6 d. ENVIRONMENT IN TAMILNADU

As the 21st century begins, several well-established environmental trends are shaping the future of civilizations all over the globe. Rising temperature, falling water tables, shrinking cropland per person, collapsing fisheries, shrinking forests, the loss of plant and animal species, all these have become universal concerns.

Land degradation, biodiversity, air pollution, fresh water resources and hazardous waste management have been identified as the major issues that face India and Tamilnadu today.

"Green Charters" have emerged for all over, emphasizing that unchecked industrial and commercial exploitation of natural resources is detrimental to both the environment and economy. There is a serious need for basic life support systems, atmosphere, water, land, forests and bio-diversity to be protected.

Land

Per-capita available land in Tamilnadu is a mere 0.22 hectares. In this regard, Tamilnadu occupies a lowly 11th position at the All India level, as per State Planning Commission estimates.

> *" While the average size of landholding for India as a whole is 4.5 acres per reporting household, it is only 2.8 acres in Tamilnadu"*
>
> **- Indian Human Development Report, 1999**

To add to the already critical situation, growing disturbing trends in the sphere of land alienation have developed:

> *"Trends which call for immediate intervention are (i) Gross cultivable area is declining, (ii) Area under cultivable waste is increasing, (iii) Cultivable lands are increasingly being diverted for non-agricultural purposes"*
>
> **- Ninth Five Year Plan Tamilnadu : 1997-2002**

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Tamilnadu, traditionally, was divided in terms of the 5 "Thinais" (eco-zones) of Mullai, Marutham, Kurinji, Neithal and Palai, designating the land, forests, mountains, coast and desert respectively. Massive ecological destructions all over are cutting at this very landscape

As the Citizens' Fifth report states, it was only in the 1970s that India began to realize that its land resources were getting badly degraded. And by the mid-1980's, even the government had begun to wake up to the environmental degradation-rural poverty crisis. In 1985, the National Wastelands Development Board was established, with the target of afforesting 5 million hectares a year through peoples' movements. In 1992, the Department of Wastelands Development was established.

The country already has 129.78 million hectares (mha) of wasteland, of which 35.92 mha is degraded forest land and 93.86 mha is degraded non-forest land.

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The hilly areas with Western ghats and areas related to the hills in the western part, the Central plateau that is mostly connected to rivers, canals and lakes and the 1000 kms long coastal areas are the major sections that demand our attention today. All of them are under the onslaught of ecological destruction and degradation of varied types.

> *"In Tamilnadu, in the name of industrial development more and more industries, which have an adverse effect on the livelihood and environmental safety of the people, are coming up. Hazardous Industries affecting the livelihood and environment and those technologies that are outdated are encouraged and permitted to enter Tamilnadu.*
>
> *"Other areas of concern are the over 8,000 tonnes of fertilizer and 500,000 litres of liquid pesticides used in the State, the continued used of DDT despite its ban in other States and the increased radioactive waste from the Madras Atomic Power Station at Kalpakkam*.
>
> **- Tamilnadu Peoples' Manifesto, 1996**

Gradual degradation of the land, its soil and its potentialities has gone on unhindered.

Waste, Degraded land in Tamilnadu (1950-1987) (in lakhs hectares)					
Units	1950s	1960s	1970s	1980s	1987
Barren, unculturable	9.73	8.85	7.05	5.74	5.5
Cultivable wasteland	8.70	6.10	4.15	3.20	2.95
Current Fallow	11.05	9.69	12.02	17.35	14.10
Other fallow	6.50	6.12	5.31	5.85	8.35
Total	36.08	31.26	28.53	32.14	31.93

(TNEC publication, 1995)

As per the Citizen's Fifth Report, the following were the figures for Tamilnadu in 1995-96:

Total wasteland	44.00	lakhs hectares
Degraded Forest Area	10.10	lakhs hectares
Degraded Non-Forest Area	33.90	lakhs hectares
Barren and Unculturable land	4.90	lakhs hectares
Culturable wasteland	3.50	lakhs hectares
Current fallows	12.90	lakhs hectares
Fallow lands other than Current fallows	11.30	lakhs hectares

Tanneries

Tanneries in Tamilnadu have been in the eye of the storm, as it were, in terms of environmental pollution. (Regarding specific river pollutions by tanneries, Refer later).

Of a total of more than 1200 tanneries in India, Tamilnadu accounts for more than 75%. Of the Rs 1600 crores earned by way of leather exports, Tamilnadu accounts for nearly 60%.

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Tanneries in Tamilnadu are concentrated in a few regions: Chrompet in Madras, Ranipet, Ambur and Vaniyambadi on the banks of the Palar River and Dindigul on the banks of Kudavanaru river. These areas, specifically chosen for their abundant supply of water, have radically changed. Effluents continue to flow into the river beds that have gone dry.

Chrompet, which used to boast of sweet water even at 30-40 feet has, now, streams of effluent channels, turning the groundwater salty. In Vaniyambadi, water is salty even at depths of more than 200 feet

Chrompet, which used to boast of sweet water even at 30-40 feet, has, now, streams of effluent channels, turning the groundwater salty. Calcium and sodium salts have increased the hardness of water.

In Vaniyambadi, water is salty even at depths of more than 200 feet. Even water from borewells next to Ranipet by-pass and from Pachakuppam off Ambur are distinctly salty.

Vaniyambadi, Ambur, Ranipet and Dindigul are forced to buy fresh water from areas far away from the contaminated zone.

Hazardous Waste

Rapid urbanization and industrialization has increased the need for time bound and comprehensive management of hazardous wastes in Tamilnadu. Urban landfills, with enormous quantities of waste, pose a major problem for the health of our towns and cities, causing air and groundwater pollution. Solid waste management and disposal in cities and towns is proving to be a major challenge. Illegal dumping with great health hazards continues in most of the urban centers.

