

## Chapter 20

### DRINKING WATER SUPPLY AND SANITATION

Drinking water supply and sanitation is not only a basic necessity of life; it is also crucial for achieving the goal of "Health for All." The Ninth Five Year Plan envisages provision of potable drinking water to every settlement in the country and all possible measures for rapid expansion and improvement of sanitation facilities in urban as well as rural areas. This would be achieved through an appropriate mix of Central and State investments, institutional finance, strengthening of operation and maintenance system and more importantly by the involvement of communities at various stages of planning, implementation operation and maintenance. Though provision of safe drinking water and sanitation is the primary responsibility of State Governments and more specifically of the local bodies, Central Government has been supplementing these efforts by financial and technological inputs through four Centrally Sponsored Schemes: Accelerated Rural Water Supply Programme, Accelerated Urban Water Supply Programme for Small Towns below 20,000 population ( as per 1991 census) , Rural Sanitation Programme and Urban Low Cost Sanitation for Liberation of Scavengers. A few support programmes go with these schemes as well.

#### Performance During First Three Years of Ninth Plan.

##### Financial:

2. The Ninth Plan outlay for water supply and sanitation sector is Rs 39,538 crore - Rs. 30,024 crore under State and UT (Union Territory) Plans and Rs. 9,514 crore under Central Plan. Against this, the likely expenditure during the first three years has been indicated as 51.39 % in nominal terms and 45.40% in real terms as shown in the Table-1 below.

**Table –1**

#### Expenditure during the first 3 years of Ninth Plan

	9 <sup>th</sup> Plan Outlay	Likely Expdr. During first two years (1997-99)	Outlay for 1999-2000	Total for first three years (1997-2000)		Percentage to 9 <sup>th</sup> Plan outlay	
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				In nominal terms	In real terms	In Nominal terms	In real terms
State/UT Plans	30024	9207.10	5809.94	15017.04	13263.37	50.02	44.18
Central Plan	9514	3258.46	2044.95	5303.41	4687.86	55.74	49.27
<b>Total:</b>	<b>39538</b>	<b>12465.56</b>	<b>7854.89</b>	<b>20320.45</b>	<b>17951.23</b>	<b>51.39</b>	<b>45.40</b>

## Urban Water Supply and Sanitation

3. Urban water supply and sanitation have remained an important area of concern and allocation of funds is being made from the First Plan. The outlay for Urban Water Supply and Sanitation, which was Rs.43 crore in the beginning, increased to Rs.550 crore by the Fifth Plan. However, despite a rapid increase in the urban population, there was a gradual shift in priority from Urban to Rural Sector from the Sixth Plan onwards. The percentage share of the sector out of the total public sector outlay only showed a marginal increase from 1.28% to 1.38% between the First Plan and the Eighth Plan. In the Ninth Plan, this dramatically improved to 2.17%.

4. In the absence of any regular/periodical monitoring arrangement, it has not been possible to ascertain, with accuracy, the factual population coverage of these facilities in urban areas. However, by the end of Seventh Plan, the reported coverage with regard to potable drinking water and sanitation was at the level of 84% and 48% respectively. At the beginning of Ninth Plan, the reported level stood at 90% and 49% respectively. However, the service levels of water supply in most cities and towns are far below the desired norm and -- in some cases particularly the smaller towns -- even below the rural norms. The coverage figures are based on average supply level and therefore do not truly reflect inter-state and regional disparities within the States and even within the city itself. The poor, particularly those living in slums and squatter settlements, are generally deprived of basic facilities. Similarly, though about 49% of urban population had provision of sanitary excreta disposal facilities, only 28% had sewerage system and the balance 21% used only low cost sanitation facility. Even where sewerage system existed, the facilities are partial and without adequate treatment. In the case of solid waste disposal, only about 60% of the generated waste is collected and disposed of --just half of it disposed of sanitarily. Separate arrangements are generally non-existent for safe disposal of industrial, hospital and other toxic and hazardous wastes.

### **General Problems of Urban Water Supply & Sanitation (UWSS)**

India's UWSS Sector faces many problems and is currently bound by a vicious circle of circumstances. Notably:

- many UWSS providers are not financially viable nor can maintain services without extensive subsidies;
- existing UWSS services fall short of full coverage of population and are often of low quality due to insufficient funding of O&M (operation and maintenance). Sanitation services, in particular, are generally inadequate and access to acceptable UWSS services is extremely limited for the poor communities; and
- environmental degradation – the resource as it is currently used -- is increasingly insufficient and over-exploited.

These problems arise because most UWSS managers lack the necessary management skills, autonomy and accountability for their performance.

The improvement in service provisions will help cut through the “vicious circle” of problems with resultant deterioration of sector assets and be a stepping stone to the creation of the “vicious circle” thus helping to establish a sustainable UWSS sector for the future.

(Source: World Bank – “Urban Water Supply & Sanitation Report – Vol.I (Main Report)

5. The ongoing Accelerated Urban Water Supply Programme (AUWSP) is for small towns with population less than 20,000 (as per 1991 census) up to 31.3.2000. Under it, 438 towns -- including 216 during the Ninth Plan -- have been approved at an estimated cost of Rs.499.66 crore; of this, Rs.201.57 crore has been released so far including Rs.132.95 crore during the Ninth Plan. In all, 104 schemes have been commissioned. While reviewing the progress, the Ministry of Urban Development was in agreement with the Planning Commission in concluding that the following issues/problems stood in the way of effective implementation of the programme :

- Changing priority list by the State Governments.
- Non submission/delay in submission of DPRs (Detailed Project Reports).
- DPRs prepared by States without observing the prescribed guidelines.
- Delay in according administrative approval by the State Governments to sanctioned schemes.
- Non release/delay in providing matching State share. Non submission of progress report.
- Non submission of utilisation certificate.
- Physical/financial constraint in project implementation.
- Non completion of sanctioned schemes for many years.
- No advance action taken for land acquisition by the States.

### **Recommended strategy on improving the system of Urban Water Supply & Sanitation**

The key elements of the strategy are:

- democratic decentralisation through municipalization of responsibility for UWSS service, including promoting inter-municipal coordination and an enhanced role for civil society associations;
- commercialisation and private participation in service provisions, both for municipal and multi-municipal schemes;
- market oriented financial systems, including developing of direct access to capital markets through bond issues, new forms of financial intermediation and leveraging public resources.

Like Central Government, State Governments should reorient Plan financing and existing state financial intermediaries towards leveraging reform and developing market-based lending to the Sector. State Governments also need to work with selected municipalities to encourage demonstration projects in the State.

