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FOREWORD

To formulate the 10th Five Year Plan on Drinking Water Supply and Sanitation (Rural & Urban), the Planning Commission had constituted a Working Group on Rural Drinking Water Supply and Sanitation under the Chairmanship of Secretary, Department of Drinking Water and Sanitation. In the first meeting of the Working Group, on Rural Water Supply and Sanitation held on 17th May 2001 eight Sub-Groups, four each on rural drinking water supply and rural sanitation were constituted to analyse and examine various issues involved, possible strategies and requirement of funds for the same. Reputed experts in the sector were included in the eight Sub-Groups to give their considered recommendations.

The Working Group in its second meeting held on 28.11.2001 deliberated on the individual reports and views of the Sub-Groups, and based on the recommendations outlined therein this Report has been finalised. I am sure that the recommendations made in this Report would provide valuable input to the Planning Commission in finalising its sector policies, priorities and resource allocation.

Sd/-

(S. K. Tripathi)
Secretary,
Department of Drinking Water and Sanitation and
Chairman of the Working Group on
Rural Drinking Water Supply & Sanitation

EXECUTIVE SUMMARY

State Governments have the responsibility to provide safe drinking water and sanitation in the rural areas. Government of India support and supplements efforts of the State Governments. Programme for Drinking Water Supply and Sanitation have been under implementation ever since inception of the first five year plan.

The Accelerated Rural Water Supply Programme (ARWSP) was introduced by the Government of India in 1972-73. A Technology Mission on Drinking Water called the "National Drinking Water Mission (NDWM) was launched in 1986, which subsequently was renamed as the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991. Upto end of November 2001, 87.89% habitations in the country are having access to adequate water (fully covered) with 40 litres per capita per day (lpcd). About 10.85% are partially covered and remaining about 20000 habitations are still not covered habitations. States are also being supported from 2000-01, under the rural drinking water component of Prime Minister's Gramodaya Yojna (PMGY-RDW). Sector Reform has been introduced in selected 63 districts in the country on a pilot basis on demand driven, community participation, and cost sharing approach by the user groups. Other support programmes like social mobilisation, capacity building, IEC, Human Resource Development (HRD) and MIS etc. supplement

the main ARWSP and PMGY (RDW).

Central Rural Sanitation Programme was launched in 1986 to complement the efforts of State Governments. Due to the special initiative taken during the 9th Plan Period, total households coverage amongst the States varied between 16-20%. Based on the strategy outlined in Ninth Plan, the Central Rural Sanitation Programme was restructured, which is "demand-driven" and people centered. Total Sanitation Campaign (TSC) was introduced and is being implemented in project mode in 200 identified districts. The revised approach in the programme emphasizes more on Information, Education and Communication (IEC) activities. So far 111 school sanitation proposals in 26 States/UTs have been sanctioned. It is proposed to continue the Programme in the 10th Plan Period also in order to cover remaining districts in the country.

RURAL WATER SUPPLY

Coverage

1. The remaining NC and PC habitations as per the present data will be covered during the first two years of the Tenth Plan. (Ch.-II, P.3.1.1)

2. Slippage of habitations from FC to PC/NC and PC to NC be assessed and specifically addressed during the last three years of the 10th Plan period. (Ch.-II, P.3.1.2)

3. State Governments to conduct fresh survey with independent evaluator to validate for reassessing the actual position regarding NC/PC habitations. (Ch.-II, P.3.1.2)

4. To adopt prioritisation in the coverage of habitations (i) all NC and PC habitations (ii) Quality affected habitation and (iii) SC and ST habitations (Ch.-II, P.3.1.1)

5. State Governments to transfer the responsibility of drinking water supply, particularly O&M to PRIs as per the 73rd amendment of the Constitution. (Ch.-II, P.3.1.6 & 3.1.8)

6. Involvement of financial institutions of repute including private entrepreneurs and External Support Agencies in rural water supply sector. (Ch.II, P.3.1.9 & 3.1.10)

Sector Reforms

1. A strategy must be devised to phase out the normal programme, like ARWSP, PMGY-RWS & other supply driven programme implemented with the State resources, within a fixed but short period of time. (Ch.-II, P.3.2.2)

2. It is recommended that Government of India should immediately issue instruction to all States that even in case of works taken up for upgradation and norm relaxation irrespective of the fact that it is with ARWSP or State funds, it should be carried out as per the reform concept. All State Governments should prepare State rural water supply strategy / policy accordingly, clearly indicating how they would implement the reform in rural water supply sector.(Ch.-II, P.3.2.2)

3. There is a need to ensure that wherever Sector Reforms projects and Total Sanitation Campaign projects both are being implemented, the DWSM / ZP should be the one and only setup implementing the projects in an integrated manner at the district level and below. It is recommended that in general at all level, including Central, State & District level, the water supply and sanitation programmes should be implemented in an integrated manner. (Ch.-II, P.3.2.2)

4. State Government / DWSM / ZP are required to finalise a formula prescribing a wide range for capital cost sharing proportionate to the service level demanded starting from minimum of 10%. For the potentially higher service demand possible, higher capital cost sharing component should be fixed. (Ch.-II, P.3.2.3)

5. There was general consensus that independent agencies be involved in a supervision team for project implementation monitoring every half yearly for the sector reform districts. (Ch.-II, P.3.2.6)

6. District implementing agencies should not be instructed to utilise only a fixed percentage of funds for activities related to sustainability of sources and the final decision on the amount to be spent on sustainability of sources should be left to the villagers. (Ch.-II, P.3.2.7)

7. Selection of NGOs for implementation of various components of the sector reform projects can be decided by the DWSCs with the approval of the State Governments. As regards choice of Member Secretary, it was decided that the present arrangement of the Executive Engineer (PHED/ Water Supply Department) to be Member Secretary may continue as this would help in proper implementation of the project at the local level. (Ch.-II, P.3.2.8)

8. Augmentation of staff in the Department of Drinking Water Supply is urgently needed for achieving the goal of Sector Reforms. Rajiv Gandhi National Drinking Water Mission should position a monitoring mechanism, outsource resource and training agency, undertake computerised MIS from Gram Panchayat level to National level and carry out half yearly review of the Sector Reform Projects implementation. (Ch.II, 3.2.11)

9. The 63 projects taken up should be allowed to be implemented during the entire Tenth Plan period. Next phase of implementation of reform agenda, through PRIs supervised by the State Governments, should commence after success is reasonably achieved in some of the pilot districts. Pilot projects for additional districts may be sanctioned to those States where the sector reform principles are implemented in true letter and spirit in the existing pilot districts. This may be done after the Government of India signs a Memorandum of Understanding with the State Government that they would adopt the reform principles for the entire State with their own resources. Some of the additional projects may be accommodated in place of those projects that do not achieve a minimum level of progress and the process monitoring results indicate that the district has still not developed to a stage to adopt the reform concepts into their system. Such non-achieving projects may be deferred and phased out, to be taken up again at a later stage during the second phase of reforms. (Ch.-II, P.3.2.12)

Water Quality

1. A scheme has to be devised for comprehensive water quality monitoring in the problem villages of the country in order to effectively launch the programme of safe water supply in these areas. (Ch.-II, P.4.9.1)
2. Further research required to improve technologies for treatment of chemically contaminated water resulting in their simplification and cost effectiveness.(Ch.-II, P.4.9.2).
3. Provide safe water in water quality affected areas from alternate sources (new dugwell, water from distant sources and utilizing traditional sources of water).(Ch.-II, P.4.9.3).
4. Encourage rainwater harvesting and its collection as well as recharge of the underground water to augment water resources in draught areas. (Ch.-II, P.4.9.4).
5. Increase the present 20% allocation under ARWSP for Sub-Mission activities after fulll coverage is achieved. (Ch.-II, P.4.9.6).

Other activities like HRD, IEC, MIS, etc.

1. The programme needs to be continued to provide adequate funding of HRD activities on 100% basis including HRD Staff Salaries to the State Governments. (Ch.-II, P.5.1.1).
2. A National Centre of Excellence for the purpose of addressing issues relating to arsenic and fluorosis and for development of research may be set up in collaboration with willing States or with GOI institutes like CSIR, etc. (Ch.-II, P.5.1.2).
3. All the District of the country should embark on IEC activities related to rural drinking water supply in 10th Five Year Plan. (Ch.-II, P.5.2.1).
4. The HRD cell in the States will coordinate and integrate IEC, MIS and HRD activities. (Ch.-II, P.5.2.2).
5. A comprehensive IEC action plan to be prepared every year to create a synergic impact in rural areas. (Ch.-II, P.5.2.3).
6. IEC Guidelines to be amended and cost structure to be made more realistic. (Ch.-II, P.5.2.4).
7. Special training courses for officers of implementing agencies in the States should be launched for effective implementation of IEC programme and for developing IEC materials, modules etc. (Ch.-II, P.5.2.5).
8. More emphasis should be given to introduce/ topics subjects related to water, sanitation and health at all levels of education. NCERT may be requested for incorporating appropriate material, in school books. (Ch.-II, P.5.2.6).
9. A committee of experts relating to Rural Water Supply and Sanitation, hygiene, health, women & child, nutrition and communication should be formed at Central and State level to advise on the subject matter of water supply, sanitation, etc. (Ch.-II, P.5.2.7).
10. Various institutions e.g. Public Health Engineering Department (PHED), Panchayati Raj Institutions, NGOs, voluntary organizations, youth organizations, school children and teachers, anganwadis, scouts and guides, health workers, social workers/ leaders, women organizations, Nehru Yuva Kendras, etc., should be involved in IEC activities during the 10th Five-Year Plan. (Ch.-II, P.5.2.9).
11. A Central Water Base Information System (WBIS) to be developed. (Ch.-II, P.5.3.1).
12. The present system of funding for MIS and computerization may be continued and all offices of the field and below the Executive Engineer should be computerised. (Ch.-II, P.5.3.2).
13. States should be encouraged to develop interactive websites and knowledge bank for people to use the same. 100% funding for the same should be provided by the Government of India. (Ch.-II, P.5.3.3)
14. Concurrent monitoring and evaluation of all projects and schemes of Rural water Supply is required. (Ch.-II, P.5.4.1).
15. Regular monitoring of the quality of water supplied in rural areas is essential to detect chemical and biological contamination of drinking water to safeguard the health of people. (Ch.-II, P.5.4.3).
16. 100% funding to be provided by Govt of India for monitoring and evaluation activities. (Ch.-II, P.5.4.4).
17. Fresh habitation survey should be conducted every ten years and it may be linked with census. (Ch.-II, P.5.5.1).
18. Every 5 years revalidation of data should be carried out and slippage may be taken into account to find out the actual position including changes in the status of habitations. (Ch.-II, P.5.5.2).

RURAL SANITATION

1. The concept of sanitation connotes a comprehensive definition which includes liquid and solid waste disposal, food hygiene and personal, domestic as well as environmental hygiene (Ch.III, P.1.1).

2. By the end of the 9th Plan it is estimated that 20% of the rural households may have sanitary

facilities through the Central Rural Sanitation Programme (Ch.III, P.2.1).

3. The objectives of the 10th Plan would be accelerating sanitation coverage in rural population and to cover all primary and upper primary schools in the country through creation of demand and awareness generation to improve physical quality of life in rural areas (Ch.III, P.4.1.2).

4. The Working Group recommends to cover all districts (574) with Total Sanitation Campaign. TSC will continue in 200 districts and will be launched in 374 districts during 10th Plan. During the 10th Plan no funds will be available for allocation based programme. (Ch.III, P.4.2).

5. Instead of recommending any particular design, it is always advantageous to have a dialogue with the community and offer a range of options. The Government will support the research and design for developing the range of various technology options, during 10th Plan (Ch.III, P.4.3).

6. Participatory demand generating exercises including social mobilisation would be undertaken under TSC. Training would be provided to motivators, teachers, unemployed youths and natak drama performers. External Support Agencies would also be associated for imparting training to the trainers at National and State levels (Ch.III, P.4.4).

7. Multi-media approach for wider reach would be adopted to create largest possible awareness. The incentives are to be provided to the motivators on the basis of construction of individual household latrines (Ch.III, P.4.5).

8. During the 10th Plan a provision of Rs.10 crores is recommended for Research and Design purpose (Ch.III, P.4.6).

9. Evaluation Studies on the implementation of TSC would be conducted by the Govt. of India/State/UTs through reputed Institutions and Organisations (Ch.III, P.4.7).

10. Financial institutions/banks would extend loans at lower interest rates to the States for provision of sanitation facilities. Various fiscal concessions should be made available to the manufacturers of low cost sanitary materials (Ch.III, P.4.8).

11. The total requirement of fund during the 10th Plan to for the TSC to cover Below Poverty Line families would be Rs.3663 crores (Ch.III, P.4.9).

CHAPTER – I

INTRODUCTION

1.1 A Steering Committee to formulate the 10th Five Year Plan on Drinking Water Supply and Sanitation (Rural & Urban) under the Chairmanship of Shri Som Pal, Member, Planning Commission, was constituted. The Composition and Terms of Reference of the Steering Committee are at Annex-I. Further, a Working Group on Rural Drinking Water Supply and Sanitation under the Chairmanship of Secretary, Dept. of Drinking Water Supply was constituted to assist the Steering Committee. The Composition and Terms of Reference of the Working Group are at Annex-II.

1.2 The first meeting of the Working Group on Rural Water Supply and Sanitation for the formulation of 10th Five Year Plan (2002-2007) was held on 17th May 2001 under the Chairmanship of Shri S.K. Tripathi, Secretary, Department of Drinking Water and Sanitation. Four Sub-Groups each for (1) rural water supply and (2) rural sanitation as indicated below were constituted. Their Composition and Terms of Reference are at Annex-III.

Sub-Group	Subjects allocated
	Rural Drinking Water Supply Sub-Groups
1.	Accelerated Rural Water Supply Programme (ARWSP) Policy, Vision and Action Plan in respect of Rural Water supply, Norms, Allocation Criteria, and National Agenda for Governance, Resources, Cost Recovery and Role of External Support Agencies.
2.	Sector Reforms – community Participation in Rural Water Supply Programme and related policy issues, Sustainability of systems and sources, Roles of Panchayat Raj Institutions (PRIs) and NGOs, Restructuring and Reorientation of the Rajiv Gandhi National Drinking Water Mission.
3.	Water Quality, Sub-Missions including that on Sustainability, Research and Development, Technology and Integrated Water Resource Management.
4.	Human Resource Development (HRD), Information, Education and Communication (IEC), Management Information System (MIS), Monitoring and Evaluation, Fresh Habitation Survey and Validation of Data.
	Rural Sanitation Sub-Groups
1.	Policies/Programmes, Current Status (Coverage), Targets, Achievement.
2.	Human Resource Development, Awareness Strategies, Demand Generation and IEC Activities.
3.	Research and Development, Technological Options and Alternate Delivery Mechanism.
4.	Private Participation, Credit Facilities and Role of NGO/External Support Agencies.

The working Group in its meeting held on 28.11.2001 has considered the reports of these sub-groups. Minutes of the said meeting is available at Annex-IV. On the basis of the same, the Group approved this Report along with the recommendations outlined therein.

1.3 Govt of India and State Governments have been trying to provide safe drinking water to the rural areas ever since inception of the first five year plan. However momentum to this initiative was given by launching the Accelerated Rural Water Supply Programme program (ARWSP) by the Govt of India in 1972-73 to assist the State Governments and Union Territories to accelerate the pace of coverage of drinking water supply. Subsequently to give much more focussed attention, this programme was given the mission approach and a Technology Mission on Drinking Water and related water management called the " National Drinking water Mission (NDWM) " was launched in 1986, which was subsequently renamed as the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991. Further in order to achieve the goal of providing safe drinking water to all habitations by March, 2004 as per the National Agenda for Governance (NAG) a separate Department of Drinking Water and Sanitation was created in the Ministry of Rural Development in 1999. Upto end of November 2001, 87.89% habitations in the country are having access to adequate water (fully covered) with 40 litres per capita per day (lpcd). About 10.85% are partially covered and remaining about 20000 habitations are still not covered habitations. In addition to the ARWSP scheme, states are being supported from 2000-2001, under the rural drinking water component of Prime Minister's Gramodaya Yojna (PMGY-RDW). A major shift in approach has taken place in water supply and sector reform approach has been adopted in selected 63 districts in the country on a pilot basis with total outlay of more than Rs 1800 crores where emphasis is on demand driven, community participation, and cost sharing by the user groups. The hardware support is being supplemented by other support programmes like social mobilisation, capacity building, IEC, Human Resource Development (HRD) and MIS etc. It is recommended to continue these programs in the Tenth Plan period.

1.4 Central Rural Sanitation Programme was launched in 1986 to complement the efforts of State Governments. The Government of India revised the guidelines in 1993 to improve the sanitation coverage by providing higher allocation and thrust to this sector. Due to the special initiative taken during the 9th Plan Period, total households coverage amongst the States varied between 16-20%. Subsequent to National Seminar held in July 1998 and based on the strategy outlined in Ninth Plan, the Central Rural Sanitation Programme was restructured, which is "demand-driven" and people centered. Total Sanitation Campaign (TSC) was introduced. TSC is being implemented in project mode in 200 identified districts. The revised approach in the programme emphasizes more on Information, Education and Communication (IEC) activities to increase awareness with a focus on community led and people centred initiatives. Considering that the children play an effective role in popularizing new ideas and concepts, School Sanitation has been introduced, initially in all primary and upper primary schools in rural areas. So far 111 project proposals in 26 States/UTs have been sanctioned. It is proposed to continue the Programme in the 10th Plan Period also inorder to cover remaining districts in the country.