Govt of India issued in 1992 the Policy Statement for Abatement of Pollution, with the stated intention "to prevent pollution at source"

MOEF issued an Environment Action Program (EAP) in 1993. EAP identifies improper management of hazardous wastes generated from industrial and commercial activities as one of the priority problem areas. It recognizes that indiscriminate disposal of these wastes has resulted in land, surface and ground water contamination. These wastes include heavy metals, cyanides and pesticides, complex organic chemicals (such as H-acids) that are toxic flammable, corrosive, or explosive or have high chemical reactivity.

Under the Environmental Protection Act of 1986, "The Hazardous waste (Management and Handling) Rules" were issued in 1989 to govern the generation, collection, treatment, transport, storage, disposal and import of hazardous wastes. The responsibility for enforcement of these rules is vested with the State Pollution Control Boards.

In 1991, MoEF issued guidelines for management and handling of hazardous wastes for a) generators; b) transport of hazardous wastes, and c) owners/operators of hazardous storage, treatment and disposal facility.

In 1995 MOEF issued guidelines for establishment of a Transport Emergency Plan and provision for the identification and assessment of hazards.

The following are the key problems identified by GOI for hazardous waste management:

- insufficient information on the total quantity and types of waste generated
- inadequate compliance with regulations
- lack of awareness regarding risks to health, safety and environment and
- lack of proper infrastructure for treatment and safe disposal

Tamilnadu, together with the States of Maharastra, Gujarat and Andhra Pradesh, accounts for 72% of the hazardous waste generated in the country. North Arcot, Dindigul and Coimbatore are the regions generating maximum waste

Tamilnadu, together with the States of Maharastra, Gujarat and Andhra Pradesh, accounts for 72% of the hazardous waste generated in the country (about 5.0 million tons / year). Tamilnadu is estimated to generate 1.40 million tones of hazardous waste per annum. ETP sludge (category 12) with 41.4% and Waste oil and oil emulsions (category 10) with 28% are the categories in Tamilnadu in which maximum waste is generated. North Arcot, Dindigul and Coimbatore are the regions generating maximum waste.

Chennai has been declared the Malaria capital of India. In 1994, of the 2.58 lakh people screened, 36,808 tested positive for Malaria. Over 40% of water samples collected from the city waterways by the Leptospirosis Research Laboratory of the Tamilnadu Veterinary and Animal Sciences University has been found to contain leptospira organisms during the last one year. Specific spots along the water courses near Spur Tank Road, Central Station and below Ambedkar bridge indicated the presence of about 60% of the spirochaete organism during the summer months. The presence of the organism is as high as 80% in the waste water discharged from the Perambur Slaughter House.

Chennai has been declared the Malaria capital of India

In Ambattur Industrial Estate, Chennai, which houses more than a thousand units, illegal dumping of solid waste is a common feature at plots that have not been fenced.

Chennai ranks next to Mumbai and Delhi in garbage generation

Several unoccupied plots have become virtual waste dumping yards, posing health risks to the nearly two-lakh strong workforce, of which 30% are women. A few waterways have also become a drain-off point for liquid waste, which is transported by tankers from different parts of Chennai. The estate was the scene of two cholera outbreaks in the past. The office of the Tamilnadu Pollution Control Board, situated at the entrance to the estate turns a blind eye. The only consolation for the units in Ambattur estate is that the facilities at Guindy estate are even worse!

Chennai ranks next to Mumbai and Delhi in garbage generation – about 3500 tonnes per day of municipal solid waste. Solid wastes contain a high proportion of organic matter and are dumped in the two official landfills at Kodungaiyur in North Chennai and Perungudi in the south. But unofficial dumping in unauthorized places goes on. A kilometer-long stretch of the Ennore coastline is filled with garbage from Tiruvottriyur municipality

Chennai Corporation's much publicized drive to privatize garbage collection and disposal was launched in March 2000. The limited privatization drive in three zones of Chennai has been entrusted to the Singapore-based CESONYX. The corporation has claimed that the extent of garbage disposal in the city had gone up to 3100 tonnes per day. The project is supposed to cost Rs 648 per tonnes per day, compared to the manual operations costing Rs. 1050 per tonnes per day. There has been also an assurance that there was no threat to the job security of the existing 10,000 conservancy workers employed by the Corporation. On the other hand, Left unions have opposed the privatization move, and have claimed that gradually the whole city will be handed over to private operators.

Any integrated waste management approach should follow the hierarchy: reduction at source > reuse or recycling > on-site treatment > off-site treatment > final disposal

Any integrated waste management approach should follow the hierarchy: reduction at source > reuse or recycling > on-site treatment > off-site treatment > final disposal.

Civic bodies in Tamilnadu need to focus their attention on evolving methods for developing an effective waste management system for segregation, recycle and reuse.

Water

"We need a paradigm shift in handling water issues"
- World water Commission at the 2nd World Water Forum, March 2000

"Politicians have created a culture of dependence on the Government. Given this political mind-set, the water bureaucracy too has a culture of providing services, however poor they may be, rather than one of empowering people to develop their own water surplus. And it is still locked into the big dam, pumps, pipes and borewell paradigm"
- Anil Agarwal, Indian Express, 26 April 2000

India, along with China, is the single largest water–deficit country in the world, according to the State of the World 2000 Report of the World Watch Institute. As India's population has tripled since 1950, water demand has climbed to where it may now be double the sustainable yield of the country's aquifers. As a result, water tables are falling in much of the country and wells are running dry in thousands of villages.

The International Water Management Institute, the world's premier water research body, estimates that aquifer depletion and the resulting cutbacks in irrigation water could drop India's grain harvest by up to one fourth. In its recent six-report series on "Water Resources Management in India", the World Bank has warned India of an imminent serious water crisis, with heavy pressure on its finite and fragile water resources.

The situation has been so severe that in September 1996 the Supreme Court directed the National Environmental Engineering Research Institute (NEERI) to examine the problem of declining groundwater levels. NEERI found that "overexploitation of ground water resources is widespread across the country" and that water tables in critical agricultural areas are sinking "at an alarming rate."

Nine Indian States are now running major water deficits, and those deficits are growing. And Tamilnadu is among the worst of the water-deficit States in India

Nine Indian States are now running major water deficits, which in the aggregate total just over 100 billion cubic meters a year, and those deficits are growing. And Tamilnadu is among the worst of the water-deficit States in India.

