

# Status of Rural Water Supply and Sanitation in Andhra Pradesh, India

**B. Rajeswara Rao**  
**H. Umakantha Rao**  
**V. Vidyanath Sastry**  
**M.Rama Mohan Rao**  
**M. Venkataswamy**  
**M. S. Rama Mohan Rao**

**WASHCost India Project**



**CENTRE FOR ECONOMIC AND SOCIAL STUDIES**

N. O. Campus, Begumpet, Hyderabad - 500 016, A.P, India

Web: [www.cess.ac.in](http://www.cess.ac.in), email: [postmaaster@cess.ac.in](mailto:postmaaster@cess.ac.in)



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## Introduction

Andhra Pradesh is geographically 4th largest state in India with an area of about 0.275 million Sq.km and has a forest cover of 23% (of the geographical area). It lies between Latitudes 12° 37' N and 19° 54' N, and Longitudes 76° 46' E and 84° 46' E. It covers large part of the Deccan plateau and bounded on the North by the States of Maharashtra, Madhya Pradesh and Orissa, on the West by Karnataka and Maharashtra and on the South by TamilNadu and Karnataka. A.P has a long coastline of 972 km on the eastern side. It has a population of 76.2 million (2001 census), of which about 59.02 million constitute (73%) rural population and the rest live in urban areas. The three broad socio-economic and administrative regions of the State are: Coastal Andhra, Telangana, and Rayalaseema. It is divided into 23 districts (one urban), comprising of 1104 mandals, 21856 Gram Panchayats, 30002 villages covering 72,147 habitations and 210 towns (Table 1).

## Physiographic Features:

Andhra Pradesh is endowed with a variety of physiographic features ranging from hills, undulating terrain to coastal deltaic plains (Fig. 1). The State has three major river basins - Godavari, Krishna and Pennar. Geomorphologically, the state can be categorized in to Pedi-plains, Coastal alluvial plains and Hilly ranges.

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<sup>1</sup> Engineer-in-Chief (Rural Water Supply and Sanitation Department, GoAP)

<sup>2</sup> Chief - Engineer, Department of Rural Water Supply and Sanitation

<sup>3</sup> Project Director (Andhra Pradesh Rural Water Supply and Sanitation Programme & CCDU)

<sup>4</sup> Project Director (State Water Sanitation Mission)

<sup>5</sup> WASH Specialist, WASHCost (India) Project

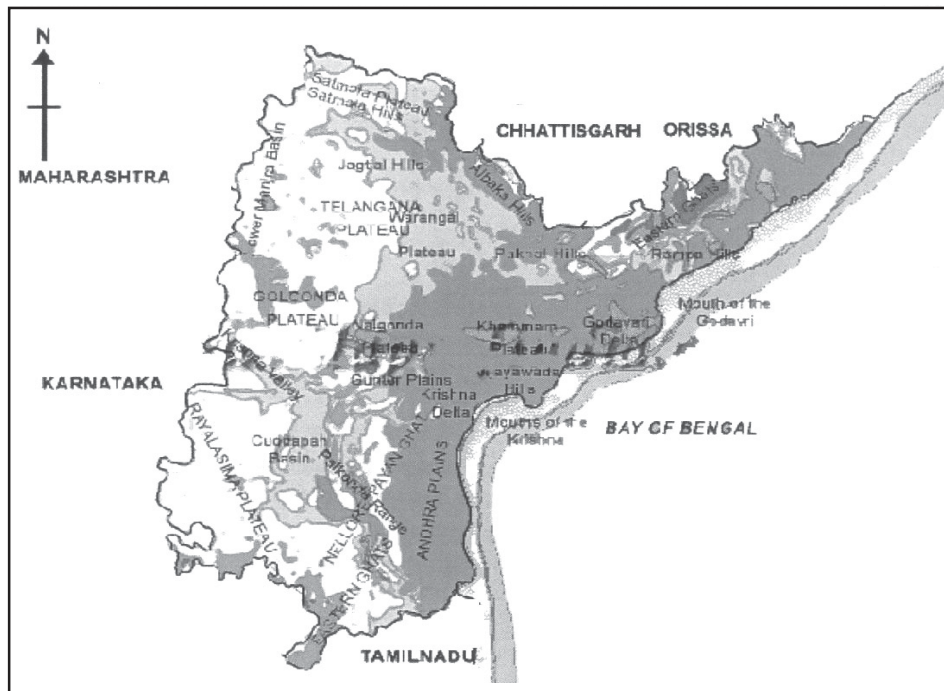
<sup>6</sup> WRM Specialist, WASHCost (India) Project

Table. 1 Administrative divisions of the State

Sl.No	Item	No
1	Districts	23
2	Revenue divisions	79
3	Mandals	1104
4	Gram Panchayats	21,634
5	Inhabited Villages	30,002
6	No.of Habitations	72,147
7	Towns	210
8	Population	76.21 million
9	Rural Population	59.02 million
10	Urban population	17.19 million

source: Census: 2001, Directorate of Economics and Statistics, GoAP. & RWSS

Fig. 1. Physiographic features of Andhra Pradesh



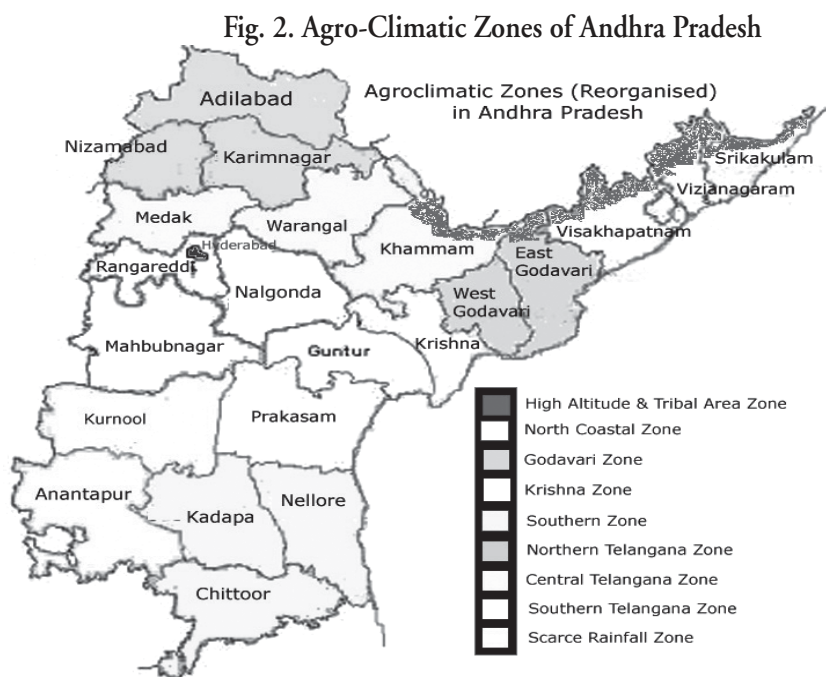
Source: Water Conservation Mission, GoAP, 2003

### Climate and Rainfall:

The climate of the state is tropical in nature. Large part of the State falls under semi-arid region of peninsular India and characterized by hot summer and cold winter. The normal annual rainfall across the State is 940 mm and varies widely. Ananthapur district receives as low as 500 mm while north-western coastal regions record a normal rainfall of more than 1150 mm. The State receives about 66% of rainfall from south-west monsoon (June - September) and about 25% from north-east monsoon (October-December). The remaining 9% is received during winter and summer months. The long term rainfall data of the State indicate that droughts are fairly recurrent in certain parts of the State. The analysis of rainfall data during the year 1974 - 2007 indicates deficit rainfall in 22 years in one or other parts of the State.

### Soils and agro-climatic Zones:

The soils are broadly classified in to four categories namely red, black, alluvial and coastal sandy types. They support a variety of vegetation and in general good for agriculture and horticulture. The state is divided into 9 agro-climatic zones based on the water availability, soil type and on the agricultural crops that the area can support. The areas / districts covered under different Agro-climatic zones of the State are presented in fig.-2.

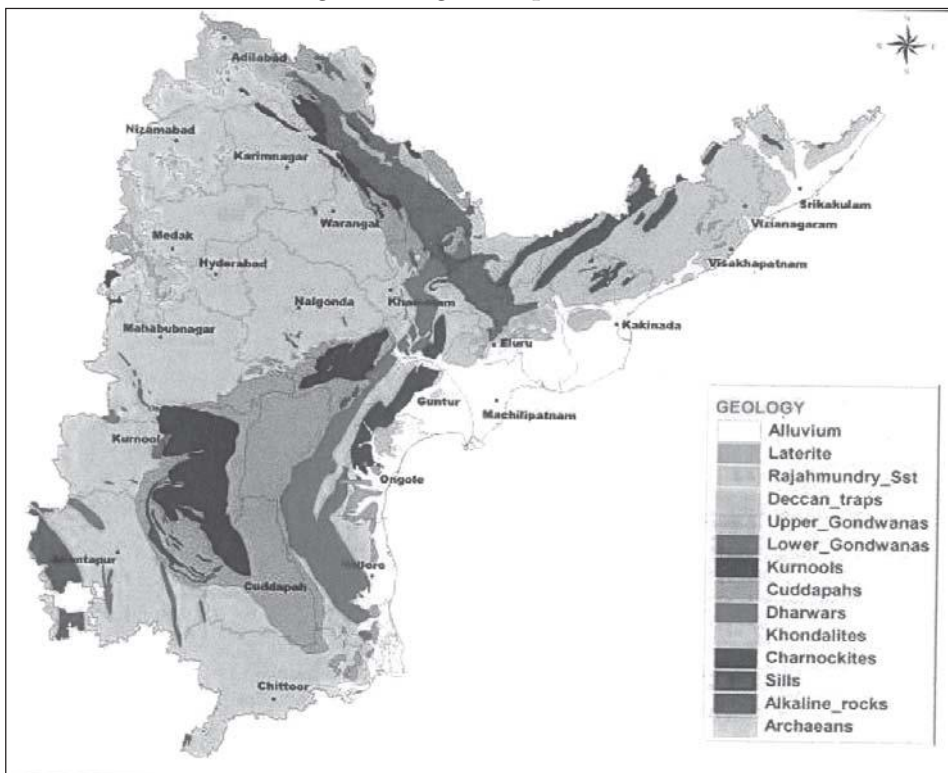


(Source: Annual Report 2007 – 2008, ANGRAU, Hyderabad)

### Geological characteristics:

From groundwater point of view, the geological rock types of the state can broadly be divided into hard rock's - Archaeans, Pre-Cambrian, Cuddapahs, Kurnools and Deccan traps and Soft and unconsolidated rocks - Gondwanas, Rajahmundry formations and Recent Alluvium. The hard rock's cover nearly 0.233 M.Sq.Km constituting about 85% of geographical area of the state while the soft rocks cover about 41,160 Sq.Km constituting 15% . The occurrence of various geological formations is presented in fig.3.

