

7. WATER SUPPLY & SANITATION

"World will not exist without water----" said Saint Thiruvalluvar more than 2000 years ago. Water, like other primordial elements, was revered and worshipped since Vedic times. The *Rig Veda* says: *"Agni and Water are givers and sustainers of life, they are affectionate mothers, givers of all givers of life, they have healing powers."*

The great rivers, like mothers, nurtured civilisations such as the Indus Valley, the Sumerian or the Nile. In fact, evolution of human cultures and civilisation has revolved around river systems.

But now, much has changed. Burgeoning population is just one of the problems. There are scores of others. In the rush to industrialise and modernise, the environment did not receive adequate attention. On the one hand, excessive use of water is causing ecological damage, while on the other, inadequate rainfall and release of pollutants have made potable water scarce.

Considering that three-fourths of Earth is water, the volume of freshwater is a mere 2.5 percent, the rest being sea water. Most of the fresh water is either in the form of ice and permanent snow cover in the Arctic and Antarctic regions or is stored underground in deep aquifers and soil moisture. The balance, accessible for use, does not exceed one percent. It is not difficult to imagine the quantum available for living beings.

The annual per capita availability of freshwater in 1951 was 5,177 cubic metres that declined to 1,869 cubic metres in 2001. It is likely to fall further to 1,341 cubic metres in 2025, and in 2050, it will be 1,140 cubic metres. It is generally presumed that if per capita level falls to 1,000 cubic metres, it could seriously affect the health and economic activity of the entire country. At this level, water crisis will be seen in 25 percent of India's geographical area affecting 21 percent of the total population. Already 5.5 percent of the country's geographical area and 7.6 percent of the population are facing acute water shortage, with availability less than 500 cubic metres.

Growing urbanisation and migration of people from hinterland to urban centres is adding to the problem. In a span of a century, from 1901 to 2000, urban population has gone up from 10.84 percent of the total population to 30.9 percent, and by 2050, it is likely to be half of India's population-820 million. As overriding priority is being given to drinking over other uses of water, the task of water supply and management assumes stupendous proportions.

Agriculture, an important sector that ensures food security in the country, consumes massive amount of water. One has to plan, not only for the near future but also years ahead, considering the galloping growth of population. In the future, agriculture sector alone would consume 85 percent of the total freshwater requirement.

Keeping this in mind, the dependency on groundwater is likely to increase, both for drinking and agricultural needs.

Dependence on Groundwater
(Based on Ultimate Irrigation Potential)
States heavily dependent on groundwater

Manipur	61.09 %
Uttar Pradesh	55.08 %
Madhya Pradesh	54.27 %
Jammu & Kashmir	52.13 %
Tamil Nadu	51.19 %
Punjab	48.80 %
All India	45.78 %

(Source: MOWR, Annual Report 2002-03)

Ground water is a major contributor in many States. Some of the states depend upwards of 50 percent on groundwater, while the all-India average itself is 45.78 percent.

The precipitation, consisting of snowfall, south-west and north-east monsoons, is 4,000 billion cubic metres on Indian landmass. Of this, the estimated run-off (amount of rainfall carried off an area by streams and rivers) is 1,869 billion cubic metres.

During monsoon, floods in some parts of the country but severe drought in others is too common a development. Under such circumstances, tapping groundwater seems to be the only and easiest recourse. The country's assessed annually-replenishable groundwater is 432 billion cubic metres.

Unrestricted exploitation of groundwater has other manifestations. In West Bengal, almost 5,00,000 people are affected by arsenic through groundwater. Increased salinity in Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Tamil Nadu as well as high fluoride levels in peninsular India and western parts of the country affect nearly 14 million people.

(from "Now or Never" by Nandu Manjeshwar in Swagat of July 2003)

Position of Tamil Nadu

Tamil Nadu is dependant on rainfall for its water supply. It has no perennial rivers and geologically too, the State is mostly covered by hard rock formations where the availability of ground water is uncertain. The population of the State as per 2001 census is 62.11 million out of which 27.24 million is urban and 34.87 million is rural population. The decadal growth stands at 11.19%. With fast urbanisation and increasing expectancy of the people, the demand for water is on the increase but the available resource is scarce. This calls for more efficient use of resources and more reliable delivery system.

Drinking Water Supply Problem

Chennai City

The drinking water requirements of Chennai city are met through a network of four surface water reservoirs namely Poondi, Cholavaram, Redhills and Chembarambakkam. But these sources are entirely dependant on rain and the city experiences acute water scarcity very often due to failure of monsoon.

In order to augment the City water supply, ground water sources from the three well fields of A.K. Basin viz. Minjur, Panjetty and Tamaraiakkam which were developed by the Public Works Department in 1968 were taken over by CMWSSB based on the recommendations of the UNDP study.

However, all these sources became inadequate during the drought year 1982. Based on the recommendations of further study made by CMWSSB in collaboration

with the UNDP, three more well fields were commissioned in the A.K. Basin, viz., Poondi, Kannigaipair, and Flood Plains in the year 1987.

The originally designed capacity of the six well fields was intended to draw 180 mld. However, pumping by Metro water never reached such a quantity. A maximum of 120 mld was abstracted during 1987. Due to drought conditions and due to continuous drawal of ground water, the water table of the aquifer went down, year after year. During 1993-94 the total abstraction was just 45 to 55 mld from the Board wells in all the six well fields.

In order to improve the availability of ground water in the future years, certain long term measures such as

(i) construction of check dams to recharge the aquifers and

(ii) construction of injection wells in Minjur aquifer to arrest sea water intrusion were initiated. Accordingly, three check dams were constructed across Korataliar River at Melsembedu, Velliyur and Jaganathapuram. The rate of pumping in Minjur well field was also reduced to control sea water intrusion.

Due to the above measures the water level increased considerably in the well fields from the year 1994 to 1999. The details of annual average rainfall in the catchment areas for the past 5 years period is given in the following table:

Rainfall in 'mm'

Year	Transitional Period Jan – May (100 mm)	South West June – Sep (495 mm)	North East Oct – Dec (805 mm)	Total (1400 mm)
1999	20	103	500	623
2000	288	367	405	1061
2001	176	346	878	1400
2002	117	406	606	1129
2003	16	409	385	810

But due to insufficient rainfall after 1999 and continued drawal for agriculture, the water level again declined very fast during the subsequent years, making it impossible to pump even lower quantities using these production wells.

Due to the depletion of water level, pumping from Board's production wells in Panjetty, Kannigaipair and Flood Plains well fields had to be stopped. Moreover, the wells in the Tamaripakkam well field also started becoming dry. In order to meet the shortfall in extraction, private agricultural wells were hired from April 2001 onwards and the average extraction from these private wells in April 2004 was 60 to 65 mld.

As the water column available in the Panjetty, Flood Plains and Kannigaipair well fields was not sufficient for pumping from Metro water wells, only hired agricultural wells had to be utilized and the number of such wells had to be increased.

Water Supply Augmentation Measures for Chennai City

(1) Chennai Water Supply Augmentation Project – I - to draw 190 mld. raw water from Veeranam lake and augment the supply by 180 mld.