The per capita water resources of Tamilnadu (4224.5 m^3) steeply falls short of the Indian average of 24,645 m^3.

Tamilnadu has already used a high 60.44% of its replenishable ground water resources. Only Haryana and Punjab in the country have exploited their groundwater potential to a greater rate

> *"(Tamilnadu) is among the States with the lowest per capita availability of water, with 0.03 m.cft as against 0.09 m.cft in the country….*
>
> **- Ninth Five Year Plan Tamilnadu : 1997-2002**

Being in the rain shadow-area, rainfall has been less than adequate. The normal annual rainfall is 942.8 mm, but the rainfall has been below normal in 25 years over a period of past 40 years. And in 8 districts, the usual rainfall is 10% below the State average.

32 river systems, 11 major reservoirs, 2,679 canals and 38,863 tanks (data given in Forest Department Policy Note, 2000) provide and preserve the available water for various purposes, including irrigation.

> *"The area irrigated in the State is 45.96%, occupying the fourth position in the country. Tamilnadu has already exploited 97.50% of the surface irrigation. The surface water potential to be created in the State is almost 'nil'."*
>
> **- Ninth Five Year Plan Tamilnadu : 1997-2002**

Hence there has been, over the years, increased dependence on groundwater.

> *"There is a significant shift from public (tanks and canals) to private (well) irrigation. From 9 lakhs in 1960, the number of wells rose to 18 lakhs in 1994. While the percentage of the area irrigated by wells increased from 24 lakh ha to 46 lakh ha, the share of ground-water has increased from 3% in 1960 to 70% in 1990."*
>
> **- Tamilnadu Peoples' Manifesto, 1996**

As per the reports of the Groundwater Estimation Committee, nearly 30% irrigation ayacut in Tamilnadu is carried out from groundwater.

> *All the above facts necessitate that a new 'strategy' has to be evolved by the planners as to how best both the surface water flows and the ground water flows can be tapped to the 'optimum level' in the event of increasing demand for drinking water supply, irrigation, power supply, industrial use etc….*
>
> **- Ninth Five Year Plan Tamilnadu : 1997-2002**

As regards level of groundwater development, Tamilnadu has already used a high 60.44% of its replenishable groundwater resources. Only Haryana and Punjab in the country have exploited their groundwater potential to a greater rate.

" In case of ground water, due to over-exploitation, the water table has gone down in several districts… and the ground water potential yet to be tapped is only 2.00 lakh hectares."

- Ninth Five Year Plan Tamilnadu : 1997-2002

And as the Plan Document further reveals, "Due to increase in exploitation of ground water for agricultural purpose, the number of dark and gray area blocks has increased considerably in Tamilnadu." The following table makes it abundantly clear.

Ground water Development and Dark Area Blocks

Development Range	Number of Blocks	
	1992	1997
More than 100% (Dark)	53	-
Between 85-100% (Black)	36	97
Between 65-85% (Grey)	86	88
Less Than 65%	209	199
Total	384	384

"It is to be noted that, out of 4262 blocks in the country (except A.P., Gujarat and Maharastra), 338 blocks fall in dark category. Out of 338 dark blocks in the country, 97 dark blocks are in Tamilnadu, which shows the level of extraction in this State"

- Ninth Five Year Plan Tamilnadu : 1997-2002

Non-farm interest groups have been lobbying, as was witnessed in the Budget Session 2000 of the Tamilnadu Assembly, to reclassify blocks that have been declared "black". While Dharmapuri had 5 blocks in 1992 and by 2000, 2 more blocks had reached the "black" status, there were demands to relax the regulations!

Over-exploitation of groundwater has led to massive problems such as sea water intrusion in coastal areas and deterioration of water quality in industrial and urban areas. In the hard rock areas of Periyar, Coimbatore, Salem and Dharmapuri districts, groundwater levels have gone beyond replenishable limits. Sea water intrusion has become a serious problem in, for instance, Kuttalam village in Tirunelveli district, Athisayapuram and Puthanthurai in Thoothukudi district, eastern parts of Tiruvarur district and Minjur area in Tiruvallur district, at time even to a distance of 9 kms, as in the case of Minjur.

Out of the 338 blocks in the country that fall in the dark category, 97 are in Tamilnadu, which shows the level of extraction in the State

There are no official statistics regarding wells and borewells within the city of Chennai. When an effort was made in 1995 to upgrade the data on wells and borewells in the city, it met with strong resistence from vested interests and the plan was quietly shelved

Chennai Metropolitan Water Supply and Sewage Board has expressed serious concern about indiscriminate unauthorized extraction of groundwater in the outskirts of the city. Officials concede illegal extraction in Ponneri, Minjur and Kottivakkam besides the Porur-Poonamallee belt and blame the insignificant punishment fines as the main culprit.

Since the early 1990s, with the proliferation of multi-storeyed residential and commercial apartments, scores of borewells have been sunk. There are no official statistics regarding wells and borewells within the city. When an effort was made in 1995 to update the data on wells and borewells in the city, it met with strong resistance from vested interests and was quietly abandoned.

There is a serious and urgent need to amend the Groundwater (Registration) Act. Punishment needs to be made more stringent, beyond very nominal fines.

Mathur : A Case Study

Mathur is a village in Puzhal Block in Tiruvallur district on the outskirts of Chennai city. There are more than 20 chemical industries around Manali. Hence in the areas surrounding Manali & Mathur, groundwater has been badly polluted and has been declared officially as unsuitable for drinking, by both State agencies and private research institutions like the CPR Foundation.

There is a ban by both the State Govt and the High Court against extracting groundwater in these areas. Yet more than 200 lorries ply daily, carrying water, extracted through deep borewells, to hotels and commercial establishments in Chennai and around. Constant protests by the people have not yielded results.

In August 1999, based on a complaint, High Court demanded from the district authorities that a suitable plan be evolved within 3 months, but nothing has happened. False cases have been filed against protestors, who have been physically assaulted.

Frustrated by the evident connivance of officials and ruling party functionaries, people await to boycott coming elections.