Fig.3. Geological Map of Andhra Pradesh



(Source: Groundwater Department, GoAP, 2008)

### Surface Water Resources:

The state has three major rivers - Godavari, Krishna and Pennar -and 37 small rivers. Krishna and Godavari account for almost 90% of the state's surface water resources.

The total surface water resources estimated at 77.75 BCM, of which, 49.63 BCM is utilised. The river waters are extensively utilised for irrigation, industry, aquaculture

and drinking purposes. The water resources of Krishna and Pennar have been completely utilised. Surface water is the main source of supply in around 90% of Multi-Village Schemes (MVS) while Single Village Schemes (SVS) are mostly based on groundwater.

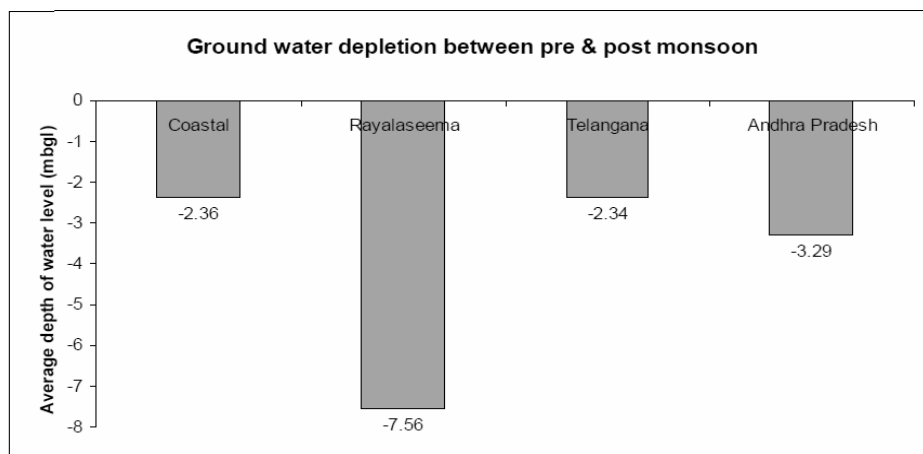
Consequent to the growth in population, industrialization, urbanization and intensification of agriculture, waste water generation has increased and discharged into surface water bodies and rivers. As a result the surface water is being contaminated and the problem is further compounded with sewerage and other solid wastes from urban and rural draining into the riverine system.

#### **Groundwater:**

The annual groundwater availability in the state is estimated at 34700 MCM (2008) and utilization is 14112MCM, leaving a balance of 20588 MCM. The average groundwater development for the state as a whole is 41% of which 59% is in non command and 21% is in command area. The average well yields range from 75 to 150 lpm in hard rock areas. However, the present mean yields for dug wells and bore wells are around 0.50 hectare meters and 2.47 hectare meters per annum respectively (Source: Groundwater Estimation Committee Report, 2008. Ground Water Department, GoAP. Gondwana rocks form an extensive aquifer and sustain well yields beyond their annual replenishment. The yield from tube wells constructed in these rocks ranges from 100 lpm to 1000 lpm for drawdown ranging from 12 to 38 m. The open wells tapping these formations yield from 10 to 20 cum/day. The Kamthi Sandstones beyond a depth of 250 m are intercalated with Shales and Clays. Tube wells constructed within 200 m, yield between 100 lpm to 1000 lpm for drawdown ranging from 9 to 30 m. Rajamundry sandstones also form good aquifers and tube wells constructed up to a depth of 300 m in these rocks, yield from 200 to 1500 lpm for a drawdown of 6 to 15 m. However, It is reported that the present yields are reduced by 20% to 30% of the above.

The groundwater levels vary significantly from district to district. In many parts of the state, in summer by May and June every year, most of the irrigation wells and drinking water wells go dry, due to significant depletion of groundwater levels. Groundwater levels measured during Post monsoon (January) and Pre monsoon (May) show depletion of groundwater. In case of Rayalseema the reduction in groundwater level was maximum (Fig. 4). Depletion of groundwater in these regions seriously affects sustainability of drinking water sources. As per the RWSS seasonal bore well status report, 9081 (cumulative number) bore wells have dried up (April 2009) due to depletion of groundwater level. Hence, relying on Groundwater in the long run can be a challenge for the state, unless appropriate steps are taken to sustain the resource.

Fig. 4: Depletion of Groundwater level: pre-monsoon to post monsoon



Source: Groundwater Department, GoAP.

#### Quality of Groundwater:

Groundwater quality is also a problem in many parts of the state. Groundwater in some parts is affected with excessive concentration of fluorides, Salinity, Iron, Arsenic, Total Dissolved Solids (TDS) and nitrates. In the past, some numbers of water supply schemes have failed due to unsuitability for drinking, consequent to excess fluorides and salinity as a result of depletion of groundwater.

There are 1097 habitations affected by quality such as fluoride, salinity, iron and arsenic parameters as on 1.04.2009, as per the updated status of RWS&S Department. Some of the habitations are affected by multiple parameters (more than one parameter).

#### Abstract of Quality affected Districts, Mandals and Habitations

	Districts	Mandals	Habitations
◆ Water Quality affected by multiple parameters	21	259	1097
◆ Fluoride Affected	21	231	979
◆ Salinity affected	19	168	713
◆ Iron affected	19	127	580
◆ Arsenic	16	91	481

The RWSS and State Ground Water Department have prepared district-wise water quality and water table maps. Separate maps representing the water quality and scarcity areas are also prepared. State Ground Water Department monitors the groundwater



table and also groundwater quality using observation wells. The RWSS is also contemplating to set up facilities to develop an MIS - for maintaining a database on water quality and scarcity.

#### **Importance of safe drinking water for achieving Millennium Development Goals**

Human Development Index is influenced by Life Expectancy at Birth, Infant Mortality Rate (IMR), Adult Literacy Rate, Primary, Secondary and Tertiary Enrolment Rate and GDP per capita. The human development index in A.P as against India for different items is given in Table-2. It could be seen from the table that the Human Development Index is 0.54 for Andhra Pradesh as against 0.61 for India. In order to improve the HDI, the Government of Andhra Pradesh has initiated programmes to eradicate poverty, establish gender equality, provide primary education, improve hygiene and environmental sanitation, including drinking water for reducing Child Mortality and to build awareness regarding HIV/AIDS.

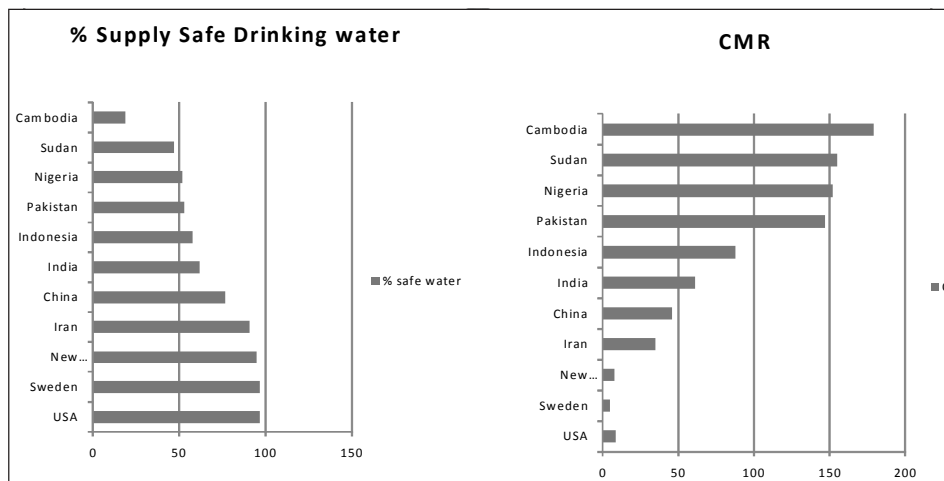
**Table.2. Human development indices in India and A.P**

<b>Development Indices</b>	<b>India</b>	<b>Andhra Pradesh</b>
Life Expectancy at Birth	63.7	62
Adult Education at 15 years and above	61	58
Combined Education	63.8	61
Males	68	71
Females	60	51
Estimated earnings		
Males	5194	-
Estimated earnings		
Females	1520	-
Human Development Index	0.61	0.54
Education Index	0.62	0.66
GDP per Capita	34520	34289
I M R	64	66

(Source: Report of the Department of RWSS, GoAP 2008)

The importance of safe drinking water across the Globe on Child Mortality Rate is depicted in Fig. 5.

Fig.5. Child Mortality Rate as influenced by the level of safe drinking water supply



(Source: Presentation of E-n-C in the WASHCost inception workshop at CESS, June 2008)

In India, it is reported that about 73 million working days are lost on account of ill health costing approximately Rs. 24000Millions annually due to consumption of poor quality drinking water. The cost of health care for the water related diseases is estimated at about Rs. 67000 millions. The total economic loss on account of supply of poor quality water is Rs. 91000 million per annum in rural areas. Further it is estimated that 66 million population are facing the risk of fluorosis. (Source: Ministry of water resources GoI, 2006)

#### Rural Water Supply and Sanitation in Andhra Pradesh:

Rural Water Supply and Sanitation Department is the nodal agency responsible for planning, designing and implementation of Water Supply and Sanitation facilities in rural areas of Andhra Pradesh. The Rural Water Supply programmes are implemented through single village schemes (SVS), multi village schemes (MVS) and hand pumps with groundwater and surface water as source.

#### Evolution of Department of Rural Water Supply and Sanitation:

Drinking Water Supply is a state subject and funds have been provided by the state for the drinking water supply right from the commencement of first five year plan.

- The PR Engineering Department was created towards the end of 1960 with one S.E for the entire department and subsequently a separate and independent

post of Head of the Department to look after rural water supply and sanitation was created with effect from 1.4.1965.