(2) Chennai Water Supply Augmentation Project – II – aims to tap sources of water proximate to Chennai city by construction of check dams across Palar at Vayalur, 4 check dams across Adyar and 2 across River Coovum to augment the supply by 40 mld. The project is expected to be commissioned by 2004.

(3) Third Chennai Project – construction of check dam across Koratalaiyar river to improve ground water availability to well field area. The total project cost is Rs.750

crores (World Bank has been approached for assistance). This will enable supply of 60 mld.

(4) Araniar – Koratalaiyar (A.K. Basin) Aquifer Studies

(5) Construction of a 50 Mld Tertiary Treated Reverse Osmosis Plant (TT/ RO PLANT) - for treating secondary treated sewage from Koyambedu, Nesapakkam and Kodingaiyur Treated Plant and supply to Manali industries.

(6) Setting up of 300 / 200 / 100 MLD Desalination Plant at Minjur on DBOOT basis

Drinking Water Supply Problem outside Chennai

The normal service level norms for drinking water supply to the rural and urban population are as follows:

Civic Status	Per capita supply
Corporations	110 lpcd
Municipalities	90 lpcd
Town Panchayats	70 lpcd
Rural Villages	40 lpcd

The drinking water supply to the people of the State is effected through surface as well as sub surface sources. The sources for most of the water supply schemes are dependant on the surface and sub surface flows of seventeen major rivers flowing within the state. Ground water sources like bore wells, open wells, etc are the main water sources for the most of the water supply schemes for rural habitations. The details are as follows:

Civic Status	Total No.	Served from Ground water source	Served from River source
Rural habitations	81787	69652	12135
Town Panchayats	611	231	380
Municipalities	102	21	81
Corporations	5 (excl. Chennai)	0	5

Continuous failure of monsoon successively in the last four years have led to inadequate surface and sub surface flows leading to the scarcity situation in the State. The following reservoirs located in the above river basins, contribute to drinking water needs either by direct drawal or through sub surface abstraction.

Reservoirs and their capacity

Name of Reservoir	Capacity at FRL in mcft
Mettur	93470
Bhavanisagar	32800
Amaravathi	4047
Periyar	10570
Vaigai	6091
Papanasam	5500
Manimutharu	5511
Pechiparai	4450
Perunchani	2890
Krishnagiri	1666
Sathanur	7321
Aliyar	3864
Thirumoorthy	1744
Chembarambakkam	3120

Sholayar	5052
Parambikulam	13408
Krishnarajasagar	45051
Kabini	15633
Poondi	3231
Sholavaram	881
Redhills	3300

Though schemes are implemented for many problem habitations with lesser service level every year by creating mostly bore well sources, continuous failure of monsoon causes depletion of ground water resources and also degradation of water quality. Thus many habitations, which have been fully covered earlier are becoming either partially covered or affected by water quality problem requiring new augmentation schemes or immediate drought mitigation measures. The continuous failure of monsoon has resulted in continuous drinking water scarcity and stress conditions in various parts of Tamil Nadu and poor ground water reserves.

In the last three years the Government allocated funds under calamity relief programme to mitigate the drinking water scarcity which prevailed in rural and urban areas in the State as follows:

Year	Amount (Rs. in Crores)
2000 – 2001	25.00
2002 – 2003	158.41
2003 – 2004	82.00

Apart from the above allocation, GOI allocated Rs.14.00 crores under ARWSP to rejuvenate the sources for optimizing its functioning. These works are also being carried out by the District Administration. So far an expenditure of Rs.7.69 crores has been incurred.

GOI has released Rs.15.64 crores for the installation of 5,000 hand pumps in water scarcity areas under the Prime Minister's Programme. The fund was released during March 2004. The works are taken up during April 2004 and the works will be completed during 2004-05.

GOI released Rs.6.86 crores for revival of 5,000 traditional drinking water sources in rural areas in March 2004. The works are in progress and the works will be completed during 2004-05.

Apart from the above contingency measures, Government have implemented many rural water supply schemes in the last three years as part of its ongoing plan schemes. The Government have also embarked upon massive water conservation and ground water recharge measures by establishing rainwater harvesting structures throughout the State.

The coverage in the last three years is as follows:

- | | |
|---|-------------------|
| (i) No. of rural habitations covered | 19649 habitations |
| (ii) Mini Power Pump schemes installed | 24732 Nos. |
| (iii) No. of urban towns provided with water supply | 195 towns. |

During 2004-2005 TWAD has programmed to cover 6500 rural habitations at an estimated cost of Rs.390 crores with power pump schemes and also to continue mini power pump schemes. Apart from that it has been programmed to complete water supply schemes to 50 urban towns.

The Rain Water Harvesting campaign is stated to have covered more than 99% of the area in the State. Apart from this 990 recharge structures comprising of

Checkdams, Percolation ponds, sub surface dykes were constructed. For the current year 2004-05, it has been programmed to construct 2637 recharge structures.

TWAD had drawn up a contingency plan to benefit 25608 rural habitations in 374 unions, 4 Corporations, 76 Municipalities and 445 Town panchayats. The relief measures proposed comprise of improvements to existing source/ creation of additional sources, extension of pipelines, purchase of pumpsets, spares, purchase/ hiring of gensets, hiring of private water sources, mini power pump schemes, supply of water through tankers etc. The Government has released Rs.82 crores for this purpose.

Long Term Policy

I. Rural Water Supply Programme

As per 1992 Resurvey all the 66,631 rural habitations were provided with water supply schemes at the end of 9th Plan period. However due to continuous failure of monsoon, there has been slippage from fully covered status to partially covered and not covered status due to various factors, viz.,

- Deficiency of the source due to over extraction
- Quality degradation
- Deficit recharge of the source.

A resurvey was carried out during 2003 as per the guidelines of the Government of India to assess the drinking water supply status in rural areas. According to the resurvey, there are 81,787 rural habitations of which only 29,067 habitations are fully covered with 40 lpcd supply and the rest are partially or not covered. During the 10th Plan period, it was programmed to cover all the partially covered and the quality problem habitations for which an outlay of Rs.6,500 crores was proposed. During the year 2002-03, 6,628 habitations were covered. During the year 2003-04, 6,156 rural habitations were covered. During 2004-05 it has been programmed to provide water supply to 6,500 rural habitations. During the remaining years of the 10th Plan period, additionally 12,000 problem habitations are proposed to be covered.

II. Urban Water Supply Programme

In respect of urban sector, at the beginning of the 10th Plan, 419 towns comprising 5 Corporations, 64 Municipalities and 350 Town Panchayats had inadequate water supply. During the year 2002-03 water supply augmentation schemes were completed for 72 towns. During 2003-04, 60 towns were provided with water supply augmentation scheme. For the current year it has been programmed to complete water supply improvements schemes for 50 towns. The remaining towns with inadequate water supply will be covered in the remaining period of the 10th Plan.

III. Schemes for sustainability of Sources

Even though schemes are designed and implemented with per capita supply as per the norms, over a period of time the quantum of supply gets diminished mainly due to depletion in the water potential. Hence to ensure the sustainability of the source of water supply schemes, recharge structures like check dams, percolation ponds, subsurface dykes, rain water harvesting structures are to be established.