1.5 The Working Group finalised the outlay for water supply and sanitation sector during 10th Plan Period in the recommendations. These are summarised as follows:

Table 1.1 (A) Rural Water Supply Tenth Five Year Plan outlay (Govt. of India)

S.No.	Programme	Outlay (Rupees in Crores)
1.	Coverage of rural habitations(50:50)	12,300
2.	Water quality problem mitigation (75:25)	10,000
3.	Sector Reforms Projects (100%)	2,000
4.	Support activities like IEC, HRD, MIS, etc.(100%)	500
TOTAL		24,800

(B) Tenth Plan Outlay for Govt. of India and State Governments
(Rupees in Crores)

Activity	Share	Years					Total
		2002-03	2003-04	2004-05	2005-06	2006-07	
Coverage	Centre	2100	2300	2400	2700	2800	12300
	State	2100	2300	2400	2700	2800	12300
	Total	4200	4600	4800	5400	5600	24600
Quality	Centre	1600	1800	2000	2200	2400	10000
	State	530	600	670	730	800	3330
	Total	2130	2400	2670	2930	3200	13330
Sector Reforms	Centre	320	360	400	440	480	2000
	State	0	0	0	0	0	0
	Total	320	360	400	440	480	2000
Support Activities	Centre	80	90	100	110	120	500
	State	0	0	0	0	0	0
	Total	80	90	100	110	120	500
Total	Centre	4100	4550	4900	5450	5800	24800
	State	2630	2900	3070	3430	3600	15630
Grand Total		6730	7450	7970	8880	9400	40430

Table 1.2 - 10th Plan Outlay for Rural Sanitation (Govt. of India)

(Rupees in crores)

		2002-03	2003-04	2004-05	2005-06	2006-07	Total
1.	Total Sanitation Campaign	450	588	710	820	970	3538
2.	IEC	2	2	2	2	2	10
3.	HRD	20	20	20	20	20	100
4.	Research and Design	2	2	2	2	2	10
5.	Monitoring and Evaluation	0.50	1.00	1.00	1.00	1.50	5
	Total	474.5	613	735	845	995.5	3663

Table 1.3 – 10th Plan Outlay for Rural Water Supply and Sanitation
(Rupees in crores)

Year	Rural Water Supply			Rural Sanitation			Grand Total
	GOI	States	Total	GOI	States	Total	
2002-03	4100	2630	6730	474.5	237	711	7441
2003-04	4550	2900	7450	613.0	306	918	8368
2004-05	4900	3070	7970	735.0	367	1101	9071
2005-06	5450	3430	8880	845.0	422	1266	10146
2006-07	5800	3600	9400	995.5	497	1491	10891
Total	24800	15630	40430	3663.0	1829	5487	45917

The Working Group recommends a total outlay of Rs.45917 crores for Rural Water Supply and Sanitation sector for the 10th Five Year Plan. The Central share alone of the above would be Rs. 28458 crore.

CHAPTER – II

RURAL DRINKING WATER SUPPLY

1. AN OVERVIEW

1.1 Water is one of the most basic requirements of all forms of life and is the key to the socio-economic development of the country. It is estimated that at present about 1.1 billion of the world's population do not have access to adequate drinking water facilities and projections for the year 2050 indicate that about 2/3rd of the population of the world would be facing moderate to severe water scarcity. Preserving the quality of water and ensuring its availability on a sustainable basis have been the major challenges that India is facing today. Increased water pollution due to industrial activities, growth of population and increasing requirement of water for the agricultural sector have led to a scenario where access to safe drinking water in some parts of rural areas has become problem. Any future plan should, therefore, address the issue of effective management of water resources through a perceivable shift in the principle towards water use, development and management strategy so that the entire population gets easy access to one of the basic necessities of life.

1.2 The programme for providing safe drinking water to rural habitations in the country, namely Accelerated Rural Water Supply Programme (ARWSP), introduced in 1972-73 has focussed attention on physical coverage of rural habitations with the facility of drinking water as per certain norms fixed for the purpose. As a result of large investment made in the past, the coverage position has improved. There are more than 3.50 million hand pumps installed in the rural habitations besides over one lakh piped water supply schemes. As the programmes to provide safe drinking water to rural population are implemented by the State Governments, efforts are being made to bring in policy

interventions and financial support to assist the State Governments to achieve the coverage objective.

1.3 Over the years, the Government has been focussing attention on the question of providing safe drinking water to the un-served and under-served rural population through investments and improved technological measures. Despite these efforts, adequate availability, appropriate levels of quality as well as sustainability of drinking water systems/ sources continued to be under strain in many parts of the country. Any strategy in the coming years should, therefore, concentrate on meeting the challenges posed by these constraints. It is evident that Government efforts alone cannot tackle all these problems. Efforts have, therefore, to be made by the community, civil society, the Government and private entrepreneurs to ensue that all the rural habitations of the country would have access to adequate, safe and sustainable supply of drinking water.

Strategy

1.4 The objectives set for the rural water supply in the National Agenda for Governance (NAG) of the Government of India envisage provision of safe drinking water to all rural habitations by 2004. The strategy to achieve the objective of providing drinking water to all rural habitations revolves around the following three distinct but inter-related issues:

- Accelerating the coverage of remaining Not Covered and Partially Covered habitations with safe drinking water systems.
- To tackle the problems of water quality in affected habitations and to institutionalise water quality monitoring and surveillance systems.
- To promote sustainability, both of systems and sources, to ensure continued supply of safe drinking water in covered habitations.

Coverage

1.5 The Comprehensive Action Plan (CAP) prepared on the basis of information furnished by all the States/UTs in consonance with the NAG, outlines that all the rural habitations in the country would be provided with drinking water facilities in five years, subject to availability of funds. The status of coverage in terms of Not Covered (NC), Partially Covered (PC) and Fully Covered (FC) habitations as on 1-4-2001, as per the information furnished by the State Governments is as follows:

Total Rural Habitations	Not Covered	Partially Covered	Fully Covered
1422664	20631	168625	1233408

Most of the left over Not Covered and Partially Covered habitations are of difficult nature as those are ‘no source’, ‘insufficient source’ or ‘quality affected source’ habitations or are in difficult terrain, desert region, hilly region, etc. Despite these constraints, the CAP indicates that the physical coverage of all the rural habitations with access to drinking water facilities could be achieved by 2004 subject to availability of funds.

Consolidation

1.6 The CAP envisages to achieve full coverage on the basis of the present data, which is originally based on a Nation-wide survey conducted during 1991-94, re-survey conducted during 1996-97 and updated from time to time by the State Governments and lately reflected in the action plans prepared by the States. Even if all rural habitations based on last survey are fully covered with drinking water facilities by the year 2004 as envisaged in the CAP, there may be slippage of already covered habitations or emergence of new non-covered habitations due to the following reasons:

- Increase in population / number of habitations.
- Systems having outlived their life span or becoming defunct due to poor maintenance.
- Sources going dry due to depletion of ground water level.
- Sources becoming quality affected.

In order to know the actual coverage status, it has been decided to conduct a Nation-wide re-survey to assess the present status of actual coverage of rural habitations. Hence, after providing drinking water supply facilities to all rural habitations as per existing data by 2004, the remaining period of the Tenth Plan, viz. 2004-2007 would be utilized for consolidation, i.e. coverage of newly emerged habitations and those which have slipped back to Partially Covered or Not Covered due to reasons explained above.

Quality

1.7 As per the information furnished by the State Governments, about 2.17 lakh rural habitations were affected with quality problems of drinking water as on 1-4-1999. As this information is based on the updated figures submitted by the State Governments based on 1% stratified sample survey conducted in the past, the actual ground reality may be different. In order to assess the actual scenario with regard to the quality problem, the State Governments are carrying out a two-stage survey, namely 5-10% Stratified Random Sample Survey, with Block as unit, in the first instance followed by 100% survey in Blocks found affected with quality problem. The exact magnitude of the problem could be assessed only after the results of the survey are available.

Exclusive Sub-Missions were constituted for initiating both preventive and remedial measures for water quality problems, for ensuring safe drinking water to the rural population. The existing Sub-Mission programmes planned and implemented by the State Governments are on control of Arsenic, Fluoride, Brackishness, Iron and Sustainability.

Even though the coverage has been impressive over the last decade, various studies indicate that there is no institutionalised quality monitoring and surveillance system in the country. This would be critical to the entire water supply sector owing to increase in pollution and depletion of ground water level. Establishing of water quality labs could be only one of the components of the programme. A “Catchment Area Approach” would be adopted by involving various grass root level educational and technical institutions by utilising their existing resources and strengthening them by providing additional financial resources. This may be implemented at three levels consisting of a Nodal Unit at the top level catchment like a premier technical institution, university, etc., intermediary level units like district laboratories, polytechnics, etc. and grass-root level units like (+2) level education institutions, labs, etc. The nodal units will be networked with the State Government Units. Once the exact magnitude of the problem of chemical contamination in ground water used for drinking purpose is assessed accurately, the problem would be tackled through the multi-pronged strategies enumerated below:

As the community themselves will have to maintain and manage rural drinking water supply schemes in the long run, the following alternatives may be adopted considering the choice, cost of the scheme and ability of the community to pay:

- draw water from alternate surface sources;
- deeper contamination free ground water sources;
- installing water treatment plants.

Encourage research and development activities to develop and identify appropriate technologies for

treatment of chemical contamination, which can easily be managed and operated by the rural community.

- In heat generating industries like petro-chemicals, cement, thermal power, etc. located in the coastal areas, surplus heat generated and waste heat released could be utilised by setting up appropriate plants for distillation of saline sea water for conversion to potable drinking water.
- A Dual Water Supply Policy may be adopted for rural habitations facing acute water quality problems. In these habitations even if safe water is provided up to 10 lpcd, which would be sufficient for drinking and cooking purposes, it may be considered as habitation(s) with a safe source of drinking water. For other activities like washing, etc. water available from unsafe sources could be utilized.
- Majority of the water treatment plants for defluoridation, iron-removal, desalination etc. installed under the Rural Water Supply Programme are found to be non-functional due to lack of adequate training, lack of funds and non-involvement of the community in the operation and maintenance of the treatment plants.
- A number of domestic filters provided under pilot project in parts of Rajasthan is reported to be functioning successfully without any problem because of advance measures taken to train the local community in the operation and maintenance of the units. Therefore, there is need to promote and encourage the use of domestic water filter systems.

Sustainability

Sustainability of Systems

1.8 The under performance of the rural water supply sector is likely to continue unless there is a fundamental reform of service arrangements. It is becoming increasingly evident that the Government alone will not be able to provide necessary expansion of services to a growing population. Hence, the need for the role of the Government to shift from that of a services provider to that of a facilitator has been acknowledged. Together with the shift in the role of the Government, there has been increasing recognition about the importance of empowering local communities. Even though access to drinking water is a social right, the rural people while exercising this right should use available water as an economic good. There is an increasing awareness of the need for strengthening the capacity of managers and entrepreneurs at local community level entrepreneurs in order to enhance their effective participation in making safe drinking water supply facilities available to all on a sustainable basis.

Accordingly, the Government of India has introduced within the Rural Water Supply Programme a new initiative from 1999 to institutionalise community based rural water supply systems by incorporating the following three basic principles for ensuring peoples' participation:

- Adoption of a demand responsive and adaptable approach based on empowerment of villagers to ensure their full participation in the project through their decision making role in the choice of scheme design, control of finances and management of systems;
- Shifting role of Government from direct service delivery to that of facilitator.
- Partial cost sharing either in cash or kind or both and full responsibility of Operation and Maintenance by end-users.

Government has already initiated action to implement the reforms in 63 districts across the country on a pilot basis. Projects in respect of 62 districts have already been sanctioned and are at present in various stages of implementation. Implementation of these 63 pilot districts would continue in Tenth Plan period.

Sustainability of Sources

1.9 Another major area of concern is the sustainability of drinking water sources. The rapid and accelerated drawal of ground water to meet competing demands from various sectors has led to an alarming decline in ground water level in many areas and consequent stress on ground water resources. The tube well and pump technology has been responsible for raising agricultural production and meeting the demand for domestic and industrial water needs. Over-exploitation of ground water and non-completion of surface water schemes have resulted in marked lowering of ground water levels. In drought prone and desert areas, seasonal paucity of potable drinking water is very common. Use of ground water needs to be regulated through appropriate legislation/reform measures in irrigation and power sectors. Due to neglect and gradual disappearance of traditional systems of water harvesting and also of the practice of collecting, storing and using rainwater by individuals and communities for their domestic use, paucity of drinking water is felt more during droughts, especially in water stressed areas.

Since time immemorial, people used to collect and store rainwater for use in future. In many areas, these traditional systems of rainwater collection and storage are still in vogue. Since such rainwater harvesting systems are cost-effective, easy to build, operate and maintain by people/communities themselves, it serves as a substitute as well as is complementary to existing water supply systems. In recent years, rainwater harvesting including artificial recharge has been accorded high priority. Such rainwater harvesting schemes will not only be helpful in making sources sustainable and save systems from becoming defunct, but stored rainwater can be used to meet supplementary domestic requirement. This would ensure long term sustainability of the sources. This aspect will also be addressed on a much larger scale during the Tenth Plan.

2. NINTH FIVE YEAR PLAN PERFORMANCE

2.1 An overview of rural drinking water scenario brings out clearly the problems and issues which both Government of India and State Governments have been addressing in the Ninth Plan. The objectives of the Ninth Plan as regards Rural Water Supply Programme is as under:

- To ensure coverage of all rural habitations especially to reach the un-reached with access to safe drinking water.
- To ensure Sustainability of the systems and sources.
- To preserve quality of water by institutionalising water quality monitoring and surveillance.

2.2 The Ninth Plan performance is discussed in the following different heads for better appreciation of the rural drinking water status:

(a) Coverage

At the beginning of the Ninth Five Year Plan, 954470 habitations were Fully Covered (FC) and so far 390117 additional habitations have been fully covered during the Ninth Plan taking the total FC habitations to 1344587. Out of 85026 Not Covered (NC) and 391047 Partially Covered (PC) habitations, 70303 NC and 319814 PC habitations have been covered Y during the Ninth Plan as per the details given below:

Table –2.2.1
Habitation coverage during 9th Plan with drinking water

NC/PC Status	Coverage

as on 1.4.1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002*	Total
NC-85026	31584	19008	11868	6655	1188	70303
PC-391047	85410	93925	62769	61901	15809	319814

* Up to end of October 2001

The State-wise and year-wise details are at Annex-V

(b) Financial

Even though, Government of India Ninth Plan outlay for Rural Water Supply Programme was Rs.8150 crores, an amount of Rs.8599 crores have been provided for the sector and Rs. 7664.65 crores have been spent up to end of October 2001. The year-wise outlay and expenditure incurred till 20.11.2001 by the Department of Drinking Water Supply and the State share is in the following Table.

Table –2.2.2
Outlay and expenditure during 9th Plan

(Rupees in Crores)

Year	Outlay	Expenditure	State share	Total
1997-1998	1302.00	1299.91	1676.99	2976.90
1998-1999	1612.00	1600.64	1897.07	3497.71
1999-2000	1715.00	1714.41	2471.77	4186.18
2000-2001	1960.00	1896.55	2276.27	4172.82
2001-2002	2010.00	1153.14*	733.98*	1887.12*
Total	8599.00	7664.65*	9056.08	16720.73

* Expenditure up to end of October 2001

(c) Sector Reform introduced

Reforms have been introduced to institutionalise community participation in Rural Water Supply activities to ensure sustainability of systems and sources. The Sector Reform projects are implemented in project mode in 63 identified pilot districts. 62 of them at a provisionally estimated cost of Rs.1860 crores have been sanctioned and Rs.499 crores has been released to the sector reforms pilot districts. Slowly and steadily the implementation of these projects is progressing.

(d) Coverage slippage study initiated

Action to carry out a study to assess the magnitude of slippage of Fully Covered habitations into Partially Covered and Not Covered habitations and Partially Covered habitations into Not Covered habitations has been initiated.

(e) Relaxation of norms

The present norms for providing drinking water supply at the rate of 40 lpcd with the source within 1.6 kms in plains and 100 meter elevation in hills has been relaxed for those States who have achieved full coverage. This relaxation could be availed only if the beneficiary community is willing to share 10% of the capital cost for implementation of the schemes and the responsibility of operation and maintenance.

(f) Catchment area approach piloted

Various workshops were held to propagate the concept of Water Quality Monitoring and Surveillance through Catchment Area Approach. An IEC module and an Implementation Manual for Water Quality Monitoring and Surveillance with emphasis on Catchment Area Approach are under finalisation.

(g) Quality problem survey

A fresh two-phase survey to assess the number of quality affected habitations in the country is in progress. The results of the survey is likely to indicate the magnitude of problem on account of the drinking water quality.

(h) Powers delegated to States

The powers to plan, sanction and implement Sub-Mission projects to mitigate the problems of drinking water supply in quality affected habitations have been delegated to the State Governments. The States can utilise up to 20% of ARWSP funds for implementation of Sub-Mission projects. However, the Government of India commitment in respect of Sub-Mission projects sanctioned prior to 1.4.1998 is being fulfilled.

(i) Guinea worm has been fully eradicated during the Ninth Plan Period.

(j) Human Resource Development (HRD)

The main objective of this program is to create awareness, involvement of local community at village level, ensure motivation, develop scientific temper and skill upgradation of Panchayat functionaries, water and sanitation committee members, self employed mechanics and masons, school teachers and students. Sector professionals are also being trained for productivity improvement and rural orientation through need based in-service training/ exposure utilizing services of specialists/ experts. A National Human Resource Development Programme (NHRDP) was launched in 1994 with following objectives:

- Empowerment of Panchayati Raj Institutions/Local Bodies with the objective of enabling them to take up O&M activities relating to Rural Water Supply Systems and to train at least one beneficiary especially women, in each village through district level trainers who in turn may be trained at selected institutions forming the Indian Training Network (ITN).
- Improve the productivity of sector professional through specialized courses
- to introduce rural orientation in technical education sector coupled with publication of manuals on rural water supply and rural sanitation.
- Capacity building of local communities by giving requisite training to mechanics/ health motivators/ masons etc. specially women to operate & maintain handpumps and the components of other water supply system as well as to generate demand for adequate sanitation facilities.

