

# THE NATIONAL RURAL WATER SUPPLY AND ENVIRONMENTAL SANITATION PROGRAMME IN INDIA

PBA Reference No. SC/95/0241

Government of the Netherlands  
1 December 1996 to 31 December 1997

## SECOND PROGRESS REPORT



Unicef 

United Nations Children's Fund - India Country Office  
Water and Environmental Sanitation Section  
73 Lodi Estate  
New Delhi 110003  
India

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## LIST OF ACRONYMS

AA	Activated Alumina
AIHH&PH	All India Institute of Hygiene & Public Health
A.P.	Andhra Pradesh
BIS	Bureau of Indian Standards
CBHPM	Community-based Handpump Maintenance
CEO	Chief Executive Officer
CDD	Control of Diarrhoeal Diseases
CRSP	Central Rural Sanitation Programme
DD	Domestic Defluoridation
Dfl.	Dutch Guilder
DWCD	Department of Women and Child Development
FY	Financial Year
GFSS	Global Field Support System
GoI	Government of India
GR	(UNICEF) General Resources
GWSSB	Gujarat Water Supply and Sewerage Board
HFU	Hydro-fracturing Unit
HMS	Hydro-fracturing Monitoring Software
H <sub>2</sub> S	Hydrogen Sulfide
IDD	Iodine Deficiency Disorders
IEC	Information, Education, Communication
IERT	Institute of Engineering and Rural Technology
IFCP	Integrated Fluorosis Control Project
IIT	Indian Institute of Technology
IM II / III	India Mark II / III handpump
IRDP	Integrated Rural Development Programme
ISI	Indian Standards Institute
KAP	Knowledge, Attitude, Practices
lpcd	litres per capita per day
MIS	Management Information Systems
M.P.	Madhya Pradesh
MPO	Master Plan of Operations
MoRAE	Ministry of Rural Areas and Employment
MSS	Management Support System
NCERT	National Council for Educational Research and Training
NGY	Nirmala Grama Yojna
NGO	Non-Governmental Organisation
NPA	National Plan of Action
O&M	Operation & Maintenance
ORS	Oral Rehydration Solution
PBA	Programme Budget Allotment
PHED	Public Health Engineering Department
PoA	Plan of Action
ppm	parts per million
PAS	Performance Appraisal System
PMRY	Prime Minister's Rozgar Yojana
PRA	Participatory Rural Appraisal
PRED	Panchayati Raj Engineering Department

PTA	Parents-Teachers Association
R&D	Research and Development
RGNDWM	Rajiv Gandhi National Drinking Water Mission
RRL	Regional Research Laboratory
RIMS	Rig Information Monitoring System
RSM	Rural Sanitary Mart
RSP	Rural Sanitation Programme
RWS&S	Rural Water Supply & Sanitation (of Govt. of Orissa)
SF	(UNICEF Supplementary Funds)
SPMS	Spare Parts Management System
TMC	Tractor-Mounted Compressor
T.N.	Tamil Nadu
TPFL	Twin-Pit Pour-Flush Latrine
UNICEF	United Nations Children's Fund
U.P.	Uttar Pradesh
VCD	Village Contact Drive
VLOM	Village-level Operation and Maintenance
WatSan	Water Supply and Sanitation
WES	Water Supply and Environmental Sanitation
WWF	World Wide Fund for Nature

## 1. EXECUTIVE SUMMARY

This is the second progress report to the Government of the Netherlands, on the utilisation of the Dfl. 25.98 million (US\$ 15.12 million) contribution to UNICEF for supporting the national rural water supply and sanitation programme. UNICEF and the Government of the Netherlands signed the agreement for this contribution on 3 May 1995. Although the project period was initially for two years, delays in implementation compelled UNICEF to seek a one year extension of the project period. With the consent of the Government of the Netherlands, the project period has been extended, budget-neutrally, by one year, now ending 30 April 1998.

### General overview

Major gains for women and children in recent years include a sharp decline in vaccine-preventable diseases and the virtual eradication of guineaworm, with 1997 being the first year in which no cases were reported. Higher levels of iodisation of salt and greater access to improved water supplies have also been achieved. Yet, nearly two million children continue to die each year before completing one year; their deaths caused most often by combinations of infections and malnutrition. The lack of hygiene, poor sanitary practices and the use of unsafe water account for about 20 per cent of these child deaths.

**Sanitation.** In 1996, home toilet coverage is estimated to have reached 35 per cent overall and 20 per cent for rural areas, leaving the global goal of universal access still a major challenge. Personal, home and environmental hygiene remain key concerns. UNICEF cooperation in sanitation started in 1983, gaining momentum when the Central Rural Sanitation Programme (CRSP) was launched in 1986. UNICEF supports health and hygiene education, the promotion of alternative delivery systems for sanitation, a range of technological options and a low or no subsidy approach to toilet construction. The Rajiv Gandhi National Drinking Water Mission (RGNDWM) conducted a national-level workshop to finalise a set of IEC booklets on drinking water and sanitation, for use by village-level functionaries, school teachers, grassroot workers, masons, etc.

**Water Supply.** By the current coverage norm of 40 litres per capita per day (lpcd) within a distance of 1,600 metres and one supply point for 250 people, rural water supply coverage on 31 March 1996 stood at 81.7 per cent. Where full coverage has been achieved, the norm can be enhanced to 55 lpcd at a distance of 500 meters. UNICEF cooperation in water supply dates back about 30 years, focusing for some 20 years on the development of water well drilling and deepwell handpumps for use on borewells. In more recent years, UNICEF assistance is focusing on issues of sustainability, quality and alternative technologies.

The year 1997 witnessed the following major developments in the water supply and sanitation sector:



**Sanitation.** The Department of Women and Child Development (DWCD) organised a national workshop on sanitation with a focus on children and women, involving State and National Governments, as well as NGOs. The workshop concluded that sanitation and hygiene should be made a mass movement. DWCD also featured sanitation as a major theme during the national nutrition week. The National Dairy Development Board adopted the concept of Rural Sanitary Marts for implementation through their primary cooperatives.

The State Housing Cooperation of Andhra Pradesh started using the district building centres for the production of pans and traps for their housing schemes and for sale in the open market.