TWAD Board in association with Institute of Remote Sensing, Anna University carried out a recharge project and identified 13,357 suitable areas for construction of recharge structures. Out of 13,357 locations, recharge structures have been provided with 5,444 locations leaving a balance of 7,913 locations where recharge

structures have to be provided. It is indicated that an amount of about Rs.180 crores would be required to create the structures in the balance locations.

It is important to see that construction of check dams and percolation ponds do not conflict with the already existing tank systems. Since the tanks are the traditional water harvesting structure, setting up of recharge structures should complement water conservation aspect and not be based on water acquisition in the catchment areas.

Rain Water Harvesting has to be prioritized based on the hydrogeology and socio-economic conditions. It has to be employed in a river basin or sub-basin where the water outflows unutilized either through the surface or through the ground water aquifer. Availability of excess surface flows (over and above the present use) must be a pre-condition for putting up any artificial recharge structure. In the case of locations where tanks are not significant, the water harvesting structures such as major check dams, minor check dams and percolation ponds should be given priority. Further the intensity of wells in the given location should also be given weightage in deciding the choice of water harvesting structures. Any structure that helps to recharge the wells in the zone of influence is more important. In some locations the soil types also decide whether the water harvesting structures should be for supplemental irrigation or for recharge only. Therefore, a master plan is needed for rain water harvesting, basin wise. The techniques to be adopted for urban and rural areas are quite different.

IV. Recycling of Waste Water

Waste water constitutes a major quantum of water unused. Water needs to be reused as many times as possible before it is let off. Recycling of waste water would be a possible option in future of reusing the waste water. This will also serve as a conservation mode of available water.

Recycling is widely practiced in Israel, the Middle East, Singapore & Oxford in UK. Producing potable water from sewage is cheaper than desalinating water. Besides sludge generated in the process can be sold as bio-fertiliser after due treatment.

Recommendations in Report of Expert Committee on Development & Management of Water Resources of Tamil Nadu

1(a) *Desilting of Tanks* - Restoration of Neman (7.25 Mm³), Sriperumpudur (4.92 Mm³) and Pillapakkam (3.45 Mm³) tanks connected to Chembarambakkam lake through their surplus courses may be useful. Though these three tanks have their irrigation requirements, in times of emergency, the water stored in them could be pumped to reach Chembarambakkam for drinking water purpose, on a priority basis.

(b) Similarly, restoration and deepening of Ambattur (6.11 Mm³), Korattur (6.68 Mm³) & Madhavaram (0.91 Mm³) tanks may be useful, as the terminal Madhavaram tank of this system, is connected to Kilpauk Water Works.

2. *Construction of Check Dams across Cooum and Adayar* - The feasibility of installation of few check dams across Cooum and Adayar in their pollution free stretches may be examined for recharge of ground water potential in the city area.

3. *Temple Tanks*- There are about 30 temple tanks in Chennai city. Improvement of these tanks through opening of the existing blocked inlets and desilting them wherever needed could be helpful in meeting the religious needs as well as in recharging the ground water potential around them.

4. *Formation of New Reservoirs* – Surface water harvesting measures in river basins of Kusasthalaiyar, Cooum and Adayar, draining through the city.

(i) *Ramacherry and Thirukandalam reservoirs* – The proposed two reservoirs of 1 T.M.C. capacity each is mainly meant to store Krishna Water. As the stored water in these 2 reservoirs is going to be directly useful for the city drinking water, these 2 schemes may be implemented overcoming the R & R problems. These will be helpful in absorbing the occasional flood flows of Kusasthalaiyar.

(ii) *Cooum, Zamin-Korattur Reservoir* – The proposed 0.25 T.M.C. Cooum, Zamin-Korattur reservoir may be useful as a way side reservoir to push the flood waters to Chembarambakkam Lake and subsequent use of drinking water purpose.

(iii) *Adayar – Tiruneermalai Reservoir* – The proposed Adayar – Tiruneermalai reservoir, to store 300 mcft. of Adayar water will be useful to meet the drinking water needs of nearby Pallavaram, Anakaputhur and Tambaram Municipalities.

(iv) *Ogium Maduvu Pallikaranai Reservoir* – The proposed reservoir at Ogium Maduvu in Pallikaranai Swamp to store 500 mcft. of water may be useful to meet the drinking water needs of the fast growing sub-urban belt in this stretch.

	Recommendations	Stage
1(a)	<i>Desilting of Tanks - Nemam, Sriperumpudur & Pillapakkam</i>	To be taken up
(b)	<i>Restoration and deepening of Ambattur, Korattur & Madhavaram tanks</i>	Partially done
2	<i>Construction of Check Dams across Cooum and Adayar</i>	Being considered in Phase I itself
3	<i>Temple Tanks</i>	
4	<i>Formation of New Reservoirs</i>	
	<i>Ramacherry and Thirukandalam reservoirs</i>	
	<i>Cooum, Zamin-Korattur Reservoir</i>	II Phase of City Waterways Augmentation Project
	<i>Adayar – Tiruneermalai Reservoir</i>	Against original storage of 300 MCft., storage was reduced to lesser limit because of land acquisition cost & is being considered in Phase I
	<i>Ogium Maduvu Pallikaranai Reservoir</i>	II Phase of City Waterways Augmentation Project

Desalination

Freshwater is a precious mineral created by nature. Today, the supply of freshwater is mainly from the rainwater, rivers, dams, canals, lakes, glaciers & underground sources. Rainwater harvesting is one such source which is being extensively employed to augment the supply of fresh water. Even with extensive ground water recharging, it is futile to depend on rain & ground water alone for meeting the drinking water needs.

Although the chemical composition of water—each molecule of water has two atoms of hydrogen & one atom of oxygen (H₂O)—is well known, manufacture of large quantities of water using chemical means is not only costly but almost impossible.

Again though interconnecting of rivers is theoretically feasible, there may be difficulties as experienced in the case of Cauvery & Krishna water.

For Chennai city, CMWSSB has been pumping water from far away places over the last few years. As the water sources have moved further away, the initial investment & pumping costs have escalated. Also, people at the source of water are raising concerns about depletion of water resources. As a result of the lowering of the ground water table, agriculture is also affected.

The steady decline in water yield from the well-fields in Poondi, Tamaraipakkam and Minjur, the virtual drying up of the other well fields namely, Panjetty, Flood Plains and Kannigaiper, the fall in water-table in the wells in the city and its outskirts are a pointer to what may happen in case the rainfall is inadequate. It is estimated that the population of the City and its surroundings would reach a level of 7.82 million by 2012 and 8.45 million by 2017.

Demand projection for Chennai assuming an average per capita supply of 150 litres for Chennai City Agglomeration

Year	Domestic	Industrial	Total
2012	1349 mld	150 mld	1499 mld
2017	1458 mld	250 mld	1708 mld

The table below sets out the projected demand on assumption of per capita supply of 150 lpcd and availability of water based on the existing supply, projects presently under implementation and proposed schemes for implementation.