Under this Scheme, the Central Government provides 100% assistance for the above activities as per approved norms. Out of 28 States, 24 States have taken action for setting up of State HRD cell. The other State Governments are being pursued for setting up HRD cells. 7 institutions have been selected as key institutions for HRD activities.

The following constraints were observed during 9th Five Year Plan:

- The budgetary support was not adequate . Initially, the staff salaries were to be shared on 50:50 basis between Centre and State, which, although later on, made 100% funded by the Centre, but some of the State Governments could not position their staff in HRD Cell resulting in slow progress.
- Since the sector was government owned and financed, non-government institutions could not initiate HRD activities for the sector, thus, creating a shortage of institutions and absence of diploma/ degree/ PG degree level courses in technical institutions exclusively covering the rural water supply needs. The institutional support from within and outside was insignificant due to lack of training institutions/ infrastructure facility with PHEDs/ Boards/ Authorities and lack of dedicated institutions out side the department.

(k) Information, Education & Communication (IEC)

IEC campaigns carried out so far were of a broad nature, and attempted to enhance people's awareness with regard to drinking water and health-related issues. An effective IEC campaign plays an important role wherein the rural population is sensitized about (i) the project concept, (ii) importance of water and its conservation, (iii) rural water supply technology, (iv) water quality and its monitoring; and (v) need for community participation, gender empowerment etc. This empowers the rural population in taking decisions about water supply schemes. As regards water source sustenance of water quality & quantity and timely repairs/ O&M, IEC activities were carried only in few selected districts of the country during 9th five-year plan. IEC activities in the 9th five-year plan had following objectives:

- The programme and problem-related IEC inputs should mutually enlighten and empower the service providers, supporters and end users and the alternatives, options and opportunities available under the programme and on the most appropriate, simple, cost-effective, affordable, manageable, culturally suitable technical options and methods that are available for people to accept within their limitations.
- To involve all sections of society - at all stages of programme implementation. Importance to be given to empower women, as it is they who suffer the most due to lack of safe drinking water and proper sanitation facilities.

Following Constraints were observed during the 9th Plan period:

- Implementation of IEC campaign programme suffered from major drawbacks as it was taken as an add-on programme and only piecemeal activities were undertaken.
- Delay in releasing funds by the State, as a result implementation started belatedly.

(l) Management Information Systems (MIS)

A nation-wide MIS and Computerization Project for effective planning, monitoring and implementation of various activities under Rural Water Supply and Sanitation Sector including the activities like installation of computer system in States/ UTs, training of officials, development of software, implementation of computerized Management Information System (MIS), connecting all the offices with computer facilities and networking were taken up. The project covers all offices up to the level of Division/ Executive Engineer in the State Departments for which Government of India provides 100% financial assistance for hardware, software and training to people associated with the work in all States/ UTs. The project is at an advanced stage of implementation. The installation of hardwares is almost complete. The software development cycle has started. The first stage of this cycle namely Software Requirement Specification (SRS) study has been completed. At present, all the States are using the network facility provided by National Informatics Centre (NIC) for

connectivity. The Ministry of Rural Development is planning to inter-link all the offices of States/ UTs covered under the Computerization Project through Very Small Aperture Terminal (VSAT).

(m) Monitoring and Evaluation:

Government of India has taken up monitoring and evaluation studies through reputed organisations/institutions during the 9th plan period. 13 states have been evaluated and 14 states evaluation is likely to commence shortly. The State Governments have been requested to take up similar monitoring and evaluation studies on the implementation of the rural water supply programme. 100% financial assistance is provided by the Centre to the States for taking up such evaluation studies with prior approval of the Mission . The reports of these studies were made available to the Mission and immediate corrective actions were initiated as a follow up to improve the quality of programme implementation.

(n) Quality Problem Habitations Survey

With the massive investments made during the various Five-Year Plans by the States and Central Governments, the results achieved have also been apparently quite impressive. The following Table shows that a large number of villages were identified as "Problem Villages". Surveys conducted in 1972, 1980 and 1985, identified 1.62 lakh "Problem Villages" of which all except 3,000 were covered with at least one safe source of water supply till the beginning of the 8th Plan (1992-97). From the year 1994-95, "Habitation Approach" was adopted instead of "Village Approach". The status updated in 1996-97 and taking into account the subsequent coverage during succeeding years and updated further in June 2001 reveals that as on April 1999, 2.17 lakh habitations had water quality problems.

Table – 2.2.3
Progressive Coverage of Problem Villages (PVs)

Year		No. of PVs	
		Identified	Covered
1972		1,52,000	
1980	Upto Start of VI Plan		94,000
1980		2,31,000*	
1980-85	During VI Plan		1,92,000
1985		1,62,000*	
	Coverage during VII Plan +2 Annual Plans		1,59,000
1992-97		3000	
April’99		2,17,000	

*Including spill over from preceding Plan

(o) Drinking water quality problem

During 9th Five Year Plan, one of the objectives was to ensure

(a) supply of safe drinking water in quality affected habitations under exclusive Sub Mission programmes;
(b) to protect quality of water by institutionalising water quality monitoring and surveillance through a Catchment Area Approach.

Performance:

Between 1996 and 1998, prior to empowerment of States for sanction of Sub Mission schemes, 69 projects with a total outlay of Rs.844.86 crore for 12 States were sanctioned. After 1.4.1998, 109 projects with a total outlay of Rs.369.34 crore in 15 States were undertaken by the States. Thus totally 178 projects with a total outlay of Rs. 1214.20 crores were taken up during 9th Plan. Two stage Water quality survey on 5-10% stratified sampling block wise to understand the magnitude of the problem was launched. Total eradication of guinea worm from the country is a significant milestone. In view of the huge backlog for testing of samples and also the infrastructure available in the States. Catchment Area Approach strategy involving all concerned personnel and institutions right from grass root to State level was designed and the following activities were also initiated:-

(a) Various workshops to propogate the concept of water quality monitoring and surveillance involving all relevant institutions and personnel at different levels;
(b) Preparation of IEC material and module for institutionalising community based water quality monitoring and surveillance;
(c) Preparation of implementation manual for water quality monitoring and surveillance adopting Catchment Area Approach;
(d) In view of the growing severity and enormity of fluoride and arsenic contamination, appropriate action was initiated for setting up centres of excellence for arsenic and fluorosis mitigation;
(e) Besides 567 water testing laboratories were sanctioned as part of strengthening the infrastructure of the State for testing and protection of water quality.

3. TENTH FIVE YEAR PLAN

3.1 COVERAGE

Accelerated Rural Water Supply Programme (ARWSP) Policy, Vision and Action Plan in respect of Rural Water supply, Norms, Allocation Criteria, and National Agenda for Governance, Resources, Cost Recovery and Role of External Support Agencies are dealt in this part with the focus on habitation coverage.

3.1.1 Accelerated Rural Water Supply Programme (ARWSP)

The programme for providing safe drinking water to rural habitations in the country, namely Accelerated Rural Water Supply Programme (ARWSP), introduced in 1972-73 has focussed attention mainly on physical coverage of all habitations with the facility of drinking water supply as per certain norms fixed for the purpose. As a result of the heavy investment made in the past, the coverage position has improved. As of now, there are more than 3.50 million hand pumps installed in the rural habitations across the length and breadth of the country. In addition, over 1.16 lakh piped water supply schemes have been installed. The present norms adopted for providing safe drinking water to rural habitations are –

- 40 litres of safe drinking water per capita per day(lpcd) for human beings.
- 30 lpcd additional for cattle in the Desert Development Programme areas.
- One hand-pump or stand post for every 250 persons.
- The water source should exist within the habitation/within 1.6 km in the plains and within 100 mts. elevation in the hilly areas.

As per these norms, the status of coverage of rural habitations as on 1.4.2001 is as under:

Type of coverage	No. of habitations	Percentage of total habitations covered

Total	1422664	
Fully Covered (FC)	1233408	86.69
Partially Covered(PC)	168625	11.85
Not Covered (NC)	20631	1.45

During the year 2001-2002, it is expected that the coverage of NC and PC habitations will be 5500 and 45000 respectively. Thus, the number of habitations falling under NC and PC categories to be tackled during the Tenth Plan will be (a) Not Covered (NC) -15,000; and (b) Partially Covered (PC) - 1,25,000

The National Agenda for Governance of the Government of India stipulate that safe drinking water should be provided to all habitations on a sustainable basis by 2004. In order to achieve this objective, it is necessary to adopt prioritization on the following pattern: (i) Highest priority to be given to ensure coverage of remaining NC habitations with sustainable supply of safe drinking water (ii) coverage of all partially covered habitations (iii) Coverage of quality affected habitations with safe drinking water on a sustainable basis and (iv) the SC and ST population to be given priority while ensuring coverage of NC and PC habitations. Taking into consideration the imperative need for covering all remaining NC/PC habitations by the year 2004, the Working Group decided that during the first two years of the 10th Plan, viz. 2002-03 and 2003-04 focus will be laid on the coverage of remaining NC and PC habitations.

3.1.2 Need for fresh survey

It is pertinent to mention that while assessing the number of habitations to be covered, the status with regard to slippage of Fully Covered habitations getting into Partially Covered and Not Covered category and the Partially Covered ones becoming Not Covered habitations is not reflected in the coverage. This factor is largely responsible for the factual position relating to actual availability of drinking water being different from the figures of coverage quoted above. The reasons for the ground reality being different may be due to:

Increase in population
Increase in number of habitations
Systems having outlived their life span or becoming defunct due to poor maintenance
Sources going dry due to depletion of ground water level
Sources have become quality affected
Natural calamities like drought, flood, earthquake, cyclone, etc.

In fact, the Planning Commission in the Mid-term Appraisal of the 9th Plan has mentioned that despite the Government's claim of more than 95 percent coverage, independent reports indicate scarcity of drinking water in about half the villages of India. The figures regarding coverage of habitations are maintained on the basis of Nation-wide habitation survey conducted through the State Governments in 1991, revalidated in 1994 and updated in 1997 and the subsequent coverage intimated by the State Governments. While there should be no reason to doubt on the information furnished by the State Governments, these figures are based on 1991 Census and 1991 Survey and the increase in population leading to emergence of new habitations has not been taken into account while arriving at the figures.

The ultimate objective of the Accelerated Rural Water Supply Programme (ARWSP) is to cover all rural habitations in the country. There is need to bridge the gap between the figures reported by the State Governments regarding coverage of habitations and the ground reality, regardless of the factors responsible for such divergence. The Working Group discussed this point in detail and was of the

opinion that it is necessary for the implementing agencies to make a reassessment of the actual ground position of NC, PC and FC habitations. The States may be requested to collect the latest data in this regard as on 1st April 2002. The position regarding total number of habitations will be reviewed only after a minimum period of five years, thereby implying that the data relating to the total number of habitations now being assessed and furnished by the States will be frozen for a period of five years. Regarding slippage of FC habitations to PC and NC categories and PC habitations to NC category, the Working Group was of the view that slippage position should be assessed at two spells during the year – first on 1st October i.e. soon after the monsoon and second after 1st April i.e. beginning of summer. This issue of fresh survey of habitations was discussed in the Conference of State Ministers held on 19-20 October 2001. It was recommended to launch a fresh survey of all habitations during 2002. This Group endorsed this recommendation.

The Working Group felt that while a clear picture on the extent of slippage will become available only after the proposed survey, it is reasonable to presume that about 20% of the habitations amounting to nearly 2.80 lakhs would fall in the category of slippage in coverage. The Group recommends that this needs to be addressed during the last three years of the 10th Plan period, (2004-05, 2005-06 and 2006-07).

3.1.3 Priority to cover NC and PC habitations

(i) So far as the strategy for coverage of habitations during the 10th Plan is concerned, the Working Group recommended that during the first two years of the 10th Plan period (2002-2003 and 2003-2004) the emphasis will be on coverage of remaining habitations as per the existing data. By the end of the year 2003-2004, the position regarding NC and PC habitations as per the latest assessment will become available and the remaining three years of the Plan period will mainly be focussing on addressing coverage of the newly emerged habitations/habitations slipped. The Working Group considered in detail the necessity of continuing with Accelerated Rural Water Supply Programme (ARWSP). It was felt that the position of NC and PC habitations will always remain dynamic and it is difficult to arrive at a point where there will be 100% achievement in coverage. After full coverage of the habitations to be covered as per the present data and for filling the gap during the last three years of the Tenth Plan period, it would be appropriate to consider the responsibility of coverage afresh during next Five Year Plan.

(ii) As regards the quality problems, the Working Group found that 20% of the funds under ARWSP can be utilised by States for quality related issues and on sustainability. In order to give focussed attention to Sub-Mission programmes, there is need to release funds separately for Sub-Mission programmes under ARWSP whereby funds not utilised will not roll back to normal ARWSP activities. The Working Group opines that quality affected habitations with no safe source of water are to be treated as not covered habitations for the practical purposes and highest priority should be given to quality in Tenth Plan.

(iii) Further, the following policy recommendations are suggested in respect of ARWSP for the Tenth Plan:

(a) Per capita per day water supply norms may be augmented from 40 lpcd in the States where 40 lpcd has been achieved. The Working Group agreed that the augmentation beyond 40 lpcd (say 55 or 70 lpcd) be based on Sector Reform principles where at least 10% capital cost of the additional investment and 100% O&M is to be borne by the community. The question of replacement of the old water supply schemes, which have become defunct was also considered by the Working Group and decided that the replacement of defunct water supply systems should be undertaken as new works out of State resources and ARWSP funds during the 10th Plan as per the existing ARWSP guidelines.

(b) Further, population, distance and elevation norms for coverage may be liberalised during Tenth Plan in respect of states which have achieved full coverage as per existing norms. The existing norms of water supply of 40 litre per capita per day (lpcd) at a distance of 1.6 km or elevation of 100 metres in hilly areas should be relaxed to 0.5 km and 50 metres of elevation. Additional water in DDP areas be provided, based on cattle of the habitation population and not as per existing norm of 20 lpcd.

(c) The question of bringing out certain modifications in the allocation criteria for ARWSP funds was also discussed by the Group. (i) It was brought to the notice, the recommendations made by the Conference of the State Ministers in charge of Rural Water Supply, held on 19-20 October, 2001 and also those of the Expenditure Reforms Commission, where enhancement in the weightage given to the NC/PC habitations and quality affected habitations was suggested. Taking into consideration the recommendations made by the Conference, the Group recommended that the weightage for coverage of NC/PC habitations be increased from 10% to 15% and for quality problem from 5% to 10%. (ii) It was also decided that 5% of the ARWSP funds will be specifically earmarked for natural calamities reported till November of the financial year and incase the funds are not used till then, they may be ploughed back to the normal programmes. (iii) The Group deliberated on the Operation and Maintenance (O&M) funding under ARWSP. As of now, 15% of the funds under ARWSP are earmarked for O&M. Most of the States are finding it extremely difficult to meet their O&M requirements out of the meagre funds. The Group, therefore, decided that the present system of funding will continue for O&M purposes till the water supply systems are handed over to the PRIs.

3.1.4 Legislative Control on groundwater extraction

Almost 85% of the drinking water needs are met from ground water, 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 remainder 5%. 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 susbsidised irrigation electricity tariffs has 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 have been declared ‘dark’ and ‘grey’ zones, there has been no let up in the depletion of ground water aquifers. Recently, it has been noticed that ground water 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 to undertake costly and complicated piped water supply schemes. The need for regulating the extraction of ground water arises from the following considerations viz (a) Protection of resource against over exploitation, (b) Protection of resource against quality degradation and (c) To ensure social equity and to guarantee minimum provision to all sections of the society. In order to regulate and develop ground water resources in a scientific manner, a Model Bill framed by the Government of India was circulated to the States. The status of the legislation in various States has recently been reviewed and it was seen that few States like Maharashtra have enacted the legislation. The Group recommended the need for a strong legislative control on ground water extraction for ensuring sustainability of sources.

3.1.5 Accessibility to water sources – norms and priorities with regard to SC/ST

The Group noted that accessibility to natural resources including drinking water in India is linked to the caste dimensions in rural areas. If the sources of safe drinking water are less, the disparity level increases between the dominant caste groups and Scheduled Caste and Scheduled Tribes. In order to bring around equity and accessibility to all strata of the society, it is necessary to ensure adequate sources in the first place. In addition, there is need to create a congenial environment through social

mobilisation process. There are examples where proactive village level institutions have been able to mitigate problems that emerge in the community. In order to put in place a system that solves the drinking water problems of all sections of society, regardless of cast factors, the Group suggests the following:

(1) Sensitise the village community to form a village level committee to address and solve social issues of natural resources, including drinking water supply.
(2) The need for addressing specific problem of SC/ST habitations was discussed and the Group agreed that the norms be relaxed for these habitations as per the provisions contained in the guidelines.

3.1.6 Role of PRIs in Rural Water Supply

After the 73rd and 74th amendment of the Constitution, State Legislatures are required to endow the panchayats with necessary powers and authority to enable them to function as institutions of self-government. For implementation of schemes relating to rural water supply including maintenance of community assets, there is need to involve PRIs effectively for ensuring a high degree of functional coordination between various agencies working towards social development. This is more important at the operational level. At the functional level, the PRI field functionaries concerned should be trained to play the role of team managers to promote well-directed teamwork for effective coordination.