Tanks

Data regarding tanks in Tamilnadu are difficult to come by. There are an estimated 39, 000 small and big water tanks spread across Tamilnadu. Among these there are 10,728 PWD tanks irrigating 10,541 ayacuts. 49.8% of them are characterized as system tanks and 50.2% as non-system tanks.

Most of these tanks are linked to river basins. Palar basin has more PWD tanks than any other basin, though Cauvery basin has the highest number of system tanks (1014 tanks). Most of the system tanks are located in the 5 major systems namely, Kodayar system, Palar Anicut system, Grand Anicut canal system, Periyar-Vaigai system and Tambaraparani system. The share of these tanks is approximately 70% among system tanks.

All the 29 districts in Tamilnadu have tanks except Chennai and Nilgiris districts. (Even Chennai is said to have earlier had 200 tanks, all of which have been abandoned due to urbanization). 50% of tanks are concentrated in Madurai, Kanyakumari, Kancheepuram, Tirunelveli, Pudukottai and Villupuram districts.

Neglect of tanks by long term non-desilting as well as illegal occupation of tanks for commercial and industrial purposes have played havoc with the tank system in Tamilnadu, leading to vast amount of rain water running away to the sea.

Groundwater Policy

Conflicts between different stakeholders, claiming right over groundwater resources have increased recently. Farmers have been mostly on the losing end in their fight against big business and commercial enterprises. Re-allocations are reportedly occurring in order to increase water supplies for the cities like Madras, Coimbatore, and Tiruppur. For example, many farmers within 35 kilometers of Tiruppur have abandoned farming and instead have taken up to the more remunerative selling of their groundwater to urban and industrial users.

To resist the over-exploitation and undo the damages already caused to the 'dynamic mechanism of groundwater resources', it is essential that measures are taken not only to restrict and regulate groundwater development, but also regarding augmentation and conservation, artificial recharge and a conjunctive use of surface and groundwater in command areas etc.

The Central Ground Water Authority announced in September 1999 that it was preparing a Rs 1.2 crores scheme for artificial recharge of groundwater in Vanur block near Tindivanam in Villupuram District, where the ground water table level had already gone 20 metres below the mean sea level.

Neglect of tanks by long term non-desilting as well as illegal occupation of tanks for commercial and industrial purposes have played havoc with the tank system in Tamilnadu, leading to vast amount of rain water running away to the sea

Year after year NABARD has been urging the State Government to use its funds mainly for minor irrigation... However the State Government has chosen to continue with its priority for rural roads and bridges

Year after year, NABARD has been urging the State Government to use its funds mainly for minor irrigation, highlighting how in various districts of the State, groundwater exploitation has reached dangerous proportions. However, the State government has chosen to continue with its priority for rural roads and bridges, claiming that adequate and comparatively low-cost funds from the WB and other multilateral agencies for minor irrigation and water management systems.

According to NABARD, there is scope for large-scale development of groundwater resources in only 196 blocks of Tamilnadu, and even out of these, coastal zone regulations would rule out water tapping in a big way in 45 blocks. NABARD would like the funds used primarily for consolidating benefits from water tapping and storage capacity already created. “The first step in this direction should be modernization of tanks.”

At last this year, the State Govt. has accepted NABARD’s criticism. This year’s budget promised that 44 minor irrigation tanks spread over 23 districts would be modernized this year, at an estimated cost of Rs 18.69 crores, benefiting 5054 hectares.

A bill under the title, “Tamilnadu State Groundwater Development and Management Act 2000”, in line with the `Draft Environment Protection Rules for the development and management of groundwater’ of the Central Groundwater Authority is said to be under the consideration of the govt.

RIVERS

Indian rivers, especially the smaller ones, in the words of the Citizens' Fifth Report, are all turning into toxic streams. The growing pollution of our rivers constitutes the biggest threat to public health. Since Independence, our neglect of water sources in India has killed more than 50 million children at least, and now even adults will begin to die of horrendous diseases because of the growing chemical pollution, according to the same Report.

So is the case with the major rivers in Tamilnadu. Tamilnadu is not endowed with perennial rivers. Its rivers are seasonal and mostly originate in the neighbouring States. In Tamilnadu, based on the drainage pattern of rivers, 34 river basins have been demarcated which are grouped into 17 major river basins. All of them are on attack today; only the intensity differs!

> *"Rapid industrialisation is taking place along the Cauvery's course. Industries are concentrated near the Mettur and Bhavani dams. Vaigai, Palar, Noyyal, Bhavani, Thamirabarani and the Amaravati rivers, which are the very life-line of millions of people, are highly polluted as the chemical wastage of industries drains into them.*
>
> *These industries include textiles, chemicals, distilleries, paper and sugar. Discharged from these units are Alkalis, chromium, barium, arsenic and cyanide as sludge and solid waste. Distilleries throw out minerals, acids and Sulphate. High qualities of chloride (2,200-7,500 mg/1) are reported in the distillery effluents. Textiles let out alkali, chlorine, peroxide, detergents, dyes, chromium and phenol, all highly toxic and some even carcinogenic…".*
>
> **-Tamilnadu Peoples' Manifesto, 1996**

River: NOYYAL

The 173 kms long river, which emerges from the Western Ghats and flows into the Cauvery in Tamilnadu, carries untreated sewage and industrial effluents from the towns of Coimbatore and Tiruppur for most part of the year. With no fresh water for dilution, the untreated sewage and effluents severely contaminate groundwater. As it is, the area is rainfall-deficient.

Indian rivers, especially the smaller ones, are all turning into toxic streams. So is the case with all the major rivers in Tamilnadu

The Noyyal Basin, polluted by the 800-odd dyeing and bleaching units of Tiruppur, has become a battle ground for confrontation between agriculturists and the textile processing industry

Being a drought-prone area, the region had a well-developed water harvesting system of tanks and anicuts. These have been rendered ineffective now. The groundwater table in the adjoining areas has gone down as low as 228 metres with levels receding at the rate of about 1 metre per year in the recent past. The fall in groundwater-table has rendered many open wells dry and unusable.