**Water Supply.** Responding to increasing concern among the public, professionals and governments, the Rajiv Gandhi National Drinking Water Mission organised a national workshop on water quality and surveillance systems, attracting national and State Governments, donors and NGOs. The workshop adopted a range of recommendations, calling for appropriate institutional mechanisms at all levels, training infrastructure, operational research on water treatment technologies, and development of simple, accurate, user-friendly water quality testing equipment. UNICEF and the World Wide Fund for Nature (WWF) reviewed a series of case studies on fresh water environments, covering diverse rural and urban settings. The studies aim to gain a better understanding on how to achieve and sustain household water security while at the same time maintaining diverse ecological systems and allow for growth in urbanisation, industry and agriculture.

### **Project overview**

In 1997, project implementation proceeded without major interruptions. While some project components have seen very good progress, in other components achievements were less impressive. Among the project components with good to excellent progress are CDD-WatSan, School Sanitation, Rural Sanitary Marts and Community-based Handpump Maintenance. Components with less progress are Environmental Protection and Integrated Fluorosis Control.

In the Environmental Protection component, the State Water Supply Agencies and UNICEF staff have found it difficult and time-consuming to develop and implement groundwater recharge activities, which specifically benefit the village water supply sources. The State Water Supply Agencies often have limited capacity and experience in designing effective groundwater recharge projects. The tendency to use contractors for the construction of recharge structures reduces the already low levels of community participation. In the fluorosis control component, the District Administrations are often involved in the implementation of large-scale water supply construction projects. As a result, UNICEF's approach of focusing on activities supplementing these projects with home water treatment, IEC activities and sanitation often do not always get the necessary attention from the District Administration.

During 1997, UNICEF had one or two WES professionals in each of the ten Field Offices, with the exception of the Office in Bhopal. However, this staff carries a tremendous workload, working with various partners to formulate, implement, monitor and evaluate a number of projects aimed at demonstrating innovative strategies and/or technologies. UNICEF field staff devoted more time and effort to monitor implementation of project components.



**School Sanitation Health Education - Alwar**

In February 1997, the Royal Netherlands Embassy conducted a mid-term review of the Netherlands assisted UNICEF India Rural Water Supply and Environmental Sanitation Programme. The review resulted in a number of recommendations. UNICEF has taken careful note of the recommendations, and a point-by-point review of each of the recommendations is given in section 5 of this report.

**Implementation of some of the main project components can be summarised as follows:**

The **Control of Diarrhoeal Diseases - Water and Sanitation (CDD-WatSan) strategy** is the largest component of the project. This reporting period has seen fairly good to excellent progress in the implementation of the CDD- WatSan strategy, particularly in Kamrup (Assam), Allahabad (U.P.), Ranchi (Bihar) and Mysore (Karnataka). Although not easy to quantify or to attribute solely to the implementation of the CDD/WatSan strategy, there are tentative indications of positive impact on health in some of the areas where the strategy is implemented.

In the **School Sanitation** component, all five districts reached through this project component have reported satisfactory progress. The project now covers more than 1,900 primary schools, exceeding the project target of 1,500. Not all schools have as yet been provided with adequate water supply and toilets/urinals. UNICEF field staff report that the project is resulting in better hygiene practices among school children and teachers.

The **Rural Sanitary Mart (RSM)** component has seen very good progress, especially in Uttar Pradesh. The target of 100 RSMs has already been exceeded. More than 80 per cent of the RSMs achieve the target of Rs. 200,000 in annual sales within a year from opening. This level of sales is considered the minimum for an RSM to be financially viable. Orientation and training of RSM managers, masons and motivators provides the population with knowledge and skills for building their home toilets.

The **rooftop rainwater harvesting component** witnessed slow but steady progress during 1997, though not to the extent as expected at the time of writing the first progress report. After evaluations of earlier projects on rooftop rainwater harvesting projects, it was decided to incorporate some improvements in the tank design. This resulted in a slow-down in construction for some time during 1997. As of end-1997, about 42 per cent of the total number of tanks have been completed. Training of women as masons for the construction of the tanks has met with very good response.

**Project Financial Implementation.** Till end-1997, UNICEF had utilised US\$ 10.37 million (68.5 %) of the US\$ 15.13 million project fund. While utilisation of the budgets allocated for the major project components is on track, there is under-utilisation on the allocations for the Fluorosis Control, Environmental Protection, Well Rejuvenation and MIS components.

## 2 BACKGROUND

Unsanitary practices and contaminated water cause diarrhoea and ill-health which account for nearly 500,000 child deaths annually. The lack of sanitation is a significant contributory factor in malnutrition, which impairs the growth of nearly 60 million children. Over 70 % of the health problems faced by children



**Advocacy in A.P.: Project Officer (WES) with Chief Minister**

in primary schools are caused by inadequate hygiene. These factors directly undermine and prejudice the child's right to survival and development. Moreover, a heavy burden of drudgery is imposed on women and young girls having to walk long distances to obtain safe water for household use. Low awareness of the importance of hygienic practices diminishes the advantages of access to safe water. The failure to assure access to safe water and a clean environment also deters parents from sending their daughters to school and denies many girls the right to basic education.



Therefore, the overall goal of securing the health and well-being of children and women is advanced by ensuring the use of safe drinking water in sufficient quantities, the use of sanitary latrines and the practicing of good personal and home hygiene. Drinking water is a priority for all rural communities, so it serves as an entry point around which social development activities can be organised. Community involvement in the planning and implementation of services leads to better utilisation of water and sanitary facilities which, in turn, results in the reduction of water-borne diseases which, along with malnutrition, are the leading causes of morbidity and mortality of children in India. The guiding principles of GoI/UNICEF cooperation in water supply and sanitation are:

- The protection of children from diarrhoea and other diseases caused by the use of unsafe water or unhygienic practices.
- The reduction of drudgery for women and young girls who must carry water over long distances.
- The improvement of women's access to better knowledge on primary environmental care.

## **2.1 Rural Water Supply and Sanitation: National Objectives and Achievements**

Rural water supply and sanitation are the responsibility of the States. The Central Government makes available funds under the Accelerated Rural Water Supply Programme (ARWSP) and the Central Rural Sanitation Programme (CRSP), subject to the States matching the Central allocations from their Minimum Needs Programme (MNP) funds. The Rajiv Gandhi National Drinking Water Mission (RGNDWM) of the Ministry for Rural Areas and Employment of the Central Government is responsible for managing ARWSP and CRSP funds, setting national policy and monitoring progress towards the national goal of safe water and sanitation for all.