(Source: World Bank "Urban Water Supply & Sanitation Report – Vol.I (Main Report) )

6. The ongoing scheme of "Urban Low Cost Sanitation for Liberation of Scavengers" is being implemented by the Ministry of Urban Development through HUDCO (Housing & Urban Development Corporation) on a whole-town basis. The primary objective is to abolish the practice of manual handling of human excreta by

converting all existing dry latrines ( around 50 lakh of them) into sanitary ones. Besides, there were around 69 lakh houses without any latrine facility where new sanitary latrines are to be constructed. Up to 31.3.2000, 825 schemes have been sanctioned at a project cost of Rs.1,339.98 crore involving a loan amount of Rs.610.73 crore and Central subsidy of Rs.467.91 crore. Conversion of dry latrines into sanitary ones and construction of new sanitary latrines, which would be carried out through these schemes, number about 37.64 lakh. Besides, 3,463 community toilets would also be constructed. A total number of 1,322 towns have been covered and 1,22,523 scavengers are expected to have been liberated. The loan and subsidy amounts released were Rs.276.29 crore and Rs.246.93 crore respectively. Units actually completed (conversion/new construction) were only 9.32 lakh and units in progress were 3.74 lakh. Total number of scavengers liberated was 30,509 and 165 towns have been declared scavenging- free. Some of the main reasons for very slow progress of the scheme are:

- Very low priority given to the programme by the State Governments and the people at large.
- Absence/lack of software components and motivational efforts in the programme.
- Inadequate organisational capacity of the States/ULBs (urban local bodies) for implementation of this scheme on a large scale.
- Lack of proper coordination between two components of the programme viz., (i) Conversion / new construction of latrines being administered by the Ministry of Urban Development through HUDCO and (ii) Rehabilitation of Liberated Scavengers being administered by the Ministry of Social Justice and Empowerment. It is better if one single Ministry/Department administers both the components.
- Delay in obtaining State Governments' guarantee by ULBs for availing HUDCO loan assistance.
- HUDCO's unwillingness to sanction projects of some local bodies due to default in re-payment by other local bodies in that State.
- No subsidy is provided for super structure .
- The Central legislation known as "Employment of Manual Scavengers and Construction of Dry Latrines (Prevention) Act 1993 is applicable to all UTs w.e.f. 26.1.97 and has by now been adopted by 12 States viz. Andhra Pradesh, Goa, Karnataka, Maharashtra, Tripura, West Bengal, Orissa, Punjab, Assam, Haryana, Bihar and Gujarat. But even where it is adopted, the Act is not being enforced strictly.

## **Issues and Policy Implications**

7. Main issues and policy implications are :

- a) As a follow up of 73<sup>rd</sup> and 74<sup>th</sup> Constitutional amendments, most States are likely to entrust the responsibilities of operation and maintenance of urban and rural water supply system to local bodies and Village Panchayats. Therefore it would be

necessary for the State Finance Commissions to lay down the norms and other financial implications, assess requirements of funds and also make suitable recommendations for provision of finances by category of towns and villages.

- b) Areas of concern in operation and maintenance of water supply include paucity of funds, non-availability of adequate trained manpower and over-centralisation. Percentage of revenue generation to O&M cost in cities of Calcutta, Nagpur, Pune, Ludhiana, Lucknow and Kanpur (in March 1998) was 14, 48, 49, 40, 50 and 78 respectively. Even in Delhi, the national capital city, the revenue generation was only about 26% of the production cost in 1997-98, though this has improved to 43% in 1999-2000. Cost of 1 kilo litre of treated water in Delhi is roughly Rs.4.61, whereas the Delhi Jal Board (DJB) is charging roughly Rs.1.99 on an average, that too after almost doubling the rates recently. There are also some good examples where revenue generation is more than 100%, e.g Hyderabad (230), Mumbai (268) and Chennai (184). In view of inadequacy of funds, it is increasingly becoming important that water supply and sanitation be recognised as utility services and local bodies be given greater autonomy for determining the tariff through automatic annual increase to cover the cost. It would greatly help if the tariff fixation is based on average incremental cost including operation and maintenance cost, depreciation charges, debt dues etc. Even though subsidy is provided, it should be transparent and better targeting should be done to meet basic minimum requirements of the poor. Efforts should however, be carried out to ensure reduction in O&M cost by effecting savings on manpower and energy consumption, reduction in unaccounted for water as also improvement in the system of billing and collection. Even in areas like sewerage, there is no direct sewerage tax and this should be collected as part of property tax. For better realisation, some cities are being encouraged to consider charging direct sewerage tax.
- c) In view of huge requirement of funds for urban water supply and sanitation as also constraint on Government's resources and other competing demands, it is imperative that larger reliance is placed on institutional financing. More innovative and broad based approach is called for to finance and manage urban water supply and sanitation facilities – implying a shift from exclusive dependence on budgetary support to resource mobilisation through institutional finance/market borrowing, enhanced participation by private sector in activities which can be performed more efficiently by them. Waste utilisation as a commercial activity may be promoted through finance-cum-subsidy scheme. The concept of BOO/BOT/BOOT in the field of urban infrastructure financing could also be promoted and supported. External support agencies have to play a still bigger role in terms of financing and technology transfer.

**Tirupur Integrated Area Development Programme**  
**( An Innovative Approach to Private Sector participation)**

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With private sector participation, a special purpose vehicle (SPV) has been formed in Tirupur, Tamil Nadu, to develop local infrastructure in areas of road transport, telecommunication, water supply to textile industries and urban population, sewerage, low cost sanitation and industrial waste treatment. Named New Tirupur Area Development Company Limited (NTADCL), the company was floated in 1995 with an initial equity of Rs.40 crore; the funds were equally contributed by Central Government (Ministry of Commerce), Government of Tamil Nadu, Infrastructure Leasing and Financing Services (IL&FS) and Tirupur Exporters' Association. Of the infrastructural areas, the SPV has given priority for water supply to textile industries in Tirupur as well as domestic supply to Tirupur municipality and for disposal of municipal sewage. Industrial waste has not been included in its concerns because this responsibility has been given to the respective industries. For water supply and sewerage requirement, bids have been floated under the BOOT concept. Local leading financial institutions like IDBI, SBI, LIC, GIC and UTI are participating in the debt component, as also contributions from World Bank (25% of project cost) and USAID (\$ 20 million).. The State Government has given a 30-year concession to the SPV to construct the project and operate it. Financial closure is expected shortly. Equipment Procurement and Construction (EPC) value is around Rs.750 crore and the total project cost (including other financing cost like management, debt services etc) is Rs.1,100 crore. There is cross subsidy of tariff between industries and domestic sectors. Out of a total production of 185 MLD of water, industrial demand has been estimated as 100 MLD and tariff is around Rs.50/- per kl and domestic tariff is Rs.5/- per kl (bulk supply to Tirupur Municipality). Construction period is three years and contract is expected to be signed shortly.