According to estimates of an Indo-Swedish project set up by the Tamilnadu Agricultural University, the region used 90% of surface water and 70% of groundwater during 1989 and any further utilisation of groundwater in the basin was considered unacceptable.

The Noyyal basin, polluted by the 800-odd dyeing and bleaching units of Tiruppur, has become a battle ground for confrontation between agriculturists, on one hand, and the textile processing industry, on the other. The former cannot use water from the river as effluents have been draining into the river for years.

The bleaching and dyeing units use bleaching liquids, soda ash, caustic soda, sulphuric acid, hydrochloric acid, sodium peroxide and various dyes and chemicals. High concentrations of calcium, magnesium, sodium and chlorides have also been noted in studies carried out in the basin. Consequently, the river water is highly saline. Groundwater has also become brackish and considerably harder over the past 10 to 15 years.

Reportedly many farmers have abandoned cultivation, opting for vending water from tubewells, a less risky enterprise with better returns. About 450 water tankers are estimated to ply in Tiruppur, only 200 of which are registered with the municipality.

According to Mr.V.Haridass, Joint Chief Environmental Engineer, TNPCB, out of the 170 textile dyeing and bleaching units in Ponnaiyarajapuram, Chettiveethi and Selvapuram areas in Coimbatore, only 22 units had installed effluent treatment plants, most of whom were not operating properly. The textile units have been letting the untreated effluents into the open gutters polluting the entire area; more than 50 electroplating units were letting out high quantity of metal effluents; most of the 596 foundries, another source of major pollution in the area, were violating the land-use classification specified in the Court order. (Hindu 23.06.2000)

The Karur Taluka Noyyal Canal Agriculturists Association, a farmers' collective, filed a case in 1996 with the green bench of the Chennai High Court.

- The court orders setting up of treatment plants or closing operations by 1996 end. The deadline is later extended to 12 June 1997
- TNPCB closes 99 out of 752 units. 114 units close on their own
- TNPCB submits a report to the court that as of 20 June 1997, 31 units had set up treatment plants, 223 had completed 75% of the work, 114 units 50%, 52 units below 50% and 44 units had not initiated any effort
- On 23 June 1997, the High court orders closure of the 44 units. The remaining 420 units are given a final deadline till October
- In December 1997, TNPCB orders closure of all dyeing units violating pollution control norms
- In January 1998, the high court permits TNPCB to allow 434 units to restart work to complete the treatment plants. About 600 units in Tiruppur and 434 in Karur are identified as polluting units
- On May 11, 1998, the dyers' association appeals to Supreme court for a stay, which is denied
- On 12 May, 1998, over 460 units in Tiruppur and 165 units in Karur are closed down, following the court's order

In what will go down in the annals of 'environmental judiciary' as a truly remarkable judgement, Tiruppur's industry has been asked to pay for a complete clean-up of the dam – its water as well as the bed of the reservoir. Industry is also under judicial orders to set up Common Effluent Treatment Plants (CETPs) by November 23, 1998. These are to be run by independent private sector companies

Encouragement to a water-intensive industry in a water-scarce region, truly, reveals misplaced priorities

Encouragement to a water-intensive industry in a water-scarce region, truly, reveals misplaced priorities. The growth of bleaching and dyeing units in Tiruppur has been nothing less than phenomenal:

Year	Units
1941	2
1971	67
1989	450
1992	510
1993	713

In early 1995, when the export earnings from Tiruppur's dyeing and bleaching units had reached the astronomical figure of RS 2000 crores, there were only 2 engineers from the Tamilnadu Pollution Control Board responsible for enforcing environmental norms on about 800 units.

If the polluted water affects agriculture, TNPCB escapes, citing the responsibility of Irrigation Department; when the polluted water affects those who drink it, TNPCB escapes again, pointing at the Public Works Department

The involvement of numerous government agencies complicates the issue further…. If the polluted wastewater affects agriculture, TNPCB escapes, citing the responsibility of Irrigation Department; when the polluted water affects those who drink it, TNPCB escapes again, pointing at the Public Works Department!

River: BHAVANI

The Bhavani, a perennial river, is one of the most polluted rivers of India. After coursing for 217 kms. through Coimbatore and Erode districts, it merges with the Cauvery at the Bhavani town.

River Bhavani is fairly unpolluted upto Athikkadavu, but at Mettupalayam, urban waste and effluents from a textile bleaching unit are led into the river.

Below Sirumugai, SIV, a multi-project private sector undertaking, is the largest industrial outfit in the Bhavani basin. It withdraws about 50 million litres per day (mld) of water – 56% of the total water withdrawn by industry in the entire basin. It also returns 41 mld of wastewater into the river. The factory is estimated to discharge 16000 m^3 effluents into the river, highly acidic and containing zine.

Though SIV claims to have an effluent treatment plant, the paper and pulp plant discharges waste with high organic content and sulphur-bearing compounds. All this collects at the Bhavanisagar dam downstream of the plant. Data collected by the Tamilnadu fisheries department between 1971-72 and 1996-97 indicate disappearance of certain fish species.

Though SIV claims to have an effluent treatment plant, the paper and pulp plant discharges waste with high organic content and sulphur-bearing compounds

In 1993-94, as the production capacity of the plant was increased from 50 tonnes to 300 tonnes, groundnut production reduced and so did the protein content of foodgrains in the area. Sugarcane, paddy and onion crops were affected. Fish catch at Bhavanisagar dam too reduced.

According to a Green Peace report ("The Stranger", on health impacts of using industrial chlorine), the large volumes of organic-rich effluent released by SIV was contaminated with a complex mixture of primarily phenolic compounds, with serious impact on human and wildlife population

Based on protests by the Bhavani River Protection Joint Council, the case went to court. The plant is closed now as it is upgrading its effluent treatment plant following court orders.

Bhavani river near the Kudal (junction with Cauvery) is so heavily polluted by sewage that 'it looks like a cesspool, is anoxic, and carries sludgeworms and bloodworms indicating unsuitability for human use. Once a major source of fish fingerlings, it is now devoid of these'.

The sugar factory at Appakudal discharges effluents, though after treatment and passing through cultivated crops.