(All values in MLD)

	2012	2017
Projected demand	1499	1708
Availability		
Existing Sources	296	296
Telugu Ganga	400	400
Veeranam	180	180
CWSAP II	40	40
Third Chennai Project	60	60
	976	976
Shortfall/Gap	523	732

The only practical solution left is to set up desalination plants in the outskirts of the city & in the coastal areas. In several parts of the world, desalination projects have reliably & in a cost effective manner, solved the availability of water for large urban population. Countries like Saudi Arabia, Kuwait & other States of the Gulf region are totally dependent for their entire fresh water supply on desalination & now there is no shortage of fresh water in these countries. [There was a time when most of these countries used to suffer from acute shortage of water, as their natural sources of fresh water supply in desert regions were severely limited with hardly any natural rainfall of significance.] The desalination processes are described in the Annexure.

The State Government has formed the "Chennai Desal Company Limited" to take up desalination projects. The company was registered on June 21, 2004. To be located at the office of the Tamil Nadu Water Supply and Drainage Board, the Chennai Desal Company will seek to develop, construct, operate and maintain "all type of desalination plants". It can also engage in treated water conveyance and distribution systems, sale and distribution of water, wastewater treatment and low-cost sanitation facilities. As desalination plants are energy-intensive, the company can put up power plants for generation, transmission, distribution and sale of electricity. All its activities can be done either alone or jointly with or through any other company or organisation of the State Government / local bodies in the Build / Operate / Transfer (BOT) or Build/Own/Operate/Transfer (BOOT) mode.

Originally, the Government appointed the Tamil Nadu Water Investment Company (TWICl), promoter of a Special Purpose Vehicle (SPV) for desalination plants. The TWICl is associated with the Tirupur water supply and sanitation project. Later, the Government decided that it should fully own the SPV as the TWICl has representatives of the private sector on its Board of Directors.

The Union Finance Minister was announced in his speech for Budget 2004-05 that it was proposed to install the first desalination plant near Chennai in the State sector, and more such plants will be installed along the Coromandel coast. A desalination plant with a capacity of 300 million litres per day (MLD) is estimated to cost Rs.1000 crore, and there will be other costs for transmission pipelines and a captive power plant. It was proposed to implement the project through public-private partnership.

Sanitation

According to Census 2001, the position in regard to distribution of Households by type of latrine within the House, Percentage of Households having water closet facility, and Households not having latrine is set out in the table below:

Distribution of Households by Type of Latrine within the House

Sl. No.	Type of Latrine within the house	Total	%	Rural	%	Urban	%
S.1	Total	14,173,626	100.0	8,274,790	100.0	5,898,836	100.0
S.2	Pit latrine	1,035,315	7.3	377,122	4.6	658,193	11.2
S.3	Water closet	3,291,248	23.2	609,067	7.4	2,682,181	45.5
S.4	Other latrine	656,257	4.6	201,730	2.4	454,527	7.7
S.5	No latrine	9,190,806	64.8	7,086,871	85.6	2,103,935	35.7

Percentage of Household having water closet facility, Households not having latrine

Sl.No.	Name	% of Households having water closet facilities	% of Households not having latrine
[1]	[2]	[3]	[4]
	INDIA	18.02	63.59
	TAMIL NADU	23.22	64.84
1.	Thiruvallur	29.97	48.50
2.	Chennai	67.01	10.22
3.	Kancheepuram	30.11	53.84
4.	Vellore	20.33	68.41
5.	Dharmapuri	10.92	81.24
6.	Tiruvannamalai	9.99	83.54
7.	Viluppuram	8.24	85.30
8.	Salem	16.51	73.02
9.	Namakkal	15.55	74.87
10.	Erode	21.21	67.60
11.	The Nilgiris	26.64	57.82
12.	Coimbatore	32.62	52.68
13.	Dindigul	14.75	75.75
14.	Karur	16.32	75.86
15.	Tiruchirappali	26.72	63.21
16.	Perambalur	6.18	88.12
17.	Ariyalur	6.15	89.58
18.	Cuddalore	18.57	73.91
19.	Nagapattinam	18.41	74.41

20.	Thiruvarur	18.13	74.30
21.	Thanjavur	24.09	67.63
22.	Pudukottai	11.91	80.41
23.	Sivaganga	17.26	74.23
24.	Madurai	31.16	53.40
25.	Theni	16.18	72.99
26.	Virudhunagar	13.36	77.40
27.	Ramanathapuram	14.08	76.93
28.	Thoothukkudi	25.30	65.08
29.	Tirunelveli	21.26	69.29
30.	Kanniyakumari	32.24	34.85

Urban Sanitation

Apart from the Solid Waste Management issues gripping the urban local bodies, inadequate sanitation is a serious problem in urban areas of Tamil Nadu and the people living below the poverty line are the most affected and deprived of this basic services in this regard. Shortage of sanitation facilities is a common problem to all; however, it is more serious for women and children.

Realizing the need for improved sanitation facilities in urban areas, schemes for Integrated Sanitation Complexes have been taken up for implementation by the Government of Tamil Nadu with financial assistance of under TNUDP-II in order to provide public sanitation facilities viz. toilets with bathing and washing areas. The facilities have been planned for those who are living below poverty line in slum areas or where open area defecation is a problem. All Municipal Corporations (Except Chennai) and all the Municipalities and Town Panchayats are implementing the scheme. The programme also envisages support from the existing community organisations and structures to provide the maintenance. The special feature of the programme is active participation of the user group and this is ensured from the preliminary stages of the programme viz. selection of project sites till handing over the sanitary complex to user groups for maintenance by them.

Construction of 525 ISP complexes were undertaken during 2001-2002 at a cost of Rs.52.50 crores with the following funding pattern.

	Rs. in crores
Total No. of Units	525.00
Total Estimated cost	52.50
ISP (World Bank assistance)	29.00
VAMBAY Grant (GOI)	16.80
ULB Contribution (Corporations, Special & Selection Grade Municipalities)	6.70
Total	52.50

Out of 525 units, 524 units have been completed and handed over to the user groups.

Based on the feedback and response from the elected representatives, Commissioners of Municipal Corporations and Municipalities it was decided to construct small sanitary complexes with 10 seats in lesser extent of spaces so that more number of slums can be covered. 905 such units were taken up during 2002-2003 at an estimated cost of Rs.36.20 crores. The unit cost is fixed is Rs.4.00 lakhs.

Rs. in crores			
Total Units	Total Cost	GOI Cost	GOTN Share
905	36.20	18.10	18.10

Out of 905 units, 426 units have been completed so far, remaining units are under progress.

The success of the project depends on the sincerity of the user groups and an effective IEC Campaign amongst the public.

To promote personal hygiene and community hygiene and to stop the obnoxious practice of open defecation and to improve the toilet habits of school going children, a Society viz., Tamil Nadu Society for Awareness Creation in areas of Urban Hygiene and Sanitation was created. The Society has been given a corpus of Rs.2.5 crores by the Government. The Society was registered as "Tamil Nadu Society for Awareness Creation in areas of Urban Hygiene and Sanitation". A Governing Body and Executive Committee are working to improve the awareness on urban hygiene and sanitation and to eradicate the obnoxious practice of open defecation / Urination.