- d) India's average annual precipitation is nearly 4000 cubic kilo metre, a part of which goes towards increasing the ground water storage, a part is lost as evapotranspiration and the balance flows as surface water. The average volume flow in the river systems has been estimated to be 1880 cu.km. However, due to much lower storage capacity, the quantum of water utilisable through surface source is about 690 cu.km. only. Similarly, the quantum of ground water that can be extracted economically from the ground water aquifers every year has been estimated to be 450 cu.km. Thus on an average, 1140 cu.km. of water may be reckoned as available for exploitation. Compared to the quantity of utilisable water resources of 1140 cu.km. the estimated demand in the year 2025 is of the order of 1050 cu.km. Therefore, in absolute terms, there could be no shortage of water in the country. However, there are large variations in rainfall from region to region, season to season and year to year. The spatial and temporal variations in precipitation have led to complex situations such as the distinctly different monsoon and non-monsoons, the high and low rainfall areas and drought-flood-drought syndrome due to numerous factors. As the overall demand in 2025 would be close to the total water available, the National Water Policy of Government of India stresses the urgent need for conservation of water with the objective to foster efficient utilisation in all the diverse uses of water. The demand for community water supply in urban as well as rural areas in 1990 was about 25

cu.km. which would increase to 33 cu.km. in 2000 and to 52 cu.km in 2025 due to growth in population, as also due to improved life style of the people. The National Water Policy has accorded top priority to Drinking Water Supply in the allocation of water resources for various beneficial uses. It is, therefore, very necessary to make long-term planning of water resources management for a period of 30-40 years ahead by National and Provincial Governments by preparing Water Resources Management Master Plans and implementing the same effectively.

- e) In view of fast growing population, urbanisation and industrialisation on one side and diminishing water resources on the other, it has become imperative to conserve available water and harvest rain water to the maximum extent possible. This could be done through various measures like leak detection and rectification works , rain water harvesting, controlling indiscriminate extraction of ground water and recharging of aquifers. For assessing the Unaccounted For Water (theft, pilferages, line and other losses), meters could be installed in the trunk mains. In larger urban and particularly water- stress areas, a system of roof-top rain water harvesting should be made mandatory for urban development agencies/private colonisers . Percolation structures, wherever suited, should also be encouraged in open grounds and road-side; this would help recharge bore wells and can also provide water for uses like gardening, car washing etc, thus reducing load on fresh/treated water requirement. For road-side percolation, it would be desirable not to make pucca pavement with cement/concrete/stones, but it can be filled up with pebbles and coarse-sand to allow fast percolation. All these measures may reduce the frequency and intensity of floods. It may also improve the quality of ground water through dilution, especially for fluoride and nitrate. Some successful experimentation on rain water harvesting and percolation structures has been done in Jawaharlal Nehru University, IIT campus Delhi and Rashtrapati Bhavan. In Chennai, various water conservation measures have been systematically taken up and the leakage level in the water supply system has been brought down from 30% to 5% -- by all means a great achievement. Similarly there has been substantial improvement in average ground water level fluctuation in and around the city.

### **Comprehensive Water Management - Chennai**

Keeping in view the expected gap in demand and supply of drinking water for Chennai city, the Chennai Metro Water has taken several measures for water conservation, equitable distribution and plugging of leakages. Indiscriminate extraction of ground water exploitation is being controlled and ground water recharged through roof-top rain water harvesting. This is ensured as a mandatory measure. Improved operation and maintenance is tried out through replacement of the house service lines with non-corrosive MDPE pipes and also by renewal of all damaged distribution mains and PVC/AC distribution mains with C.I Pipes. This is stated to have brought down leakage level in the distribution systems from almost 30 percent to 5 per cent. All this has resulted in substantial improvement in the average ground water level fluctuation of Chennai City.

- f) Progress under "Urban Low Cost Sanitation for Liberation of Scavengers" suggests there is a long way to go before manual scavenging in the country is abolished. Hardly about 8% of the dry latrines were converted into sanitary latrines during the Eighth Plan and the first three years of the Ninth Plan. In order to achieve the objective, it will be necessary to remove all bottlenecks hindering the progress of the scheme. It would also be necessary to adopt a three-pronged approach which includes strong IEC (Information, Education & Communication) and motivational efforts, easy and comfortable loaning facilities to the beneficiaries and strict enforcement of legislative measures to prevent employment of manual scavengers and construction of new dry latrines. It would also be desirable that both the components of the programme viz., (i) Conversion of Dry Latrines into Sanitary Latrines and (ii) Rehabilitation of the Liberated Scavengers, are implemented by one single Ministry/Department for better coordination between the two components. The second component is now being administered by the Ministry of Social Justice & Empowerment.
- g) Many experts claim that our three-fourths of surface water resources are polluted and 80% of pollution is created by sewage alone. It is estimated that more than 12000 million litres per day (mld) of waste water is generated in Class I cities and about 1300 mld in Class II towns, whereas only about 20% and 2% respectively get primary or secondary treatment before disposal. While many sewage treatments were based on the established technology such as Activated Sludge Process, Trickling Filter and oxidation pond, emphasis is now laid on low cost treatment technologies which have been developed through R&D efforts such as Land Treatment, Up-flow Anaerobic Sludge Blanket (UASB) technology, use of raw sewage for afforestation based on Karnal technology and using aquaculture. Emphasis is also laid on resource recovery from effluents of the Sewage Treatment Plants to minimise the cost of operation and maintenance and maximize the revenue generation by use of treated sewage for irrigation and aquaculture and sale of sludge for manure and bio-gas generation for producing electricity and domestic fuel. On an average a healthy person discharges 100 to 400 grams of fecal matter and 1 to 1.31 kilogramme of urine per day which has nitrogen, phosphate and potassium in sufficient quantities in addition to organic matter. All these are essential for plant growth and applied as chemical fertilizers in agriculture for better crop yield. After treatment, sewage may be used for irrigation, aquaculture and some industrial purposes. Raw sludge produced in the process, if it is not further processed, creates another pollution problem because it is foul smelling and houses many pathogens. Now it is realised that it is a valuable resource. In this era of energy crisis, it is viewed as an economic source of methane, a fuel. If all the sewage is put for irrigation, it is assumed, about 82,000 tonnes of nitrogen and 24,000 tonnes of phosphorus input as chemical fertilisers may be saved. The over supply of nutrient rich sludge and sewage is causing eutrophication and premature aging of recipient water bodies. The concentration of nitrogen, phosphate, potassium and organic matter in cities having population of more than 50 thousands is 645, 148, 282 and 5377 tonnes per day. Despite so much technological advancements, one is unable to use this resource and as a result dumps about 1685 million rupees per year in water courses. The value of water for irrigation is additional 490 million rupees. Some cess on fertiliser could therefore be considered for fundig this activity.