- The GoAP has created separate division vide Go No.24 dated 11.10.96 for Rural Water Supply with in the PR in order to have better focus.
- The PRED was looking after all works relating to rural development including rural water supply.
- Though separate divisions were formed, the desired levels of service levels were not achieved. Hence the GoAP has trifurcated PR and RD department into Panchayati Raj, Rural Development and Rural Water Supply Departments vide Go.Ms No. 508, dated 18.07.2007.
- A separate post of Chief Engineer (RWS) was created in 1979. During 2007 RWSS department was separated from PR department, creating a department exclusively to implement the RWSS development activities and technical assistance in operation and maintenance.

The GoI has been provided funds from time to time by initiating new schemes as detailed below.

- A National Water Supply and Sanitation programme was introduced in the social welfare sector during the year 1954.
- Financial assistance to the states to carryout special investigations in the fourth five year plan to identify problem villages in the States is provided till 1973.
- Accelerated Rural Water Supply Programme was introduced (ARWSP) in the year 1977-78 and followed. Subsequently, the entire programme was given a Mission approach under the name National Drinking Water Mission (NDWM). Later NDWM was renamed as Rajiv Gandhi National Drinking Water Mission in 1986 along with ARWSP programme.
- In April 2009, the ARWSP has been modified as NRDWP i.e., National Rural Drinking Water Pogramme, for implementation of new guidelines during eleventh plan 2009-12.

#### **Evolution of Sanitation Programme:**

Sanitation programme was introduced in the health sector by GoI in the year 1954. The International Water Supply and Sanitation Decade programme was launched during 1981 with an objective to cover 25 % of rural population. Rural sanitation was transferred from Ministry of Urban Development to the Department of Rural Development in

1985. Department of Rural Development was made as nodal agency for coordinating sanitary latrine programme in 1986. In the same year, a programme was launched to construct one million sanitary latrines for SC/ST population and to provide 2,50,000 additional latrines to health sub-centres, schools, and anganwadis under NREGP. During the year 1987, Rural Sanitation Programme was included in the State sector under MNP. Central Rural sanitation Programme (CRSP) was launched in 1986 to provide latrines to SC/ST families, BPL families with 100 % subsidy and general public with subsidy per the existing rules. Under this programme, it was planned to construct pour flush water seal latrines at an estimated cost of about Rs.1200 per latrine. During the year 1990-91, the norms under CRSP were modified with changed cost of individual latrine at Rs.2500 and subsequently, the CRSP guidelines were revised in 1993. Later in the year 1995, the programme envisaged an integrated approach to rural sanitation – construction of sanitary complexes for women, establishment of rural sanitary marts, total sanitation of villages and organisation of IEC/health education campaigns.

GoI had subsequently restructured the CRSP as Total Sanitation Campaign (TSC) programme in 1999 with the underlying principle of demand driven and people oriented approach to raise the awareness among village communities and households to improve personal and household hygienic practices to sanitation facilities and to promote conservation and recycling of household waste water. The scheme provided matching contributions from the State and GoI for individual latrines. Provision was also made for beneficiary contribution to the extent of 20% with the balance 80% being equally met by the state and the centre.

#### **Status of Rural Water Supply and Sanitation in Andhra Pradesh:**

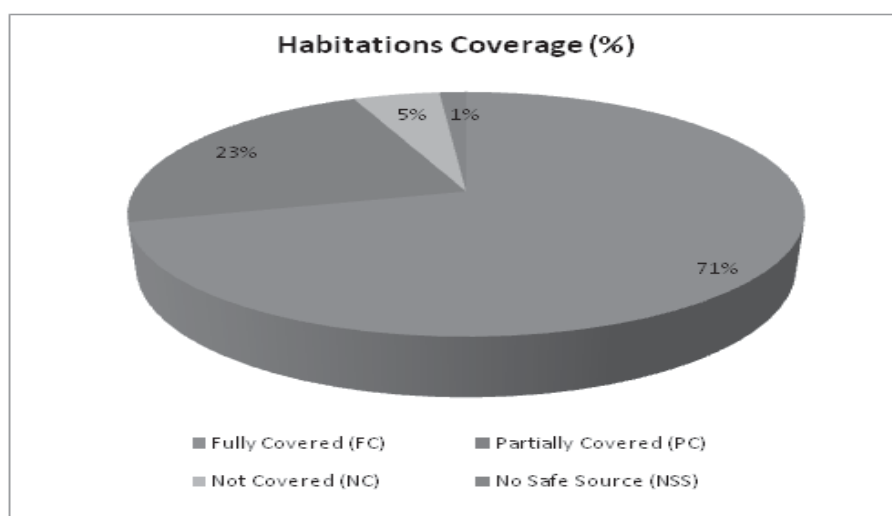
##### **Coverage and access of water supply:**

About 78 percent of rural population have access to piped water schemes to meet drinking and domestic water needs. Others use water from hand pumps, (fitted with tube wells or open wells) while a small section use village tanks and springs. There is a high dependence on groundwater for drinking and other domestic purposes. In most of the villages, water is distributed through Public Stand Posts (PSPs). At present, about 60 % of water supply schemes are based on Groundwater as source, 38% are covered with surface sources and 2% are with other sources like rainwater storages, etc., Further, as on 1.04.2009, about 1,097 habitations are not having any safe source, out of which 979 are fluoride affected habitations and 118 are salinity affected habitations. Apart from providing treated surface water to fluoride/salinity affected habitations, RWSS is also implementing latest technologies for de-fluoridation/de-salination of ground water/ excess TDS surface water by using treatment plants such as Reverse Osmosis, techeneque etc., for supplying safe drinking water to the rural people.

### Water Supply- Coverage of Habitations:

Out of the 72,147 habitations in the state, 51,222 are Fully Covered (FC); 16,257 are Partially Covered (PC); 3,571 habitations are Not Covered (NC) and 1097 habitations have No Safe Source (NSS) of water supply for drinking purpose as on 1.04.2009. The current status of habitation coverage is presented in fig.6.

Fig. 6 Habitation coverage through rural water supply (2008)

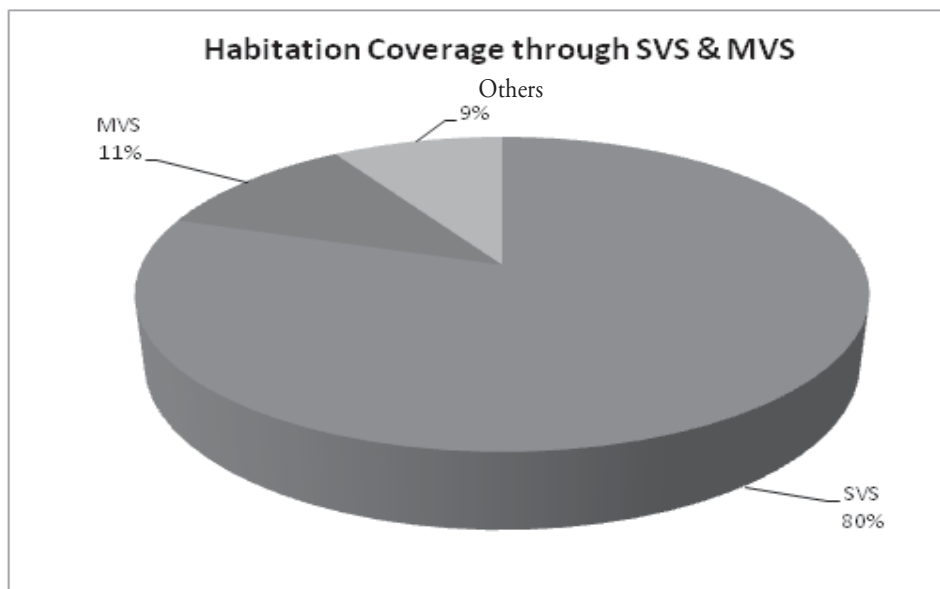


(Source: Department of RWSS 2008, GoAP)

### Water Supply- Scheme coverage:

In Andhra Pradesh, almost 80% of the habitations are served through Single Village Scheme (SVS) and Mini Piped Water Supply Schemes. SVS is the most preferred option for the RWSS department provided the source is sustainable in terms of implementation and management. Multi Village Schemes (MVS) are predominantly dependent on surface water source. In terms of habitations coverage, out of total 72,147 habitations, 80% (57,718 habitations) are covered through SVS and 7,936 habitations (11%) through MVS. Scheme-wise coverage of habitations is presented in fig.7.

Fig. 7: Scheme – wise coverage



(Source: Department of RWSS 2008, GoAP)

**Infrastructure (Assets) created:**

In all Rs. 658.30 millions were spent since 1969 up to 2007 for creation of drinking water assets in the state. The infrastructure created by the department as on 1.04.2008 is as follows.

➤ Hand pumps	3,26,506
➤ SVS schemes	47,836
➤ MVS schemes	476
➤ MVS schemes (in execution)	233

Of the above schemes, surface water schemes constitute about 23% while Groundwater Schemes form about 72%. The approximate amount spent in creating rural water supply and sanitation infrastructure including rehabilitation and extension during the last five years (2004 to 2009) is over Rs 30,000 millions. The year wise expenditure is given in table.3

**Table.3 Year wise expenditure (Rs. In Millions)**

Sl. No	Year	No. of Works/	Est. Cost	Expenditure	Habs Covered
			<b>Project</b>		
1	2004-05	4244	7832.00	5566.20	4129
2	2005-06	2382	6026.50	5036.30	3294
3	2006-07	12310	1756.10	5441.00	5198
4	2007-08	13931	20834.20	7998.50	7070
5	2008-09	9076	12552.70	9512.00	17983
	<b>Total</b>	<b>35714</b>	<b>63761.50</b>	<b>33554.00</b>	<b>37674</b>

(Source: Department of RWSS 2008, GoAP)

The habitations (72,147) in terms of water supply coverage are categorized in to four categories namely Fully Covered (40 lpcd), Partially Covered (10 – 39 lpcd), Not Covered (less than 10 lpcd), and No Safe Source habitation means water quality affected. The coverage of habitations is given in table.4 below.

