1628	1303
2.	2008-09	1229	1054	1228	1056

Source: Data collected from TNPCB

For the convenience of the local public to raise the issues of high level pollution, the government has identified 10 Hot spot areas viz., Manali, Cuddalore, Thoothukudi, Mettur, Ranipet, Sriperumpudur, I.T. corridor at Perungudi, Perundurai, Gummidipoondi and Tiruppur.

Common Effluent Treatment Plants (CETP):

While the large scale industries establish their own CETPs, due to financial crunch and non-availability of sufficient space the cluster of small scale industries are assisted by the CETPs formed by the Government. As per the latest estimate, no new CETP had been formed during the year 2008-09.

Waste Management:

The **hazardous wastes** generated from hazardous chemicals are treated and disposed off according to Hazardous Waste Rules, 1989. The Government had identified 2532 units as hazardous waste generating units as on 31st March 2009. For an effective recycling and reuse of the hazardous waste, facilities had been established at SIPCOT Industrial estate and are in operation. New facilities had been identified at Coimbatore and Karur districts. Cement industries are encouraged to recycle and reuse the sludge as raw materials and incineration materials.

For an effective treatment of **bio-medical wastes**, the Government has listed 2479 private hospitals and 317 Government hospitals under Bio-Medical Waste Rules, amended in 2000. For the private sector health care units, 11 common facilities had been identified and are in operation. While the State Government hospitals have joined the common bio-medical waste treatment facilities, the rest of the following hospital have been issued notification for the implementation of health care waste management techniques.

District Headquarters Hospitals	:	29
Sub-District Hospitals	:	241
Tertiary Care hospitals	:	41
Upgraded Primary Health Centres	:	130
ESI hospitals	:	8

Source: Data collected from TNPCB

The municipalities and town panchayats of the State together generate around 15,000 M.T. of solid wastes per day. This necessitates an urgent need for a scientific approach to manage the solid wastes. The Government has given authorization to 63 municipalities and NOC to 46 municipalities and one Corporation for composting of municipal solid wastes and setting up waste processing facility.

The throw away plastics when mixed with **solid waste** generates adverse effects on the general public due to the non-bio-degradable nature of the plastics. To regulate such effects, the government has implemented the plastic (Manufacture, Sale and Usage) Rules, which has stipulated the minimum thickness of 60 microns for the carry bags.

According to the report by MAIT-GTZ study 2007, 19000 tonnes of the 300000 lakhs tonnes of e-wastes produced in the country are recycled. Only 5 per cent reaches the authorised recyclers. The illegal import of around 50,000 tonnes of e-wastes had created chronic problems. The Government has given consent to 12 e-waste recyclers for segregation and recovery of PCB, IC, Iron, Copper, Rubber, Glass etc. While PCB / IC wastes were exported to recover the heavy metal present in them, the other wastes were sent for recycling. A Committee of Professors of Anna University, representatives of NGOs and an expert from national Metallurgical Laboratory had been formed to initiate a National Policy or legislation on e-waste.

Monitoring of Air and Water Quality:

As per the Air (Prevention and Control of Pollution) Act 1981, the entire State of Tamil Nadu has been declared as air pollution control areas. While all the districts have been declared as air borne free districts, the Metropolitan Transport Corporation, Chennai was the first to declare its Corporation '*air borne free*'. During the year 2008-09, no new Air Quality Monitoring Stations had been established under the programmes of NAAQM and SAAQM. Special efforts had been taken to monitor the carbon monoxide level in the industrial and traffic prone area through the purchase of 5 carbon monoxide analysers at a cost of Rs.25 lakh. It has been proposed to monitor the ground level ozone in the industrial and commercial areas by procuring 5 ozone monitor.

Water Quality Monitoring:

To provide quality water to the citizen of India, Government has implemented two programmes viz., Monitoring of Indian National Aquatic Resources (MINAR) and Global Environmental Monitoring System (GEMS). In Tamil Nadu, the Government is entrusted with the monitoring of the quality of Cauvery river water at 16 locations under MINAR and at 4 locations under GEMS, apart from the monitoring of other rivers and lakes. To

extend the availability of river water, '*River Stretch Pollution*' studies are conducted by the Government in association with reputed Universities and educational institutions.