India has made remarkable progress during the last three decades in provisioning of rural water supply. The Government has adopted a coverage norm of one safe source supplying 40 litres per capita per day, for a population of 250, within a distance of 1,600 metres in the plains or 100 metres elevation in the hills. In 1996, about 83 per cent (85 % urban and 82 % rural) of the population had access to safe water.

In areas where near universal access has been assured at current norms, States can revise the norm upward to one source for 150 people within a distance of 500 metres, supplying 55 litres per person per day. The 14 % of the population remaining without access to safe water includes many living in tribal or remote geographical areas. Statistical coverage does not always guarantee effective access to all social groups, especially those living in India's many hamlets, often composed of scheduled castes.

**No case of guineaworm was reported in 1997, the first year of zero incidences.**

Starting from a low base, progress in household toilet coverage has accelerated over the last five years. In 1996, about 20 per cent of rural households had a toilet – up from 9 per cent in 1989. Slow progress reflects not so much the absence of appropriate technologies or financing mechanisms, but more a state of mind. At policy level, the heavy dependence on subsidies, together with a narrow focus on the choice of technology, have slowed progress. Added to this is a general lack of demand for toilets, and indifference on the part of families and communities for a safe environment for their children and for themselves.

Fulfillment of the right to safe water and a clean environment has been uneven. Whereas 70 % of urban households has access to proper sanitation, it is only 20 % among rural households. The urban figure, however, disguises the fact that millions of families in the poorest urban settlements, many of which are unauthorized, face sanitary conditions that are life threatening to children.

The 8th Five-Year Plan of GoI (1992-97) has the following principles related to water supply and sanitation:

- ◆ Protection of the environment and safeguarding health through the integrated management of water resources and liquid and solid wastes.
- ◆ Organisational reforms and changes in procedures, attitudes and behaviour and the full participation of women at all levels.

- ◆ Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes.
- ◆ Sound financial practices, achieved through better management of existing assets and extensive use of appropriate technologies.

Drafts of the 9th Plan suggest that Government aims to provide access to safe water to all households by the year 2002 and emphasizes the importance of prudently using fresh water. GoI's goal for rural sanitation is an ambitious 75 % (though more modest and realistic for India than the Summit goal of full coverage).

In 1995-96, Government expenditure for rural water supply under ARWSP, CRSP and MNP totalled about US\$ 730 million. Investments for rural sanitation were less than 7 per cent of the investments for rural water supply. Other Government programmes, which contribute directly or indirectly to rural water supply and sanitation improvements, include the Jawahar Rozgar Yojana, Employment Assurance Scheme, the Drought Prone Areas Programme and the Prime Minister's Rozgar Yojana. Despite the massive investments, the country still faces several concurrent challenges.

- Problems of water quality are becoming increasingly acute. Borewells, long promoted as safe sources of water, are found to be feacally polluted as a result of poor well construction and unsanitary well surroundings. At least 10 % of the population has excess levels of fluoride, arsenic, iron or salinity in their sources of drinking water.
- Sustainability of the very technologies used successfully to reach out rapidly and cost effectively to provide access to safe water to millions of households is under threat from falling water tables, caused by over-exploitation of groundwater for irrigation and industry. The fresh water situation is increasingly threatened by indiscriminate pollution of surface as well as ground water.
- Public water supplies are often irregular or out of order for long periods. A recent Government study revealed, for instance, that 23 % of handpumps, 14 % of mini-piped schemes and 44 % of larger piped water supply schemes were not functioning due to breakdown and poor maintenance.
- Almost a third of households in urban slums does not have access to any kind of toilet. Drainage and garbage disposal systems are often overwhelmed or absent. Public latrines, poorly designed and maintained, become themselves major centres of infection, and often deter use by women and children. The continued neglect of the environment in urban slums poses a serious threat to progress on infant and child mortality and improving the nutritional status of children living in such disadvantaged areas.
- Sanitation remains a major challenge, with rural household toilet coverage at 20 per cent. The 1996-97 baseline survey related to the design of the IEC strategy for water supply and sanitation reported that, while nearly everyone claims to wash hands before eating, only 10 per cent report they do so with water and soap, 1 per cent with water and ash, and none with water and sand.

## 2.2 UNICEF Cooperation in Water Supply and Sanitation

GOI-UNICEF collaboration in the sector dates from the 1960s. During the seventies and eighties, UNICEF cooperation focused on the development of water well drilling and deepwell handpumps for use on borewells. In more recent years, UNICEF assistance is focusing on issues of sustainability, quality and alternative technologies.

UNICEF is supporting Central and State Governments efforts to (i) expand physical coverage of water supply and sanitation; (ii) address water quality problems; (iii) make handpump designs more suitable for community maintenance and repair; (iv) develop alternative delivery systems for sanitation; (v) eradicate guineaworm disease; (vi) demonstrate approaches bringing together safe drinking water and sanitation with hygiene awareness and proper case management of diarrhoea; (vii) build capacity; (viii) develop IEC and MIS.

0/0  
26  
19  
22  
54  
30  
51  
49  
36%

UNICEF WES EXPENDITURE (IN MILLION US\$)			
Year	GR	SF	TOTAL
1991	2.82	7.90	10.72
1992	3.17	13.67	16.83
1993	2.62	9.50	12.12
1994	8.77	7.43	16.20
1995	3.33	7.83	11.15
1996	8.15	7.93	16.08
1997	5.12	5.44	10.56
<b>AVERAGE</b>	<b>4.85</b>	<b>8.53</b>	<b>13.38</b>

Continuity of high-quality support over many years, with a gradually changing programme focus, has been one of the main reasons for UNICEF's well-respected status in the water supply and sanitation sector in India. Water supply and sanitation continues to be one of the major programmes supported by UNICEF in India. During 1991-1997, UNICEF expenditure for water supply and sanitation averaged US\$ 13.38 million per annum. In 1996, UNICEF expenditure was about 2.2 per cent of Government sector investments in FY 1995-96.