Palliagraharam near Bhavani discharges stannery wastes into the Kalingarayan Channel, used for irrigation in the Erode region. Wastes from Erode-Cauvery textiles at Bhavani 'caused the decline in fish seed by over 90%. The BOD was over 1000-1600 pm.'

River: CAUVERY

The Citizen's Fifth Report mentions the stretch of Cauvery from Pugalur to Grand Anicut and from Grand Anicut to Kumbakonam among the most polluted stretches in India.

Even before entering Tamilnadu, Cauvery is highly polluted. Polluted by sewage and effluents from sugar factories and about 60 industries, Cauvery in Karnataka is reported to be unsatisfactory for drinking purposes.

The tributaries Kabini, Lakshmana Thirtha and Hemavathy are highly polluted by sewage. Amaravathy, another tributary of Cauvery, is polluted by effluents from a glucose factory below the dam.

The Citizen's Fifth Report mentions the stretch of Cauvery from Pugalur to Grand Anicut and from Grand Anicut to Kumbakonam among the post polluted stretches in India

The Mettur reservoir, once minimally polluted, has suffered with the arrival of industries - Mettur Chemicals, manufacturing caustic soda, bleaching powder, bleach liquor, vanaspati and liquid chlorine and discharging partially treated effluents; Chemplast PVC plant, discharging 2880 kl / day of effluents;

and the MALCO Aluminium factory discharging 21360 kl / day effluents. Due to these, the number of days the water surpluses over Ellis Surplus has shrunk from about 145-241 days in 1946-48 to hardly 30 days a year at present.

A total of 1139 industries in Tamilnadu contribute a heavy pollution load, especially during the lean flow period of the year. Tamilnadu houses water-intensive textile and sugar units and other industries such as paper mills, chemical units, engineering units and tanneries, which contribute to the pollution load in the river.

The paper factory at Pallipalayam discharges 46800 kl / day of wastes into Cauvery.

Textile and dyeing industries pollute the Cauvery in Periyar and Salem districts.

Near Kumarapalayam, domestic sewage and dyeing wastes are dumped into Cauvery.

Ponni Sugars releases 100 mt of 'pressmud' and 1100 kl of liquid wastes per day into the river.

Mohanur Sugar Mills discharges untreated effluents into the river.

Deccan Sugars releases 7.5 lakh kl / day of untreated wastes.

Pugalur Paper Factory discharges 3,88,000 kl / d of partly treated effluents (black liquor and bleach liquor) into the river.

Tiruchy Distilleries discharges 6.74 kl / d of highly polluting wastes into Uyyakondan channel, a distributory of Cauvery. This dark effluent with high BOD affects the water quality even in the G.A.Canal. Untreated effluents are discharged, through underground pipes, near Kattur into the Channel.

A 3-year study of Cauvery river by the Tamilnadu Fisheries department between 1976-79, established, based on chemical biological parameters, heavy pollution mainly below Mettur Dam, at Trichy and Pallipalayam. According to official sources, in some samples of Cauvery, Cadmium and Zinc exceed the prescribed limit.

With a high rate of cultivation in the river basin, large quantities of fertilizers and pesticides are discharged into the river as agricultural runoff. The rate of application of chemical fertilizers is highest in Pudukottai district (338.9 kg/ha) and the lowest in South Arcot district (3.14 kg/ha).

The river has a total dissolved solid (TDS) level of 1450 mg/l, which is almost 3 times higher than the WHO permissible limit of 500 mg/l, as per the Citizens' Fifth Report.

River: PALAR

A pilot study done in the 45 panchayats in Thirukazhukundram, Thiruporur and Katangulathoor blocks in Kancheepuram district along the Palar River basin reveals interesting insights about groundwater reality in the area:

- Over the last 20 years, given less recourse to canal irrigation, there has been an increase of about 68% in deep wells and borewells for irrigation purposes.
- Over the same period, about 217 big irrigation wells, 63 small drinking water wells, 24 irrigation borewells and 15 drinking water borewells have been made unusable.
- Groundwater which used to be available at 10-15 feet, is now available only at 35-40 feet
- 86% of the groundwater has become saline and filled with chemicals
- About 35% of lakes have been appropriated by private parties
- Desilting of lakes (Kudimaraamathu) is hardly done anymore, so that lakes which could, 20 years ago, hold water for about 6 months irrigation works, can now hold water enough for hardly 2 or 3 months.

A pilot study done in some 45 panchayats in Kanchhepuram district along the Palar River basin makes it clear that the responsibility for lakes (and tanks) must be taken away from the State Government and vested with the panchayats

The study strongly demands that responsibility for lakes must be taken away from the State government and vested with the panchayats.

The fast degradation and pollution of Palar River portends serious problems to the inhabitants of Walaja, SIPCOT, Ranipet, Ambur, Vaniyambadi and surrounding areas in Vellore district. From the more than 100 tanneries in the district, untreated poisonous effluents are directly let out into the river (calculated at more than 10,000 litres per day).

In its report to the Loss of Ecology (Prevention and Assessment of Damage) Authority, the Tamilnadu Agricultural University stated that 15,600 ha of agricultural land had been polluted and fixed Rs 120 crores as the figure of pollution damage in Vellore district

Periodic studies made by the TWAD Board shows that the total dissolved salts (TDS) content in the groundwater sources has been increasing in the tannery concentrated areas over the years. The TDS content, which was 2075 mg per litre in 1968, went up to 3350 mg/litre in 1981, to 5000 mg/litre in 1995 and 7000 mg/litre in 1998. The maximum amount allowed for discharge into the river is 2,100 ppm for total dissolved salts

Concentration of solids in the river bed has led to the pollution of the drinking water sources at the headworks of many combined drinking water supply schemes. The water supply headworks at Gudimallur at Walajapet had to be abandoned because of the contamination of the water by the treated effluents.