Rural Sanitation

Rural sanitation has been dealt in Chapter 3.1 "Rural Development"

Plan Objectives, Outlay and Programmes

Tenth Five Year Plan

The main objectives of the Tenth Five Year Plan are:

Rural Water Supply

- Full coverage of all the rural habitations in the State with a minimum of 40 lpcd supply and 55 lpcd where ever possible
- Full and independent coverage of habitations where socially marginalised groups live
- Sustainability of the systems and sources
- Water quality monitoring and surveillance through a Catchment Area approach
- Cost effective technology to the quality affected habitations
- Introduction of dual water supply schemes
- On site treatment
- House Services Connection
- Adoption of demand driven approach, user participation and cost recovery
- Coverage of schools, anganwadis, noon meals centres and primary health centres with water supply
- Awareness campaign on the use of safe drinking water, water conservation, ground water management
- Redefining the role of the Government/ Governmental agencies from 'provider' to 'facilitator'
- Rain water harvesting, establishment of ground water recharge structures for source sustainability

Rural Sanitation

- Shift from allocation based approach to demand driven approach
- Coverage of the rural population with individual/cluster toilets
- Abolition of manual scavenging by converting dry latrines into pour flush latrines
- Safe disposal of domestic liquid and solid waste integrated with disposal of night soil
- Coverage of rural schools with sanitation facilities

- Intensive IEC campaign and human resource development
- Facilitating setting up of Rural Sanitary Marts at nearest points
- Introduction of cost effective technologies in the construction of sanitary facilities
- Soft loans through institutional finance for the construction of rural latrines
- Extending house service connections in the rural areas

Urban Water Supply

- To cover the towns with poor service level on a priority basis
- Toning up of the existing water supply scheme to derive full benefit
- Waste water management including recycling and reuse of waste water
- Energy audit to improve the performance of electrical installations
- Improved accounting improvements
- Knowledge upgradation
- Sustainability through rain water harvesting and recharging techniques and conservation of water
- Standardisation of operation and maintenance procedures
- Periodical water quality monitoring

Urban Sewerage

- Integrating sanitation with water supply programme
- Steps to treat effluent before it enters the water courses.
- Master Plan to cover the urban towns with underground sewerage scheme. Adoption of alternate technology for safe disposal and recycling of waster water

State Budgetary Support for the Tenth Five Year Plan

(Rs. in Crores)

Sl. No.	Departments/ Institutions	State Outlay	Extra Budgetary Provisions		Total
			Loan Component	Externally Aided Projects	
1	2	3	4	5	6
1.	CMWSSB	252.36	656.49	96.37	1005.22
2.	TWAD Board				
	Rural Water Supply	750.00	300.00	703.63	1753.63
	Rural Sanitation	-	50.00	-	50.00
	Urban Water Supply	400.00	204.65	500.00	1104.65
	Urban Sanitation	200.00	100.00	-	300.00
	Total	1350.00	654.65	1203.63	3208.28
3.	NRAP/NRCP Schemes (TWAD)	586.50	-	-	586.50
Grand Total		2188.86	1311.14	1300.00	4800.00

Annual Plan 2002-03

An amount of Rs.88273.11 lakhs was provided for Water Supply and Sewerage Sector for the year 2002-03. The actual expenditure incurred was Rs.66245.32 lakhs.

Annual Plan 2003-04

An amount of Rs. 75235.01 lakhs was provided for the year 2003-04 for the Water Supply & Sewerage Sector. As against this, the expenditure is anticipated to be around Rs.70852.87 lakhs.

Annual Plan 2004-05

Chennai Water Supply and Sewerage Board

Second Chennai Water Supply Project

The Second Chennai Water Supply Project was taken up in February 1996. The revised cost of the project is Rs.7787.89 million, with a World Bank Loan assistance of U.S. \$ 86.50 million. The financing pattern for the project is as follows: (i) IBRD Loan 65.50% of project cost, (ii) Government of Tamil Nadu grant 17.25% of project cost and (iii) Board's internal generation 17.25% of project cost. The project was granted extension and the revised scheduled date of closing was fixed as 31st March 2004. The components are (i) improvements to the 16 sewerage pumping stations, (ii) construction of 7 nos. water distribution stations, (iii) Transmission main to convey water to the various water distribution stations (36km), (iv) Strengthening of existing water distribution systems in 11 zones for a length of 660 kilometers. (v) Water conservation - leak detection and ratification in the water distribution system (in 3 phases 3,4 & 5) and (vi) Technical Assistance and training, consultation services. Items (i),(ii), (iii), (iv) & (v) have been completed. In respect of item (iii), all the works have been completed except one inter connection work with the existing transmission main of Triplicane Water Distribution System.

Chembarambakkam 530 MLD water treatment project

Presently, Chennai city has two water treatment plants one at Redhills of 300 mld capacity and another at Kilpauk of 327 mld capacity. Krishna Water from Andhra Pradesh is to be treated in two different locations. For treating the first stage of Krishna Water, one treatment plant of 300 mld capacity has been constructed at Redhills and commissioned. In order to treat additional water to be drawn under Telugu Ganga Project, additional treatment capacity of 530 mld is proposed to be constructed at Chembarambakkam with part assistance from French Government. The plant will be commissioned by May 2005.

Water Supply, Sewerage Scheme through Assistance from HUDCO, TUFIDCO, Board, Deposit, O&M and drought works implemented by CMWSS Board.

A. HUDCO / TUFIDCO

Regarding the works under HUDCO / TUFIDCO funds, the details of major ongoing works are as follows:

(i) Prevention of overflow into City waterways - Phase II

The total project cost for 24 works is Rs.488.10 lakhs. The main objective of the project is to prevent sewage water entering into the storm water drain, river courses and waterways. The various works involved to arrest sewage over flows into the city water ways are rerouting, diversion and shifting of sewer main, providing sewer main, force main, construction of road side pumping station and providing house sewer connections. The work was expected to be completed by May 2004.

(ii) Construction of sewage pumping station at Kodungaiyur south KB 3 and laying of 500mm dia gravity sewer and construction of Kodungaiyur north KC 1 pumping station.

The construction of two sewage pumping stations viz. KB3 and KC1 at Kodungaiyur, Area I has been completed and the pumping stations have been commissioned.

(iii) *Rerouting of 900 mm dia water main from Gangadeeswarar Koil Street to Harris road junction of Pantheon road.*

The work of rerouting of 900mm dia CI water main from Gangadeeswarar Koil Street to Harris Road contains laying of water main for a length of 1600m. The laying has been completed for a length of 1315 m and the balance length of 285m is to be laid. The work will be completed by July 2004.

B. TNUDF

Regarding the works under TNUDF funds the details of major on going works are given as follows:

Valasaravakkam sewerage scheme

Government of Tamil Nadu had entrusted the consultancy work of formulating a sewerage system for the entire Valasaravakkam Town Panchayat in March 1998. The sewerage system had been designed with all the parameters in accordance with the requirements of the manual of the Government of India with a projected population of 162300 in the year 2031. The total cost of the project works out to Rs.1921.63 lakhs. The work order was issued on 2nd May 2001. Till April 2004 96% of work has been completed. The balance works were expected to be completed by May 2004.