**h)** Management of Urban Solid Waste is one of the most neglected areas of urban development in India. There has been a decline in the standard of services in collection and disposal of household, industrial and hospital waste. In most cities nearly half the solid waste remains unattended and there is a need for generating awareness for action throughout the urban sector. Lack of financial resources, inadequate manpower, fragmentation of administrative responsibility, non-involvement and lack of awareness of community are major constraints in solid waste management. Poverty and low standards of living in the slum areas add to the adverse effect on environmental sanitation. Considering the complexity of the problem, it is necessary to evolve a suitable national strategy even though its implementation can best be handled at the level of municipalities and urban local bodies. A Technology Advisory Group has already been constituted in the Ministry of Urban Development and guidelines are being formulated for working out suitable strategies relating to solid waste management. For attracting and encouraging private capital in this area through mechanisms like BOT & BOOT, certain reforms are being contemplated and it is hoped that the State Governments would formulate this as part of the urban reform agenda. Selection of technology for disposal of bio-degradable solid waste in a town would depend on various considerations like quality and quantity of waste, climatic condition and availability of land, but composting method using the successfully experimented wormi-culture technology would be the most suitable option for the country like India, if it is otherwise technically feasible. In order to encourage private sector participation, some initial subsidy and concessional rate for land could be considered by the State Governments/ULBs. On an average Rs.1 core to Rs 2 crore per town up to a population of 1 lakh could be considered as initial subsidy for setting up compost plants. Running cost should be self financing and therefore no subsidy would be required for it.

## **Rural Water Supply**

### **The increasing gap**

8. Despite good monsoons continuously for the last eleven years and high priority by the Central Government for the programme of augmenting the supply of drinking water by way of funds and attention, the problem of potable drinking water has remained unresolved and in fact is becoming more serious every year. Although the Ministry of Rural Development claims more than 95% coverage, independent reports show scarcity of drinking water in about half of the villages of India. What is even more distressing is that this gap has been increasing over the years, despite heavy investment.

9. In 1972, surveys revealed that out of a total of 5,80,000 revenue villages there were 1,50,000 drinking water 'problem villages' in India. By 1980, some 94,000 villages were covered by Government and 56,000 were left uncovered. But the 1980 survey put the number of problem villages actually at 2,31,000, and not merely 56,000. By 1985, all but 39,000 villages were covered but the new survey showed 1,61,722 problem villages. Again, by 1994, they were all covered leaving only 70 uncovered villages but the 1994 survey revealed 1,40,975 problem habitations. This time the number included both

revenue villages as well as hamlets (the total of which is about 14 lakhs, henceforth called habitations).

10. Since 1994, state governments, with the help of funds from Government of India, have again provided clean water to almost all the habitations or would do so by the end of 1999-2000, with only 5% more to be covered by 2001-02, but surveys hardly support this optimistic picture and on the other hand indicate acute hardship and quality problems in about half of the habitations. Why this extraordinary discrepancy between government records and reality?

11. At the beginning of the Ninth Plan, there were about 0.85 lakh "Not Covered"(NC), 3.91 lakh "Partially Covered" (PC) and 1.40 lakh "Quality Problem" (QP) habitations. The Ninth Plan seeks to cover all the NC, PC and QP habitations with safe drinking water at the existing norm of 40 lpcd, giving first priority to NC/PC (0-10 lpcd) habitations. As per reports received from the States through Department of Drinking Water Supply, 0.62 lakh NC and 2.42 lakh PC habitations have been covered with water supply facilities during the first three years. This would have left a balance of 0.23 lakh NC and 1.49 lakh PC as on 1.4.2000. However, as per the reconciled/updated figures now received from the State Governments, the balance numbers as on 1.4.2000 are 0.26 lakh NC, 2.13 lakh PC and 2.17 lakh QP habitations. The National Agenda for Governance seeks to provide safe drinking water to all habitations within five years i.e., by March 2004. A large number of surveys have been done since 1996 to check the validity of government figures as also to measure the level of public satisfaction.

#### **PEO survey (1996- 97)**

12. The Plan Evaluation Organisation (PEO) studied 87 villages in 29 districts of 16 States were studied by Although in the selected villages, the number of people who had access to drinking water from government sources had increased from 69% to 81% between 1986 and 1996, PEO came across serious problems even though the definition of 'providing' water was very liberal: source need to be within 1.6 km, one hand pump (HP) would suffice for 250 persons and 40 litres a day per adult in a habitation would be taken as fully covered (FC).

13. Of the 29 districts studied, 19 reported the problem of frequent water scarcity. Of the 87 villages 40% complained of shortage during summer months and 30% people reported that water supply was not dependable. There was frequent breakdown of power in case of piped water supply and damage in pipelines led to leakages and contamination; for HPs quality of construction was not satisfactory in 47% cases and there was frequent mechanical failure.

14. Agencies complained of untimely release of funds and shortage of staff – there was embargo on recruitment in some States. For instance, 11 mechanics looked after 4,000 pumps in Bijnore (UP) in the entire district. Often testing and maintenance are responsibilities of different departments, only in 27.6% cases routine maintenance activity of oiling etc. was undertaken. About 87% of the districts reported breakdowns during the year, out of which only in 43% cases repairs were undertaken. Often spares were not available and funds were inadequate. Only in 12 out of 29 districts training was

said to be imparted;, although 12,191 people were claimed to be trained, the PEO team did not find them in any of the 87 selected villages.

15. Local communities participated only in 20 out of 87 villages, mostly in identifying suitable sites and contributing their labour, involvement in O & M was hardly observed. In 21% cases panchayats looked after O & M, in 9% cases panchayats supervised and regulated water supply, only in 3 out of 87 villages water committees were formed.

16. A large percentage of people in rural areas suffer from water-borne diseases like diarrhoea and cholera indicating use of unprotected/unhygienic drinking water sources. Even in those villages where quality was said to have improved after treatment, the incidence of water borne diseases had not come down. Reasons identified were:-

- platforms for HP and pipelines were not well laid leading to contamination of water,
- drainage was not satisfactory,
- testing of water was not done,
- disinfection was not carried out, and
- people fell back to original contaminated source as water supply from new source was not dependable,

17. No source villages re-emerged because of depletion of groundwater, major mechanical defects or water being contaminated leading to disuse. About 56% of the no-source villages were never covered under the schemes because they were not approachable, they had peculiar topography, or were new habitations.

18. In many districts water table had gone down by 15 metres to 20 metres, increasing the problem of scarcity as well as quality. Programmes leading to charging of aquifers through water harvesting were needed, but these measures required inter-departmental coordination that was lacking. Legislation was needed to ban over-exploitation for irrigation.

#### **Study for 74 Disitriacts in 1998**

- 59% people felt supply was inadequate
- 12% households said that the quality of water was not potable
- 98% households reported that there was no regular quality testing of drinking water sources
- 20% sources non-functional at any time
- Of these, half have minor defects
- 35% defects remain unattended for more than a month
- 83% people had never met a water official
- 54% villages willing to pay for water

19. The National Council for Applied Economic Research (NCAER) carried out a detailed survey of 1765 villages spread over 195 districts between January and May, 1994. The survey concluded that about one-half of all villages in India do not have any source of protected drinking water. Of the other villages 17% reported pipe water as the dominant source of drinking water, another 18% villages were using hand-pumps and 13% had other sources of protected water. The assessment of the NCAER is in sharp contrast to the official claims that in 1994 more than 80% villages were receiving adequate supply of potable water.