On 28 August 1996, the Supreme Court, on the basis of a petition from the Vellore Citizens' Welfare Forum, imposed fines of Rs 10,000 on each of the 700-odd tanneries in Tamilnadu and ordered them to install pollution treatment plants before December (TCFR, p.365). The "Vellore Tanneries case" also led the Supreme Court to direct the constitution of the Loss of Ecology (Prevention and Assessment of Damage) Authority in the State. The Authority was asked, with the help of expert opinion and after hearing the polluters concerned, to assess the damage to the environment, identify the individuals / families which had suffered because of the pollution; assess the compensation to be paid to them; determine the compensation to be collected from the polluters as cost of reversing the environmental damage.

The Authority was constituted by the Union Ministry of Environment and Forests and has been functioning from 1998 and it was submitted that more than 600 tanneries had already participated in the inquiry, based on the damage assessment made by the Tamilnadu Agricultural University (TANU). In its report submitted on 20.10.1999, TNAU stated that 15,600 ha of agricultural land, held by 3,200 people, were polluted and fixed Rs 120 crores as the figure of pollution damage in Vellore district.

In April 2000, Chennai High court dismissed a batch of petitions seeking an interim stay of all proceedings before the Authority. The petitions had been filed by tanneries from different parts of the State, contending that the Authority functioned beyond the scope of the Act and the Supreme Court's directions. The petitioners went on appeal to the Green Bench, which too rejected the appeal, though allowing the petitioners to cross-examine TNAU experts.

The authority was expected to announce its award on the compensation that tanneries need to pay for the pollution they had caused, by August-September 2000. Meanwhile the Council for Leather Exports, with the help of the Central Leather Research Institute (CLRI), have come up with a proposal to set up Rs 250 crores special purpose company to lay a pipeline along the Palar River bed to transport treated tannery effluents from Vellore district to the Bay of Bengal. And the Tamilnadu Water Supply and Drainage (TWAD) Board seems to have recommended the proposal to the State Government.

The Vellore Citizens Welfare Forum has severely criticized the proposal. Claiming that the proposal will take many years for implementation, meanwhile allowing the tanneries to continue discharging their effluents into the Palar river. This is also an attempt to shift the burden on the Government. A similar project to take the treated tannery effluents from Erode, Trichy, Dindigul and Chennai for discharge into the Bay of Bengal is to be formulated and executed through a global tender

Sand quarrying is another major area of concern along the Palar basin as in many other riverbeds in the State. As the 'sand mafia' mines for profits, environment and livelihood of local population are pushed into irreversible damage.

Sand quarrying is another major area of concern along the Palar basin, as in many other river beds in the State. As the 'sand mafia' mines for profits, environment and livelihood of local population are pushed into irreversible damage

The sand business is so lucrative that the government scaled down the penalty for clandestine quarrying from Rs 50,000 fixed in December 1997 to Rs 15,000 a month later.

Thiruvallur District is one of the worst districts affected by this ravaging. Collectors who are strict get transferred (Ms. Jayashree Raghunathan, the first collector of the new district, was transferred in August 1997, immediately after the driver of a lorry was arrested on charges of attempt to kill her when she was conducting a raid on illegal quarrying), Tahsildars who dare to raid are gharaoed by the miners and protestors are threatened to death.

In May 2000, people belonging to the village panchayats of Paandur and Valaagam, along the Palar river near Tirukazhukundram in Kancheepuram district took law into their hands blocking about 300 lorries from the illegal quarrying and effectively handling the goondas that came and attacked the people in retaliation. Even though the district administration had allowed sand quarrying to a depth of 3 feet, people claimed that the companies had been mining illegally to a depth of 30 feet over many kilometers and that daily 2000 to 2500 lorries had been carrying sand from this one single quarry. Besides the degradation of groundwater and agricultural fields nearby being adversely affected, the roads had also been badly damaged.

Rivers: ADYAR / COOUM

Adyar and Cooum are heavily polluted by urban wastes and discharges from small industries in Chennai city. The surgical Instruments Factory at Nandambakkam is just one of those who pollute Adyar river. According to a survey conducted by a UK based independent organization, the Tamilnadu Water and Sewage Board was letting untreated sewage directly into the waterways in about 2000 points. Metrowater is primarily responsible for polluting the waterways as 92% of the pollution is caused by it, according to the secretary of the All India Nirman Mazdoor Panchayat Sangham.

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The Federation of Welfare Associations of Anakaputhur-Pammal, a township on the outskirts of Chennai city complained in April this year to the Tamilnadu Pollution Control Board that tannery effluents are being disposed of untreated in the Adyar river, despite the presence of a common effluent treatment plant for the 120-oddd tanneries in the area. Persons who used the river water for washing have complained of itching, besides the unbearable stench that the effluents emit, off and on. Depletion of groundwater in many parts have also been mentioned.

In the early 1990's, Karanodai, about 30 kms north of Chennai, witnessed heavy sand mining from the Kortalaiyar river bed. This continued until the 120-years-old bridge in the area collapsed in November 1993. Of late, the Ponneri-Minjur belt is the prime attraction for miners. Tamaraipakkam, Guruvoyal and Singlikuppam, all along Kortalaiyar and the Cooum river stretch from Aranvoyal to Thiruvallur are badly affected.

Among other rivers in Tamilnadu, Vellar in South Arcot is polluted by the effluents from a starch factory, 'which were acidic with very high BOD – 5000 ppm and total solids of 18000 ppm'

The idea of a "River Basin Environment Council", consisting of environmental and water experts as well as peoples' representatives, to monitor river pollution in Tamilnadu has been floated. It surely merits serious attention of the Government and everyone who is concerned about the future of the highly depleted rivers of Tamilnadu.

FORESTS

The Govt of Tamilnadu has claimed that, under various afforestation schemes, lakhs of hectares had been afforested and that forest cover in Tamilnadu had even marginally risen from 17.49% to 19% in 1999. But the reality is quite different.

> *"…The degradation of forest lands is on the increase. Estimates indicate that the forest cover is being exploited at an appalling rate. Of the degraded forest area available for reforestation, barren lands account for 12.71%, partial tree cover 53.44% and shrubs requiring tending and protection, 33.85%"*
>
> **- Ninth Five Year Plan Tamilnadu : 1997-2002**

> *"Against the norm of 33% of forest cover prescribed under National Forest Policy of 1988, Tamilnadu has only about 17.50% of its area under forest. It is comparatively low"*
>
> **- Ninth Five Year Plan Tamilnadu : 1997-2002**

And, as the "Tamilnadu – An Economic Appraisal 1996-97" admitted, the area under actual forest coverage may be even less than 17.50%.