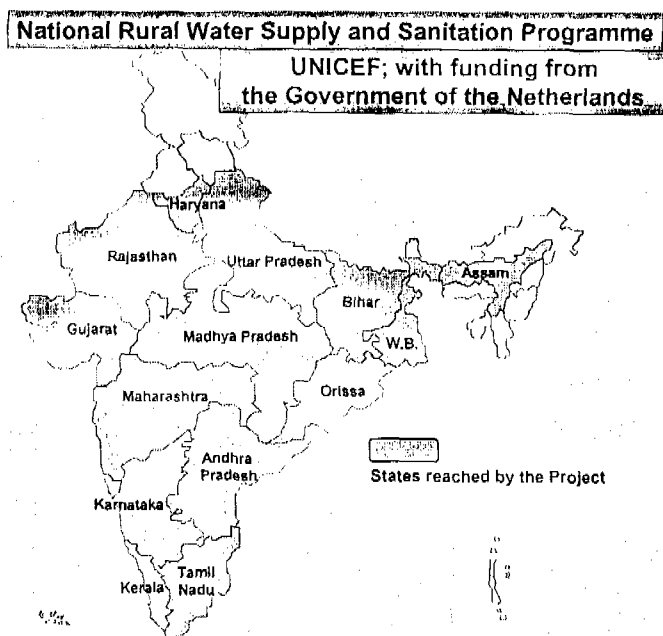
In support of the goals of the World Summit for Children, as well as the national goals, the objectives of UNICEF cooperation as defined in the current Plan of Operations (1996-1998) are to: (1) advocate and ensure community

management of the 'Water Environment'; (2) enhance household water security; (3) rapidly expand sanitation and hygiene education.

Beyond 1998, UNICEF and Government have agreed to collaborate to:

- ◆ increase awareness of families and communities on hygienic practices and the importance of safeguarding their immediate environment.
- ◆ promote sanitation and hygiene in and through schools to bring about behavioral change and to enable young girls to realise their right to basic education.
- ◆ increase access to sanitary means of excreta disposal and a safer environment for children.
- ◆ strengthen community participation and promote the active involvement of women in the national water supply and sanitation programmes.
- ◆ ensure access to safe drinking water for the remaining 14 % of the population
- ◆ create a sustainable water environment in the country

### 2.3 Assistance from the Government of the Netherlands



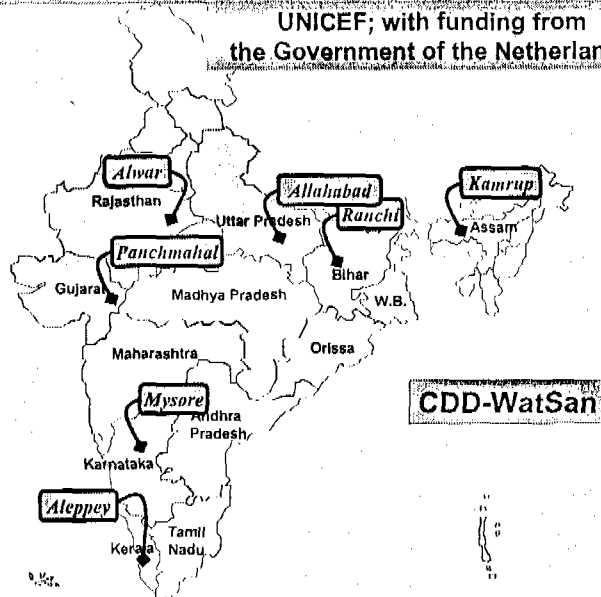
In 1994, SIDA withdrew its support to the Water Supply and Sanitation programme of UNICEF, leaving a programme funding gap of US\$ 14 million. The Government of the Netherlands recognised an opportunity to work in partnership with UNICEF, in addition to supporting the water supply and sanitation sector bilaterally.

In 1995, the Government of the Netherlands agreed to provide Dfl. 25.98 million (US\$ 15.12 million) in supplementary funding for the rural water supply and sanitation programme, for a period of two years, from May 1995 to April 1997, through an agreement signed on 3 May 1995. In 1997 the project period was extended by one year, ending 30 April 1998. The Dutch-funded project consists of ten areas of intervention. While identifying the project areas, priority was given to States where other Dutch-assisted projects were already underway. In some

cases other states, where UNICEF had on-going projects, which required further investments to accelerate implementation, were also included. The following pages of this report document progress of implementation of each of these components, as of end-1997.

## Control of Diarrhoeal Diseases - Water & Sanitation

**National Rural Water Supply and Sanitation Programme**  
UNICEF; with funding from  
the Government of the Netherlands.



Unsanitary practices and contaminated water cause diarrhoea and ill-health which account for nearly 400,000 child deaths annually. The lack of sanitation is a significant contributory factor in malnutrition, which impairs the growth of more than 58 million children. Over 70 % of the health problems faced by children in primary schools are caused by inadequate hygiene. These factors directly undermine and prejudice the child's right to survival and development.

The Control of Diarrhoeal Diseases - Water and Sanitation (CDD-WatSan) strategy aims at reducing the diarrhoeal morbidity by increasing the use of safe drinking water and home toilets, improved domestic and personal hygiene, and proper diarrhoea case management. By adopting sectoral convergence, this comprehensive strategy aims to improve health and reduce morbidity.

**Objectives.** The project agreement has adopted the following objectives for the CDD-WatSan component:

- Promoting key practices for the prevention of diarrhoea, including motivating people on the safe use and handling of water for personal and domestic use, safe disposal of excreta, including that of infants and young children, handwashing with soap before eating or handling food and after defecation/disposal of child's stool, exclusive breast feeding for infants during their first six months, and immunisation against measles.
- Improving access to safe sources of water supply, sanitation and health services, including the provision of a safe water source for every 150 people with a per capita consumption of 40 litres per day, community-based maintenance of water sources for sustainability, low cost options for sanitary facilities, availability of ORS packets and access to measles immunisation at village level.
- Promoting key practices for the proper management of child diarrhoea, including timely administration of ORT, continued feeding and seeking timely and correct referral outside the home.

**Investments.** Till end-1997, the CDD-WatSan component accounts for about 33 per cent of project expenditure.



**Achievements.** This reporting period has seen fairly good to excellent progress in the implementation of the CDD/WatSan component of the project, particularly in Kamrup, Allahabad, Ranchi and Mysore. Progress in Aleppey and Panchmahal has been less impressive. Work in Alwar commenced only recently. Several information sources indicate that people have adopted improved hygiene practices.

The goal of one improved source of water per 150 people has been achieved in many project areas.