**Table.4 Coverage of Population as on 1.04.2008**

Category	Habitations	Population in million	% population
Quality affected (NSS)	1097	1.05	1.9
Not Covered (NC) getting <10 lpcd	3571	4.3	7.7
Partially covered (10-40lpcd)	16257	194.8	33.1
Fully covered ( 40 lpcd )	51,222	31.9	57.3

(Source: Department of RWSS 2008, GoAP)

However, the categorization is mostly based on designed engineering parameters and does not consider equity, supply tree and duration, distance from the source, seasonal variation in water quantity, quality, floating population, etc. Percentage of population dependent on various types of drinking water sources namely major reservoirs and canals, infiltration wells, groundwater in various categories and unorganized and unsafe is presented in graphical form in fig.8

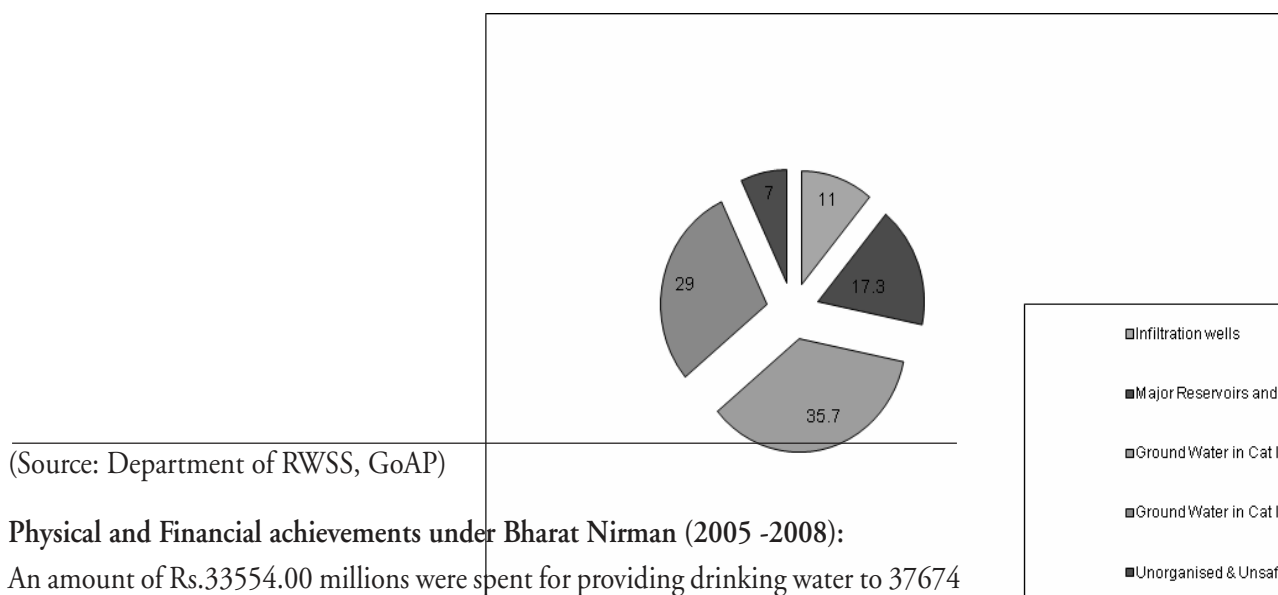
**Ongoing Programmes (2009 - 2010):**

About 13375 works costing Rs.30197.50 millions are on hand to cover about 9513 habitations. About 3943 habitations are covered till January 2010 incurring an expenditure of Rs. 3058.10 millions. The balance works are in progress. The programme wise details are as follows:

(Cost;Rs.in millions)

SL.No	Program	Works	Est.cost	Habitations
1	ARWSP-Normal	10203	4468.30	4070
2	ARWSP-Projects	83	3797.60	1191
3	SMP	35	2315.50	436
4	DDP	4	367.00	170
5	HUDCO	14	6497.80	1714
6	NABARD	55	3078.90	1048
7	TFC	40	2685.90	581
8	Others	26	3826.70	303
9	Sustainability	3035	92.50	
<b>Total</b>		<b>13375</b>	<b>30197.50</b>	<b>9513</b>

Fig.8 Types of Sources





**Table.5 Financial Achievement (Rs in Million)**

Sl. No	Year	Number of works/Projects	Estimated Cost	Expenditure (Rs.in millions)
1	2004-05	4244	7832.00	
2	2005-06	2382	6026.50	1304.8
3	2006-07	12310	17516.10	2271.0
4	2007-08	7702	20834.20	3523
5	2008-09	9076	12552.70	9512.00
<b>Total</b>		<b>35714</b>	<b>64761.50</b>	<b>33554.00</b>

(Source: Department of RWSS, GoAP)

**Table.6 Physical (Habitations)Achievement**

Sl. No.	Year	No of Projects/ Works	Habs Covered
1	2004-05	4244	4129
2	2005-06	2382	3294
3	2006-07	12310	5198
4	2007-08	7702	7070
5	2008-09	9076	17983
<b>Total</b>		<b>35714</b>	<b>64761.50</b>

(Source: Department of RWSS, GoAP)

Out of 15,523 quality affected habitations identified during the year 1991, 13492 Quality affected habitations were brought to Fully Covered status under Accelerated Rural Water Supply programme.

The Government of India has launched Swajaldhara programme during December 2002 for taking water supply schemes under reforms initiatives with a community contribution of 10% of the estimated cost of the schemes. About 4107 schemes were taken up costing Rs.2022 millions (GoI share Rs.1811.5 millions and community contribution Rs.210.5 million). Out of which 3597 schemes were completed incurring an expenditure of Rs.1662.2 millions up to April 2008.

**Action Plan for Coverage of all Habitations:**

The Action plan for the year 2009-2010 is prepared to cover 8500 Habitations as detailed below.

Sl.No	Year	Quality affected habitations	Not Covered habitations	Partially Covered Habitations	Total Habitations
1	2009-10	197	2670	5633	8500

**Sanctions and Coverage of Habitations Up to Date:**

Sl.No	Item	Total Habitations
1	Balance Habitations to be covered (as on 1.04.09)	20925
2	Habitations covered by sanctions	9513
3	Habitations sanctioned during 2009-10	Nil
4	Target for 2009-10	8500
5	Habitations yet to be sanctioned	11412

**SPECIAL works with Latest Technologies:****Ooranies (Traditional Village Ponds)**

35 Nos Oorany works are sanctioned at an estimated cost of Rs.21.00 millions in 35 fluoride affected habitations . It is a latest technology implemented successfully in Tamilnadu. The works are in progress.

**Reverse Osmosis Technology**

About 150 Reverse Osmosis Plants are proposed to be installed in fluoride problem habitations at an estimated cost of Rs.155.00 millions .

**Roof Top Rain Water Harvesting Structures**

All Schools in over-exploited and critical villages are being proposed with Roof Top Rain Water Harvesting Structures. About 3000 structures are sanctioned with a cost of Rs.90.00 millions and works are in progress.

**Coverage of Scheduled Caste and Scheduled Tribe Areas:**

The allocation for the year 2008-09 under SC and AP is Rs.1205.90 millions and expenditure incurred is Rs.1272.88 millions. The allocation for the year 2008-09 under TSP is Rs.491.29 millions and the expenditure is Rs.504.80 millions.

### Critical gap Works:

Certain works sanctioned under various grants could not be completed for want of additional sanction of funds due to escalation of price in steel & cement, amount required for electricity connections and additional amount due to extension of schemes to new locations. The Government has permitted to spend Rs. 40 millions per each district under TFC for completion of such works

### Drinking Water to Rural Schools:

Potable Drinking Water is provided to 20863 schools against the target of 32838 schools incurring an expenditure of Rs.717.8 millions up to March 2008. Sanitation facilities are provided in 65916 schools.

### Construction and O&M cost of water Supply Schemes:

- The per capita cost of Single Village Scheme (SVS) is about Rs. 945 as per the provisions and norms of RWSS Department while the O&M cost worked out to Rs.30 per household per month and the responsibility vested with the Gram Panchayats
- The per capita cost of Multi Village Scheme (MVS) with common facilities for entry to villages is about Rs. 2451. The constructing agency is liable for O&M of the scheme for the first two years with their own expenditure. After the defects liability period, the scheme is transferred to the Zilla Parishad (ZPs) for further maintenance. The ZPs outsource the responsibility of O&M to the contractors on yearly basis following the tendering process.
- The GoAP is releasing Rs.600 per hand pump to Gram Panchayat for maintenance of hand pumps.

The average Economic and Capital costs of various types of water supply schemes are presented in table.7

**Table.7 Average economic cost of various types of water supply schemes**

Sl.No	Types of Schemes	Per capita cost (Rs)	Per capita Maintenance cost (Rs)
1	MVS	2500 – 2800	58 – 62
2	SVS	900 – 1200	32 – 34
3	Hand Pumps	200	5 – 6

(Source: Department of RWSS, GoAP)

The Major Issues Concerning to O & M are:

- Inadequate Operation and Maintenance (O & M) due to shortage of Funds.
- About 20 % of the schemes, including schemes transferred to Gram Panchayats (GPs) are not fully operational and require rehabilitation and augmentation.
- Communities lack sense of ownership of drinking water assets created by the RWSS.
- Lack of awareness among the rural people regarding the quality of water and its health Hazards.

#### **Rural Sanitation:**

The present level of sanitation coverage in the state is around 50 %, while the rural household coverage is about 30 % (and only half of the rural households with latrines are using them regularly). This implies that still more than 80% of rural population resort to open defecation with its associated risks relating to public health and also pollution of water supply sources. This problem is more acute in densely populated settlements.

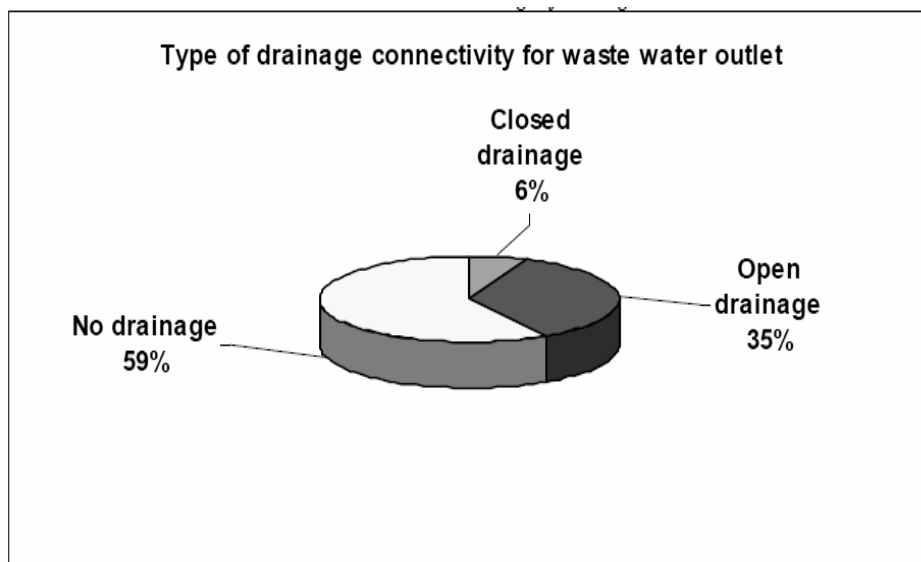
In addition to the in-sanitary disposal of human waste, the sanitation situation in rural areas becomes more acute as:

- Wastewater generated by households including cattle sheds flows into open surface drains that often get choked, leading to stagnation of wastewater in the lanes and by-lanes.
- Facilities for safe disposal of enormous amounts of animal, agriculture and Household solid waste are absent.
- Construction of dry pits to discharge sullage is done without any consideration to sanitary aspects
- Discharge of septic tank effluents into open drains creates in-sanitary conditions

#### **Coverage of environmental sanitation:**

Wastewater generated by households including cattle sheds flows into open surface drains. Currently, only 6.3% of rural household are connected to the closed drainage system. The connectivity for waste water disposal for rural households has been presented in the graph below.