Valasaravakkam Water supply scheme

Government accorded administrative approval in 1999 for Rs.21.92 crores for providing water supply facilities to various local bodies by borrowing funds from TNUDF and accordingly works have been carried out in the adjacent 12 urban local bodies.

Based on the request of TNUDF to take up additional distribution mains at Valasaravakkam Town Panchayat, the distribution system has been designed for the ultimate population in the year 2031. The present population is 40,600 and the projected population in the year 2031 will be 1,62,300. Till April 2004 76% of work had been completed. The balance works were expected to be completed by May 2004.

C. Board funds

The major ongoing projects implemented under Board Funds is given as follows:

(i) JBIC project

The CMWSS Board has taken up implementation of Chennai sewage renovation and functional improvement project under JBIC funds. The scope of the project consist of the following components:

(ii) Effluent conveyance system

This component originally envisaged pumping of secondary treated sewage from Koyambedu and conveying it to Kodungaiyur through a 900 mm dia DL pipe line to be laid over a distance of 16.4 km to Kodungaiyur where TT/RO Plant was proposed for sewage renovation and supply the permeate to industries at Manali. The work has been completed except for 150 metre length of railway crossing near Villvakkam railway station. Railways have completed the duct crossing work. Pipe laying work completed except hydro testing which is expected to be completed by October 2004.

(iii) Permeate conveyance system

The Permeate from the Sewage Renovation Plant (Territory Treatment / Reverse Osmosis) would be conveyed to the 12 industries at Manali for their use for various purposes such as cooling, process, boiler feed and others. 100 mls of permeate could be conveyed through mains of size 200mm dia to 1000mm dia to be laid for length of about 3.9 km. Out of 3.9 km of pipe line to be laid 3.75km of pipe line has been completed and laying in the balance 0.15 km near Athipattu Railway Station has been completed except thrust block and hydro testing. The works will be completed by September 2004.

Chennai Water Supply Augmentation Project - I

The project proposal is to draw 190 mld Raw water from Veeranam Lake located in Cuddalore District treat and convey 180 mld of treated water for a distance of about 230 km for distribution in Chennai city. Administrative sanction was accorded in August 2001. The estimated cost of the project is Rs.720 crore. The project has been divided into five packages and the progress is indicated below:

Package I: Construction of Raw water Intake arrangement and Raw Water Pumping Station at Sethiathope (190 MLD) and Treated Water Pumping Station at Vadakuthu (180 MLD) and allied works including replacement of mechanical and electrical equipments, rehabilitation of existing structures, providing Telemetry System for the whole project. The work will be completed by June 2004.

Package II: Rehabilitation of existing Water Treatment Plant at Vadakuthu (180 MLD) including replacement of electrical, mechanical equipments. The work has almost been completed.

Package III: Supply and laying of Raw water transmission main for a length of about 20 km. from Sethiathope to Water Treatment Plant at Vadakuthu, supply and laying of clear water transmission main from Vadakuthu to Break Pressure Tank for a length of about 8 km. and from Break Pressure Tank to Ongur river for a length of about 86 km. including construction of Break Pressure Tank, supply & providing necessary appurtenances in the pipe line. 98% of work has been completed.

Package IV: Supply & laying of clear water transmission main for a length of about 94 km. from Ongur river to Vandalur, supply and laying of clear water transmission main from Vandalur to Porur for a length of about 20 km. and supply and providing necessary appurtenances in the pipeline. 95% of the work has been completed.

Package V: Design build, operate Water Distribution Station which includes construction of underground tank, pump house, installation of pump sets and allied pipe laying works and supply, laying of 1500 mm dia M.S. pipe for a length of about 1.50 km. at Porur and interconnection with existing 1500 mm dia M.S. pipe line for distribution of 180 MLD water. 98% of the work has been completed.

Chennai Water Supply Augmentation Project II

The objective of the scheme is to augment the Water supply to Chennai city. The components of the scheme are as follows: (a) Conveying raw water from Kolavoy Lake to Mangalam and construction of water treatment plant at Mangalam and inject the treated water into the proposed CWSAP - I pipeline (b) Construction of Check dam across Palar River at Vayalur and conveying the water to Mangalam and construction of water treatment plant at Mangalam and inject the treated water into the proposed CWSAP-I pipeline (c) Construction of four Check dams across Adyar up stream of Nandambakkam bridge (d) Rehabilitation of two Check dams across Coom at Paruthipattu and Kannapalayam. DPR for Check dams across Palar river

is under scrutiny, DPR for other component are being prepared by Public Works Department.

Chennai City River Conservation Project

The Government of Tamil Nadu along with Government of India formulated the Chennai City River Conservation Project at a cost of Rs.1700.00 crore with the objective to prevent sewage entering into the city waterways and also keep them clean on sustainable basis.

The project has the following components: (i) Desilting and removal of sand bars in Cooum and Adyar rivers (PWD) (ii) Rehabilitation and Resettlement of slum dwellers living on the banks of waterways (TNSCB) (iii) Prevention of untreated sewage flow reaching waterways (CMWSSB) (iv) Micro Drainage / Storm Water Drainage works (CMC) (v) Project formulation, monitoring co-ordination and management (CMDA). The Government of India, Ministry of Environment and Forests, National Rivers Conservation Directorate agreed to fund partly (Rs.720.15 crores) for the component of prevention of untreated sewage flow reaching waterways.

The above project is in progress and it is expected that the work relating to interceptors, pumping mains and pumping stations and the four Sewage Treatment Plants would be completed by July 2004.

National River Conservation Project (Madurai Sewerage Scheme)

The objective of the scheme is to prevent pollution of river vaigai at Madurai. The details of the scheme are as follows:

Phase-I	Laying Collection system	- 124.36 km
	Laying force main	- 15.30 km
	Construction of new Pumping Stations	- 6 nos.
Phase-II	Laying Collection system	- 173.80 km
	Laying force main	- 29.95 km
	Construction of new Pumping Stations	- 13 nos.

Under Phase-I 98% of the work has been completed. Under Phase-II both North of River Vaigai and South of River Vaigai works commenced in September 2003. Till April 2004 15% of the work has completed. It is expected that the entire work will be completed September 2005.

National River Conservation Project (Kumbakonam Sewerage Scheme)

The objective of the scheme is to prevent pollution of River Cauvery and Arasalar at Kumbakonam. The details of the scheme are as follows:

Phase-I	Laying force main	- 1185m
	Laying PSC force main	- 4470m
	Rejuvenation of existing Pumping Station	- 1 no.
	Construction of new Pumping Stations	- 1 no.
Phase-II	Laying Collection system	- 85.66 km
	Laying force main	- 18.46 km
	Construction of new Pumping Stations	- 9 nos.

92% of the Phase -I work has been completed by 2004. It is expected that the entire work will be completed by September 2004. In respect of Phase-II work 56 % of the work has been completed. The project will be completed by March 2005.