Sanitation		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
Household toilets built	26,472	10,497
Inst. toilet built (at schools)	141	469
Inst. toilet built (at anganwadi centre)	45	0
Production centre set up	4	19
RSM set up	3	21
Garbage disposal introduced (villages)	130	308
Drainage improved (villages)	11	466

Health and Hygiene Education		
	Achieved	
	05/95-10/96	11/96 - 12/97
Village Contact Drives	992	894
Mothers' meetings	1,914	648
Wall paintings/slogans (villages)	511	2,747
Exhibitions/fairs	129	17
PRA camps (villages)	10	156

- **Sanitation.** Hygiene education and promotion is brought through group meetings, Mahila Samiti meetings, school rallies, mothers' meetings, village contact drives, etc. This reporting period has seen numerous activities in this area. The number of Participatory Rural Appraisal (PRA) camps has increased significantly, also as a result of increased emphasis on Convergent Community Action, as a UNICEF priority. The alternative delivery system for sanitation was strengthened, with 21 RSMs and 19 production centres set up during the reporting period. The construction of toilets for schools also increased significantly, with 469 units added during the period under review.

In Kamrup, 26 villages have now been fully covered, with all households using toilets. The construction of home toilets is creating significant job opportunities for skilled and unskilled workers in several districts.

In Ranchi, subsidies for household latrine construction have been reduced and a range of technological options for household toilets has been adopted. Households from outside the project area are coming forward to purchase the pre-cast latrine components units from production centres/RSMs.

Government of Gujarat is still very much focused on the promotion of the twin-pit pour-flush toilet, using heavy subsidies. In the CDD-WatSan area, efforts are on to set up RSMs through the National Dairy Development Board.

Water Supply		
	Achieved	
	05/95-10/96	11/96 - 12/97
Borewell with IMIII pump installed	703	652
Tubewell with TARA pump installed	1,900	860
Borewell successfully rejuvenated	99	200
Traditional source upgraded	265	828
Rooftop rainwater harvest tank built	52	0

- **Water Supply.** The provision of additional sources of safe water continued, and in most areas covered by the strategy, the desired ratio of 150 persons per spot source has been achieved. However, in water supply the siting of the spot sources relative to the users is very important, because users are generally not prepared to

walk long distances to fetch water, if there is an alternate source closer at hand. Community involvement in site selection, a lower ratio of users per spot source and the active promotion of handpumps as the best source of water are increasing the proportion of the population using handpumps as the source of choice for domestic supplies. As part of the strategy, upgrading of traditional sources, mostly dugwells, to protect the water from contamination, has also received considerable attention.

In selected areas of the blocks reached by the CDD-WatSan strategy, community-based handpump maintenance is promoted. To facilitate maintenance by user groups, Village WatSan Committees are formed and local caretakers and mechanics are selected and trained. These activities continued throughout this reporting period. The number of borewells with the easy-to-maintain India Mark III or TARA pump increased. The concerned water supply agencies still have substantial stocks of these pumps, awaiting utilisation. The demonstration of a decentralised system for the maintenance and repair of handpumps contributes to national efforts to establish such systems on a much larger scale, throughout the country.

Water Quality		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
Water quality surveillance (villages)	1,067	416
Env. improvements (sources covered)	3,549	2,178

- **Water quality surveillance** has been introduced in Kamrup and Allahabad, covering a substantial number of villages.

Similar work has been started in 15 villages each in Aleppey and in Ranchi. Community efforts have resulted in environmental improvements for a large numbers of spot sources, to minimise pollution of borewells, especially in Mysore, Kamrup, Ranchi, Aleppey and Allahabad.

Social Mobilisation / Capacity Building		
Type	Participants (M/F)	
	05/95-10/96	11/96-12/97
<b>WATER SUPPLY:</b>		
PHED/Panchayat functionaries	997	554
Handpump caretakers	1,234 / 5,300	547 / 3,742
Handpump mechanics	861 / 562	441 / 298
<b>SANITATION:</b>		
Trainers	399	236
District-level functionaries	568	84
Block-level functionaries	473	248
Masons	1,742 / 52	304 / 203
Orientation of health staff	449	542
Village-level motivators	2,570	509
Village WatSan Committee members	2,450 / 1,276	3,137 / 1,373
Panchayat members	326	885
Media personnel	30	111

trained. While among the caretakers trained the proportion of women increased to over 85 per cent, the proportion of women mechanics remained at about 40 per cent.

Management of Diarrhoea		
Type	Achieved	
	05/95-10/96	11/96-12/97
DTUs set up	4	56
ORT corners set up	135	14
ORS depots set up	247	1,224
Revolving fund for ORS set up	0	50

to be a very good forum for education on the proper management of infant and child diarrhoea.

• **Studies.** As indicated in the first progress report, UNICEF carried out a detailed KAP study in Phulbani/Ganjam of Orissa and Medinipur of West Bengal, where the CDD-WatSan strategy is implemented along similar lines. Main findings include a doubling of home toilet coverage in Orissa, and a four-fold increase in Medinipur (1997 vs. 1991), low toilet coverage at primary schools (13 – 19 %), wide variation in use of drinking water from safe sources (43 % in Phulbani, 90 % in Medinipur), high proportion of handpumps working (89 – 91 %), about 20 % of primary schools and Anganwadis using water from safe sources, wide variations in measles immunisation (36 – 71 %), near-universal claims of handwashing after defecation and before eating and a very low point prevalence (0.03) of diarrhoea among children under five in Medinipur.



• **Impact.** Although not easy to quantify or to attribute solely to the implementation of the CDD-WatSan strategy, there are tentative indications of positive impact on health in some of the areas where the strategy is implemented.

➤ **Ranchi reports evidence of a reduction in the incidence of diarrhoea, more evident during the 1997 monsoon. In Allahabad studies will be conducted during 1998, seeking to quantify the impact of project activities on health as well as on hygiene practices.**

- In **Mysore**, better awareness among the rural population, especially women, on the causes, prevention, control and management of diarrhoeal disease has resulted in a reduction in gastro-enteritis morbidity and mortality.
- In **Allahabad**, hand washing with soap before eating or handling food and after defecation/disposal of child's stool, exclusive breast feeding for infants during their first six months, and immunisation against measles have significantly improved as a result of sustained health and hygiene education brought by the project.