Fig.9 Coverage of drainage



(Source: Department of RWSS, GoAP)

In view of the above, the RWSS department has established as per the guidelines of GoI, a State Water and Sanitation Mission to look after water supply and sanitation programmes under reforms mode in the State.

#### **Water Quality Monitoring and Surveillance:**

Water quality is as important as its quantity. Water quality problems are emerging due to over exploitation of groundwater, especially high concentrations of fluorides, salinity, nitrate, Iron, etc and vary to a great extent both in space and time. Therefore, it is highly essential to monitor regularly the water quality of drinking water sources. The Rural Water Supply wing of PRED has established 51 water quality-testing laboratories spread over all the districts of Andhra Pradesh for testing drinking water samples. 14 of these laboratories are established with Government of India (GOI) funding, while the remaining 37 labs are established with State's funds.

The Department of Drinking Water Supply, Ministry of Rural Development, GOI launched the National Rural Drinking Water Quality Monitoring and Surveillance program (NRDWQM & SP) during the year 2005-06 to build capacities of Gram Panchayats and to involve in water quality testing and monitoring. The State Water and Sanitation Mission has been identified as a nodal agency for implementation of NRDWQM & SP in the state under the supervision of State Referral Institute. The

key elements of a surveillance programme include monitoring, sanitary survey, data processing, evaluation, remedial and preventive actions and institutional analysis

#### **Water Quality Monitoring:**

The 51 water quality-testing laboratories established across the state are equipped to test physical and chemical parameters – Turbidity, Colour, Taste and Odour, Electrical Conductivity, Total Alkalinity, Total Hardness, Calcium, Chloride, Fluoride, Nitrate, Sulphate, Nitrite, Iron and Bacteriological Parameter - M.P.N. Coliform Bacteria per 100 ml., E. Coli per 100 ml. The H<sub>2</sub>S strip test is used to know the bacteriological quality.

#### **Analysis of drinking water sources:**

All drinking water sources are tested for bacteriological contamination using H<sub>2</sub>S vials once during Pre monsoon and once during Post monsoon. If any positive results are observed by using H<sub>2</sub>S vials during the bacteriological quality test, the water samples are sent to state level laboratory for further analysis.

Bacteriological and Physico – chemical analysis of MPWS/PWS/CPWS schemes are analyzed once in a quarter. Chemical analysis of all Hand pump sources is done once in a year.

#### **State Level Laboratory:**

State Level Laboratory has been established in the O/o the Project Director, State Water and Sanitation Mission, Hyderabad to supervise and monitor and guide the work of all the laboratories.

- Under the NRDWQM & SP, 10 % of the total samples, tested at the district /Division level laboratories in all the districts, are being tested at the State level laboratory for cross verification and analysis of some toxic trace elements Viz., Arsenic, Strontium, Chromium, Lead, Mercury and pesticides and insecticides in the water samples.
- In association with the Doctors from Nizam's Institute of Medical Sciences, Hyderabad, Scientists from National Institution of Nutrition, (ICMR), Hyderabad and Geological Survey of India, Hyderabad, State Level Laboratory has been conducting study of the high prevalence of kidney diseases and it's possible association with the chemical quality of the drinking water, in some rural areas of Prakasham, Nellore, Srikakulam and Ananthapur districts, where groundwater has been used for drinking purpose.

#### **Data Processing and Online Monitoring System:**

- The water quality data (both chemical and bacteriological), from all the Gram Panchayats in the district, are being sent to the district level surveillance coordinators in the District Head Quarters.
- The details of the Training programs at all levels under the HRD activities, distribution of water testing field kits (both chemical and bacteriological) to PRIs' and IEC activities are being put in the online monitoring system of DWSM.
- The source wise details of all the drinking water sources in the state are being finalized as base line data and it is expected to be completed by 30/09/2008. Based on this base line data of all the drinking water sources, water quality and sanitary survey data of all the drinking water sources from the field level and water quality data from the district level water testing laboratories will be obtained, processed and hosted in the online monitoring system of the Department of Drinking Water Supply, by the district level coordinator.

#### **Current M & E System:**

- Network connectivity is established up to Divisional level for communication of data.
- Video Conference facility is available to conduct meetings with all District Head Quarters simultaneously.
- Regular Monthly Reporting System is established in obtaining information.
- Habitations status, functioning of PWSS, CPWSS and Hand pumps.

#### **Database and MIS:**

- Development of different modules of **WATERSOFT** with NIC is under Progress "**Water Soft**" **Web Application** - "**WaterSoft**" (<http://jwst.ap.nic.in/pred>). GOI have approved NIC Project proposal (Rs.69.90 millions) for Design and Development of Web Application for Complete automation of RWS Sector work flow process from GOI to sub-division level for planning and execution of works under various grants and maintaining up to date Habitation Directory Status
- Monitoring with respect to progress of works and fund management
- Automatic generation of reports at all levels.

### Status of Water Soft Web application:

Modules completed and deployed

- ▲ Habitation Status
- ▲ Works/Projects Monitoring

Modules under testing and to be deployed

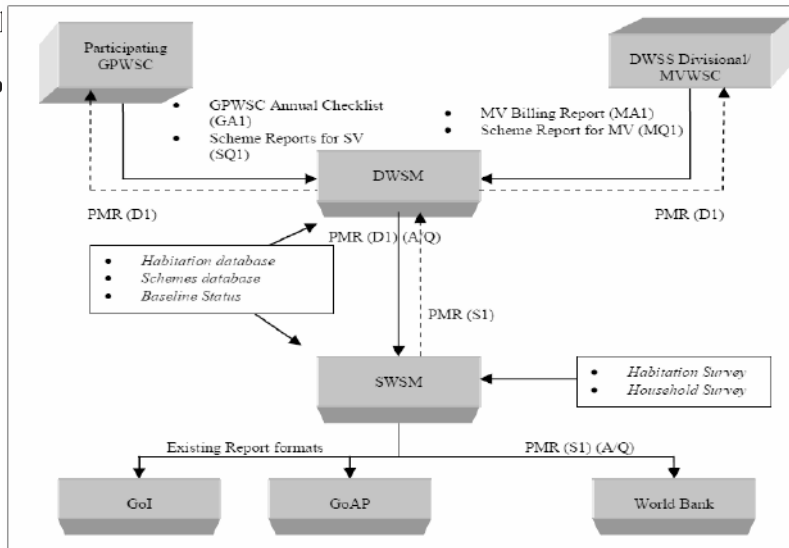
- ▲ Asset Management
- ▲ Water Quality Management
- ▲ Employee Database

Proposed Automation: Automation for MVS Monitoring

- On line observation and monitoring of source levels
- Observation of levels at Summer Storage Tank
- Observation of levels at Booster Stations
- Discharge at outlet chamber of filters
- Discharge at the taps through meters to know about leakages

The monthly progress reports both physical and financial achievements are collected and updated online at the Sub-division, Division and District level. The information flow for the reporting requirements of the

Fig.10 Flow o



(Source: Department of RWSS 2008, GoAP)



### **New Initiatives in RWSS sector:**

Rural Water Supply is an important development programme of the Government and covers whole state of Andhra Pradesh. Over a period of time, the need for giving a better focus to rural water supply is felt by the Government as still sizable number of villages need to be provided with quality drinking water. Realising this, Government have issued G.O No. 428, PR and RD Dept dated 11.10.1996 creating separate division of Rural Water Supply from PR Division.

Though separate RWS division was created in 1996, the division of PR and RD Engineering Service did not take place to provide required focus and attention to drinking Water Supply and Sanitation. Hence, Government have decided to trifurcate PR and RD Department into Panchayat Raj, Rural Development and Rural Water Supply Departments. Accordingly Panchayat Raj and Rural Development Engineering Service gets bifurcated into Panchayat raj Engineering Service and Rural Water Supply Engineering Service as per the G.O Ms. No. 508 dated 18th July 2007.

### **New Vision and Strategy of the RWSS Department:**

The Government of Andhra Pradesh (GoAP) envisioned a decentralized and demand-driven approach for the RWSS sector and related policy notes were issued in October 2006. The Key elements of the Vision are:

- (i) To significantly improve the service levels and coverage
- (ii) Devolution of powers to Panchayat Raj Institutions (PRIs)
- (iii) To recover full O & M cost and sharing of capital cost (taking into consideration affordability, particularly of disadvantaged groups); and
- (iv) To improve the "accountability framework" by clarifying roles and responsibilities of various actors of the RWSS sector at the state, district and village levels.

The two significant changes introduced are:

- i) Transfer of RWSS infrastructure to PRIs and communities and with complete O & M responsibility.
- ii) Shifting the role of RWSS Department from provider to a facilitator (extending technical assistance to PRIs).

### **Institutional and implementation arrangements**

The institutional arrangement centers around PRIs taking on the key roles of service delivery (GPWSC at the village level and MVWSC for common facilities in MVS,

both being sub-committees of PRIs). However in the case of large and complex MVS, RWSS Department has direct responsibility to create the assets. There also the community will play a significant role in the asset creation process. Over a period of time, RWSS Department will assist PRIs to substantially improve their capacity to, manage their responsibility.

State level and district level Water and Sanitation Missions (WSMs) will be the key governance institutions. PRIs with RWSS Department assistance will be the key entities for operations.