The Working Group noted that PRIs more specially Gram Panchayats have a definite advantage in reaching out to the community and solving its problems from close proximity. In areas where the presence of PRIs has been predominant, the results in the entire development process have been remarkable. In order to ensure equitable and accessible water sources at the village level, the capability of the PRIs has to be tapped effectively. It is of vital importance to sensitise the PRIs through effective IEC strategy about the rural water supply schemes. There is need to grant an optimum level of autonomy to the PRIs for effective implementation of individual schemes.

Once the task of sensitising the PRIs is successfully completed, there is need to keep the institutions updated on the development programmes on a continuous basis. At the grassroots level, it is necessary to effectively utilise the potential of traditional water conservation methods as the villagers have sound knowledge systems handed over from generation to generation about various methods of water conservation practices. This vital knowledge base need to be tapped effectively and used in implementation of rural water supply schemes. In fact necessary assistance should be rendered to the PRIs for maintaining database of water availability so that the dual approach of traditional system and modern technology get utilised for solving shortage of drinking water, especially during summer months.

The role of Gram Panchayats and its Village Water Supply and Sanitation Committee in operation and maintenance of water supply assets created at the village level is very essential. If carefully managed, the village resources can be effectively oriented towards this vital link in rural water supply programmes in the rural areas. Funds provided to the PRIs by Central and State Finance Commissions may also be utilised for this purpose.

The strategy for transferring rural water supply schemes to Panchayati Raj Institutions/Communities was discussed at length. The Group recommended that the responsibility of the ownership, operation, and management of RWS schemes should be handed over to the 3 tier Panchayats adopting the subsidiary principle along with the manpower and resources gradually within the 10th Plan period.

3.1.7 Linkage of Rural Water Supply with other Rural Development programmes

There is need for convergence of various rural development programmes at panchayat level so that the focus on overall development does not get blurred. There should be institutional mechanism at the field level for coordination of various activities relating to rural water supply like watershed development programme, social forestry, rainwater harvesting, etc. so that the entire community work in a concerted manner towards achieving the goal of development. The State Governments implement the Accelerated Rural Water Supply Programme (ARWSP) by providing access to drinking water to all habitations in the rural areas. This programme is implemented by the State Governments who have been delegated powers to plan, sanction and implement the programmes. There are programmes under the Ministry of Rural Development which enhance groundwater level like social forestry. Similarly, Ministry of Water Resources has programmes for management and conservation of water for all purposes including for drinking. The Working Group is of the view that there is total lack of coordination between various agencies not only at the ground level but even at the highest levels where the development plans are formulated. There is need for ensuring better coordination so that available funds are utilised in an optimum way. At the level of the Gram Panchayat, it will be possible to form VWSC and user committees and coordinate the activities of these committees by the Panchayats. Further, an effective convergence or at least coordination between programmes related to water supply, sanitation and health would lead to better implementation of the programme at grassroots level.

The role of the NGOs in the rural water supply sector needs to be strengthened. With the increasing need for community involvement, the gaps in the development process needs to be filled by active presence of reputed NGOs. Similarly other professional institutions and community-based organisations should also be involved in process of planning, development and management of water supply schemes. This will ensure adoption of integrated policies for water conservation and proportionate distribution of available resources on an optimum way.

3.1.8 Operation and Maintenance (O&M)

The maintenance of the assets created through huge investment has become a major problem that affects the sustainability of the systems. It is not possible for the Government alone to take the responsibility of operation and maintenance in the required way with the limited resources available. There is need to involve the communities for ensuring proper upkeep of the assets created. The initiative taken through the sector reform is the right direction in this regard. Through demand driven approaches, the community is involved in the planning and implementation of water supply schemes by sharing full O&M cost and part of the capital cost. The ultimate solution for sustaining the system created is the replication of sector reform concept in all districts. There is need to involve Panchayati Raj Institutions for upkeep of the systems. The States should play a more proactive role in transferring the O&M responsibility to the Gram Panchayats. The PRIs should be encouraged to effectively deal with the maintenance of the existing water supply structures for which incentives will have to be paid at the initial stages. The ultimate solution lies in empowering the communities to the extent of their raising resources to maintain the water supply systems available in their locality. States should shed their inhibitions in transferring the rural water supply schemes, specially hand pumps to Panchayats. Funds earmarked for O&M should also be made available to PRIs along with staff, equipments, etc. so that PRIs effectively ensure proper management, operation and maintenance of the assets transferred to them.

3.1.9 Additional resource mobilisation

(i) The rural water supply schemes are conceived as Government grant schemes. It is necessary to bring in the concept of institutional funding to this sector for mobilisation of additional resources. Since substantial investment has already been made in the sector and huge infrastructure has been

built up, it is essential to ensure their operation and maintenance for achieving sustainability. The transformation from a target based, supply-driven approach, paying little attention to the preferences of the end users, to a demand-based approach where users get the service and are willing to pay for it, being adopted as part of the sector reforms, is an indication to the reality that partial cost sharing and taking up the full O&M responsibility by the community is the only way to ensure viability and sustainability of the schemes in a rural water supply sector. Community participation is also seen as a viable alternative to the present system as major part of the funds for small Central infrastructure projects in panchayat areas can be contributed by the beneficiary community. Programmes aimed at seeking innovative community oriented projects has been experimented through SWAJAL in U.P, "We for Ourselves" in Tamil Nadu and Olavana Model in Kerala, where contribution from the beneficiary groups has been vital. It has proved that it is possible to provide sustainable water supply systems through community financing either sharing partly or fully, the capital cost and O&M expenditure.

The role of financial institutions in mobilising additional resources is vital. In this regard, the Group noted that the potential of financial institutions like HUDCO, LIC, IDFC, ICICI, etc. should be tapped. Although some of these institutions are yet to open up their portfolios for rural water supply, there is scope for exploring their active role, especially at the State level for meeting expenses on rural water supply schemes. In addition to the above agencies, financial institutions like commercial and co-operative banks should be encouraged to include financing of water supply schemes in their portfolios. This would provide more choices to local borrowing agencies. The Working Group supported greater involvement of financial institutions of repute including private entrepreneurs.

3.1.10 Role of the External Support Agencies

There are a number of External Support Agencies who have expressed their willingness to support projects in Rural Water Supply sector, like the World Bank, DFID, KFW, DANIDA, UNICEF, etc. As per the present policy, the projects to be considered for external funding should include component for institutionalising community based, demand driven rural water supply programme with cost sharing by the communities, in line with the sector reform projects undertaken by the Government in selected districts on pilot basis.

Organisations like WHO, UNICEF, WSP-SA, etc. take up number of programmes for supporting the Government sector reforms initiatives. These agencies also engage in selected focussed districts/villages, on issues like water quality monitoring and surveillance, HRD activities, launching of quality related programmes, technology options, preparation of various manuals and publications, exchange of best practices, assessment and evaluation studies, general awareness campaigns on water use and hygiene in rural areas, particularly in schools, etc.

IDA fund is recommended to be accessed for a multi-state national programme to tackle water quality problem. World Bank funding for a state water supply project in a year should be improved to the level of 2 to 3 States per year. The endeavour made by the external support agencies have always been supporting the initiatives taken by the Government. It has been the experience that these agencies implement rural water supply packages with innovative ideas and flexible approaches in selected areas as a demonstration strategy. More than the financial impact of the contribution made by the external support agencies, Government stands to gain from these experiments while launching new policy initiatives in its programme.

The Working Group felt that External Support Agencies should be encouraged to take up more projects in the rural areas of the country. While doing so they should increasingly choose areas where (1) there are a large number of NC/PC habitations (2) quality problems in drinking water is of high order and (3) there is low level of awareness about and acceptability of community based demand

driven approaches (4) areas where programme implementation, whether routine or new initiatives, have been rather slow due to various bottlenecks.The Group also noted the relevance of support given by the External Support Agencies in Water Supply and Sanitation sector and expressed the hope that they will continue to render their support in the years to come.

3.1.11 10th Plan Outlay for Coverage

The Working Group feels that Rs.23,000 crores would be required for undertaking the above activities to provide access to drinking water in all rural habitations in the country during 10th Plan period.

3.2 REFORMS IN THE RURAL WATER SUPPLY SECTOR

3.2.1 Policy and Principles

Under the Rural Water Supply Programme, due to massive Government investments in excess of rupees thirty two thousand crores, considerable coverage as per the national norms of providing drinking water supply has been achieved. Having achieved this success, the reforms were introduced into the Rural Water Supply Sector in order to ensure the sustainability of the systems and sources, by institutionalizing community participation in the implementation of Rural Water Supply schemes. This signifies a major paradigm shift from a centralised, government oriented and supply driven programme to a decentralised, people oriented and demand driven programme. The reforms envisage to encompass the following broader elements:

(a) adoption of a demand-driven approach based on empowerment of villagers to ensure their full participation in the project through a decision making role in the choice of scheme design and management arrangement;

(b) focus on village level capacity building (Village Water and Sanitation Committees);

(c) ensure an integrated service delivery mechanism by streamlining the functions of the agencies involved in project implementation and;

(d) at least 10% capital cost sharing and 100% sharing of O&M cost by users. The rate of capital cost shared should increase proportionately with increasing service demand. This contribution can be in the form of cash or kind (labour, land or material)

(e) taking up of conservation measures for sustained supply of water through rainwater harvesting and ground water recharge structures.

The Sector Reforms projects are being implemented either through the Zilla Parishad or through the District Water and Sanitation Mission (DWSM) constituted, as a registered society, functioning under the overall supervision, control and guidance of Zilla Parishad. The Sector Reforms projects are broad-based and encompass within itself the need based requirements of efforts for ensuring sustainability of the Rural Water Supply systems and the sources on which the systems are dependent. Sector Reforms Projects being process projects guided by demand driven principles, it is not fully possible to visualise the number of schemes, the type of schemes, estimated cost of each scheme to be implemented under the project. Even it would not be possible to assess the type, intensity and magnitude of the IEC and HRD component that would be required as it may vary from habitation to habitation in accordance with the population, the sociological setup, the financial capability, the literacy rate, the awareness level, the main occupation, the paying capacity, the willingness to pay and the water supply coverage status of habitation. As such, the requirement for

funds for these purposes could not be correctly estimated. These aspects would become clear only after the project implementation commences and progresses.

The objective is to empower the community including the women to be knowledgeable, self-reliant, independent and self supporting so as to enable them to assess their drinking water requirements and take decisions to fulfill those requirements. This objective cannot be achieved without proper intensive interactive IEC and Community Development effort. Hence, IEC/HRD or in other words community development activities is necessary and unavoidable component of the project.

A uniformly drawn out IEC/HRD Programme would not be sufficient. As the population, gender equations, awareness levels, economic status, water supply coverage status, paying capacity expectations from water supply systems etc. would vary among the habitations, we may have to resort to habitations specific IEC/HRD Programme. If the DWSC or its Core Group find it difficult to carry its activities on its own, they may take the assistance of support organizations to achieve this goal. It is in this context, that role of NGOs and other sector professionals/experts become important. DWSCs/Core Groups may also resort to the strategies like developing district, block and village resource groups or any other innovative strategy to achieve the desired objective of empowering the community and enabling them to take decision about Rural Water Supply scheme which would be adaptable, acceptable and affordable to them.

Intensive IEC/Community Development activity in a village, if successfully done, should culminate in the community organising themselves and constituting a VWSC without any persuasion but as a result of awareness and skill acquired by them during the period. They form the VWSC to enable a decision taking process as to which scheme out of the list of options offered to them during IEC / Community Development stage would be suitable for them. Once this decision is taken, the VWSC should intimate the DWSC about their decision and initiate collection of community contribution. The amount collected should be deposited in their own VWSC account and intimated to the DWSC for transfer of the Govt. share of the funds for implementation of the scheme. Subsequently, the agency to implement the scheme for them is also decided by the VWSCs themselves with the help of DWSC and once the decision is taken, the agreement with the decided agency is reached, follow up action to be taken by the VWSC themselves. Once the scheme is implemented, it is commissioned and thereafter its full O&M responsibility rests with the VWSC who would manage it with the contributions received from the users. A scheme got implemented in this fashion could be categorised as a conceptually correct and successful scheme which is likely to be sustainable both economically and institutionally. VWSC should normally be one of the Committees of Gram Panchayats.

3.2.2 Implementation Issues

It was decided to implement the reforms, initially in 63 districts across the country, on experimental basis, by means of implementation of Sector Reforms Pilot Projects there. 62 of such projects have already been sanctioned and the first installment of funds for their implementation has been released to the implementing agencies in respect of 60 of them till date. A statement indicating the names of pilot districts and the amount released to them is annexed [Annex- VI]

The main objective of the Sector Reforms project is not just physical implementation of a water supply scheme, but to institutionalise a new concept which envisages to enhance the awareness among the rural people by demystifying various possible RWS technology options, the merits and demerits of each option, their cost differences, the importance of peoples participation, and to equip the rural population to plan, sanction, partially fund, implement, operate, maintain, manage and replace the Rural Water Supply Scheme of their choice, themselves. This being rather difficult and challenging initiative, it is expected that there would be some teething problems in the beginning and is likely to gain momentum only after awareness generation and capacity building activities progress.

As this happens, the project is likely to get popular and take deep roots, thereby enabling the project implementation to pick up and progress faster. The implementation process is likely to be slow with few problems, which are anticipated while a new innovative initiative is implemented for ensuring sustainability.

Hence, the efforts to institutionalise the reforms need to be pursued vigorously. The slow progress in the implementation of the project should not be a matter of worry. In fact, process projects should make only a slow and steady progress, but at the same time, it should ensure that the concepts are clearly understood by all concerned. The implementation of the first phase of the reform cannot be confined to three years. The project concepts are so complex that it would take considerable time to educate various functionaries including the rural people. Similar initiatives elsewhere have taken more than seven years for implementation of projects much simpler in concepts and smaller in magnitude. The cycle of three years hence cannot be considered as project cycle, but as rightly mentioned in the Guidelines, they are just individual scheme cycles. The experience shows that the implementation of a Rural Water Supply scheme in a habitation / village through community participation is likely to take a maximum of about three years for completion of all the four phases.

However, it is felt that the Sector Reform pilot project implementation cannot be looked in isolation as a separate entity from the normal programme. A strategy must be devised to phase out the normal programme, like ARWSP, PMGY-RWS & other supply driven programme implemented with the State resources, within a fixed but short period of time. This phasing out schedule should be given wide publicity, failing which the expansion of Sector Reform to the entire country would only remain a dream. In fact, without such a declaration, even the first phase of reforms may not be successful. It is recommended that Government of India should immediately issue instruction to all States that even in case of works taken up for upgradation and norm relaxation irrespective of the fact that it is with ARWSP or State funds, it should be carried out as per the reform concept. All State Governments should prepare State rural water supply strategy / policy accordingly, clearly indicating how they would implement the reform in rural water supply sector.

It is felt that the Government functionaries at all levels viz. the Central, State, District and Village levels, including political, administrative, technical and secretarial set-up are yet to understand the concept correctly and unambiguously in majority of the projects. There is an urgent need to sensitize all the concerned officers in all the above levels, through proper awareness generation and training initiatives. Accordingly, the project implementation should commence by initiating steps for adequately sensitizing and equipping the above functionaries without any further delay. The efforts put in should be assessed for corresponding impact.

The implementation of Sector Reforms projects being a positive step towards decentralisation of social / community development efforts, large number of NGOs would have to be involved in the project. The initiative of the Government to allow the District Water and Sanitation Committees (DWSC) to co-opt NGOs to understand the non-official view of project implementation is worth appreciation. However, the instruction in the Guidelines that the NGOs to be co-opted in the DWSC only with the prior approval of Government of India do not go well with the overall principle of decentralisation and seems to be out of place. It would be most appropriate if the powers to co-opt NGOs into the DWSC are delegated to the DWSM / ZP itself, as the provision of seeking the approval of GOI is causing undue delay in the commencement of project. It is also felt that as the most of the members of the DWSC are drawn from various departments of the district administration, their primary responsibilities are to carry out the work assigned to them by their respective department and not implementation of Sector Reforms project. At the same time, Sector Reforms projects being a new initiative, complex and large in magnitude of its own, it would require full time attention of those who takes it upon to implement it. Hence, it would be appropriate, if the Government of India immediately instruct the district implementing agency to establish a core group /

team of committed experts who can devote full time towards project implementation.

The Guidelines indicate certain role for the State Government to perform in the implementation of Sector Reforms projects in the districts. It is observed that most of the States are not taking adequate initiative to fulfil their responsibility towards the project. There is an urgent need to impress upon the State Governments to expedite the project implementation and to offer proper guidance to the DWSM/ DWSC, if required in consultation with the Rajiv Gandhi National Drinking Water Mission.

In some States and perhaps, in certain districts, water supply and sanitation are implemented by different agencies. At the habitation / village level, the people feel that the efforts on these sectors would be more effective if they are implemented in a integrated manner. Hence, there is a need to ensure that wherever Sector Reforms projects and Total Sanitation Campaign projects both are being implemented, the DWSM / ZP should be the one and only setup implementing the projects in an integrated manner at the district level and below. It is recommended that in general at all level, including Central, State & District level, the water supply and sanitation programmes should be implemented in an integrated manner.

3.2.3 Users' Contribution

As per the provisions of para 3.2.1 (a) of the guidelines for implementation of Rural Water Supply Programme, the users are required to share at least 10% of the capital cost and the proportion of capital cost share should increase proportionately with the increasing service demand. Only a minimum share of the capital cost to be shouldered by the community has been prescribed, and no maximum limit for the same has been indicated in the guidelines. State Government / DWSM / ZP are required to finalise a formula prescribing a wide range for capital cost sharing proportionate to the service level demanded starting from minimum of 10%. For the potentially higher service demand possible, higher capital cost sharing component should be fixed. It should also be ensured that contribution is received from each individuals and only from individual's personal property / wealth / belonging / savings and not through any other source like Charity, NGO or even Panchayat funds or MP/MLA local area development funds. The beneficiary contribution could be in the form of cash, kind, land or labour.