• **Policy and Replication.** The implementation of the CDD-WatSan strategy is gradually finding acceptance beyond the confines of the project areas. In several States certain aspects of the CDD-WatSan strategy are finding a place in other areas or programmes. A few examples:

- From 1998, the Government of Assam has reduced the subsidy for home toilets to Rs. 750 per unit.
- In Ranchi, Bihar, subsidies for household latrine construction have also been reduced and a range of technological options for household toilets has been adopted.
- In Assam, the Government is expanding CDD-WatSan strategy components to other areas of the State. Nine sanitary marts have been established in Nalbari, Sonitpur, North Lakimpur, Dhemaji, Dhubri and Darrang districts. Community-based water quality surveillance and community-based handpump maintenance are similarly applied in other districts. The Government of Assam has procured more than 5,000 TARA handpumps, with UNICEF providing pre-delivery quality inspection services. Most of these pumps will be installed at schools, throughout the State.
- In Bihar, the concept and methodology has been adopted by the Government of Bihar in the implementation of the World Bank aided Bihar Plateau Development Project, which covers 67 blocks with predominately tribal population. The training module and the communication material developed under CDD-WatSan is replicated by the Government of Bihar. Bihar has adopted the India Mark III handpump as the standard in the rural water supply programme in the State.
- In Karnataka, the State Government has requested to extend the CDD-WatSan strategy into seven other districts, with government counterpart funding promised.



CDD-WatSan Health Education – Alwar

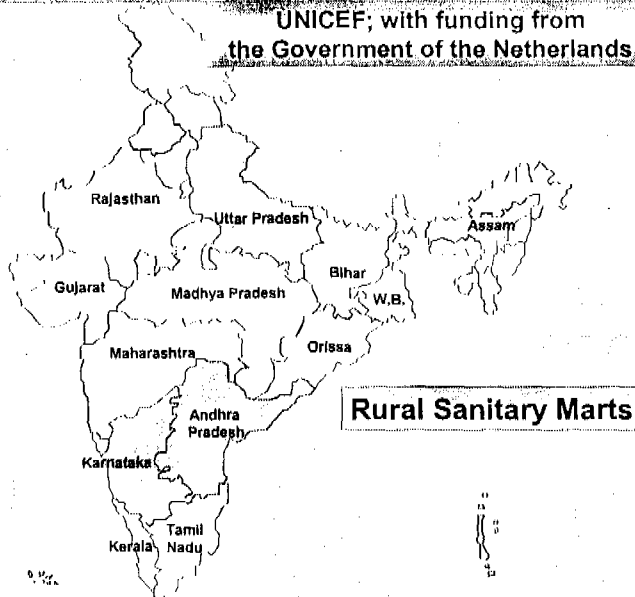
• **Constraints.** A survey of the very shallow TARA handpump installations in the saline belt of Alleppey, Kerala, reported serious water quality problems. UNICEF is working with the Socio-Economic Units in Thiruvananthapuram and the Alleppey District Administration to take corrective action, such as the removal of obvious sources of pollution, improvement of drainage and disinfecting the wells.

Delays in the delivery of handpump supplies, mentioned in the previous progress report, have by-and-large been overcome. UNICEF staff support to this project component has also improved.

## Rural Sanitary Marts

In India, over 90 million rural and 14 million urban households do not have a toilet. The subsidy-linked Government sanitation programme leaves the majority of the population out of its purview. Moreover, household toilets constructed through a subsidy-driven programme are all too often not used properly. In most villages, there are always households willing to have their own latrines without waiting for government subsidy. The 1989 National Sample Survey reported that eight per cent of households in India had constructed latrines on their own, while only three per cent depended on the government subsidy.

**National Rural Water Supply and Sanitation Programme**  
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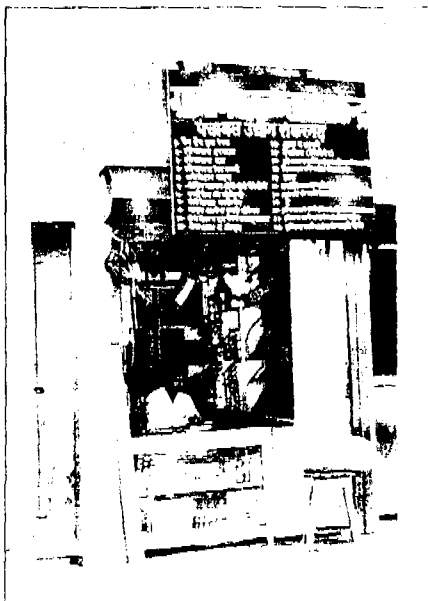


People need know-how and easily available construction materials at a reasonable price. The RSM is a one-stop shop to meet all the sanitation requirements of a community. It is a commercial enterprise with a social objective, but no visible subsidy. UNICEF conceived the RSM concept and supported the establishment of RSMs on a limited scale from late 1991. At present nearly 700 RSMs are in operation, throughout the country. The initial success of RSMs encouraged GoI to accept this concept and adopt the same at the national level. The RSM is now an important part of the GoI's Central Rural Sanitation Programme (CRSP) guidelines, as an alternate delivery system to accelerate sanitation coverage.

This project component, though implemented in three states only, will facilitate replication of the RSM concept on a much wider scale.

### Objectives

- To establish 100 RSMs, selling materials required for the construction of home toilets and other sanitary facilities, as well as items, which are required as a part of the sanitation package.
- To provide counselling, technical inputs and services to individuals interested in having their own toilet.
- To create, over a period of time, an information dissemination centre for all software aspects of sanitation. To develop a climate for commercialising the provision of sanitary facilities in rural and peri-urban areas, thereby attracting private entrepreneurs to adopt the approach.



RSM - Uttar Pradesh

**Investments.** Till end-1997, the Rural Sanitary Mart component accounts for about 10 per cent of project expenditure.

**Achievements.** In 1997, the RSM component of the project has seen very good progress, especially in Uttar Pradesh. The target of 100 RSMs has already been surpassed. More than 80 per cent of the RSMs achieved the target of Rs. 200,000 in annual sales within a year from opening. This level of sales is considered the minimum for an RSM to be financially viable. Orientation and training of RSM managers, masons and motivators provides the population with the knowledge and skills for building their home toilets.