20. Since these studies indicated large discrepancy between Government records and the ground reality, the matter was taken up by the Planning Commission with the Department of Drinking Water Supply. The Department clarified that their records in respect of coverage are maintained on the basis of nationwide habitation-survey conducted through State Governments in 1991, revalidated in 1994, updated in 1996-97 and the subsequent coverage intimated by the State Governments. The Department is of the view that for the purpose of collecting and compiling information the State Governments are the most appropriate source of data and there should be no reason to doubt the information furnished by them. They are also of the view that though these studies are helpful in giving a broad feedback on the implementation of the scheme, it would not be appropriate to generalise the findings and draw conclusions from them because the samples taken for these studies were rather small in size. They also clarified that the information furnished by the State Governments was based on 1991 census and 1991 survey whereas the population since then has increased leading to emergence of new habitations. New habitations also emerge due to natural disasters like earth-quake, flood, cyclone etc. This, together with the non-sustainability of sources and systems due to variety to reasons, may cause re-emergence of un-covered/partially covered/quality problem habitations negating the efforts of the Government initiative. In the existing monitoring arrangement, such negative coverage is not being accounted for. The Planning Commission has also taken up this issue with the Department of Drinking Water Supply and suggested appropriate modifications in the present monitoring formats to remove anomaly in the reporting system. The Department has accepted this.

21. There are some States which have not been able to get the full release of allocated fund of Central assistance under the ARWSP particularly due to non-provisioning of matching State Plan funds and thus have lost quite a substantial amount of Central assistance during the Eighth Plan and during first three years of the Ninth Plan. The biggest loser has been Bihar which has lost about Rs.400 crore of Central assistance during the last five years (see Box).

<b>Performance in Bihar: Utilisation of ARWSP Funds (Rs. crore)</b>						
<b>Year</b>	<b>Opening balance</b>	<b>Allocation by GOI</b>	<b>Release</b>	<b>Total availability of funds</b>	<b>Expenditure</b>	<b>Closing balance</b>
1994-95	30.58	54.70	28.04	58.62	38.40	20.22
1995-96	20.22	70.99	35.50	55.72	22.74	32.98
1996-97	32.98	77.95	31.13	64.11	34.24	29.87
1997-98	29.87	93.80	00.00	29.87	08.67	21.20
1998-99	21.20	117.69	00.00	21.20	08.50	12.00
1999-00	12.00	93.80	00.00	12.00	00.00	----
<b>Total</b>		<b>508.93</b>			<b>112.55</b>	

22. Thus Bihar's loss of Rs 400-crore Central Assistance has resulted in a huge shortfall in physical coverage. Informal enquiries show that the State Government has not been able to finalise procedures for buying pipes for the last three years. The general feeling among field officers in Bihar is that the secretariat is largely dysfunctional and there are long delays in financial approvals. Success in the implementation of schemes depends upon the capability of the delivery system to make optimum use of funds. The implementation of the programme in Bihar suffers from systemic deficiencies in terms of staff morale, policy formulation, financial procedures, method of implementation, poor monitoring and evaluation practices.

### **Audit Review by A.Gs**

The Accountant Generals of the States reviewed in 1998 documents of Rural Water Supply Departments in 304 Divisions spread over 24 States to estimate to what extent the primary objective of providing safe drinking water in a cost effective manner has been achieved. The audit review has brought out a number of issues of serious concerns and shortcomings in the implementation of the programme involving misuse of Public Exchequer Funds of substantial order. These are:

- Re-emergence of habitations with no source of drinking water negating the impact of the scheme.
- Financial achievements were inflated so much as to include advances, funds were diverted to other schemes or kept in Personal/Revenue Deposits. There was a persistent trend of over-reporting of physical achievements.
- Large funds were met irregularly out of the ARWSP funds, instead of from State Plan funds.
- Suspected mis-appropriation of funds/stores was reported by AGs on which Government failed to take corrective action.
- Mis-directed application of funds without adequate planning or scientific identification of water sources resulting in time and cost over runs.
- Schemes were abandoned mid-way or became inoperative after spending huge amounts.
- Inadequate maintenance rendered water sources defunct and non-operative.
- Material purchased in excess of requirement was lying idle in stores/not accounted for in books.
- Water Quality Testing Laboratories were ill-equipped with inadequate facilities (non-creation /non filling of posts) and trained manpower.
- Water Treatment Plants installed to control fluorosis, remove excess iron and salinity were non-functional resulting in continued supply of unsafe drinking water to the rural population.
- Gross under-utilisation of rigs.

### **Water Quality**

23. Water quality concerns clearly have serious implications for the supply of rural drinking water and are important determinants of public health. Water quality issues are gaining recognition as ground water depletion worsens. The level of natural contaminants such as fluoride and arsenic and chemical pollutants such as pesticides and insecticides is high and rising. Fluoride contamination affects 150 districts in 15 States and excess arsenic affects 8 districts of West Bengal. Fluoride levels are high in Andhra Pradesh, Gujarat, Haryana, Karnataka, Punjab, Rajasthan, Tamil Nadu and U.P. and iron levels are high in the North-Eastern and Eastern part of the country. Similarly salinity is high in Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Tamil Nadu. The Quality affected habitations with excess fluoride/arsenic/salinity/iron etc. based on 1% stratified sampling numbered about 1.54 lakh. The number of such habitations is

increasing due to a variety of natural and man-made reasons, particularly due to unscientific and over exploitation of groundwater for different uses including agriculture. Although several studies and pilot programmes (sponsored by both the Government and various external funding agencies) are under way, proposed solutions have had mixed success. Technologies developed and tested to remove fluoride and iron have shown satisfactory results in a laboratory environment. The complexity, high cost and inconvenience of these technologies, however, have constrained their implementation and sustainability.

24. For instance, the Handpump Attached Defluoridation and Iron Removal plants have failed due to inappropriate technology, unsuited to community perceptions and community involvement. Desalination plants have been a costly failure mainly due to lapses at different levels such as poor planning and implementation, technology inappropriate to the rural setting and high cost of O&M. It has been found that a large proportion of treatment units installed in such habitations have become non-functional/non-working in a few years, particularly due to non-involvement of the communities. Out of 427, 150 and 9227 installed de-fluoridation, de-salination and iron removal plants, 350 (82%), 75 (50%) and 3485 (38%) respectively were reported to be non-working as on 31.9.98. These Sub Missions were mainly technology application experiments. . Alternative sources or a mix of both were being considered under the Sub Missions only from 1993.