The State / District implementing agencies have, perhaps, not understood the concept of capital cost sharing correctly. In most of the places, the project is introduced as a "10% scheme" which is not correct, and would not reveal the real demand for any particular scheme. The stress on the words 'at least' is lost while the concept reaches the implementing agency. This discrepancy needs to be corrected immediately. The State Government / district implementing agency need to be educated about the correct meaning of the provisions in this regard unambiguously. It would be better if it is conveyed by methods other than issuing orders and instructions from the Central Government. The State Governments must also engage themselves in formulating their own cost sharing rules, taking into account the region specific demands, technical requirements, paying capacity, willingness to pay, etc. The rules formulated in this manner should have adequate flexibility and the administrator should not hesitate in changing and amending the rules whenever required as per the experience gained during the implementation process. Planned capacity building efforts are required to be made by the State / district levels to cause this message to percolate down to all concerned at all levels.

3.2.4 Information Education Communication (IEC) and Human Resource Development (HRD)

The awareness levels, capacity, financial capability and willingness to pay may differ from village to village. Accordingly, even though the States and Districts may have broad IEC and HRD strategy for capacity building of generic nature, separate IEC / HRD strategy would have to be evolved for individual villages as per their specific requirement. The past experience indicates that in most cases,

a good proportion of the material required for the purpose would be available at district / village level and hence could be drawn up at the district / village level itself. The State Government should be asked to look for organisations which could assist in these efforts within the State / Districts and identify potential agencies with expertise on mass communication, inter personal communication methods, folklore, etc. During the IEC campaign, utmost care needs to be given that only a limited number of messages are delivered at a time to avoid too many cooks spoiling the broth. In order to make optimum use of the available manpower, the State / District should develop small training centers and prepare requisite training manuals themselves as per the requirement of the project from time to time. The IEC and HRD activities initiated by the districts should go hand-in-hand supporting and complementing each other.

3.2.5 Panchayati Raj Institutions

1. As per Article 243G of the Constitution, the Legislature of a State may, by law, endow the Panchayats, with such powers and authority as may be necessary to enable them to function as institutions of self-government and such law may contain provisions for the devolution of powers and responsibilities upon Panchayats at the appropriate level, subject to such conditions as may be specified therein, with respect to - (a) the preparation of plans for economic development and social justice, and (b) the implementation of schemes for economic development and social justice as may be entrusted to them including those in relation to the matters listed in the Eleventh Schedule which, inter-alia, includes Drinking Water and Maintenance of community assets. Accordingly, .the Guidelines for implementation of Rural Water Supply Programme provides for implementation of the Sector Reforms projects through Panchayati Raj Institutions wherever they are strong, firmly in place and are ready and willing to take up the responsibility of effective implementation of Sector Reforms project .

2. This project would go a long way in improving and strengthening of the infrastructures and capacity of the PRIs / Local Bodies and the local community based organisations. In times to come, with the experience gained during the implementation of these projects, the local bodies would be in a position and best equipped to shoulder the responsibilities of many other community- building exercises.

3.2.6 Project Progress Monitoring

1. An effective monitoring strategy in respect of the Sector Reforms projects would require not only progress monitoring, but also the process monitoring. As far as progress monitoring is concerned, the initiatives taken by the Government seems adequate at this stage and could be improved upon as and when the necessity is felt. More crucial is the component of process monitoring. The Sector Reforms projects, being process projects, success or failure of the project would depend and could be assessed only through an accurate and effective process monitoring. The process monitoring activity not only enables to monitor and evaluate the progress of the concept implementation, but also helps a mid-course correction wherever necessary and guides the projects all the way to its logical conclusion. Perhaps, being the first of its type in scale and magnitude, the exercise needs to begin with the identification of crucial indicators for process monitoring and development of questionnaire for collection of requisite data on the progress of the identified indicators.

2. The Department of Drinking Water and Sanitation has allowed the Water and Sanitation Programme – South Asia (WSP-SA) to commission a consultancy to frame a strategy for process monitoring of theses projects. Further, benchmarks to be achieved during implementation of the projects at various points of time scale of project implementation should also be finalised. Once the strategy for evaluating them are finalised, independent agencies / private consultancies / experienced grass-root level organisations could be commissioned for carrying out the process monitoring

activities and reporting back to the Mission along with their comments on the way the objectives of the project is being achieved. The second / next instalments for the projects should be released on the basis of the process monitoring reports submitted, if it indicates that the institutionalisation of the principle is moving in the right direction. There was general consensus that independent agencies be involved in a supervision team for project implementation monitoring every half yearly for the sector reform districts.

3.2.7 Sustainability of Sources – (Promotion of Water Harvesting and Revival of Traditional Systems)

In many villages, the problems faced by the people for accessing to safe drinking water is directly related to non-sustainable ground water sources. It is felt that at most of such places, we may not have to initiate any new drinking water supply scheme. If initiatives are taken to recharge the ground water level by water shed / water harvesting activities, availability of water in the ground water source could be enhanced, thereby increasing the access of drinking water to the villagers. These problems could be solved easily just by taking up water harvesting activities and revival of traditional systems. Hence, these form a very crucial, important and necessary component of the Sector Reforms project. There may be instances where the villagers may only take up schemes for sustainability of sources. While allowing the Village Water and Sanitation Committee (VWSC) / villagers / users to take up implementation of micro watershed as sustainability component under the Sector Reforms project, the Group agreed that there need not be any restrictions for utilisation of funds for activities related to sustainability of sources. They should however keep a close watch to see that as far as possible the sustainability scheme taken up is linked to enhancement of safe water availability for the drinking water supply schemes of the respective village / habitation / user group. For this purpose, the IEC campaign should effectively convey the message that the initiative taken up should not lead to over extraction and misuse of ground water for purposes other than drinking. They should be made aware of the need for not using the water conserved / recharged under this project for irrigation purposes, unless there is surplus water after it is used for drinking purposes and if it is ensured that utilisation of water for other than drinking purposes would not lead to extraction of water more than the recharging capacity of the source. The final decision in this regard should be left to the villagers. Such an enhanced awareness coupled with the mechanism of capital cost share contribution from the beneficiaries at the rate proportionate to the service level demanded by them and full responsibility of O & M is likely to ensure effective and optimal utilisation of available funds for activities related to sustainability of sources under the Sector Reforms project.

The Mission may also initiate immediate action to compile and document information related to all the traditional systems of drinking water and watershed activities for drinking water purposes in various parts of the Country. This could then be disseminated to all the Sector Reforms districts to assist them to pick up appropriate ideas for themselves, thereby, encouraging revival of traditional systems. Documentation of resultant success stories may also be compiled for posterity.

3.2.8 Role of NGOs / CBO / User Communities

As per the existing guidelines the NGO/CBO/User Committees have active role to play in the following activities in the Sector Reforms projects:

Baseline survey
IEC
HRD
Participatory appraisal and Monitoring
Collection of beneficiary contributions
Implementation of the schemes
O & M activities

Social Development activities
Women's empowerment, etc
Exploring traditional practices and institutional arrangements and dissemination of the same.

The above list is quite exhaustive, any augmentation to which could be thought of only when challenges / occasions arise during the implementation of the project.

The question of delegating the powers to District Water and Sanitation Mission/District Water and Sanitation Committee was discussed, especially with reference to co-option of NGOs and choosing Member Secretary in respect of DWSC. The Group noted that selection of NGOs for implementation of various components of the sector reform projects can be decided by the DWSCs with the approval of the State Governments. As regards choice of Member Secretary, it was decided that the present arrangement of the Executive Engineer (PHED/ Water Supply Department) to be Member Secretary may continue as this would help in proper implementation of the project at the local level.

3.2.9 Role of Women

The implementation of Sector Reform projects provides ample opportunity for involving women and women oriented voluntary organisations in the decision making process. The Guidelines for implementation of Rural Water Supply Programme clearly indicates various activities which could be entrusted to women not only for implementation of Sector Reform project, but also in implementation of Rural Water Supply activities in non Sector Reform areas. State and District level Administration of all the States may be instructed to plan and devise strategies to operationalise the provisions of the Guidelines effectively and to give wide publicity and to educate the stakeholders about the strategy so that awareness on the issue among the common rural people could be enhanced. Its impact in programme implementation should also be evaluated at regular intervals by the Mission, an appropriate strategy for which may also be developed.

3.2.10 Integration of rural water supply and sanitation

The Group noted that integration of Water Supply and Sanitation at the field level is of great relevance for effective implementation of the sector reform initiatives and Total Sanitation Campaign (TSC).

3.2.11 Restructuring of Rajiv Gandhi National Drinking Water Mission

An assessment of the strength of RGNDWM indicates that the Mission needs to be restructured and reoriented into a cohesive, committed and competent unit, comprising of sincere, skilful and sustainable workforce, so as to enable them to implement an innovative and complex agenda in such a large scale. The newly created Department of Drinking Water and Sanitation in the Ministry of Rural Development has been given the mandate of achieving the target of providing safe and sustainable drinking water supply facilities to all rural habitations. However, the creation of the Department has not been followed-up with requisite augmentation of staff and infrastructure to enable its functioning as a full-fledged Department. Hence, there is an urgent need to augment the staff and infrastructure of the Department. If the requisite augmentation is not effected immediately, the path-breaking innovative initiative of introducing the reforms in the sector may not lead to the desired results. Such a setback at this stage would push back the reform agenda. At a time, when the whole World is looking towards India to lead the way on reforming the water supply sector, Government of India should provide adequate skilled personnel to the Mission. The SR concept is an attempt for strengthening of the Department of Drinking Water Supply. The additional Government expenditure would be only a short-term burden, but with a far reaching consequence of reducing the recurring Government expenditure by way of transferring the full responsibility of the operation and

maintenance of Rural Water Supply Schemes to the community. The annual requirement of Government funds for Operation & Maintenance of Rural Water Supply Scheme is very high. While going for short term gain in respect of Government expenditure, the long term vision of ensuring sustainability of Rural Water Supply activities thereby reducing Government expenditure on a long term basis should not be lost sight of. The additional staff could be directly linked to specific result, and would only be temporary arrangement till the mandate given to the Department is achieved. Under these circumstances, it is pertinent on the part of the Department of Drinking Water and Sanitation to immediately move the Department of Personnel, Department of Expenditure and the Planning Commission with a request to fulfill the above requirement.

Augmentation of staff in the Department of Drinking Water Supply for achieving the goal of Sector Reforms. Rajiv Gandhi National Drinking Water Mission should position a monitoring mechanism, outsource resource and training agency, undertake computerised MIS from Gram Panchayat level to National level and carry out half yearly review of the Sector Reform Projects implementation. The Group strongly recommended that there is need for strengthening manpower available in the Department of Drinking Water Supply in the wake of the sector reform initiatives, especially with reference to the need for effective monitoring and evaluation.

3.2.12 Project Funding and Outlay during 10th Plan

As the Sector Reforms projects are very complex in nature and big in scale and magnitude, implementation of 63 projects itself would be a challenging task of highest order. The second phase of reform implementation may commence only after careful study of the experience gained during the implementation of the reforms agenda during the first phase. Having demonstrated the implementation of reform pilot projects in the first phase, the second phase, as and when taken up, the responsibility of implementation may directly be discharged by the PRIs in conformity with the principles envisaged in the 73rd Constitution Amendment. There is a need to encourage States where the Sector Reform Projects are being successfully implemented. It may be appropriate in such States to take up additional districts equal to the number of districts in which at least in half the number of habitations of the district rural water supply schemes as per the reform concepts has been successfully implemented and its sustainability in true spirit, proved beyond doubt, through regular periodic post-completion and handing over evaluation.

The Group discussed at length the question of adding new districts for implementation of sector reforms. It was decided that additional districts may be sanctioned to those States where the existing pilot projects are being implemented well and progressing satisfactorily, equal to the number of districts so graded. This may be done after the concerned State signs an MOU with the GOI that they would adopt the reform principle for the entire State. Simultaneously, the pilot projects in respect of which process monitoring results confirm that the reforms have failed to pick up, may be phased out to be taken up again at a later stage in the second phase of reforms.

The requirement of funds for implementation of sector reform projects cannot be correctly estimated at this stage. The 63 pilot projects are provisionally estimated to cost around Rs.1900 crores. Out of which, about Rs.499 crores have already been released. In view of the facts explained above, it is felt that the approximate requirement of funds for Tenth Plan Period for implementing sector reform projects alone would be in the range of about Rs.2000 crores. In case, more funds are needed, the ARWSP funds may be accessed.

4. DRINKING WATER QUALITY

4.1 The main objectives during the Tenth Five Year Plan may be as under:

- Ensuring submission of action plans by States for implementation of coverage of quality affected habitations based on 5-10% water quality survey
- Institutinalising community based water quality monitoring, adopting catchment area approach along with establishing appropriate institutional mechanism right from Panchayat to State headquarters level including adequate infrastructure
- Refinement of removal technology to make it cost effective and user friendly and technology for safe disposal of sludge.
- Propagating water harvesting on conservation on a large scale for ensuring sustainability of source.

A five pronged strategy as follows would be followed for implementation of action plan to tackle quality problem:

- Alternate problem free zones in groundwater, either vertical or horizontal direction.
- Mini piped water supply, based on deep tubewell from nearby area.
- Regional piped water supply scheme.
- Dual mode water supply restricting fresh water to drinking and cooking and marginal quality water for other domestic use.
- Treatment technology, preferably domestic filter type, after extensive awareness programme.

In the case of sustainability of source, advocacy covering mass awareness programmes and side by side implementation of water harvesting and conservation on extensive scale would be the approach. Community involvement, both in water quality monitoring and water harvesting would be the most crucial focal point.

Background

Being a tropical country India is fortunate to get an average precipitation of about 4000 billion m3. Nearly 3/4th of it is, however, lost as run off to the sea due to torrential nature of the rain and remaining about 1000 billion m3 is available as ground and surface water for use. It is estimated that by 2025 the total water requirement will exceed the available water resources unless efforts are directed to augment the existing resources. There is however, vast spatial and temporal variations in the precipitation. About 1/3rd of the country's area is thus drought prone. Limited groundwater sources have not been able to keep pace with the recharge in these areas. Some areas of the country are affected by excess salinity, fluoride, nitrate and arsenic in the ground water and microbial contamination making it unfit for human consumption. The quality of water is also facing problem due to large fertilizer use, poor solid waste management and increasing concentration of minerals in deeper aquifers.

A one time survey carried out by the Mission in 1991 (validation in 1994) based on 1% random sampling indicated that as many as 1,51,170 habitations in the country are affected by different quality problems like brackishness/excess fluoride/iron/arsenic. However, the above figure based on cross checking of the figures available with the States have been re-estimated at 2,17,211as on 1.4.1999 (Table 2.4.1). Amongst the identified quality problems, maximum suffering to a large segment of the rural population is due to excess fluoride/arsenic in drinking water.

Table 2.4.1
Number of Habitations Affected with Quality Problems of Drinking Water

Nature of Quality Problem	No. of affected habitations
Excess Fluoride	36988

Excess Arsenic	3553
Excess Salinity	32597
Excess Iron	138670
Excess Nitrate	4003
Other reasons	1400
Total	217211

Quality problems have persisted for so long now and have to be given top priority if complete coverage is desired in the first few years of the 10th plan. The habitations where epidemiological surveys have indicated health hazards due to water quality problems, must be taken up immediately during the first two years of the 10th plan. During subsequent years of the plan, the remaining quality affected habitations should be taken up for ensuring full coverage.

An in depth study need be carried out to meet the challenges of provision of safe water supply in quality affected villages. It is apparent that no single solution will be feasible to tackle this problem. Site and location specific solutions utilizing a mix of methodology based on rain water harvesting/recharge, water supply from nearby sources, use of traditional sources after adequate disinfection and adoption of treatment methods in that order have to be resorted.

Water Quality Aspects

As has been mentioned in subsequent pages, the quality problems first of all require monitoring and surveillance of the water quality parameters for which an appropriate mechanism need be launched. There is found a direct linkage between the water quality and ground water levels as well as their rate of replenishment from recharge by rainwater. It is well known that due to excessive ground water withdrawal the water quality gets affected. ca. seawater intrusion in coastal areas increasing the water salinity, concentration of brackishness and fluoride due to lack of recharge, changing concentrations of arsenic at different depth of aquifers. The passage in to ground water of bio organics from domestic wastes, fertilizer & pesticides in the irrigated agriculture areas is also responsible for deterioration in the water quality.

4.2. Water Borne Diseases and Health Aspects

Water-borne diseases are caused by contamination of water with virus (viral hepatitis, poliomyelitis), bacteria (cholera, typhoid fever, bacillary dysentery etc.), parasites (amoebiasis, giardiasis, worm infestation, guinea worm etc.) or chemicals. Water gets contaminated either at source or while passing through water-pipes which are poorly laid and maintained, or in the homes when it is not stored and handled properly. The risk of water contamination resulting in water-borne diseases is higher under following conditions: (i) availability of inadequate water, (ii) poor quality of water at source, (iii) ill maintained water pipelines and sewer lines, (iv) open air rampant defecation, (v) lack of disposal of human, animal and household waste, and (vi) lack of awareness of good sanitation and personal hygienic practices.

Water-borne diseases are of immense public health importance in India because of (i) high morbidity and mortality, (ii) potential for causing large and explosive epidemics (for example, cholera) which create panic in the community, (iii) non-availability of specific treatment for some viral diseases such as viral hepatitis E, and (iv) increasingly becoming difficult treatment due to anti-microbial drug resistance in bacterial diseases such as typhoid fever and bacillary dysentery.