Identification of potential centres/agencies		
	Achieved	
	05/95-10/96	11/96 - 12/97
Market towns identified	107	86
Socio-economic analysis completed	81	51
Agencies identified	48	61

Training		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
Orientation of RSM managers	79	113
Training of RSM managers	59	131
Training of masons (RSMs)	150	785
Training of masons (prod. centres)	20	109
Training of motivators	674	1,880

Rural Sanitary Marts set up		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
RSMs set up	35	70
RSMs provided with working capital	35	70
RSMs provided with marketing/managerial support	70	19
Pans & traps sold in total RSMs	783	13,736

increased from just one in 1996 to 16 by end-1997. In Karnataka the first four RSMs were set up in 1997. During 1997, nearly 14,000 pans and traps were sold through the RSMs.

Production Centres set up		
	Achieved	
	05/95-10/96	11/96 - 12/97
Production Centres set up	18	33
Working capital provided	18	33

**Uttar Pradesh.** The 132 RSMs set up by the project in U.P. reach 132 blocks in 24 districts of the State, covering about 2,500 villages. Vigorous social mobilization activities include village group meetings, village drives, orientation of school teachers and students, screening of slides and organisation of video shows, visual wall paintings, exhibition cum sale points at local haats/melas and announcement through mikes took place. Innovative community mobilisation meetings through *nukkad nataks* (street-corner plays) and folk dances were organised to promote sanitation as a people's movement and to provide counselling to families and communities for their sanitation related needs.



Rural Sanitary Mart Range of Goods

- **Preparatory work.** Prior to setting up an RSM, its potential market is surveyed. Equally important, the credentials of the agency, which will support the RSM's operation, are checked. These preparations are critical to the future success of an RSM.

- **Training.** Before the RSM starts operating, the RSM manager, the masons and the motivators are thoroughly trained. While the training for the RSM manager includes business practice and accounting, the masons are trained on toilet construction. Training of all three categories increased substantially in 1997.

- **RSMs.** In 1997, 70 new RSMs were set up, bringing the total to 105. Most of these RSMs are located in U.P., which accounts for 85 of the total. Progress in Uttar Pradesh, the 'birth-place' of the Rural Sanitary Mart, has been momentous. In Andhra Pradesh the number of RSMs

- **Production Centres.** The number of production centres set up under the project has also exceeded the project target of 20. Most of these, 47 of 51, have been set up in Andhra Pradesh, by the A.P. State Housing Corporation.

**Andhra Pradesh.** The rural sanitary systems production centres established by the A.P. State Housing Corporation have started giving counselling to their customers under the weaker section housing programme and people who come to buy housing materials at their sub-Nirmithi Kendras. In a major achievement, more than 1,500 staff of the A.P. State Housing Corporation were given orientation training on sanitation as a package, with special emphasis on the alternate delivery system.

- **Policy and Replication.** GoI has accepted the concept of RSM as a sales outlet for building materials for toilets and other items needed for sanitation and hygiene. CRSP funds can be used to set up RSMs, through reputed voluntary agencies/Panchayati Raj institutions.

- In **Uttar Pradesh**, to increase outreach and to link the RSMs with the Government's ongoing income-employment generating programmes (PMRY and IRDP), 20 RSMs and 100 mini RSMs, with funding from Banks, will be set up in Agra, Aligarh and Gonda district. UNICEF will extend support for management, marketing and training.
- In **Karnataka**, although only four RSMs have been set up so far, the state government has accepted the concept as one of the methods to reach critical mass in the state-wide rural sanitation programme. The government has appointed a financial consulting firm to study the viability of RSMs for promoting sanitation and as an economic venture for women's groups.
- In **Andhra Pradesh**, many requests have been received from NGOs to start RSMs.

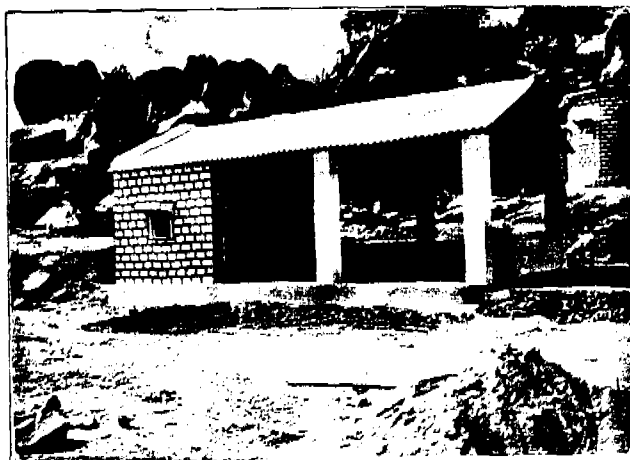
**RURAL SANITARY SYSTEMS PRODUCTION CENTRE (SPONSORED BY UNICEF) AT TEKKALI, SRIKAKULAM DT.**



**OVERALL VIEW OF RSSPC**



**SHOW ROOM**



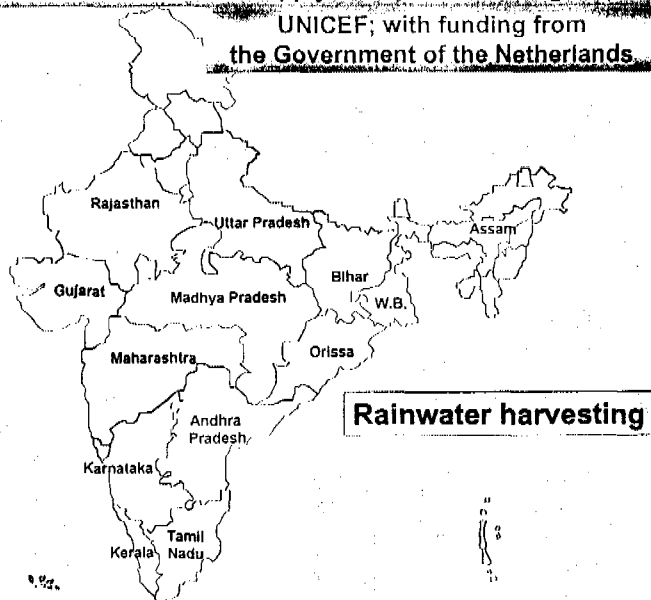
**WORK SHED WITH STORE ROOM & CURING VAT**



**DEMONSTRATION UNITS (UPGRADATION APPROACH)**

# Rainwater harvesting and empowerment of women

National Rural Water Supply and Sanitation Programme  
UNICEF; with funding from  
the Government of the Netherlands



This project component seeks to promote rooftop rainwater harvesting as a supplementary source of safe water, through the collection of rainwater from rooftops into simple ferro-cement structures. The tanks are to be constructed by women masons from the villages where this technology is demonstrated. These women masons will learn to construct, maintain and repair the ferro-cement structures and could possibly find employment as masons. The project is implemented in two states by a water supply agency, the district administrations and selected NGOs.