RWSS Department would function on a regional structure basis, enhancing accountability and clarifying roles and responsibilities of the staff at all levels. Enhanced powers of technical sanction and tender committees would increase the efficiencies of operations. The proposed institutional setup under the above is given in Fig. 11

The arrangements proposed in the above figure have been evolved after substantial internal stakeholder's discussions, who considered different institutional options. The institutional arrangement centres around PRIs taking on the key roles of service delivery (VPWSC at the village level and MWSC for common facilities in multi-village schemes). RWSS department's role is expected to be transformed substantially from a creator of assets and provider of services to a facilitator in both asset creation and service provision. Only in the case of large and complex MVS, the RWSS will have direct responsibility to create the assets in partnership with the community. Over a period of time, RWSS Department will assist PRIs substantially to improve their capacity to manage their responsibility.

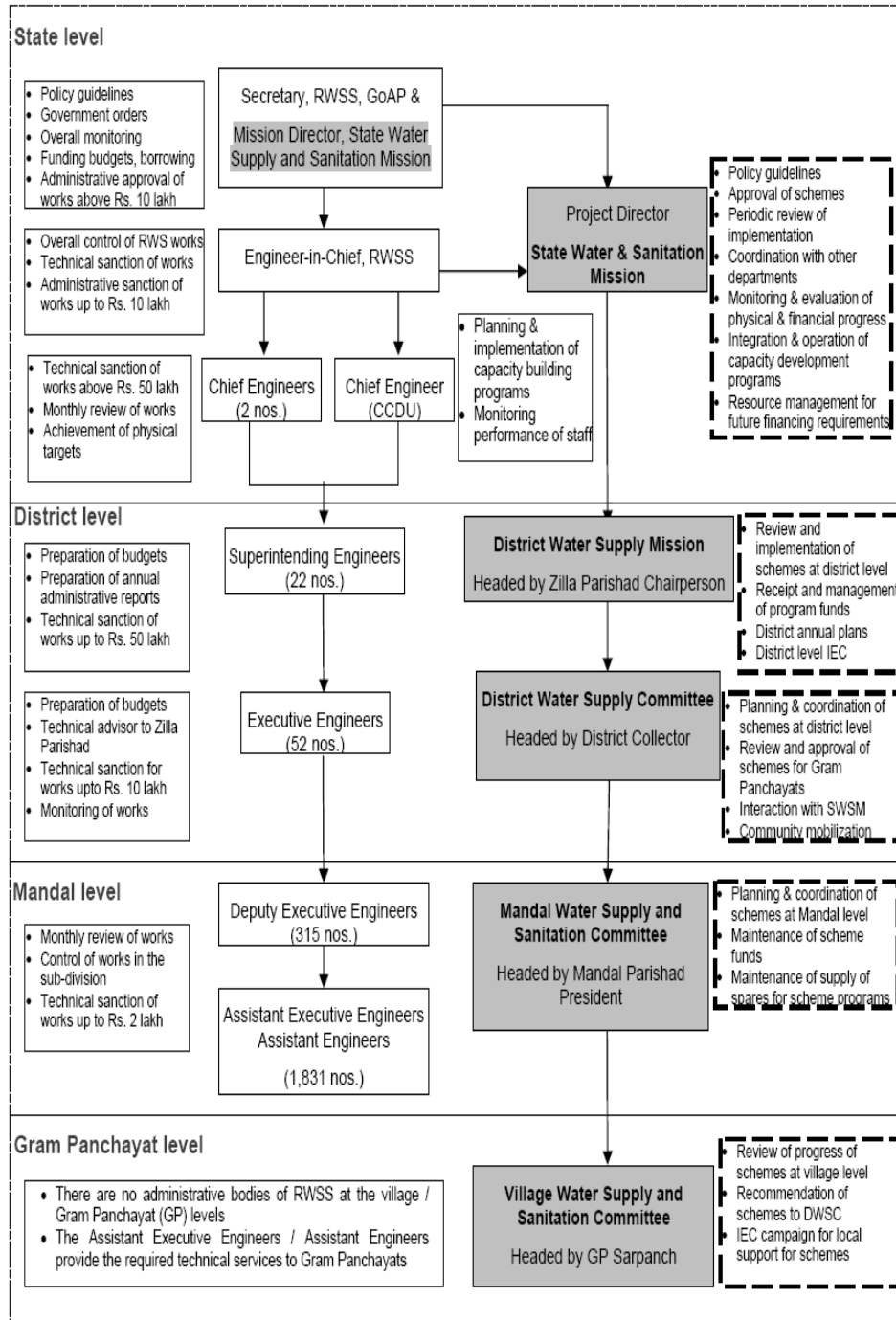
#### **Institutional Setup:**

The roles and responsibilities of key officials involved in the rural water supply at various levels are given below.

State level: At the Government level, Secretary, RWSS department is the head of the institution. Apart from policy making function, he has the overall responsibility for the performance of the sector. The Engineer-in-Chief (E-in-C), RWSS department and the Chief Engineers (CE) are the key personnel at the state level responsible for overall program management and implementation.

District level: The Superintending Engineers (SEs) and Executive Engineers (EEs) - in hierarchical order - are responsible for implementation of the sector programs at the district level. The officials at the district level play an important role in monitoring and evaluation, besides executing the projects.

Fig.: 11 Institutional arrangement



(Source: Department of RWSS, GoAP)

Mandal and GP level: The Deputy Executive Engineers (DEEs) are in charge of all RWSS activities in about 2-3 Mandals in each district. The DEEs report to the EEs and SEs at the sub-divisional and district levels. The DEEs are assisted in their activities by Assistant Executive Engineers (AEEs) / Assistant Engineers (AEs) who are in charge of RWSS works in a few selected GPs allocated to them.

For Swajaldhara and Total Sanitation Campaign (TSC), the Institutional arrangement is as per Government of India guidelines with a state level water and sanitation mission (SWSM) for overall governance and policy supported by district level DWSMs and DWSCs. Under these reform oriented programs, the operations are carried out by the PRIs with technical assistance from RWSS Department.

#### **I. The Medium Term Sector Program (MTSP):**

The current system of financing through a number of different RWSS programs has resulted in parallel implementation with varying and conflicting procedures and results. This has led to different programs undermining each other and adversely affecting demand-driven and cost sharing approaches under Swajaldhara and TSC schemes. Based on the lessons learnt from new approaches, the GoAP is keen to adopt a uniform delivery structure across the state. In the past few years, the Government of Andhra Pradesh (GoAP) has taken a number of steps to significantly improve the rural water and sanitation situation, including the important policy decisions for greater devolution of powers to the Panchayat Raj Institutions (PRIs). GoAP also plans to enhance investments to achieve increased coverage and access to both water supply and sanitation services in rural areas. In this context, GoAP has envisioned a Medium Term Sector Program (MTSP) for the RWSS sector involving further reforms and also investments. GoAP proposes to adopt a sector wide approach wherein all funding for the sector will support a single sector policy and rules of engagement in creation and maintenance of RWSS assets and operations and management of RWSS services in the state for the program period (2009 - 2014). The expected outputs from the programme are presented in table 8

#### **Funding arrangements:**

The total estimated cost towards all the components under MTSP project works out to Rs 43360 millions. An amount of Rs.32750 millions, will be mobilised by dovetailing funds from the existing programmes of GoAP and GoI such as, ARWS, TSC, TFC, etc. leaving a funding gap of Rs.10610 millions proposed for World Bank Assistance.

The year wise requirements and availability of funds for the three major components are detailed in table.9 and 10.

**Table:8 The year wise anticipated achievements**

Sl.No	Financial Year	Outputs
1	2009 to 2011	<ul style="list-style-type: none"> <li>● Completion of identified ongoing projects by 31st march 2011.</li> </ul>
2	2009 to 2011	<ul style="list-style-type: none"> <li>● 7,519 (NC/NSS/PC) habitations will be provided with water facilities through SVS (70%) and MVS (30%).</li> <li>● All NSS, NC and PC1 habitations will be fully covered (4,617)</li> <li>● 12% of remaining PC habitations will be upgraded to FC category.</li> <li>● 14,000 schools will be provided with drinking water facilities.</li> <li>● Rehabilitation / rejuvenation /repair of 4,629 SVS and 2,514 MVS.</li> <li>● Taking up of 4,410 groundwater recharge structures to augment Groundwater sources.</li> <li>● Protective use of 50 catchment areas.</li> <li>● Installation of 1,000 bulk meters.</li> </ul>
3	2009 to 2011	<ul style="list-style-type: none"> <li>● Construction of Individual Sanitary Latrines (ISL) in 701,602 BPL households</li> <li>● Providing sanitation facilities in all schools (49,570) and Anganwadis (11,939).</li> <li>● 55 selected major GPs will be provided with pavements, drains, solid and liquid waste management (SLWM)</li> <li>● Construction of soak pits in households in 12,137 habitations.</li> <li>● Laying of underground drainage in 55 mandal head quarters.</li> </ul>

(Source: Department of RWSS, GoAP)

**Table.9 Total fund required (Rs. millions)**

	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Sector development	180	180	190	180	180	910
Investments for Infrastructure (Ongoing program projects + New projects+ Augmentation and rehabilitation and sanitation and hygiene.	8710	8710	7760	7830	8410	41420
Project Management	220	220	200	190	200	1030
<b>TOTAL</b>	<b>9110</b>	<b>9110</b>	<b>8150</b>	<b>8200</b>	<b>8790</b>	<b>43360</b>

( Source: Department of RWSS, GoAP)

**Table.10 Total availability of funds and Gap (Rs. millions)**

Available Funds	2009-10	2010-11	2011-12	2012-13	2013-14	Total
ARWS	3000	3000	3000	3000	3000	15000
AUWSP, RIDE, and HUDCO	3000	3000	3000	3000	3000	15000
TSC (GOI)	150	150				300
TFC	880	880				1760
Community contribution	80	80	150	200	180	690
Total availability	7110	7110	6150	6200	6180	3,2750
Total Requirement	9110	9110	8150	8200	8790	4,3360
Gap	2000	2000	2000	2000	2610	1,0610

(Source: Department of RWSS, GoAP)

### Initiatives for Sustainability:

The various measures initiated by RWSS Department for sustainability of water supply schemes are stated in table.11