25. Other quality related issues include biological contamination. Indiscriminate use of fertilizers and various agro-chemicals, along with un-scientificallly designed latrines and improper disposal of domestic waste water, has further contributed to the deterioration of ground water. In Tamil Nadu, an immense growth in the tanning industry has resulted in polluted ground water far from the tanning sites. Percolating effluents reach water table after being discharged from the tanneries into dry river beds. Ground water contamination is known to spread up to 5 kms from the discharge site and as there are many scattered tanneries, the effect is wide spread. The tanning process uses many chemicals including heavy metals such as cadmium, arsenic and chromium which can be toxic to people in sufficient concentrations. Many community wells are contaminated as a result of tanning practices. At a wider level, community sources need to be protected from industrial pollution through enactment and enforcement of appropriate legal provisions. Communities have a role in monitoring polluters and lobbying for effective control measures. It has also been noticed that in many places, the water clarifying medium of filters have not been changed for decades which has reduced the efficiency of the filters to a great extent. If measures are not taken to control pollution, the consequences could be serious. All States must come out with a clear cut water quality surveillance policy. This would include monitoring of water quality both at source and supply points in a specified scientific pattern and sequence. Also there is need to know the quality of water at the user's end before consumption. This will indicate the real success of the programme and point out whether special health education efforts are necessary.

### **What needs to be done?**

26. To sum up, the number of problem habitations has not declined over the years although around 90,000 habitations (out of a total number of 14 lakh habitations in the

country) are claimed to be covered every year. The reason for re-emergence of uncovered villages are:-

- Fast depletion of groundwater level, which also increases incidence of quality problems of Arsenic and Fluoride .
- Sources go dry and defunct due to deforestation and lack of protection
- Heavy emphasis on new construction and little attention to maintenance
- Poor quality of construction
- Non-involvement of people in design as well as operations and maintenance
- No recharging efforts undertaken particularly due to lack of inter-departmental coordination
- Neglect of traditional water management strategies
- It is obvious that the past strategy of pumping money into this sector without looking at policy and institutional issues is not going to work. What we require is:-
- Restrictions on withdrawal of groundwater
- People's control over management of water supply schemes
- Water to be managed as an economic asset rather than a free commodity
- Increased attention towards recharge of groundwater through afforestation and watershed development programmes

The new policy parameters are discussed below.

#### **I. Control on withdrawal of groundwater**

27. Almost 90% of the drinking water needs are met from groundwater although only 5% of total groundwater extraction is needed for domestic water supply. Irrigation accounts for 90% of all groundwater extraction whereas industry takes the balance 5%.

#### **Water Scarcity - how real ?**

During the summer months of April - May 2000, the Maharashtra Government was supplying drinking water through tankers in about 3000 villages. Many of these had standing and well irrigated sugarcane crop. Thus groundwater that should have been a community resource was being monopolized by a few rich farmers, who also took advantage of easy availability of two other scarce resources -electric power and capital. The responsibility to provide drinking water was then transferred to the State.

28. The rapid development in groundwater based irrigation in many States has caused groundwater depletion, because of which the life of drinking water supply source becomes short. Highly subsidised irrigation electricity tariffs have led to an



indiscriminate and disproportionate level of groundwater extraction. Although significant areas in States, such as Punjab, Haryana, Gujarat, Karnataka, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh (in all 144 districts in 10 States) have been declared 'dark' and 'grey' zones, there has been no let-up in the depletion of groundwater aquifers. Recently, it has been noticed that groundwater depletion has aggravated water quality problems due to excess fluoride, arsenic and brackishness, in certain areas, forcing the Public Health Engineering Departments to abandon low-cost hand pump based systems and undertake costly and complicated piped water supply schemes.

29. The need for regulating the extraction of groundwater arises from the following considerations:

- Protection of resource against over exploitation
- Protection of resource against quality degradation
- To ensure social equity and guarantee minimum provision to all sections of society

30. In view of the above and to regulate and develop groundwater resources in a scientific manner, a Model Bill was framed by the Central Government in 1970 and it was circulated to the States. Based on the experiences in the past two decades, the Bill was revised and circulated to States in 1992. The Bill was yet again revised and circulated to States in 1996.

31. The status of the legislation in various States was recently reviewed and it was seen that except for Maharashtra, implementation of the legislation was not satisfactory. A meeting of State Ministers held in August 1997 resolved against any strong legal measures of controlling groundwater discharge and cropping pattern. Instead they wanted to rely more on improving recharge and arresting run-off through watershed programmes. Even such programmes are not very effective today for reasons already discussed.

## **II. Lack of People's Participation**

32. The Engineering Departments in-charge of water supply had in the past concentrated their attention on new construction and there was hardly any people's participation in maintenance and operation of water supply schemes. Water is being perceived by the rural public as a social right to be provided free by the Government rather than as a scarce resource which must be managed locally as an economic asset in order to ensure its effective use. The present pattern is that systems are designed and executed by the Department and imposed on end-users, even when on paper these are transferred to the local Panchayats. Since the guiding principle for planning is that the Government will provide a minimum supply of 40 lpcd and make it free, there is no attempt to ascertain demand or to respond to demand for higher (or even lower) service levels. As such, planning is not done on the basis of demand and does not take into account user preferences (and willingness to pay) for different service levels nor future demand from increasing incomes and expectations. The experience has been that Panchayats are unwilling to take on the responsibility for operating and maintaining them. However, State Governments have no effective machinery at the village level to maintain such works. The system, therefore, requires a radical change. Rather than being supply-driven, it has to be demand-driven and has also take into account user

preferences. A great deal of time should be spent with the communities so that user preferences are taken into account.

33. In order to address the problem of sustainability, the Government approved in March 1999 reforms to associate active participation of the community in rural water supply programme. The implementation of the new policy has already commenced. State Governments have identified 58 pilot districts to introduce reforms. The reform projects being submitted by the state Governments incorporate institutionalisation of community participation through capital cost sharing and shouldering of full O&M responsibilities in the rural water supply programme. The experience gained during the implementation of these pilot projects would be effectively utilised while expanding the reform package to other districts in the second phase, so as to ensure a satisfactory and sustainable rural water supply programme in the whole country. For success of the proposed reform process, it would therefore be necessary that similar reforms are also adopted in other sectors such as increasing user-charges for irrigation and industry which also consume the available water resources.

#### **SWAJAL PROJECT- Emphasis on Community Participation**

The World Bank Aided SWAJAL Project in UP aims to:

- improve sustainability by adopting a demand responsive approach which introduces partial recovery of capital costs and full recovery of operation and maintenance costs;
- develop community participation so that communities play a major role in identifying planning, building and operating and maintaining their water supply and sanitation schemes ; and
- create institutional structures to facilitate decentralised decision making and in so doing to test an alternative to the supply driven approach to service delivery.

For O&M, mere handing over of assets to Panchayats may be counter productive unless the Panchayats/water user groups are adequately trained, and prepared to take on the O&M. The Project emphasises community involvement from the very beginning even in planning and design and in choice of technology. The village community is involved with the help of NGOs and Community Based Organisations (CBOs) from concept to commissioning and its O&M.

- Establish one NGO/CBO for 5-10 villages.
- Heavy emphasis on promoting off-farm activities through training.
- 10% capital cost and 100% O&M cost to be borne by the community
- A minimum of 22 months of preparatory activity for mobilising community support.
- Village committee decides technology and places orderNB:

Evaluation of the project with regard to success of community participation is yet to be done. The State Government has been requested to do the evaluation before this model could be replicated else where.