Some estimates mention 70% of available water is polluted and estimated three million work days are lost due to water related diseases. However, whenever focused attention has been made morbidity

and mortality declined viz. cholera mortality from diarrhoeal diseases, guinea worm which has being shortly eradicated.

4.3 Water Quality Monitoring

Before the launch of the RGNDWM, information on water quality was available through GSI, CGWB, State PHEDs and many research institutes engaged in environment and water management research. It was desired by the Mission to have an authoritative and exhaustive database on water quality throughout the country particularly in areas already known to have water quality problems reporting prevalence of water related diseases.

The analytical facilities required for the assessment of water quality were available with research laboratories then but these were far and few. In 1990s the Mission laid emphasis on setting up District Labs in all the States affected by water quality problems. Five nodal laboratories (AIIH&PH, Calcutta, Defence Laboratory, Jodhpur, Bhabha Atomic Research Centre, Mumbai, ITRC, Lucknow and SJR College of Engineering, Mysore) provided extensive support to the State Governments to set up the labs and train the personnel to carry out routine water quality analysis. The total number of labs set up during the programme is 586. Realizing the volume of large number of samples to be analyzed, field test kits were developed by a number of National Laboratories and Institutes and were also utilized. A number of mobile labs were also fabricated and utilized by few State Governments.

It appears that required analysis methods are now available for water quality monitoring in future. Eventually a “catchment area approach” having community based water quality surveillance team is desired involving villager’s participation along with the Government Agencies for fulfilling the task of safe potable water in rural areas. This calls for a water quality monitoring & surveillance model involving different level activities such as State level laboratory at capital, regional laboratory at the major cities, district laboratory and finally small water quality centres at blocklevel, grampanchayat level and village level.

4.4 Institutional Frame Work

Effective water quality surveillance programme envisages not only to have a systematic monitoring of water quality but also to monitor the plausible causes of quality deterioration so as to enable the appropriate authorities to take timely appropriate and specific steps for remedification. Then only the quality assurance can be effectively maintained and a sustainable water system would emerge.

The data on existing water quality monitoring systems in various states reveal that at present the concerned departments, be it Public Health Engineering or Rural Development Department or Panchayat Raj Engineering organizations, have absolutely inadequate infrastructure for carrying out the task. A very huge outlay would be required to have adequate infrastructure, physical facilities, etc. which would be next to impossible. The solution, as stated earlier, would be to institutionalize community based water quality surveillance at the grass-root level and establish institutional linkage upwards through intersectotal coordination and minimal institution building and manpower development at district / state / regional and national level. A three-tier structure, in line with the recommendations of WHO may be adopted.

Level – I (Village Level)

The base line water quality monitoring at the grass - root level would be carried out by community groups (village level water - sanitation committee). Initial support in terms of supplying the field kits, chemicals and training would be provided by the government. The programme would be financially sustainable with total cost recovery from the community. However, some amount of subsidy in terms

of honorariums to community volunteers and periodic training, monitoring and evaluation may be provided from the budget of Zilla Parishad / State Government. Composition of village level committee for water quality may consist of panchayat members, block level workers, teachers, Anganwadi, PHC staff etc. with Block Development Officer as Chairman.

Level – II (District Level)

Keeping in view the area, population and local resources, district level centres will be set up. Such a centre will have a laboratory to serve (to begin with) a cluster of 2 - 3 districts. In the first phase, such laboratories will be set up in the districts which have known problems of water quality. However, ultimately there should be a district level centre with laboratory in each district. The district level centres will constitute a committee to plan and guide the activities of the district level laboratories. Composition of district level centre committee will be as follows :

- Chairman DRDA / Zilla Parishad - Chairman
- District Health Officer
- District Education Officer
- Representative of voluntary agency
- Child & Women Development Officer
- Executive Director, PHED (HRD)
- In - charge of District Water Quality Testing Laboratory
- Public representative to be identified by Chairman (preferably representative of local science school / college)
- Superintending Engineer / Ex. Engineer (PHED) - Convenor

The functions of the district committee will be as under : -

- Provide facilities for routine analysis of physico - chemical and bacteriological parameters relating to drinking water.
- Implement the action plan decided by state government / zonal laboratory to which it is attached.
- Help analyze samples from each village under their jurisdiction at least twice a year for public water supply and other sources.
- Supervise the operation of potable kits supplied to villages under their jurisdiction and provide them with necessary chemicals / glasswares, etc.
- Arrange periodical monitoring of bacteriological quality of water from the sources in villages and report to State PHED for remedial measures.

Level – III (State Level)

There will be a state level committee to monitor state water quality testing and surveillance programme in the states. The State Water Mission Coordinator. i.e. Secretary, PHED will be the focal point for linkages with the NDWM, Regional Centres and District Laboratories. The composition of the state level committee will be as follows : -

- Secretary, State PHED - Chairman
- Development Commissioner, Rural Development Deptt.
- Director Health Services
- Director Medical Education
- Director, Child & Women Welfare
- In - charge, State Level Laboratory
- Public representative to be identified by the Chairman

- Representative of regional laboratory
- Chief Engineer, PHED - Convenor

The main functions will be as follows : -

- Assist regional centres in successful implementation of programme.
- Provide feed back data on water quality along with information related to quality consciousness and awareness.
- Plan, execute and monitor the collection, testing and reporting of water samples by state and district level laboratories.
- Promote people's participation by involving target groups, educational institutions, voluntary organizations, women, etc.

4.5 National Level (Policy Formulation)

In order to formalise linkages and to facilitate monitoring / surveillance activities at various levels, National Drinking Water Mission, Govt. of India should set up regional centres in 5 regions of the country as shown below : -

Sl No.	Size	States	Regional / Associated Centre (proposed)
1.	East Zone & North - Eastern Zone	A & N Islands, West Bengal, Bihar, Orissa, Sikkim, Assam, N. E. States (Meghalaya, Manipur, Mizoram, Nagaland, Tripura & Aurnachal Pradesh)	AIIH&PH, Calcutta (associated with RRL, Jorhat)
2.	North Zone	J&K, Punjab, Haryana, H. P., U. P.	ITRC, Lucknow (associated with RRL, Jammu)
3.	West Zone	Rajasthan, Gujarat, Madhya Pradesh	DL, Jodhpur (associated with PHED Lab, Vadodara, DRDE, Gwalior & PHED Lab, Bhopal & Jaipur)
4.	Central Zone	Maharashtra, Goa, Daman & Diu, D & N haveli, Andhra Pradesh	NEERI, Nagpur with BARC, Trombay
5.	South Zone	Karnataka, Lakshadweep, Kerala, Tamil Nadu, Pondicherry	S. J. R. College of Engineering, Mysore (associated with TWAD Lab)

The regional centres would advise PHEDs / Water Boards in setting up Water Quality Testing (WQT) labs covering the following : -

- Identification and assessment of present facilities and needs.
- Scope of strengthening the existing laboratories at different levels
- Arrangement for hardware and other requirements
- Water quality surveillance
- Programme for training and development of human resources.

In addition to the above, the regional centre would also undertake random sampling of water in association with associate laboratories, state level labs to monitor the programme.

4.6 Overall Monitoring

The entire programme of water quality 'assurance' will be monitored by Mission Director, NDWM. To this effect, the Management Information System (MIS) will be provided by a suitable national agency. Mission Director may be helped by a National Water Quality Council, constituted with experts from various national institutes. Proposal of PHEDs will be cleared by Mission headquarters on the recommendation of the regional centres.

Centre of Excellence & Nodal Laboratories

Although various laboratories and research centres will continue their R&D activities, it is desirable to establish a couple of Research Centres of Excellence exclusively catering the needs of water quality monitoring, remediation and mitigation of quality related problems. A few laboratories dealing with health and environmental research as well as water management should be chosen as nodal laboratories and provided with adequate funds to undertake the futuristic research. AIIMS, AIIH&PH, NEERI are the research institutes which can take up this challenging assignment.

4.7 Sustainability of sources and systems

Once the safe drinking water supply is made available, it has to be also kept sustainable in years to come. The long term sustainability is primarily achievable by preserving the source and the system used for drinking water supply. The prime causes for poor sustainability are as follows :

- The sources of water supply get depleted due to frequent drought conditions.
- Due to changing water quality, new areas become water quality problem prone requiring launching of new schemes.
- The failure of the equipments both in water supply schemes and treatment plants due to climatic and environmental factors and their poor maintenance.
- Lack of participation from the community and sense of involvement by the Government agencies.
- Lack of appropriate legislation for utilizing required quantity of water and preserving its quality leads to deterioration in quality and hence the availability of safe potable water sources.

Adequate fund provision has not been made so far on the sustainability aspect as initial efforts has been on the coverage. A multi-dimensional approach has to be implemented with provision of substantial financial support. A mix of water supply schemes (piped water supply, regional water supply, treatment plants, utilization of traditional sources and rain water harvesting) would come handy to ensure sustainable water supply. The most important aspect is continuous water quality monitoring and surveillance and to deploy various Government machineries, PRI and community at large. The funds required has been worked out for the sustainability programme in the Xth Plan and is given along with the coverage and quality monitoring costs.

4.8 Appropriate Technologies

Rain Water Harvesting and Artificial Recharge

Rain water harvesting encompasses methods to induce collection and store surface run off and ground water for beneficial use and has been practiced in India for centuries. This practice has been relegated into relative insignificance with the introduction of large scale centralized water supply systems through the reservoir storage and deep tube well supply. The basic philosophy is mentioned as "Catch water whenever it falls arrest the water flow and allow recharge". A hectare land in India's driest places, where the annual rain is around 100 mm a much as one million litres of water – enough to meet drinking and cooking water needs of 200 people at 10 litres per day.

Rain water harvesting can be effected by various technologies such as :

- In-situ Harvesting : Nadis, tankas, sand-filled reservoirs, ponds, roof top collections/hill top collections, platforms, ooranis (Tamil Nadu, Pondicherry).
- Storage of water in the aquifers (natural under ground reservoirs) : Percolation tanks, khadins, anicuts/check dams, sub-surface dykes/ dams/ barriers, injection wells.
- Soil Conservation methods which help in increased ground water recharge also; Gully plugging, contour bunding, afforestation, contour trenching, land leveling and bunding of fields.
- Enhancement of surface run-off collection : catchment treatment.

Direct storage of drinking water is necessary in the areas where rain fall is scanty and the water bearing geological formation are not suitable. Ground water storage is the best method of water harvesting as it not only involves filtration of surface water but is also safe from evaporation losses and natural catastrophes. The land development, soil conservation methods and afforestation methods whose main function is to improve the ecological and environmental conditions, indirectly improve ground water recharge and increase the surface water storage.

Rainwater is generally a very pure form of water, having resulted from the process of distillation (evaporation and condensation). Nevertheless, cloud, droplets do react with other atmospheric constitutes such as carbon dioxide and naturally occurring oxides of sulphur and nitrogen. This results in natural rainwater being slightly acidic. Disinfecting can be done either by boiling water in a vessel before consuming or by dissolving bleaching power in required quantity to the water stored in the tank. This also help passivation of water.

Many examples in recent years have been reported in the country with successful results. Meshana (Gujarat) - well injection technique; Amaravati (Maharashtra) - artificial recharges through percolation tanks, Odakkali (Kerala) -construction of sub surface tanks. Large scale rainwater harvesting is also reported recently in Madhya Pradesh and Rajasthan by communities, NGOs and Government. A survey conducted by the Centre of Science and Environment (CSE) of several villages facing drought in Gujarat and western Madhya Pradesh last December, found all those villages which had under taken rainwater harvesting or watershed development in earlier years had no drinking water problem whatsoever and even had some water to irrigate their crops. On the other hand neighbouring villages were desperate for water and planning to migrate when the real summer hit them. Rainwater harvesting has helped Relegan Siddhi to transform itself from one of the most destitute villages of the country in the 1970s to one of the richest villages today. The successful experiments by NGO under the leadership of Shri Rajendra Singh in Rajasthan is the latest achievement reported. In all villages which have regenerated their local economy with the help of good management of their natural resources, distress rural – urban migration has been greatly reduced or has been totally eliminated.

Effluent Treatment & Water Recycling

The impact of industrial and municipal waste discharged in to our rivers without adequate treatment along the major rivers is well known. In the context of rural water supply schemes which utilize river water as a source it is required to check the water quality if nearby an industry exists. Cases of effluents from textile, sugarcane mills, dyes and pharmaceutical industries entering the fresh water sources have been reported in some parts of the country. In these areas regular check of water quality is desired.

In recent years, in many parts of the country, the fertilizer and pesticides residue from irrigation water going down to the under ground waters have been reported. This particular issue needs to be

thoroughly investigated particularly in the irrigated agriculture belts. The pesticide analysis requires support from the well established laboratories. The domestic effluents from human and animals are also likely to enter the water bodies in the areas of high recharge resulting in NO3, COD, BOD and microbial problems in the underground water.

Thus the industrial, agricultural and domestic waste contaminating the drinking water sources are known to affect the water quality and may lead to loss of valuable water sources due to serious contamination. Serious problems of contamination of water sources by local textile industries are reported in Tamil Nadu and Gujarat. At first, a data base for water quality need to be established in the areas likely to be affected by the discharge of industrial, agricultural and municipal waste that are likely to reach the surface and underground water being used as drinking water sources. In the particular areas affected by the pollution problems the water sources should not be utilized for drinking purposes. If there is no alternate water source available, water purification and treatment plants need be considered. The effluent treatment plants can recover a significant fraction of useful water and effectively control the discharge of constituents of these effluents into water bodies.

Reed-bed system (RBS)

This method is an ecofriendly way of treating sewage with the help of Reed plants. The system is specially engineered simulation of a natural wetland ecosystem for the treatment of sewage, sullage and industrial effluent with the help of microbes in the roots of reed species, which are special plants acclimatized to survive in hards polluted environment. The whole system, based on root zone technology is environment friendly and does not require any chemicals, pesticides or electricity and skilled operators. It requires minimum maintenance, produces no sludge, aesthetically looks good (like a garden), and lasts for 25-30 years.

Conjuctive Use of Surface and Ground Water

Ground water happens to be the principal source of rural drinking water accounting for nearly 85%. In recent times, ground water systems is put to severe stress due to a number of factors including absence of an effective institutional mechanism for its regulated development resulting in pronounced fall in water levels, drying up of wells and degradation of quality. The competing demands from irrigation sector using nearly 85% of the annual ground water recharge adds another dimension to the entire problem. Basically, ground water is a people’s resource. In view of the inherent advantages in its development, there has been a tendency for over exploitation leading to emergence of a number of over exploited, dark and grey blocks.

Against this backdrop of a system under continued severe stress and in the context of a lukeworm response of majority of states for adopting ground water legislation, it becomes increasingly urgent and necessary to evolve appropriate management strategy for ensuring sustainability of the source. Under these circumstances, the only feasible attractive and desirable option is water harvesting and water recharge with the ultimate objective of achieving integrated development and conjunctive use of both surface and ground water.

Integrated development of surface and ground water and its conjunctive use can be achieved in two ways. (a) using fresh surface water, free from quality problem, for blending with marginal quality ground water for purposes of dilution of the contamination and for domestic use. This is a feasible option especially in high rainfall area like the state of West Bengal, where rainwater harvesting can be undertaken for purposes of diluting the contaminated ground water provided the contamination is not high. (b) Rain water harvesting/water harvesting can also be practiced by constructing a number of storage ponds/tanks for storing of rainwater and its percolation by appropriate modification of the surface of the structure for augmenting ground water recharge. This is also one way of ensuring

integrated development of surface and ground water for conjunctive use. This strategy can be gainfully adopted by utilizing a number of defunct traditional water harvesting structures available in the country. This programme adopted on a large scale would not only result in optimal water resources management but also in human resources management because of the inherent component/inbuilt element of people's participation in these programmes.

4.9 Recommendations

1. It is desirable to device a scheme for comprehensive water quality monitoring in the problem villages of the country in order to effectively launch the programme of safe water supply in these areas. Initially a stratified sample survey (5% of total water samples) can be analysed for its quality parameters. It is required to have an institutional framework of setting up laboratories in State Capital, Districts, Blocks to Panchayat level. The different laboratories are to be run with the help of NGOs and village people participation apart from the Government agencies. Routine analysis of water samples for their physico-chemical and microbial quality should be continued. Training for personnel at different levels involving village personnel, NGOs, teachers and officers is required to undertake the massive project of water quality monitoring.

2. Although treatment of chemically contaminated water using various technologies have been tried, further research is required to improve these technologies resulting in their simplification and cost effectiveness.

3. Side by side, major efforts need to be directed towards providing safe water in these areas from alternate sources (new dugwell, water from distant sources and utilizing traditional sources of water).

4. Rainwater harvesting and its collection as well as recharge of the underground water appears to be the need of hour and should be encouraged to augment water resources in draught areas. It may also be utilized for treating the contaminated waters by dilution to the recharge in other areas having reasonable rainfall. Linkage with Public Health Departments in assessing the information of water borne diseases is required. The linkage of the PHED with the health laboratory is desirable to ascertain the impact of contaminated water on health, morbidity/mortality. For surface water pollution, some data available with CPCB and State Pollution Control Boards can be useful in ascertaining the quality of surface water proposed for supplying as drinking water sources. Suitable legislations for over exploitation of underground resources by the State Governments would help to restore the availability of water as well as check the deterioration of its quality.

5. The total allocation of funds required for treatment/improvement in water quality for supply to the problem villages has been worked out on the basis of per capita cost for different States in the 1981 Mission documents (after giving due weightage for cost escalation). A total of about Rs. 10000 crores (provisional) is required for treatment/quality improvement of water supply and about Rs. 140 crores for setting up laboratories and training of personnel for water quality monitoring. This allocation may also take care of sustainability of source through water harvesting.