The per capita forest area remained as low as 0.04 hectare.

Against the norm of 33% of forest cover prescribed under the National Forest Policy, Tamilnadu has only about 17.50% of its area under forest

Area Under Forests in Tamilnadu (in lakh hectares)						
Particulars	91-92	92-93	93-94	94-95	95-96	1997
1. Reserved Forests	19.38	19.49	19.12	19.14	19.25	19.50
2. Reserved Lands	2.54	2.53	2.26	2.25	2.19	2.50
3. Unclassified Forest	0.61	0.61	1.31	1.31	1.31	0.61
Total Forest Area	22.32	22.63	22.69	22.70	22.75	22.60
4. Forest Area as % to total area	17.30	17.39	17.45	17.45	17.45	
5. Per capita Forest area (hectare)	0.04	0.04	0.04	0.04	0.04	

- Department of Forests, GOTN & The Citizen's Fifth Report

" The various State of Forest Reports prepared by Forest Survey of India (FSI) provide a changing picture of the dense forest cover in different States over time, and thus, show which States are doing better or worse than others in managing their forest wealth. A comparison of the States-wise dense forest area provided by NRSA and FSI over the years shows that the dense forest cover in Andhra Pradesh, Assam, Maharastra and ***Tamilnadu*** *has been consistently declining since the early 1970's. Forest conservation in these States have been the worst"*

- The Citizens' Fifth Report (p.118)

Based on satellite imagery, dense forest cover in India has drastically been reduced from 1.35 million hectares in 1972-75 to 0.87 million hectares in 1993-95.

" Owing to heavy biotic pressure from about 3072 villages abutting forests about 7,000 sq.kms of forest land became degraded in Tamilnadu."

- Policy Note 2000-2001, Forest Department, GOTN

The beautiful and clean hills of the Western Ghats have been facing severe destruction. Rampant deforestation and proliferation of hotels and tourist homes without proper effluent treatment facilities have degraded most of the hill towns. Destruction of forests in the hilly regions of Kodaikanal, Palani, Nilgiris, Aanamalai and such other western Ghat regions, in the name of development activities, has played havoc.

The Ministry of Environment announced the creation of the Nilgiri Biosphere Reserve in 1986 – the first of its kind – in keeping with the Man and Biosphere (MAB) concept of UNESCO.

The core area, in the upper plateau of Nilgiri hills, is dominated by evergreen forests (sholas), surrounded by grasslands. The shoal-grassland combination plays a vital social and ecological role in sustaining human groups both within and beyond the Nilgiris.

Towards the end of 1999, a draft State Forest Policy, fashioned within the framework of the 1988 National Forest Policy, was being debated. The Policy intends to allocate 5% of annual plan allocations to forest sector, compared to the present less than 1%. We have yet to have a look at that.

Policy Issues:

Tamilnadu Pollution Control Board (TNPCB) was established in 1982. It issues consent to industries at two stages viz, consent to establish and consent to operate. It is intended to enforce the following pollution control laws / rules relating to environmental protection in the State:

- The Water (Prevention and Control of Pollution) Act 1974, as amended in 1978 and 1988
- The water (Prevention and Control of Pollution) Cess Act 1977, as amended in 1991
- The Air (Prevention and Control of Pollution) Act 1981, as amended in 1987
- The Environment (Protection) Act 1986
- Hazardous Wastes (Management and Handling) Rules 1989
- Manufacture, Storage and Import of Hazardous Chemical Rules 1989
- The Public Insurance Liability Act 1991
- Bio-Medical wastes (management and Handling) rules 1998

The Board claims to have issued, during the years 1993-1999, 13,948 showcause notices and 2,838 closure orders to the industries for not complying with the conditions stipulated by the Board.

Neither the various Central environmental protection and enforcement agencies nor TNPCB are really equipped to deal with the present massive environmental degradation.

Whatever so far has been done by the Central and State PCBs or even the Green Benches of the court has just touched the tip of the iceberg, so to say. For example, none of the enforcement authorities has so far initiated any prosecution even under Chapter 14 of the IPC (public nuisance).

The case of Veerappan, for instance, is the classical example of a flawed sandalwood policy that alienates the people at the root. The law makes sandalwood an exclusive property of the government, putting undue pressure on people. Apart from the state-owned sandal oil units and the registered sandalwood carvers, the major buyers of sandalwood are the numerous private sandal oil units, which are mostly illegal. And the external face of Veerappan is just a distraction from more serious and organized smuggling of sandalwood, and merely a smokescreen that many vested interests (other smugglers and poachers… low- key operators clearing the forest of sandalwood…) want and need.

RECOMMENDATIONS

- The Right to Sustainable Development, as enunciated by the 1980 UN Resolution and the Right to Common Property Resources need to become the basic frameworks by which the State Govt. would evaluate and monitor any industrial activity that might be harmful to local communities and the long-time ecological concerns

- The principle of "Polluter pays", recommended by the Supreme court in its judgement, dated 11 December 1995, against shrimp farms, should be followed by the government in all cases of environmental pollution

- The present environment laws operate on a deterrent theory of criminal justice administration. Such retributive values of the penalty fail to deter because of total disparity between the penalty and the economic profits of non-compliance. The laws fail to provide any incentive for compliance. There is a serious need to revamp the whole approach and framework of environmental laws and agencies in the country and in the State.

- The idea of a compulsory environment audit, especially for large and medium size enterprises, needs to be given a serious thought.

- The Tamilnadu State Pollution Control Board needs to be restructured in such a way that it ensures scientific and impartial way of functioning. People should be informed about the production process of any industry, big or small, and public debate should be called for before the permission is granted.

- Public hearings demanded by the Environment Assessment Plans are becoming mere rituals. There is a need to seriously involve the affected communities and their representatives into the process.

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