**Table.11 Measures initiated for sustainability of Water Supply Schemes**

Initiatives	Challenges
1. Introduction of demand responsive approaches.	<ul style="list-style-type: none"> <li>● To prepare the community towards ownership</li> <li>● To involve and build awareness among the communities on various processes and decision making at different stages of project cycle</li> <li>● To create an enabling environment among the communities.</li> </ul>
2. Changing roles of RWSS from provider to facilitator.	<ul style="list-style-type: none"> <li>● Gradual withdrawal from using standard estimations and to develop projects based on sites specific conditions considering future settlements.</li> <li>● In-depth analysis of local conditions and listing of alternative options with details.</li> <li>● Forecasting risks on account of climate change / load shedding / technical failures and developing mitigation strategies.</li> <li>● Gradual withdrawal from execution and taking advisory role in protection and O &amp; M activities.</li> </ul>
3. Developing a strong social audit team (Transparency and Accountability)	<ul style="list-style-type: none"> <li>● Display the disaggregated costs of the project.</li> <li>● Develop appropriate O and M plan.</li> <li>● Mobilization of financial resources.</li> <li>● Allocation of funds on priority basis.</li> <li>● Preparation of people's estimation.</li> <li>● Display balance sheet.</li> <li>● Establishing complaint redressal mechanism</li> </ul>

4. 100% for O & M cost	<ul style="list-style-type: none"> <li>● To build capacities of the communities to come out of dependency syndrome</li> <li>● To educate communities on health and other related impacts of proper water supply and hygiene through IEC activities</li> <li>● To generate funds for O&amp;M</li> <li>● To build community capacities on water quality aspects and quality control.</li> </ul>
5. Devolution of O & M to PRI.	<ul style="list-style-type: none"> <li>● Building technical skills of PRI's for effective O&amp;M and Preparation of Plans.</li> <li>● Creation of appropriate corpus fund for O&amp;M.</li> </ul>
6. Promotion of Rain water harvesting structures such as percolation tanks, subsurface dykes, check dams, roof top water harvesting, oranies in quality affected villages, etc,	<ul style="list-style-type: none"> <li>● Identifying location specific rain water harvesting structures in relation to geomorphology.</li> <li>● Regular maintenance of the structures for their effectiveness.</li> <li>● Roof water harvesting leading to common pool resources.</li> <li>● Developing network of village drainage and its maintenance.</li> </ul>
7. Introduction of Water Land and Tree Act (WALTA) for safeguarding drinking water sources.	<ul style="list-style-type: none"> <li>● Training of Gram Panchayats and VWSC on WALTA and awareness for effective implementation.</li> </ul>
8. IEC activities on large scale.	<ul style="list-style-type: none"> <li>● Development of appropriate training manuals on different aspects and promoting hands on training to school children at high school level.</li> </ul>
9. Encouraging the Grampanchayats for taking up drinking water quality monitoring in rural areas.	<ul style="list-style-type: none"> <li>● Provision of quality testing kits to GP and provide training on how to use.</li> <li>● Training on drinking water quality standards and water quality monitoring and surveillance programme</li> </ul>
10. MIS and Online monitoring	<ul style="list-style-type: none"> <li>● Development of MIS at division level and village level for problem identification and suggesting remedial measures.</li> </ul>

(Source: Department of RWSS, GoAP)



#### **IV Major issues of RWSS Sector:**

The water supply coverage of habitations and sanitation is dynamic and changes with time. In spite of best efforts by the Government, quality affected habitations and partially covered habitations are re-emerging due to man's intervention with the nature and improper management of WASH service delivery systems. As a result, about 24654 habitations slipped into either to PC or NSS or NC from FC category during the span of last 10 years. The reasons for such slippage are due to unsustainability of source, falling quality of groundwater, increases in population and maintenance failures.

##### **a. Source sustainability:**

- Well density increased from <5 wells/Sq Km to >20 wells/Sq Km in last 2 decades.
- The dug wells yield reduced from 60 -150 cu.m/day to 20-40 cu.m/day and that of bore wells from 2.5 lps –10 lps to 0.8 lps-2.5 lps.

##### **b. Slippage:**

- Most of the rural water supply schemes are formulated and built using groundwater (nearly 75 % as on 2003) as source. Nearly half of the groundwater based schemes are falling in “over-exploited, critical and semi-critical” areas identified by the CGWB and SGWD.

##### **c. Water quality:**

- Competing demands of groundwater for various purposes resulting in reduced well yields and deterioration of water quality especially fluoride and salinity problems. Nearly 3 percent of the habitations rely on water sources with excess fluoride and/or salinity.
- Deterioration of water quality in industrial areas and ingress of saline waters into fresh waters along the coastal belt.
- Pollution of drinking water sources

##### **d. Operation and Maintenance (O&M):**

- Inadequate operation and maintenance (O&M) mainly due to shortage of funds. The other general problems include such as shortage of staff and lack of dedicated staff, and insufficient capacities of communities.

#### **AP Rural Water Supply and Sanitation project with World Bank Assistance:**

The total project outlay is Rs. 10610 million with a project period of 5 years, Commencing from 2008-09. The three major components of the project are;

● Infrastructre Development	250 millions
● Sector development	9750 millions
● Program management	610 millions
<b>Total</b>	<b>10610 millions</b>

**Infrastructure Development:**

- Building or rehabilitating water supply systems.
- Source strengthening measures.
- Health and hygiene awareness promotion.
- Incentive for construction and use of household latrines.
- Solid and liquid waste management.

**Sector Development:**

- Training and Capacity Building programs
- IEC activities
- Sector Information Systems
- Water quality and water source Monitoring system
- Sector studies.

**Program management:**

- Support to Project Support Unit for implementing the project.
- Support to DPSUs at district level.
- Operational and Administrative costs.
- Development and Operation of financial management system and
- M&E and Impact analysis system.

**Unit Costs:**

The unit costs adapted for working out cost estimate for various components under APRWSS are given in table.14

**Table.14 unit cost**

Description	Unit	Amount
SVS (PC to FC)	Rs. lakh per habitation	8.80
SVS (NC to FC)	Rs. lakh per habitation	9.90
SVS (NSS to FC)	Rs. lakh per habitation	14.30
MVS common facilities	Rs. lakh per habitation	22.00
MVS IVF	Rs. lakh per habitation	6.60
Innovative technology	Rs. lakh per habitation	20.00
Schools	Rs. lakh per Schools	0.35
Augmentation SVS	Rs. lakh per habitation	5.00
Augmentation MVS	Rs. lakh per habitation	5.00
MVS (Bulk Meters)	Rs. lakh per bulk meter	0.15
Improving Groundwater source	Rs. lakh per source	0.50
Catchment area protection for surface source	Rs. lakh per catchment area	10.00
Roof top rain water harvesting structures	Rs. lakh per structure	0.15
Incentives / Awards to improve OandM	Rs. lakh per GP	0.35
Disinfection facilities	Rs. lakh per facility	0.50
Individual Sanitary latrines (ISL)	Rs. lakh per ISL	0.03
School Sanitation	Rs. lakh per school	0.20
Balwadis Sanitation	Rs. lakh per Balwadi	0.10
Pavements, drains and SLWM	Rs. lakh per GP	30.00
UGD and SLWM	Rs. lakh per mandal headquarters	250.00

(Source: Department of RWSS 2008, GoAP)

**State Water and Sanitation Mission (SWSM):**

Sanitation is vital for human health. The health of the communities depends on the good sanitary conditions that exist in the village and its environment. Hence sanitation encompasses safe disposal of solid and liquid waste and maintaining clean environment, which promote health and hygiene of the community. Sanitation is one of the basic determinants of quality of life and human development index.

**Sanitation coverage:**

The all India water supply and sanitation coverage in India is about 88% and 33% respectively. About 36% of population have latrines within/attached to house. Only 21.9 % of rural population is covered with sanitation. In Andhra Pradesh, 57% of IHHLs of BPL are provided with sanitation while 44% of ABPL are covered. 66%

covered with ISLs, of which only 48% of ISLs are under usage and balance 18% are being used for other purposes. About 36 % of habitations have drainage facilities. However the drains are constructed in an haphazard way without following levels resulting in water stagnation in many habitations causing ill effects. 45 of habitations are covered with solid waste management facilities in unscientific way. 32% of people are dumping in front of houses and 44% are dumping at road side.

Although the concept of sanitation has undergone qualitative changes over the years, there has been slow progress in the sanitary conditions compared to rural water supply, as such State Water and Sanitation Missions were established as per GoI guidelines to have Mission approach with an objective to cover problem villages, improve performance and cost effectiveness of ongoing programme, promote conservation measures for sustained water supply of water duly involving PanchayatRaj Institutions where as earlier the department is focusing on coverage with least importance to sustainability.

State Water and Sanitation Mission (SWSM) is an apex body, functions under Chairman cum Mission Director and supported by Project Management / Monitoring Unit (PMU). The PMU is a compact unit consisting of multidisciplinary professionals hired on deputation or consultancy basis. The SWSM which will be initially responsible for managing the sector reforms, Swajaldhara and TSC projects in the pilot districts and Water Quality and Surveillance and later expanded its scope of work to the whole state.

#### **Objectives of SWSM:**

The primary objectives are:

- To promote institutionalization of community participation in Rural Water Supply and Rural Sanitation
- To assist the Sector Reforms and TSC districts of Andhra Pradesh in improving the quality of Rural Water Supply and Environmental sanitation service delivery
- To promote the long-term sustainability of the rural water supply and sanitation sector by providing assistance to sector reform and TSC districts.
- To build the capacity of the Gram Panchayats, to own the water quality testing field kits and to take up the full operation and maintenance responsibility of the water quality monitoring of all the drinking water sources in their respective rural areas.

The secondary objectives are:

- To build capacity of primary stakeholders, to plan, implement, monitor and maintain their own schemes

- To implement the appropriate policy and institutional reforms in phased manner
- To promote learning lessons in Pilot project districts throughout the State of Andhra Pradesh and delivery of demand responsive and sustainable service to project communities in Pilot districts.

The major functional responsibilities of SWSM are:

- To oversee and monitor the implementation of sector reforms, TSC and swjaldhara Projects and Water quality monitoring,
- To assist the Govt. of A.P in improving the quality of water Supply and environmental sanitation service delivery in rural areas,
- To provide over all policy guidance in sector reforms and TSC and assisting the Govt.of A.P. in identifying and implementing appropriate sector strategies,
- To Liaise and interact with the Govt. of India
- To Liaise and co-ordinate with various departments of the state Government and other sector partners,
- To formulate general rules and guidelines from time to time;
- To develop monitoring indicators including monitoring and evaluation plan,
- To co-ordinate among pilot projects and overall state level management of pilot projects, to ensure audit by competent authority,
- To build a management Information System (MIS) for sector and to analyze and disseminate sector information,
- To forge effective collaboration with the State / National level Research Institutions/agencies and encourage innovation / R & D studies,
- To harness resources internally and externally to support the financing needs of the sector.