6. Presently, 20% of the funds under ARWSP allocation is earmarked for Sub Mission programme for quality improvement and sustainability. 25% of the 20% allocation (amounting to 5% of total ARWSP) has already been earmarked for taking up programme under Sub Mission on Sustainability. But many States are not found to utilize this allocation for quality improvement programme. The present earmarking of 20% under ARWSP for Sub Mission covered both quality improvement (15%) and Sustainability of the Source (5%). Based on the trend of water quality scenario in the country, the quality problem is bound to increase in the years to come. Hence it may be desirable to increase the allocation from the present 20% to 30%. Further it is suggested that a recommendation for keeping the earmarked 30% allocation under ARWSP as a pool fund at Government of India level

may be considered. The above fund can be optimally utilized by allocation to the States which comes forward with a number of Sub Mission projects.

Financial Projection for Providing Potable Water Supply in Quality Affected Habitations and on Sustainability

As per information made available by the States, the total number of quality affected habitations (as on 1.04.1999) is 2,17,211. The Working Group after detailed discussions decided that following options to be adopted parameterwise.

1. In respect of 1,40,000 habitations with iron contamination

Treatment option

2. In respect of 37000 habitations with fluoride contamination, 3722 habitations with arsenic contamination and 33000 habitations with salinity problem

50% Treatment option
50% Piped water supply scheme

While calculating the financial projection on the basis of per capita cost of treatment of different quality parameters, a Norm of 500 populations for each quality affected habitation was adopted. Accordingly parameterwise cost involved is as below.

Table 2.4.2
Allocation of Funds based on Current Cost Available

Sl. No.	Parameter	Total No. of Habitations	Total Population(in Crores)	Per capita cost for treatment @ 10 lpcd except for iron	Per capita cost for PWS @ 40 lpcd	Total amount (Rs. in crores)
1.	Iron	1,40,000	7.00	Rs. 50		315.00
2.	Fluoride	37,000	1.85	Rs. 200	1200	1235.00
3.	Arsenic	3,722	0.186	Rs. 500	1200	162.00
4.	Salinity	33,000	1.65	Rs. 700	1200	1568.00
5.	Nitrate	10000	.50		1200	600.00
6.	Quality				1200	140.00
Total						4020.00

The costs are somewhat lower compared to costs worked out on the per capita basis cost provided by the State Governments to the Mission for their quality affected villages in 1986 and accounting for appropriate inflation and cost escalation. This comes out to be Rs. 5768 crores rounded off to Rs.5800 crores. This value is taken for allocation of funds.

The provision for sustainability is calculated from O&M cost for 2 years in the 10th plan (in the remaining period it has to be provided by the State Governments including a small tariff from the users of water supply), replacement/addition of some new schemes and provision for rain water harvesting in the quality affected areas. This comes to about Rs. 2000 crores. The total cost for coverage of quality affected habitations and sustainability is around Rs. 8000 crores.

Presently, 20% of the funds under ARWSP allocation is earmarked for Sub Mission programme for quality improvement and sustainability. 25% of the 20% allocation (amounting to 5% of total ARWSP) has already been earmarked for taking up programme under Sub Mission on Sustainability. But many States are not found to utilize this allocation for quality improvement programme. The present earmarking of 20% under ARWSP for Sub Mission covered both quality improvement (15%) and Sustainability of the Source (5%). Based on the trend of water quality scenario in the country, the quality problem is bound to increase in the years to come. Hence it may be desirable to increase the allocation from the present 20% to 30%. Further it is suggested that a recommendation for keeping the earmarked 30% allocation under ARWSP as a pool fund at Government of India level and allotted to States having quality problems only on the basis of quality problems weightage given in the ARWSP Guidelines.

The total allocation of funds required for treatment/improvement in water quality for supply to the problem villages has been worked out on the basis of per capita cost for different States in the 1981 Mission documents (after giving due weightage for cost escalation). A total of about Rs. 5800 crores is required for treatment/quality improvement of water supply and about Rs. 140 crores for setting up laboratories and training of personnel for water quality monitoring. An allocation of Rs. 2000 crores is needed for the sustainability including O&M for certain period of plan, replacement/addition of some new schemes and provision for appropriate technology. So, the overall outlay for meeting the requirements under quality upgradation, Sustainability of the Source and System works out to approximately Rs.8000 crore.

5. SUPPORT ACTIVITIES

5.1 Human Resource Development

The Main Objectives of the NHRDP in 10th plan period will be:

- Empowerment of Panchayati Raj Institutions/Local Bodies with the objective of enabling them to take up O&M activities relating to Rural Water Supply Systems.
- Capacity building of local communities by giving requisite training to mechanics/ health motivators/ masons etc.
- specially women to operate & maintain handpumps and the components of other water supply system as well as to generate demand for adequate sanitation facilities.
- To train at least one beneficiary especially women in each village through district level trainers who in turn may be trained at selected institutions forming the Indian Training Network (ITN).
- Improve the productivity of sector professionals through specialized courses.
- To introduce rural orientation in technical education sector coupled with publication of manuals on rural water supply and rural sanitation.

The strategy for implementation of the NHRDP involves:

- Establishing HRD Cells in all the States to undertake HRD activities in the State based on trainer assessment.
- Networking with NGOs, polytechnics, training institutes / organizations etc.
- Conducting specialized courses and experience sharing workshops for sector professionals, in India and abroad.
- Evolving courses, for introduction at diploma and degree levels, to introduce rural orientation and appropriate technologies and practices.
- Creating a resource pool of trainers for training grassroots level trainees in the villages through the Indian Training Network (ITN)

In order to achieve the objectives mentioned above following are the recommendations of the department:

1. The programme needs to be continued to provide adequate funding of HRD activities on 100% basis including HRD Staff Salaries to the State Govts. The HRD Cells in the State Governments should be strenghtened for implementation of the HRD activities and serve as knowledge resource centre for implementing the Sector Reform approach and cater to the local needs.

2. (i) A National Centre of Excellence should be established for research in various aspects of education, policies, social issues, sector reforms, and technology options, norms of Rural Water Supply and Sanitation standards related to the same. Till such time the proposed National Centre develops, Mission may offload specialized issues to identified institutions.

(ii) The NHRD management cell may be strengthened through positioning multidisciplinary experts and institutionalized which should work as resource and HRD programme management centre for monitoring, training development of appropriate materials/ plans coordinate developments in the sector at regional, national and international levels.

3. The outside institutions viz. universities/ technical institutions, centres and autonomous institutions may be identified based on their knowledge base in the sector and funded for creation of Rural Water Supply knowledge centre within these institutions. These centres would also work as knowledge centres for the local/ decentralized water supply institutions/ committees under sector reform.

4. Capacity building of local communities by giving requisite training to grass root level, such as mechanics/ health motivators/ masons, etc., specially women to maintain hand pumps and the components of other water supply systems and to generate demand for adequate sanitation facilities. For this purpose village and habitation wise training programmes may be made through anganwadis, women groups, active in the area, consultants, teacher during vacations, students of class Xth, XIth, XIIth, etc.

5. Detailed O&M Manuals should be prepared at the state level in local languages and appropriate training modules should be developed.

6. Two sets of tool kits shall be provided to Gram Panchayat for O&M of water source like hand pump, tube-wells, etc.

7. Research projects for HRD, Capacity Building, Social Issues, Policy Matters related to Rural Water Supply may be sponsored by the Mission.

5.2 Information, Education and Communication (IEC)

Objectives:

To create a sense of participation among the community, voluntary agencies and Panchayati Raj Institutions; especially, women, and involve them in planning and implementation of water and sanitation programmes, and in the maintenance of the systems;

- To institutionalise the concepts of sanitation and safe drinking water within the community, to be passed on from generation to generation like other social customs and to bring about a permanent change in peoples behaviour and attitude regarding sanitation and safe drinking water;
- To create awareness about proper storage , handling and consumption of safe drinking water as

well as construction of individual latrines;
- To create consciousness about good hygiene and to create awareness among the community regarding safe disposal of waste water and solid wastes;
- To create a sense of willingness among them to pay for the construction of water supply systems and sanitation facilities;
- To prepare motivators within the community, and make all sections of society conscious of their duty to promote good sanitation and safe drinking water;
- To reduce infant mortality and morbidity through improved sanitation and safe drinking water;
- To promote low cost, location specific appropriate technologies and encourage establishment of production centres and delivers outlets;

Strategy:

- For the intensive awareness campaign an infrastructure has to be created at the state , district, block and villages levels.
- Creation of IEC cell in the all the states and identification of State Coordinating Agency (SCA) and District Coordinating Agency (DCA)
- Constitution of WATSAN committee at various level State, District, Block and Village level
- Selection of Motivators at Panchayati level in consultation with DCA and Selection of Block level coordinators
- State will prepare a district wise action plan reflecting activities and budgetary provision and also a State Level Action and submit to the Rajiv Gandhi National Drinking Water Mission.

Recommendations:

1. Only few districts had IEC activities in 9th Five-Year Plan, and it is recommended that all the districts of the country should embark on IEC activities related to rural drinking water supply in 10th Five-Year Plan.

2. IEC activities to be taken up at the three levels viz. Mission, State and District Level in all the districts of the country. The HRD cell in the States will coordinate and integrate IEC, MIS and HRD activities.

3. A comprehensive IEC action plan will be prepared every year to create a synergic impact in rural areas. The objective of IEC will be to improve community participation, to promote demand responsive approach besides cost recovery in drinking water projects. The electronic and print media will also be utilised for general wareness amongst the rural peopleon rain water harvesting, water conservation and development of traditional drinking water systems and sustained hardware activity/ sector reforms must follow IEC campaign in all districts.

4. IEC Guidelines are to be amended and cost structure to be made more realistic.

5. Concerned officials to be sensitized at the State and district level regarding the objectives and needs of IEC programme and launching of special training courses for officers of implementing agencies in the States for effective implementation of IEC programme and for developing IEC materials, modules etc.

6. More emphasis should be given to introduce/ topics subjects related to water, sanitation and health at all levels of education. NCERT may be requested for incorporating appropriate material, in school books.

7. A committee of experts relating to Rural Water Supply and Sanitation, hygiene, health, women &

child, nutrition and communication should be formed at Central and State level to advise on the subject matter of water supply, sanitation, etc.

8. Baseline survey should be carried out in each habitation to bring out information regarding capacity to desires and expectations. Specific IEC strategies/ modules should then be developed based on these information;

9. Various institutions e.g. Public Health Engineering Department (PHED), Panchayati Raj Institutions, NGOs, voluntary organizations, youth organizations, school children and teachers, anganwadis, scouts and guides, health workers, social workers/ leaders, women organizations, Nehru Yuva Kendras, etc., should be involved in IEC activities during the 10th Five-Year Plan. Special emphasis is to be given for campaign in tribal and backward areas .

5.3 Management Information System (MIS)

Management Information System is extremely important for effective monitoring and implementation of various components of the Rural Water Supply Programme and easy availability of data not only to the Central and State Governments, people's representatives, but also to the users. It will be ensured that public has access to habitation-wise survey data through NIC and there is effective communication system using NICNET.

The objectives of computerization are to generate information relating to:

- Fast and reliable communication system , Office automation and Training
- Habitation-wise status availability for water supply and details of water sources as well as progress of implementation of projects/ schemes
- Mechanism of handling micro level data obtained from related departments/ agencies
- Evaluating different design alternatives based on costing ,Preparation of detailed scheme/ project documents including drawings and easy mechanism of storage and retrieval of schematic details
- Sharing of information in respect of technological innovations and experience in the water supply and sanitation sector

Strategy

1. Flow of data

- Compiled information should flow upwards from the level of habitation, village, Panchayat to District/ Division Head Quarters through well designed formats to maintain uniformity of data collected, in local language/ English.
- District level data entry needs to be standardized by developing proformae for communication to State capitals and the Mission.

2. Data collection

- The proformae should be compatible to software for mapping exercise on GIS package on All India basis and Projection of reports/ statements on specified topics.
- Forms for data collection should preferably be both in English and in the local language. This can be done at the State level.
- Proper training to enumerators should be imparted so that all items in the performa are explained in detail.
- Enumerators should be given a remuneration village/ locality wise and he/ she should preferably belong to any one of the villages/ locality he/ she is surveying. One enumerator

should be given the responsibility of collecting data for 3-4 neighboring villages/ locality depending on the area of the villages/ locality. This will ensure that his/ her remuneration amounts to a good sum, which will act as a motivation for good work.

- There should be a core group in every block consisting of Gram Panchayat (GP) secretaries or elected people's representatives. This group will be primarily responsible for data collection and authentication.
- In cases where data cannot be collected directly - like finding out % of iron, arsenic, fluoride, salinity of water sources, etc., or for finding out whether proper gradient is available for rainwater harvesting, third party co-ordination may be called for. District authorities may co-ordinate with technical agencies for the same.
- After data collection is over, the Mukhia or village chief, or any GP member from that village should certify the data so that accountability is ascertained.

3. Data entry and Retrieval

- An effective communication network like NICNET, for easy and efficient flow of information should link all PHEDs up. There should also be proper communication links between the PHEDs and other departments like the DRDA. The District administration, etc., for facilitating information flow among them.
- The data can be entered into the computer at the Division or District level and then validation checks can be run based on the rules and guidelines laid down by the PHEDs/ State Departments looking after rural water supply. Regular data updating should be ensured to keep the system meaningful over time.
- After proper validation of data reports may be generated at the PHED/ District/ State level. It has to be kept in mind that there should be uniformity in reporting data formats from States to the RGNDWM for countrywide monitoring.
- Computerization would be most effective if it is done bottom-up i.e. from PHE level upto the State level.
- Decision support systems and Geographic Information systems can go a long way in improving decisions and effective planing

Recommendations:

1. A Central Water Base Information System (WBIS) to be developed.

2. The present funding for MIS and computerization may be continued and all offices of the field and below the Executive Engineer should be computerised.

3. States should be encouraged to develop interactive websites and knowledge bank for people to use the same. 100% funding for the same should be provided by the Government of India.

5.4 Monitoring & Evaluation

Objectives:

An continuous monitoring and effective evaluation at the state and district levels in respect of the various Rural water supply projects and Sector Reform projects. Implementation would require not only progress monitoring, but also the process monitoring.

Strategy:

Monitoring and evaluation is of vital importance to ensure not only achieving the targets of the 10th Plan, but also to assess the status of work done during the previous plans and to ascertain the reasons

for:

- Ever-growing numbers of not covered/ partially covered habitations,
- Depleting water resources
- Sources of water supply becoming non- sustainable, qualitatively/ quantitatively.

Recommendations:

1. Concurrent Monitoring of all projects and schemes of Rural water Supply should be done. Presently, quarterly and annual reports are submitted by concerned offices, however the process needs streamlining and an inbuilt mechanism need to be developed in the proposed MIS for generation of the periodic monitoring and evaluation reports. However, GIS also should be developed that would supply all information related to water quality, availability of ground water, hand pumps, tube-wells etc. in the area, which would also become an in important component of monitoring and evaluation.

2. Continuous Evaluation of various schemes, programmes and projects of rural water supply should also be done. Evaluation should be done at least twice once when the project is going on and once the project is completed. Post project impact assessment should also be carried out either through independent agencies or by States themselves. Evaluation of rural water schemes will be carried out to identify the improvement of the schemes and the result of recommendations suggested in the previous report. New recommendations will be suggested in the periodical assessment report for further improvement.

3. Regular monitoring of the quality of water supplied in rural areas is essential to detect chemical and biological contamination of drinking water to safeguard the health of living beings. The existing water quality monitoring system like mobile and static laboratories needs to be evaluated and based on the lessons learnt, need strengthening besides suitable policy/institutional measures with appropriate budgetary support. Water quality monitoring is definitely a very important part of this monitoring and evaluation process and should be treated as a separate issue.

4. 100% funding to be provided by the Govt of India for Monitoring and Evaluation activities

5.5 Fresh Validation of data & fresh habitation survey

Objective:

The status of habitations (NC/PC/FC) keeps on changing periodically on account of extention of water supply, creation of new habitations, disappearance of old habitations etc. Hence there is pressing need for updating the data periodically. Updation can be done by conducting fresh habitation survey as well as revalidation of existing data.

Recommendation:

1. Fresh habitation survey should be conducted every 10 years and it may be linked with census operations. All the relevant information need to be to be compiled habitationwise, revenue village wise through Gram Panchayat upto District Level.

2. Every 5 years revalidation of habitation coverage data should be carried out and slippage may be taken into account to find out the actual position including changes in the status of habitations.

Outlay:

The outlay required during the Tenth Plan for various activities like HRD, IEC, MIS, etc. would be as follows:

Sl. No.	Activity	Outlay required (Rs. crores)
1.	Validation of data and fresh habitation survey	30.00
2.	IEC	150.00
3.	HRD	200.00
4.	Monitoring & Evaluation	30.00
5.	Management Information System	90.00
	TOTAL	500.00

6. TENTH FIVE YEAR PLAN OUTLAY

After considering the recommendations and outlays formulated by the Sub-Groups on Rural Drinking Water Supply, the Working Group has come to the conclusion that Rs. 40430 crore would be required for rural drinking water sector out of which an outlay of Rs.15630 crores would be from States. An outlay of Rs. 24800 crores as Central share alone would be required for the following activities under the Rural Water Supply Programme during the Tenth Five Year Plan:-

Sl. No.	Activity/Programme	Outlay (in Rs. crore)
1.	Coverage of rural habitations	12,300.00
2.	Sector Reforms – community participation in Rural Water Supply Programme and related policy issues, Sustainability of systems and sources, Role of PRIs and NGOs, Restructuring and Re-orientation of the Rajiv Gandhi National Drinking Water Mission	2,000.00
3..	Water Quality, Sub-Missions including that on Sustainability, Research and Development, Technology and Integrated Water Resource Management.	10,000.00
4.	Other activities like Human Resource Development (HRD), Information, Education and Communication (IEC), Management Information System (MIS), Monitoring and Evaluation, Fresh Habitation Survey and Validation of Data.	500.00
	TOTAL	24,800.00

CHAPTER –III

RURAL SANITATION

1. AN OVERVIEW

1.1 The concept of sanitation cannotes a comprehensive definition which includes liquid and solid waste disposal, food hygiene and personal, domestic as well as environmental hygiene. Although the concept of sanitation has undergone qualitative changes during the years, there has hardly been significant change in the sanitary conditions in the villages in India. Based on the experience gained in the past, it was reviewed to work out the new strategy for Eighth Plan and it envisaged an integrated approach to rural sanitation and, inter-alia, included the construction of individual sanitary latrines.