### III. Should water be supplied free?

34. The conditions under which people would be willing to maintain and operate water supply schemes are:-

- If they own the assets,
- If they have themselves installed the hand pump, or are being actively involved throughout,
- If they have been trained to do simple repairs,
- If they know that government will not maintain the asset,
- If they have sufficient funds for maintenance, and
- If they have to pay for O & M

35. Field research has shown that stakeholders are involved in O&M only when they pay for it; when they are certain that they will control the funds which are collected for O&M, and that water supply would be dependable. Except in a few projects, people are not made aware of the technology aspects or given the choice between different technologies and the right to know the details of expenditure on the project. Non-involvement of people in the design and execution of project leads to sub-standard quality of materials used, poor workmanship and insufficient maintenance. If these problems are not addressed, the life of a project falls drastically, which makes huge expenditure necessary later. On the other hand if the entire community is involved in decision-making it may even be advisable to transfer funds to the user committees or Panchayats, who may be asked to buy pipes and install handpumps on their own.

36. The cost sharing arrangement would ensure involvement of the users and the supporting agencies (thereby reducing the down time of installations and reducing O&M costs) like Panchayat Raj Institutions to own, operate and manage the drinking water supply programme. The arguments are generally advanced that people in the rural areas due to lower level of income cannot afford to share the cost involved in capital investment and the operation and maintenance of the systems. Various field level studies indicate that the O&M cost for hand pump per person per year works out to be Rs. 5.8 and Mini piped water supply schemes Rs. 15-17 per person per year, and is affordable.

37. It is, therefore, clear that O&M cost and replacement cost are within the reach of vast majority of the rural population. It is also possible for the beneficiaries to share at least a portion of the capital cost which would also inculcate a sense of ownership of the systems among the stakeholders. The experience of World Bank-assisted projects in Karnataka, Maharashtra and Uttar Pradesh shows that it is possible to institutionalise community based rural drinking water supply programme. If through adequate financial devolution package, the Panchayat Raj Institutions are empowered to generate resources as well as provided with sufficient loans and grants, they would be in a position to mobilise users contribution and also put in contribution from their own sources.

38. Implementation of a participatory demand- driven approach will ensure that the public obtain the level of service they desire and can afford to pay. Further, full cost recovery of operations and maintenance and replacement costs will ensure the financial viability and sustainability of the schemes. It would also ensure institutional sustainability, by supporting policy reform and institutional strengthening to assure that

the devolution to the Panchayat Raj Institutions and the sector decentralisation both successfully reach their logical and intended conclusions.

#### **IV. Recharge of groundwater through watershed development**

39. The three problems in sustainable supply of drinking water viz., scarcity, brackishness and excess fluoride are found to be manifested mainly in the low rainfall and high potential evaporation areas of the country. Solutions to all these problems should therefore involve an integrated water management approach. Discrete and pipe oriented solutions of these problems would not be very effective. Water harvesting and conservation measures in a watershed as a natural physiographic unit with emphasis on direct or indirect artificial recharge of aquifers by utilising surplus run off water can lead to a simultaneous mitigation of all the three problems.

40. Soil and water conservation measures such as contour trenching, vegetative bunding and small check-dams can enhance soil moisture and recharge of groundwater, accelerating the rehabilitation of the micro-environment. Most funds for watershed development are spent by the Ministries of Agriculture and Rural Developments. They should rehabilitate lands in the upper catchment first for at least three reasons: first, the landless and the poor who depend on upper slopes can benefit; second, groundwater recharge begins at the earliest; and third, by the time the lower catchment is treated any debris and erosion running down from the upper catchment would have been minimized.

#### **Traditional Technologies**

41. Rain water harvesting not only supplements the domestic water supply but also acts as an anti-flood measure and recharges the ground water aquifers. Rain water has been harvested in India since antiquity. There are some evidences of advanced water harvesting systems from pre-historical times -- systems like canals, tanks, embankments and wells. India can be broadly divided into 15 ecological regions. In hills and mountain regions, natural springs were often harvested, rain water harvesting from roof tops and spring water was often carried over long distances with the help of bamboo pipes. In arid and semi-arid region, ground water harvesting structures like wells and step-wells were built to tap ground water aquifers like "bavdis" of Rajasthan. Rain water harvesting from roof tops e.g. tanks of pali, used artificially created catchments which drained water into an artificial well like kunds of Rajasthan. Special rain water harvesting structures which helped to keep sweat rain water mixing with saline ground water and thus providing a layer of potable water e.g. virdas of Kuchchh; horizontal wells similar to the "Qanats" of the Middle East to harvest seepage down hill slopes e.g. surangams of Kerala. With the fast declining ground water table due to indiscriminate ground water exploitation for agricultural use, it has become imperative to take curative as well as preventive measures to check further declining. Revival of traditional technologies for rain water harvesting can prove to be most economical, successful and long lasting and therefore should receive emphasis by all States, those particularly in the water scarcity areas.

## V. Need for alternate planning & the new Water Policy 1999

42. A number of steps need to be taken urgently in order to manage groundwater in a more scientific manner, especially in dark and grey zones. Firstly, there must be a Central legislation against subsidies on electricity tariffs for irrigation. One may mention here that although the World Bank had approved a drinking water project in principle for Punjab, further processing was withheld by the World Bank because of the Punjab Government's policy of providing free electricity and power for irrigation sector. Secondly, the Model Bill framed by the Centre and circulated to the States in 1996 should be adopted by the States and implemented seriously. Thirdly, user groups should be formed on the lines of Joint Forest Management Groups, which should do groundwater monitoring and ensure that it is managed as common property resource rather than allow it to be over-exploited as an open access resource.

43. It should be noted that the ongoing Accelerated Rural Water Supply Programme (ARWSP) has been modified w.e.f. 1.4.99, incorporating most of the suggestions made above. In consonance with the adoption of a need-based approach, it has been found desirable to give appropriate weights (10%) for NC/PC habitations in the ratio of 2:1 based on data received from States as on 1.4.98. Two more new criteria viz., "overall water resources availability" and "Number of quality problem habitations" have also been included. The former is reflected by ratio of un-irrigated to irrigated area and will take care of special needs of area with overall water scarcity on account of poor rainfall, low groundwater potential. The latter reflects concern for adoption of need based approach. In this criterion, differential weights have been given (based on severity of the problem) to fluoride (40%), arsenic (40%), brakishness (15%) and iron (5%). The old criterion of rural population and special category areas (HADP/DPAP/DDP/Special Category Hill States) have been found relevant and therefore retained. Limit of ARWSP fund utilisation for O&M has been raised from 10% to 15%

44. The new Policy initiated in April, 1999 has asked the States to implement "Sector Reform" measures and a demand-driven approach based on empowerment of village water and sanitation committees, 10% of capital cost sharing and 100% sharing of O&M cost by users etc. 20% of the Central Government funds would be reserved for States which adopt these measures.