#### **Total Sanitation Campaign (TSC):**

Total Sanitation Campaign programme is being implemented in all 22 districts with support from Govt. of India and State Govt as a comprehensive programme to ensure sanitation facilities in rural areas with broader goal to eradicate the practice of open defecation. It is opined that the programme is focused on construction of ISLs, however its usage is low due to lack of space and converted into storage rooms, bath rooms, etc., behavioral change, non availability of a adequate water, poor maintenance, etc.

The main objectives of TSC programme are;

- Bring about an improvement in the general quality of life in the rural areas.
- Accelerate sanitation coverage in rural areas to achieve the goals within a time frame

- Generate felt demand for sanitation facilities through awareness creation and health education.
- Cover schools / Anganwadis in rural areas with sanitation facilities and promote hygiene education and sanitary habits among students.
- Provide separate toilets for boys and girls
- Eliminate open defecation to minimize risk of contamination of drinking water sources and food
- Convert dry latrines to pour flush latrines, and eliminate manual scavenging practice, wherever in existence in rural areas.

### Physical achievements

The cumulative achievement under Total Sanitation campaign are as follows.

Sl.No	Item	Acievement
1	ISLs (APL)	208697
2	ISLs (BPL)	405893
3	School Toilets	98711
4	Balwadi Toilets	5427
5	Sanitary Complexes	908

### Efforts made for reaching the unreached:

To give benefit to the poorest of the poor, BPL (Below Poverty line) and APL (Above Poverty Line) families are identified based on the income and expenditure indicators. As per the Participatory Identification of Poor PIP report, 77, 53,714 are BPL families and 64, 26,989 are APL families

The total project outlay is Rs 12580.4 millions in which the GOI share is Rs. 7834.2 millions with matching State share of Rs 2826.1 millions and beneficiary share Rs 1920.1 millions. In addition to this matching state share, the State Government is extending back ended support as total subsidy at the rate of Rs 1550/- per ISL for construction of superstructure promoting bathroom also. The addl. State share amount is Rs 12073.8 millions. As on July-2008 Rs 2871.5 millions of central share, Rs 2940.2 millions of state share and Rs 1324.6 millions of beneficiary share was received. The expenditure incurred up to July-2008 is Rs 2353.6 millions, Rs 2227.1 millions and Rs 963.8 millions under central, State and beneficiary respectively.

About 3821216 BPL individual Households Latrines (IHHL) constituting 62% and 1635741 of ABPL- IHHL constituting 58% are provided with ISLs respectively. About 72959 schools and 3796 Balwadis are provided with sanitation facilities under TSC programme. The cumulative achievements under TSC program are summarized in table.15

**Table.15: The achievements under TSC program**

Sl.No	Description	TSC targets	Provided with sanitation	% achieved
1	Below Poverty Line (BPL) Individual Households (IHHL)	6,521,091	4,057,893	62%
2	Above Poverty Line ABPL) Individual Households (IHHL)	3,629,688	2,086,917	58%
3	Latrines for Schools	114,861	98,711	86%
4	Latrines for Balwadis	15,040	5,427	36%
5	Sanitary complex	575	908	157%
6	RSM/PCs	220	441	199%

(Source: Department of RWSS, GoAP)

**TSC components:**

The envisaged components and activities under TSC implementation are;

*(a) Start-Up Activities*

The start-up activities include conducting of preliminary survey to assess the status of sanitation and hygiene practices, people's attitude and demand for improved sanitation, etc

*(b) Information, Education and Communication*

Information, Education and Communication (IEC) are important components of the Programme. These intend to create demand for sanitary facilities in the rural areas for Households, Schools, Anganwadis, Balwadies and Community Sanitary Complexes

*(c) Rural Sanitary Marts and Production Centers*

The Rural Sanitary Mart is an outlet dealing with the materials, hardware and designs required for the construction of not only sanitary latrines but also other sanitary facilities, such as soakage and compost pits, vermi-composting, washing platforms, certified domestic water filters and other sanitation and hygiene accessories required for individuals, families and the environment in the rural areas. RSM should necessarily have those items, which are required as a part of the sanitation package.

*(d) Construction of Individual Household Latrines*

The programme is aimed to cover all the rural families. The construction of household toilets should be undertaken by the BPL household itself and on completion and use of the toilet by the BPL household, the cash incentive can be given to the BPL household in recognition of its achievement.

It is assumed that APL families, through motivation, will take up construction of the household latrines on their own. The IEC activities, will, however, cover all the families in the district, without exceptions. The funding pattern is presented in Table 16.

**Table 16: Incentive Pattern for IHHL**

Basic Low Cost Unit Cost	Contribution Percentage					
	GOI		State		Household	
	BPL	APL	BPL	APL	BPL	APL
Model 1: Up to Rs. 1500 (including superstructure)	60	Nil	20	Nil	20	100
Model 2: Between Rs. 1500/- and Rs. 2000/-	30	Nil	30	Nil	40	100
Above Rs.2000/-	Nil	Nil	Nil	Nil	100	100

(Source: Department of RWSS, GoAP)

*(e) Community Sanitary Complex:*

Community Sanitary Complex is an important component of the TSC. These Complexes, comprising an appropriate number of toilet seats, bathing cubicles, washing platforms, wash basins, etc, can be set up in a place in the village acceptable to women/ men/ landless families and accessible to them. The maintenance of such complexes is very essential for which Gram Panchayat should own the ultimate responsibility or make alternative arrangements at the village level. User families may be asked to contribute a reasonable monthly user charge for cleaning and maintenance

*(f) Institutional Toilets:*

School sanitation is an integral part of TSC project. Toilets in all types of Government Schools and Anganwadi centres will be provided.

*(g) Solid and Liquid Waste Management:*

One of the objectives of TSC is bringing about an improvement in the general quality



of life in rural areas. This objective cannot be met if the general cleanliness of villages is not maintained properly. Panchayati Raj Institutions (PRIs) are required to put in place mechanisms for garbage collection and disposal and for preventing water logging. The component wise funding pattern is presented in table.17

**Table.17: TSC Component-Wise earmarking and funding pattern**

S.No.	Component	Amount earmarked as percent of the TSC project outlay	Contribution percent		
			GOI	State	Beneficiary Household/Community
a.	IEC and Start Up Activity, Including Motivational Awareness and Educative Campaigns, Advocacy etc.	Upto 15%	80	20	0
b.	Alternate Delivery Mechanism (PCs/RSMs)	Up to 5% (Subject to a maximum of Rs. 35 Lakh per district for PC/RSMs and additional Rs.50 Lakhs as revolving fund for group lending activity)	80	20	0
c.	(i) Individual Latrines for BPL/ disabled households (ii) Community Sanitary Complexes	Actual amount required for full coverage	60	20	20
d.	Individual household latrines for APL	Nil	0	0	100
e.	Institutional Toilets including School and Anganwadi Sanitation (Hardware and Support Services)	Actual amount required for full coverage	70	30	0
f.	Administrative charges, including training, staff, support services, Monitoring and Evaluation etc.	Less than 5%	80	20	0
g.	Solid/Liquid Waste Management (Capital Cost)	Up to 10%	60	20	20

(Source: Department of RWSS, GoAP)

### Nirmal Gram Puraskar Awards:

To add vigor to the TSC, in June 2003, GoI initiated an incentive scheme for fully sanitized and open defecation free Gram Panchayats, Blocks, and Districts called the ‘ Nirmal Gram Puraskar’. The incentive pattern is based on population criteria and given below. The incentive provision is for PRIs as well as individuals and organizations that are the driving force for full sanitation coverage is presented in table.18

Table.18:Incentive pattern under Nirmal Gram Puraskar (Rs. In Millions)

Particulars	Gram Panchayat					Block		District	
	Less than 1000	1000 to 1999	2000 to 4999	5000 to 9999	10000 and above	Up to 50000	50001 and above	Up to 1.0 million	Above 1.0 million
PRI	0.05	0.01	0.02	0.04	0.05	1.00	2.00	3.00	5.00
Individuals	0.01					0.02		0.03	
Organizations									
other than PRIs	0.20					0.35		0.50	

(Source: Department of RWSS, GoAP)

- Andhra Pradesh state has received 10 Nirmal Gram Puraskars from the Govt.of India for the year 2005 – 06 and 143 NGPs for the year 2006 – 07, for achieving 100% sanitation in their respective Gram Panchyats.
- For the year 2007 - 08 , 1447 Gram Panchyats and one Mandal have filed applications.

### Shubhram – State Awards:

- Shubhram is an annual competition hosted by the Government of Andhra Pradesh to select the Cleanest Gram Panchayat, cleanest Mandal Parishads and Zilla Parishads in the state.
- The Shubhram awards will provide financial awards to Panchayat bodies at different levels (mandal, district, and state) for achieving safe and hygienic disposal of excreta, and solid and liquid waste. The awards will also recognize the participation of the community in the entire process.

**Eligibility for the award and categories of awards:**

- Any GP, which is free from open defecation, would be eligible to participate in the competition.
- Districts with the highest number of such Mandals can participate and Mandals with highest number of ODF villages can participate. The following are the awards:

**Table.19: Number of Awards**

Particulars	Number of awards	Prize amount (in Millions)
Cleanest GP at mandal level	1150	0.03
Three best GPs in each district	66	0.125/0.1 /0.075
Three best GPs in the state	3	0.25/0.2/0.15
One best mandal in a district	22	0.25
Three best mandal in the state	3	0.5/0.4/0.3
Three best districts/ ZP in the state	3	1/0.8/0.6
Reward for 5 individuals (officials and non officials) from each district	110	0.005

(Source: Department of RWSS, GoAP)

- The Government has placed utmost importance to sanitation, and thus is willing to allocate more than Rs. 60 Millions for its promotion.

**Evaluation process:**

- The evaluation will be done very stringently so that only the deserving GPs, Mandals, etc will bag the awards, and all measures will be taken to make the evaluation as objective as possible.
- The award money would be utilized to take up various development activities like improved waste management, recycling, water quality monitoring, etc.
- An additional incentive is that the Shubhram GPs will be recommended for the Nirmal Gram Puraskar awards.