For Cauvery, Tamiraparani, Palar and Vaigai:

As per the latest update, the new Water Quality Monitoring Stations were established.

Vehicle Emission Monitoring:

All the vehicles and goods carriages are subject to emission monitoring before the procurement of Pollution Under Control (PUC) Certificates. Table presented below indicates the number of vehicles complied and not complied with the emission standards set. It may be inferred from the table that the number of vehicles not complied with the standards had been on the increase during 2008-09 (3.2%) compared to the year 2007-08 (2.3%).

Table – 7: Vehicle Emission Monitoring

Year	No. of vehicles tested	Vehicles within the limit	% of vehicles complied within the limit	Vehicles exceeded the limit during 1 st test	Vehicles not complied standards	Vehicles complied standards after notification	% of vehicles exceeded limit during 1 st test	% of vehicles not complied standards
2007-08	38891	37987	97.7	2824	904	1920	7.3	2.3
2008-09	42206	40835	96.8	4760	1371	3389	11.3	3.2

Source: Data collected from TNPCB

Other Activities:

Training on environmental issues were provided to the staff of PCS, representatives of industries, NGOs. During the year 2008-09, a total of 14 programmes were conducted for 611 participants across the State. Environmental awareness activities (46) were carried on in different forms.

State environment atlas, District Environmental atlas, Environmental Management Plan etc., were prepared under '*Spatial Environmental Planning Activities*'.

Industries were encouraged to adopt the concept of '*Going Green*' to mitigate pollution. Accordingly, around 25 per cent of the land area of industries were covered with green belt. Industries of all the categories such as FMCGS, Consumer appliances, Banking, Automobile, Pharma, IT etc/. are becoming greener day by day.

Key Issues of 11th Five Year Plan towards Ecology and Environmental Sector (2007-08 to 2011-12):

The major aim of the ecology and environmental sector is to restore and rehabilitate the ecologically fragile and sensitive eco-systems by ameliorative management.

As a means of achieving this strategy, the 11th Five Year Plan aims at the expansion of forest and tree coverage from 21 per cent in 2007-08 to 33 per cent of the total geographical area by 2012. The developments in the allied sectors would have an impact on the agrarian sector and thereby would lead to sustainable economic development. To achieve this national objective of increased green cover, strict enforcement of environment laws and cleaning of rivers should be continued along with the utilization of public and private waste lands through recharge.

The Centre had allocated a sum of Rs.120.79 crore for the purpose of developmental activities by the environment sector during the five year period ending 2011-12. Of this, around 66 per cent (Rs.80 crore) of the total fund was proposed for the provision of Free LPG connections and gas stove to poor families so as to avoid deforestation.

While 24 per cent of the total funds were allocated for the continuation of Emergency Tsunami Reconstruction Project (ETRP), the rest of 10 per cent was proposed to create environmental awareness through competition, trainings and research works.

Table -8: Financial Outlay for 11th Five Year Plan for the Department of Environment

Sl. No.	Scheme	Outlay (Rs. in crores)
1.	Provision of Free LPG Connection and Gas stove to poor families	80.00
2.	Environment Awareness Creation	9.25
a.	Conducting competitions at Rs.50,000/- per district	
b.	Conducting 3 days environment camps at 75,000 per district	
c.	Conducting training / workshops / seminars through awareness network	
d.	Eco-friendly demonstration activities at 2 lakh for 70 activities	
e.	Promoting Environmental Research	
f.	Preparation of Environmental Management Plans for important localities for 20 localities	
g.	Conducting Environmental Status report studies for all districts in Tamil Nadu	
3.	Continuation of the existing 2 divisions created under ETRP after the project period i.e. from May 2008	29.44
4.	Restoration of Palkani lake at Pallavaram	0.10
5.	New schemes for Environmental protection and awareness	2.00
	Total	120.79