Tamil Nadu Water Supply and Drainage Board

Rural Water Supply Programme

Water supply to rural habitations are implemented based on the status assessed through surveys conducted in the rural habitations. The habitations are classified into three different categories, viz (i) habitations with a service level of 40 lpcd (national norm) and above are classified as 'fully covered', (ii) habitation with a service level below 40 lpcd are classified as 'partially covered' and habitations with no source of potable water supply are classified as 'not covered'. The status of water supply in rural areas at the beginning of the Ninth Plan (1997-2002) based on the resurvey conducted in 1992 was as follows:

Status	No. of habitations
Fully covered (40 lpcd and above)	37,155
Partially covered (1 to 39 lpcd)	29,476
Not covered (0 lpcd)	—
Total	66,631

During the ninth plan period, 32,267 habitations were fully covered and at the end of the ninth plan period all the 66631 habitations based on 1992 resurvey were fully covered. The year wise physical and financial progress achieved during the Ninth Plan period is presented below:

Year	Physical achievement			Financial achievement (Rs. In lakhs)		
	ARWSP	MNP	Total	ARWSP	MNP	Total
1997-98	1772	2759	4531	10123.92	13641.00	23764.92
1998-99	2789	5185	7974	13151.14	23315.33	36466.47
1999-2000	2396	3904	6300	8958.00	25305.00	34263.00
2000-2001	1876	4741	6617	7308.00	38900.73	46208.73
2001-02	1500	5365	6865	7956.00	35822.57	43778.57
Total	10333	21954	32287	47497.06	136984.63	184481.69

Any change in the status after the installation of water supply scheme is not taken into account until a resurvey is taken up to assess the status in the rural habitations afresh. The status of water supply is a dynamic concept rather than a static one. Factors like increase in population, deficiency of the source due to over extraction, quality degradation, deficient recharge of the source due to failure of monsoon etc, cause slippage from fully covered status to partially covered or not covered status in a habitation. The rehabilitation and redoing of schemes in such habitations are also included in the coverage. This apart, new habitations that have sprung up during the Ninth Plan period were also provided with water supply.

During the year 2002-2003, 6628 habitations were covered with an investment of Rs.526.54 crores. Concurrently a resurvey was conducted to ascertain the drinking water status in rural habitations in accordance with the guidelines of Government of India. As per the resurvey, the status of water supply as on 1-1-2003 was as follows:

Fully covered Habitations	29067
Partially covered habitations	40930
Not covered habitations	11790
Total	81787

Taking into account the coverage from 1.1.2003 to 31.3.2004 the status of water supply as on 1.4.2004 in the rural habitations is as follows:

Fully covered habitations	35727
Partially covered	36777
Not covered habitation	9283
Total	81787

The performance during the year 2003-2004 under Rural water supply is as follows:

- Water Supply Schemes for 6,510 rural habitations have been executed through Individual Power Pump schemes and Combined Water Supply Schemes (CWSS) as against the target of 6000.
- Water supply Schemes to 5000 Government schools which remained uncovered have been provided with water supply
- The Mini Power Pump scheme introduced to mitigate the hardship faced by the rural women folk has been taken up and completed in 10,135 locations against the target of 10,000 including 4,000 nos. installed exclusively in SC/ST habitations
- Under the Sector Reform Project of Government of India, in six pilot districts 3716 water supply schemes have been completed at a total expenditure of Rs. 59.06 crores. This pilot programme was closed on 31.3.2004 in view of launching of the Swajaldhara Rural Water Supply Project throughout the State in accordance with the guidelines issued by the GOI
- Under “Swajaldhara” programme totally 834 schemes to benefit 834 habitations were implemented availing the allocation of Rs. 20.72 crores made by the Government of India to the State
- Under PMGY programme, for sustainability of existing drinking water sources, 391 recharge structures including Check dam, Percolation ponds, etc. have been completed at an expenditure of Rs. 8.16 crores
- Under the NABARD assistance, 180 recharge structures have been completed in Thiruvallur, Dharmapuri, Coimbatore, Namakkal and Theni districts at an expenditure of Rs. 4.64 crores.

Urban Water Supply Programme

During the Ninth Plan period, substantial coverage was made in the urban areas. The status of water supply in urban towns is broadly classified as indicated below:

Civic Status	Status of water supply		
	Good	Average	Poor
Corporation	110 & above	70 to 109	Below 70
Municipalities	90 & above	50 to 89	Below 50
Town Panchayats	70 & above	40 to 69	Below 40

Position of water supply in urban towns at the beginning of Ninth Plan

Civic Status	Total Nos.	Status of water supply		
		Good	Average	Poor
Corporation	5		5	
Municipalities	104	15	43	46
UrbanTown Panchayats	370	105	100	165
Roral town panchayats	265	71	68	126
Total	744	191	216	337

Physical and financial performance during the Ninth plan period

Year	Achievement	
	Financial (Rs in crore)	Physical in nos
1997-1998	78.63	39
1998-1999	83.72	50
1999-2000	102.01	42
2000-2001	128.45	55
2001-2002	167.15	63
Total	559.96	249

With the provision of water supply augmentation schemes to 249 towns during the Ninth Plan period at an investment of Rs. 559.96 crores, the status of water supply in urban towns at the beginning of the Tenth Plan (2002-2003 to 2006-2007) was as under:

Civic Status	Total Nos.	Status of water supply		
		Good	Average	Poor
Corporation	5	0	5	-
Municipalities	102	38	34	40
UrbanTown Panchayats	367	163	115	89
Rural town panchayats	244	89	75	80
Total	718	290	229	209

During the year 2002-2003 water supply schemes to 72 towns were completed with an investment of Rs. 170.78 crores , and in the year 2003-2004, 60 towns were covered with an investment of Rs 134.06 crores.

Urban Sewerage

Sanitation is essential for enhancing the quality of life and improving productivity. The goals fixed in respect of sanitation coverage for the International Water Supply and Sanitation Decade (1981-1991) remain unfulfilled. Over the years, water supply was accorded priority and the sanitation sector did not receive that much of attention.

In Tamilnadu, underground sewerage schemes are in existence only in 16 towns, comprising 4 Corporations and 11 Municipalities and one panchayat. At the beginning of the Ninth plan, excluding Chennai Corporation, there were 23 towns having a population of more than one lakh in the state. Of these, only 8 towns namely Madurai, Trichy, Coimbatore, Tirunelveli, Tiruvottiyur, Kancheepuram, Thoothukkudi, and Kumbakonam were provided with sewerage schemes, that too with partial coverage. Apart from this, sewerage systems are in existence in 8 other towns namely Uthagamandalam, Chidambaram, Mannargudi, Periyakulam,

Thirumangalam, Sattur, Mettur and Aravankadu, where also the coverage is only partial. The expenditure incurred during the Ninth Plan was Rs. 4.70 crores for the ongoing Coimbatore Drainage Scheme and works taken up under National River Action Plan, National River Conservation programme and National Lake conservation programme.