1.2 Keeping in view the experiences of the Central Government, State Governments and NGOs and other implementing agencies during the Eighth Plan and the recommendations of the Second National

Seminar on Rural Sanitation, the strategy for Ninth Plan was restructured. The restructured Central Rural Sanitation Programme (CRSP) has come into being from 1.4.1999. It moves away from the principle of State-wise allocation primarily based on poverty criteria to a "demand-driven" approach in a phased manner with a view to achieve at least 25% coverage of rural population by the end of the Ninth Plan period. The restructured Programme is community led and people centered. Rural School Sanitation has been introduced as a major component and as an entry point encouraging wider acceptance of sanitation by rural masses. The "campaign approach" is helping in imparting the message of use of toilets and safe disposal of human excreta. Under the restructured Central Rural Sanitation Programme, Total Sanitation Campaign is being implemented at present in 200 identified districts.

2 RURAL SANITATION STATUS

2.1 Rural sanitation is promoted as a total package consisting of safe handling of drinking water, disposal of waste water, safe disposal of human excreta including child excreta, solid waste disposal, domestic sanitation and food hygiene, personal hygiene and village sanitation. There are difficulties and limitations to make a realistic assessment of sanitation facilities available in rural areas. The sanitation coverage in terms of individual household latrines at the beginning of 9th Five Year Plan was 16-20% of total rural households. National Sample Survey, 54th Round Report published in July 1999 (Drinking Water, Sanitation and Hygiene in India) indicates that 17.5% of the rural population were using the latrine. By the end of the 9th Plan i.e. 2002, it is estimated that 20% of the Rural Household may have sanitary facilities through the Central Rural Sanitation Programme.

2.2 Though the majority of Indian population live in rural areas, their access to a minimum level of sanitation is very low. Some of the issues that have stood in the way of effective implementation of Programme are - very low priority given by the State governments and the people at large to sanitation, low emphasis on IEC, promotion of a single model i.e., twin-pit pour-flush latrines, heavy reliance on subsidy and lack of motivation efforts, poor disposal of waste water from water points creating un-hygienic conditions, habits, unwillingness to pay for the cost of sewerage, scarcity of water and lack of community participation and NGO/Private Sector involvement.

2.3 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. The poor uitlisation of existing sanitary latrines, due to lack of awareness, scarcity of water, poor construction standard, emphasis on standardised designs without attention to local needs and general reluctance of people are also important factors for low coverage. Indira Awaas Yojana also has a component of household latrine, but the facility is often used as an extra room. A statement giving percentage distribution of households for different States by type of latrine used in rural areas during 1998 is at Annex-VII

3. NINTH FIVE YEAR PLAN PERFORMANCE

3.1 The Working Group for the 9th Plan recommended a provision of Rs.6251 crore for the Plan Period and fixed the target for coverage at 50% of the rural population. However, the Ninth Plan document envisages a coverage of 35% of rural population by the end of the 9th Plan. The Planning Commission has been able to provide only Rs.549 crore for the 9th Plan. By the end of the 9th Plan period the allocation based programme would be phased out and only Total Sanitation Campaign would be implemented under Sector Reforms. Physical and financial progress achieved during Ninth Plan is as follows:

Table-3.1
Physical progress during Ninth Plan

Year	Achievement (CRSP+MNP) (Number in lakhs)
1997-98	13.87
1998-99	16.31
1999-2000	10.87
2000-2001	6.81*
2001-2002	3.98 (provisional)

* Monthly progress reports are not yet received from States/UTs like Madhya Pradesh, Maharashtra, Manipur, Nagaland and Dadra & Nagar Haveli

Table-3.2
Financial performance during Ninth Plan

Year	Total Expenditure (CRSP+MNP) (Rs. in crores)
1997-98	265.14
1998-99	254.17
1999-2000	168.64
2000-2001	82.70*
2001-2002	150.00

* Monthly progress reports are not yet received from States/UTs like Madhya Pradesh, Maharashtra, Manipur, Nagaland and Dadra & Nagar Haveli

4. TENTH FIVE YEAR PLAN PROPOSALS

4.1.1 The objectives of the Tenth Five Year Plan is to bring about the improvement in the general quality of life in the rural areas, which would be achieved by following:

(a) Accelerating coverage in rural population
(b) Generating felt need through awareness creation and promotion of health and hygiene
(c) Covering schools in rural areas with sanitation facilities
(d) Encouraging suitable cost effective and appropriate technologies

In order to achieve the above objectives, the following Programme will be implemented during 10th Plan.

4.1.2 TENTH PLAN STRATEGY

The approach to the sanitation challenge will not only be human centred but also ecologically sustainable. It is concerned with equity, the protection of the environment and the health of both the user and the general public. The unprecedented sanitation challenge requires new strategies and methods to improve sanitation which should be accessible to every one in the rural areas. In view of this and experiences gained in the past it is felt that the following strategies should be adopted during the Xth Plan Period. With these strategies the objectives of the Xth Plan would be accelerating sanitation coverage in rural population through creation of demand and awareness generation to improve physical quality of life in rural areas. Toilet facilities especially in all the primary and upper primary schools would be provided. Suitable, cost effective, local based affordable design of individual household toilets should be encouraged. With these objectives the improvement in the general quality of life in the rural areas would be achieved.

4.1.3 SUBSIDY PATTERN UNDER CRSP

Before restructuring of the Central Rural Sanitation Programme the cost of the individual household latrine was estimated to Rs.2500/-. The subsidy provided for construction of these toilets was Rs.2000/- shared by Central and State Governments equally (Rs.1000/-) and Beneficiary contribution was Rs.500/-. The subsidy pattern was distributed in the ratio of 40:40:20 amongst Centre, State and Beneficiary. On the basis of this pattern the individual household latrines constructed during 1998-99 was 16.30 lakhs and during 1999-2000 about 10.87 lakhs. The subsidy pattern was revised w.e.f.1-4-1999. As per the revised pattern the following types of subsidies are available under the Total Sanitation Campaign:-

Individual household latrines costing upto Rs.625/-, the Central share of subsidy allowed is Rs.375/-
Individual household latrines costing between Rs.625/- and Rs.1000/-, the Central share of subsidy allowed is 30% of the unit cost
School latrines costing upto Rs.20,000/-, the Central subsidy allowed is Rs.12,000/-
Women Sanitary Complexes, the Central subsidy allowed is 60% of the unit cost

The physcial progress has come down tremendously and in 2000-2001 only 6.81 lakhs (provisional) latrines were constructed. In the Xth Five Year Plan, it is estimated to cover all the 574 districts in the country about Rs.3538 crores will be required for providing 100% coverage.

4.2 TOTAL SANITATION CAMPAIGN (TSC)

Under Sector Reform process Total Sanitation Campaign is being initiated since 1st April, 1999. Total Sanitation Campaign Programme is community led and people centered. The main thrust of the Programme is shift from a high subsidy to a low-subsidy regime, greater household involvement, choice of technology according to customer preferences, stress on software, development of back up services-trained masons, building materials through Rural Sanitary Marts/Production Centres. The components of the Total Sanitation Campaign are-construction of household latrines, construction of sanitary complex for women, toilets for schools, toilets for Balwadi/Anganwadi etc. Besides, funds are being provided for Start-up activities, Information, Education and Communication and Administrative Charges.

The main features of the Total Sanitation Campaign are as under :

- Shift from high subsidy to low-subsidy regime – from Rs.2000/- to Rs.500/- per latrine.
- Greater household involvement and participation.
- Technology options as per choice of beneficiaries households.
- Stress on Information, Education and Communication (IEC) as part of the Campaign.
- Emphasis on School Sanitation.
- Tie-up with various rural development programmes.
- Involvement of NGOs/CBOs and local groups.
- Promoting access to the institutional finance.

The revised strategies have been implemented since 1.4.99 and Total Sanitation Campaign has been launched in 200 selected districts during the 9th Plan period. Till now the Total Sanitation Campaign projects amounting to Rs. 1100 crores have been sanctioned. The components sanctioned in these projects are: construction of 104 lakh individual household latrines, 1.05 lakh latrines for schools, 11343 sanitary complex for women, 6413 toilets for balwadi/anganwadis and 929 Rural Sanitary Marts/Production Centres. With the present Annual allocation of the budget for Rural Sanitation Programme it is expected to achieve approximately 1.2 % of the Total Rural household per year

through these initiatives. For effective implementation and guiding the campaign approach in Total Sanitation Campaign Regional Workshops have been organised. The participants from the State Governments and other stake holders opined that owing to cost escalation of the different component of the low cost sanitation the cost structure proposed is not sufficient enough to provide safe sanitation as prescribed. As such they opined that the cost structure may be revised with a view to proving safe and affordable low cost sanitary facilities to the rural poor. The Working Group recommends to cover all districts (574) with Total Sanitation Campaign. TSC will be launched in 374 districts during 10th Plan and implementation in 200 districts will be expedited.

4.3 Technological Options

For promotion and reinforcement of Rural Sanitation Programme the role of appropriate and affordable technology is important. Technology options in Rural Sanitation Programme should play due emphasis to all the seven components of the Rural Sanitation. Various need specific technology options have been in practice and are in continuous process of improvement particularly in respect of excreta disposal, waste water disposal, and solid waste disposal. The Technologies provided to the target group need appropriate launching, extension and improvement.

The crucial part of sanitation promotion is `Technology Selection'. A single direct pit waterseal may be constructed keeping the vision of making a two pit waterseal following the sanitation upgrading sequences. Specific geo-hydrology demands a specific consideration for technology selection. For example, waterseal latrines that possess excellent hygienic qualities (due to having waterseal) may run dry and become non-functional in an arid region where water itself is a scarce resource. Again, pit latrines will become non functional in a high water table, water-logged and flood prone area and can pose tremendous health risk. Moreover, groundwater pollution possibility is another dimension which has also to be looked into carefully for technology selection. Instead of recommending any particular design, it is always advantageous to have a dialogue with the community and offer a range of options. This will provide the opportunity to choose the one based on their taste and capacity and make the community feel involved in the programme and provide better understanding on the preference to a set of options. Nevertheless, it is advisable to carefully prepare the gross list keeping in view the geohydrological conditions, availability of construction materials and skilled manpower, after-construction services, possible upgrading, ground water pollution aspect, health and environmental risks and cost factors. The Government will support the research and design for developing the range of various technology options, during 10th Plan which should be location specific and need based. Further, all TSC districts will have models on all possible options for household toilets, community toilets and school/balwadi latrines.

4.4 Human Resource Development

Human resource development covers all actions required for developing a qualified and motivated manpower in organisations at all levels, which includes training and education, manpower, utilization plans and also creation of an appropriate culture in the implementing agencies in particular and in the community in general. Human Research Development programme includes development of users group and awareness building in communities. With a view to make use of appropriate low cost technology for assisting the poor in the country, the tools on how to design, implement and operate such technology will have to be made available to all stake holders. As per the 73rd Constitutional Amendment Act, 1992, Panchayats have to play a major role to implement the Sanitation Programme.

In creation of the demand, socio-cultural factors play an important role for behavioural and attitudinal change. The evils of open defecation, the drudgery and privacy of women should be explained and those should be major issues in generating demand. It is necessary to create quality

environment by involving every inhabitant of village to change the mind set for accessibility to safe sanitation. For this purpose, a cadre of trained sanitation motivators through proper training with the help of NGOs and other community based organisations may be created to inter act with the villagers and other agencies at various levels in the implementation of sanitation programme. Participatory demand generating exercises including social mobilisation should be undertaken under TSC.

Training is required in the design, implementation and operation for appropriate technology projects and conventional type projects. The low service level coupled with the need to reach many villages requires a large number of community workers with the ability to motivate rural inhabitants to participate actively in self help water supply and sanitation projects. There is a great need for the more traditional training programmes in all aspects of water supply and sanitation projects for managers, treatment engineers, plant operators, construction and maintenance workers. It is essential to make assessment of the available trained manpower. Information can be collected from the training institutes like Rural Development Training Institutes, ITIs, Polytechnics, Teachers' Training Institutes, Panchayati Raj Training Institutes etc. Orientation programmes for community leaders, Sarpanchs, sanitation programme workers, grass root level workers, Public Health Engineering Department and Health Department staff and motivators will be of great assistance to make the programme successful. Training should be provided to motivators, teachers, unemployed youths and natak drama performers.

The central feature is to develop a good linkage between the organisations, activities and job practices with the demand of surrounding environment. Capacity building within the village and grama panchayat should have awareness raising, information imparting, skill acquisition, encouragement and social mobilisation. Capacity building goes beyond training and includes institutional and community development needed to ensure that the new learning and skills are applied as intended. It is viewed as increasing the ability and motivation of institutions and people to improve the use and sustainability of water and sanitation facilities. It comprises three elements: namely, creating an enabling environment with appropriate policy and legal frameworks, institutional development and community development for water and sanitation including training.

With the objective to cover all the districts of the country in the Xth Plan by assuming that about 500 villages in each district and 7 persons of different categories required to be trained in each village, the number of the persons to be trained will be about 20 lakh. These persons may include village pradhan, gram panchayat secretary, primary school Headmaster and teachers, anganwadi worker, motivators, representatives of NGOs, masons, primary health workers, Block Development Officers, Zilla Parishad functionaries, junior engineers at Block level etc., To train these people good trainers and recognised institutions are to be identified and involved at National, State and District levels. External Support Agencies can also be associated for imparting training to the trainers at National and State levels. The trainers at the National level can be utilised throughout the country for preparing group of the trainers at the District level and State level. It is estimated that about Rs.100 crores will be required for this purpose during the Xth Five Year Plan.

4.5 INFORMATION, EDUCATION, COMMUNICATION(IEC)

Multi-media approach for wider reach would be adopted to create largest possible awareness through audio-visual, print and electronic media. Inter-personal communication, traditional media (folk songs) etc. should be involved in transmitting the message of sanitation. The communication should be short, medium and long term and should be planned by involving community, Panchayati Raj institutions and governmental agencies. District and State level workshops and seminars may be organised. Social advocacy with various groups and organisations, like, NCC, NSS, Rotary and Lion Clubs, Soap Manufacturers, CII, FICCI and ASSOCHAM should be initiated. Celebration of sanitation week should also be organised at district level.

The programme should address different audiences and will have to be tailored for each one of these audiences. The incentives are to be provided to the motivators on the basis of construction of individual households toilets. The industrialists should also be encouraged to donate toilets, smokeless chullahas to their employees as bonus in addition to cash incentives. Motivators should be given financial incentives for construction of sanitary latrines. Funding of 15% has been provided for IEC activities under TSC for the project districts. It is recommended to provide Rs.10 crores during X Plan for general National level IEC activities.

4.6 RESEARCH AND DESIGN

NGO/VO with proven track record in the areas of Sanitation and National/State level Institutions involved in the research related to the issues of health, hygiene and sanitation will be involved to study the present technology of human excreta and waste disposal systems in the rural areas. The Research outcome would provide an affordable low cost technology to suit the requirements of different geo-hydrological conditions for ecologically sustainable long term solution. During the Xth Plan Period a provision of Rs.10 crores is recommended.

4.7 MONITORING AND EVALUATION

Evaluation studies on the implementation of TSC would be conducted by Govt. of India/States/UTs through reputed Institutions and Organisations. Based on monitoring and Evaluation reports remedial actions would be taken for undertaking midway corrections, and also to guide the project activities in TSC districts. In order to support such activities Rs.5.00 crore would be provided in the Xth Plan period.

4.8 PRIVATE PARTICIPATION, CREDIT FACILITIES AND OTHER SUPPORTS

In order to mobilise required funds for rural sanitation, to improve coverage in the rural areas the financial institutions/banks should extend loan at lower interest rates to the States for provision of sanitation facilities. Micro-credit through NGOs should be supported. Various fiscal concessions like cutting excise duty/sales tax and lower electricity charges should be made available to the manufacturers of low cost sanitary materials. Private participation should be encouraged in setting up of Building Centres and Sanitary Marts in rural areas to provide cost effective technology of sanitation to the rural households. To invite maximum participation of the rural population under sanitation coverage, the subsidy available for low cost sanitation may also be extended to all types of latrines opted by the beneficiaries irrespective of cost.

4.9 PROPOSED PLAN OUTLAY FOR THE TENTH PLAN PERIOD

The total requirement of the fund during the Tenth Plan Period so as to cover the entire districts of the country under Total Sanitation Campaign initially to cover Below Poverty Line families is as follows:

Total Sanitation Campaign projects encompassing individual household toilets, school sanitation, women complexes for covering 574 districts as a Central share @ Rs.625/- unit cost	Rs. 3538 crores
Information, Education and Communication	Rs. 10 crores
Human Resource Development	Rs. 100 crores

Research and Design	Rs. 10 crores
Monitoring and Evaluation	Rs. 5 crores
Total Plan Outlay	Rs. 3663 crores