Source: 11th Five Year Plan document

Table - 9 : Outlay for TNPCB under Eleventh Five Year Plan
(Rs. in crores)

Sl. No.	Projects / Schemes	State	Central	TNPCB own fund	Bene-ficiary	Total
I.	Schemes to be carried over from 10th Five Year Plan					
1.	Formation of new district Officers and construction of District Office Buildings Construction and upgradations of TNPCB labs SWM, R&D of environmental education.	--	--	8.00	--	8.00
II.	New Schemes					
1.	Upgradation and provision of new CETPs to achieve zero liquid discharge in textile and tannery sector	--	532.09	--	177.36	709.43
2.	Remediation of contaminated legacy Sites under hazardous Waste management.	--	5.00	--	--	5.00
3.	Water Quality Monitoring	--	0.50	--	--	0.50
4.	Air Quality Monitoring	--	2.00	--	--	2.00
5.	Environmental Training ENVIS, Environmental Management	--	--	2.50	--	2.50

Source: 11th Five Year Plan document.

For the effective monitoring of air and water quality and for the development and management of waste disposal techniques, an amount of Rs.727.43 crore was proposed for the 11th plan period. The above funds are financed by the Central Government, TNPCB itself and by the beneficiary in the ratio of 74:2:24 respectively. A major proportion of (97.5%) of the funds were allocated for the upgradation and provision of CETPs in the textile and tannery sector. Around 5 crore was funded for the monitoring of air and water quality. Rs.8 crore was funded for the continuation of the existing schemes proposed during the 10th plan period.

Developments of Global Warming Effects:

Being highly vulnerable to climate change, the projected change in climate poses many challenges to the climate sensitive sectors such as agriculture, water and forestry of India. To combat these challenges, our nation needs to focus on several issues such as energy security, promoting renewable energy sources, transportation, forests and agriculture. Experts are of the opinion that reducing Atmosphere Brown Clouds (ABC) would delay the onset of global warming. The atmospheric brown clouds, the latest environmental concern of India which leads to major changes in the weather conditions, is caused by bio-fuel cooking and bio-mass burning. According to United Nations

Environment Programme (UNEP), Mumbai, Delhi and Kolkata are identified as ABC hot spots. ABC induced atmospheric solar heating and surface dimming are large over Asia in general and over India and China in particular. It was suggested to remove the brown haze which is easier than reducing green house gas emissions.

As a part of global warming effects, the government has promoted a number of new concepts. Efforts had been taken to reduce the ill effects of tobacco products through the concept of 'Smoke Free Village'. The villages that do not sell tobacco products would be rewarded. A joint venture between Central Pollution Control Board (CPCB) and IIT campus was made to register the pollution levels in the atmosphere every minute and to store data for every 5 minute. The recommended Respirable Suspended Particulate Matter (RSPM) standard for sensitive areas such as hospitals, educational institutions, national parks and buildings into heritage value is 75. To manage floods, which contributes to one-third of the natural disaster all over the world, the Government of Tamil Nadu and Government of India together had commissioned an extensive flood risk mapping project of 500 sq.kms. for Chennai metro comprising of cities and its suburbs at a cost of Rs.2.17 crore. The Institute of Remote Sensing (IRS) of Anna University would prepare a digital terrain of Chennai region.

Besides the efforts taken by the government, going green has become fashionable and business mantra for many industries. A green building consumes 40 per cent less energy and 20 per cent less water than the non-green building. The 'United States Green Building Council' has identified 19 'Leadership in Energy and Environmental Design (LEED) rated green buildings in our country, of which 10 of them belong to Chennai (example). Khivraj Tech's Olympia Tech park. RMZ Millernia Business Park). Companies such as Hyderabad import. ITC welcome group, Infosys, TCS, Agilent, HP, IBM etc. claim to be going green.

The countries rich in oil and gas are expected to focuss in the post-kyoto period. Large developing countries are expected to contribute more to emission reduction than the developed countries.