National River Action Plan

Under NRAP, the abatement of Pollution in river Cauvery in Trichy, Erode. Bhavani, Kumarapalayam, and Pallipalayam, towns have been taken up at a cost of Rs.30.10 Crores. The total expenditure incurred upto 30th April 2004 was Rs.15.74 Crores. Government of India, had released upto 30th April 2004, Rs. 15.41 Crores.

National River Conservation Programme

Under NRCP, the Underground Sewerage Schemes in Tirunelveli, Thanjavur, Mayiladuthurai, Trichy, Karur and Inam-Karur, have been taken up for implementation at a cost of Rs.292.51 crore. The fund released by the funding agencies till 30th April 2004, is Rs.42.805 crores. The expenditure incurred upto 30.4.2004 is Rs. 48.50 crores.

National Lake Conservation Programme

Under NLCP, the revival of Kodaikanal Lake has been taken up at a total cost of Rs. 9.13 crores. The interceptions, diversion and construction of STP works at a cost of Rs.3.47 crores have been taken up by TWAD Board. The revival of lake with "BIO REMEDIATION PROCESS" is implemented by PWD Authorities at a cost of Rs.4.65 crores. The other components viz., Low Cost Sanitation and Community Toilet works are being executed by the Local Body at a cost of Rs. 1.01 crores. The amount received from GOI upto 30th April 2004 is Rs. 1.00 crore (TWAD Component only). The expenditure incurred upto 30th April 2004 is Rs. 0.28 crores.

Programmes of TWAD Board for year 2004-2005

I. Rural Water Supply

- Implementation of Individual Power Pump Schemes for 2,744 habitations
- Implementation of 70 Combined water supply schemes benefiting 7706 habitations
- 499 Individual power pump schemes proposed under NABARD - RIDF IX (WSS)
- Special schemes such as installation of hand pumps (5000 Nos.) and revival of traditional sources (5000 Nos.) under Prime Minister's Announcement
- Implementation of 5,000 Nos. of Mini Power Pump Schemes
- Revamping of combined water supply schemes maintained by TWAD Board
- 523 Recharge structures proposed under NABARD - RIDF IX
- Sustaining Rural water supply through 367 Rain Water Harvesting Structures with PMGY assistance
- Implementation of water supply schemes to 60 Rural town panchayats

II. Urban Water Supply

- Implementation of spill over Schemes in 54 towns
- Implementation of new Water Supply Schemes in 11 towns

- Implementation of water supply schemes to 25 towns under Accelerated Urban
- water supply programme

III. Sewerage Scheme

- Continuing the ongoing works under National River Action Plan for the abatement of Pollution in river Cauvery in Trichy, Erode. Bhavani, Kumarapalayam and Pallipalayam towns. It is programmed to complete additional works in STP site at Lakkapuram in Erode, Bhavani STP works & Komarapalayam Stretch during 2004-05. The Budget Estimate for 2004-05 is Rs. 14.435 Crore.
- Continuing the ongoing works in Tirunelveli, Thanjavur, Mayiladuthurai, Trichy, Karur and Inam-Karur, under National River Conservation programme It is programmed to complete the works in Tirunelveli, Thanjavur, Mayiladuthurai & Karur- Inam Karur Towns, during 2004-05. The Budget Estimate for 2004-05 is Rs.155.00 crores.
- Continuing the ongoing works of the revival of Kodaikanal Lake under National Lake Conservation Programme. The Budget Estimate for 2004-05 is Rs. 3.00 crores. The Project is programmed to be completed by 3/2005.
- Taking up new schemes to district head quarter towns.

Issues and constraints

Rural Water Supply Programme

Increase in scheme costs and demand for higher service levels require higher investments and operation and maintenance budgets. Competing demands on Government resources and limitations in external or private sector funding, necessitates realisation of full recurrent cost recovery and capital cost sharing by users apart from bringing down the operational costs.

A beginning has been made through appropriate policy changes and a reorientation of users perceptions through implementation of Sector Reform Project and Swajaldhara Project. The user community needs to be educated on the cost and other constraints involved in providing them with protected water supply.

It has been identified that ground water depletion also results in contamination leading to water quality problems like excess fluoride, brackishness/salinity. There is an immediate need to regulate the extraction of ground water. The Government has taken initiative in this regard.

Schemes are implemented with huge investments with focus mainly on coverage and the sustainability of the source is not accorded its due importance. Over-exploitation of ground water has resulted in marked depletion of ground water levels. Monsoon failures also contribute to the paucity of sources. The Roof - water harvesting and other ground water recharge structures established throughout the state on an unprecedented scale will help to improve the ground water levels.

Urban Water Supply Scheme

Poor financial condition of the ULBs combined with insufficient budgetary allocations has resulted in poor service level in many urban towns with wide gap between the demand and supply particularly in areas where people belonging to low income group live.

Old transmission and distribution systems, poor maintenance and inadequate vigilance also results in reduced quantum of supply in urban towns.

Annual Plan Outlay for 2004-05

A sum of Rs.75878.09 lakhs has been proposed for "Water Supply and Sanitation" as shown below for the year 2004-05.

(Rs. in lakhs)

Sl.No.	Programme	Outlay
1.	Sewerage Scheme - DMA	3100.00
2.	Urban Water Supply Scheme	
	(i) Krishan Water Supply Scheme	1200.01
	(ii) CMWSS Board	17907.77
	(iii) Local Bodies - DMA	1200.66
	(iv) Tiruppur Water Supply Scheme	0.02
	(v) TWAD Board	1211.93
	Total	21520.39
3.	Rural Water Supply Scheme	
	(i) TWAD Board	32440.69
	(ii) PMGY	1100.00
	Total	33540.69
4.	Other Programmes	
	(i) Grants to NTADCL	4017.00
	(ii) RWH	0.01
	Total	4017.01
5.	Spl. Component Programme - TWAD Board	13700.00
Grand Total		75878.00

Centrally Sponsored Schemes

Government of India allocated Rs.14.00 crores under Accelerated Rural Water Supply Programme (ARWSP) to rejuvenate the water sources. These works are being carried out by the District Administration. So far an expenditure of Rs.7.69 crores has been incurred.

Government of India has released Rs.15.64 crores for the installation of 5000 hand pumps in water scarcity areas under the Prime Minister's Programme. The fund was released during March 2004. The works are in progress and the works will be completed during 2004-05.

Government of India released Rs.6.86 crores for revival of 5000 traditional drinking water sources in rural areas in March 2004. The works are in progress and the works will be completed during 2004-05. The following Centrally Sponsored Schemes have been proposed for the year 2004-05: (a) Accelerated Rural Water Supply Programme (ARWSP) for SC/ST habitations (Outlay Rs.0.01 lakh) (b) Grants to TWAD Board for the execution of accelerated Urban Water Supply Programme (Outlay Rs.2423.86 lakhs). The State's share is Rs.1250.00 lakhs.

The Union Finance Minister in his speech for Budget 2004-05 has indicated that ARWSP would focus on renewal of water sources and on serving uncovered and partially covered habitations. PRIs would be encouraged to plan, implement, own, operate and maintain rural water supply schemes.

The Union Finance Minister has also announced that all the drinking water schemes would be brought under the umbrella of the Rajiv Gandhi Drinking Water Mission.