45. The new strategy thus rightly relies heavily on the use of Central/State funding as a critical incentive to drive the sector reform process at both State and local government levels. As such, it is important that funding conditionality for disbursement of Central funds to State administrations, and from State administrations to Panchayat Raj Institutions and/or local administrations, be explicitly defined both in terms of conditions which must be met and activities for which funding can be applied. However, the impression gathered during Working Group discussions with the States (held between June and September 1999) was that the impact of the programme was yet to be seen. The Ministry has also not identified States which have introduced or have promised to introduce sector reforms. It is likely, therefore, that the 20% funds --rather than induce reforms --would again be distributed to the States on the basis of the fixed criterion with no emphasis on performance. .It must be recognised that sector reforms such as

improving capacity of the local people to manage water resources and to make them pay for the supply are politically or administratively not popular decisions. In the absence of requisite political and administrative will, it is likely that unpopular measures may not be implemented. The modalities of collecting water charges and the use of those collections should also be thought out. So far the Panchayats have relied too heavily on Central and State funding leading almost to spoon-feeding and weak implementation capacity. For their capacity building they too should get into the mould of collecting user charges, which the panchayats so far avoided.

## **Rural Sanitation**

46. Though the majority of Indian population, i.e. 62.87 crore (1991 census) live in rural areas, their access to a minimum level of sanitation is very low (approx. 20% coverage). Such strategies are required to be adopted that would help increase the coverage and ensure better O & M. Some of the issues that have stood in the way of effective implementation of programmes are :-

- very low priority given by the State Governments and the people at large,
- lower emphasis on IEC,
- promotion of a single model i.e., twin-pit pour-flush latrines which are costly,
- heavy reliance on subsidy and lack of motivation efforts,
- Poor disposal of waste water from water points creating un-hygienic conditions,
- Sanitation services do not correspond to the local culture and habits,
- Users of a sewerage facility are unwilling to pay for the cost of sewerage.
- scarcity of water.
- lack of community participation and NGO/Private Sector involvement.

47. Allocation of Plan funds during the Ninth Plan towards Central Subsidy Component is quite meagre i.e. only Rs.500 crore against a huge requirement of around Rs.12,000 crore. The physical coverage which was estimated to be around 17 % of rural population at the beginning of the Ninth Plan has gone up only by less than 3% during the first two years. Field studies show poor utilisation of existing sanitary latrines, inter alia due to lack of awareness, scarcity of water, poor construction standard, emphasis on standardised designs without attention to local specificities and general absence of involvement on the part of the beneficiaries. Indira Awas Yojana also has a component of latrine, but the facility is often used as an extra room. A number of field studies, village level studies, evaluation reports and donor agency status papers have drawn attention to the serious problems in the programme design and implementation. There is some evidence that over-reliance on a traditional supply-driven subsidy-oriented Government programme is hampering private initiative in rural sanitation. Conversely, there is very strong evidence that in States where Centrally Sponsored Rural Sanitation Programme (CRSP) has not picked up to any significant extent, the gap has been amply filled by private initiative. An evaluation (1998) by British Aid Agency (DFID) did not find any evidence that the high level of subsidies being offered under current State Government policy was helping to promote uptake of latrines amongst the poor. Indeed, it appeared to

reinforce the tendency to promote high cost options. It was thus felt that the subsidy be abolished or at the very least be offered and private initiative be provided a fillip. As per an ORG Study, in M.P, 20% of house holds owning latrines did not use the facility and the main reason for non-use was quoted as lack of adequate water.

48. Keeping in view the lacunae mentioned above, the CRSP has been restructured w.e.f. 1.4.99. The restructured programme proposes to move away from the principle of State-wise allocations primarily based on poverty criteria to a demand driven approach and the States would be required to formulate "Total Sanitation Campaign" (TSC) in select districts in order to claim Central assistance. To allow time for proper grounding of the new approach, it has been decided also to continue with the existing "allocation based" programme. The latter would however be progressively phased out within a couple of years and TSCs would be supported both by the Central and the State Governments as per the funding pattern. The physical implementation would have to be oriented towards felt-need using a "vertical up-gradations" concept, in which beneficiaries, individual or institutions get to choose from a menu of options that allow for subsequent upgradation depending upon their requirement and financial position. During the Working Group meetings for Annual Plan 1999-2000, some of the States were not found supportive of the idea of no subsidy/low subsidy and single pit pour flush latrines. As this new approach is yet to take off in most of the States, its impact could be seen only after some time. The main features of the restructured Rural Sanitation programme are as under:

- Shift from high subsidy to low-subsidy regime. - from Rs.2000/- to Rs.500/- per latrine (inclusive of both Central subsidy as well as State subsidy)
- Greater household involvement.
- Technology options as per choice of beneficiaries.
- Stress on software programme (IEC).
- Emphasis on School Sanitation.
- Tie- up with various Rural Development programmes.
- Involvement of NGOs/VOs and local groups.
- Seek institutional finance (NABARD etc).

49. The coverage of rural population with sanitation facility at the beginning of the Ninth Plan was as low as 16% and only about 2 - 3% additional rural population is expected to have been covered during first three years of the Plan under the Governments' rural sanitation programme . The re-structured Centrally Sponsored Rural Sanitation Programme, which has been made effective from 1.4.99, is yet to pick up. As such, it may not be possible to achieve the envisaged target of 35% rural population coverage (cumulative) by the end of the Ninth Plan.

### **Sanitation – Study Reports of RGNDWM .**

According to studies got conducted by Rajiv Gandhi National Drinking Water Mission in a few States, more than 90% households in a Bihar sample survey were using open fields and banks of rivers for defecation and very few families have their own toilets. Majority of the villagers were unaware of concept of sanitation and importance of it because of poverty and illiteracy. In Punjab, 42% of rural household respondents in Hoshiarpur and Bhatinda districts had their own private latrines, 1% used community latrines and 57% went for open defecation. In Haryana 34% of households surveyed in the districts of Panipat and Hissar had private latrines, 1% used community latrines and 65% went for open defecation. In Hissar 18% latrines were constructed with Government subsidy and 19% with private funds. In Panipat, 16% latrines were constructed with Government subsidy while 15% with private funds. In Maharashtra, sample survey revealed 19% households had sanitary latrine facilities of which 16% were constructed under CRSP and 3% with private efforts. In Karnataka only 8% surveyed households had latrine facilities of which 7% were constructed under CRSP and 1% with own efforts.

In MP, as per an ORG study, households covered with sanitary latrines were 21% of which 63 % used latrines regularly and about 20% of house holds who owned latrines did not use the facility . A large section of respondents who were owners but non-users (93%) stated that lack of adequate water prevented them from using the facility. In UP, 16% of surveyed households were covered by the sanitary latrine facility, of which 39% households used them regularly and a large proportion (45% ) of the housholds possessing latrines never used the facility.