## Objectives

- Provide a supplementary source of safe water by constructing about 1,000 storage tanks for schools, health centres and individual families, serving about 12,000 previously unserved people in difficult areas.
- Minimise the effort spent by women to collect water, thereby providing them time for other activities.
- Enhance awareness of the importance of safe water and of water related diseases.
- Impart technical skills to enable women to effectively contribute to family income.
- Study available low cost technology options for selecting further technical skills with reference to women.

**Investments.** Till end-1997, the rainwater harvesting component accounts for about 3 per cent of project expenditure.

**Achievements.** The rooftop rainwater harvesting component of the project witnessed slow but steady progress during 1997, though not to the extent expected at the time of writing the first progress report. After assessing the status of a rooftop rainwater harvesting demonstration project in Tamil Nadu, which ended in 1994, and a similar project in Himachal Pradesh, which ended in 1995, it was decided to incorporate some improvements in the tank design. This resulted in a slow-down in construction for some time during 1997. As of end-1997, about 42 per cent of the total number of tanks have been completed. Training of women as masons for the construction of the tanks has met with very good response.

Water Supply		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
Preparation of moulds	22	28
Construction of RWH tanks	103	422

tanks will save the women and girls of the household the time and effort to collect up to 20,000 litres of water per annum, often from distant polluted sources. In Uttar Pradesh, this project component has been taken up in seven villages of remote Nagwan block of Sonbhadra district. Preparations to start work in Lalitpur and Banda are complete, and work will start in early 1998.

- **Water Supply.** In Maharashtra, rooftop rainwater harvesting has been introduced in six districts: Nashik, Aurangabad, Chandrapur, Sindhudurg, Ratnagiri and Jalgaon. The use of rainwater harvested in the household

Training / Orientation		
Type	Participants (M / F)	
	05/95-10/96	11/96-12/97
Orientation engineers	33 / 0	65 / 0
Orientation of district/block functionaries	46 / 19	67 / 59
Training of resource person/master mason	16 / 24	38 / 37
Training of masons	2 / 82	8 / 258
Training of NGO functionaries	17 / 6	34 / 32
Training of Panchayat functionaries	20 / 6	25 / 9

rainwater harvesting as a useful technology to supplement other water supply technologies, particularly in tanker-fed villages. A video film on rooftop rainwater harvesting has been completed.

Hygiene education		
Type	Participants (M / F)	
	05/95-10/96	11/96-12/97
Villagers reached with messages	50 / 34	297 / 282
Village-level motivators trained	10 / 10	16 / 38
District/block level officials trained	45	48
NGO group trained	1	2

the remaining months of the project, especially in U.P.

• **Policy and Replication.** The Government of Maharashtra has requested for dissemination of information on rainwater harvesting for 20 Chief Executive Officer (CEOs) and their support staff. Work is in progress on a booklet to standardise the technology and the construction methods, taking into account the lessons learned to-date. GoM has endorsed the use of rooftop rainwater harvesting technology in the State rural water supply programme, including the approach of constructing the tanks by local woman masons. GoM has indicated that government funds can be available to subsidise the construction of additional household rainwater harvesting tanks, but the level of subsidy has yet to be established.

• **Constraints.** Little is known yet about the actual use of the tanks, because only a few households had their tank complete with roof guttering prior to the 1997 monsoon. In 1996 and 1997, UNICEF completed studies of the earlier demonstration projects in Nagercoil, T.N., and in Himachal Pradesh. Based on the findings of these studies, the reinforcement of the tanks and the roof design were improved.



Tank Construction - Maharashtra

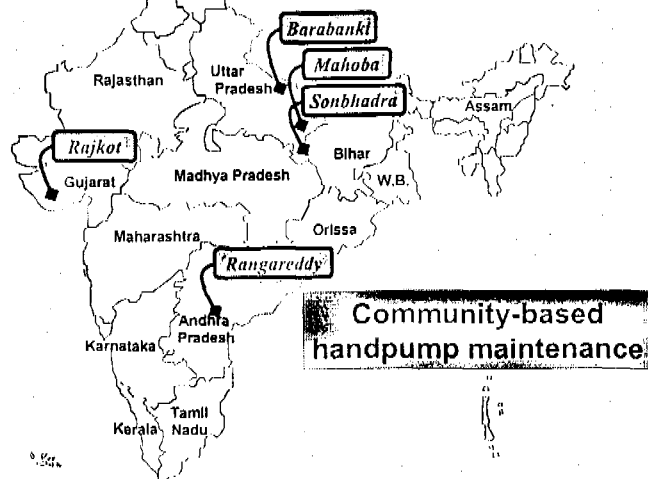
• **Training.** Training/orientation of secondary stakeholders at various levels has received much attention. Unable to refuse village women interested to be trained on tank construction, far more women have been trained than is actually required for building the tanks. A workshop for CEOs in Maharashtra endorsed rooftop

• **Hygiene education.** Awareness of improved water has been enhanced through community meetings in Nashik, Aurangabad, Sindhudurg and Ratnagiri where some 500 people participated. Although efforts to promote hygiene among the user communities increased, more intensive work is required during

It is necessary to closely monitor the use of the newly built tanks after the 1998 monsoon season, so as to learn more about the effectiveness of the approaches and technology adopted in this demonstration project. If monitoring indicates that the water from the tanks is not preserved as intended for use in the dry season, additional education and motivation will be needed to encourage households to save the collected water for use in the most critical season.

# Community-based handpump maintenance

National Rural Water Supply and Sanitation Programme  
UNICEF, with funding from  
the Government of the Netherlands



The establishment of Community-Based Handpump Maintenance (CBHPM) systems aims to transfer accountability for the management of such water systems from the government agencies to the village communities. As women are the prime managers of water, emphasis is given to their full participation in these community-managed systems. To enable women to participate in a meaningful manner, capacity building for women representatives is a priority. Under the Dutch-funded project, the Community-Based Handpump Maintenance model is demonstrated in three States, for future wider replication.

## Objectives

- Establish a sustainable CBHPM system as a model for replication by the government.
- Empower women by developing skills on water management and the control of diarrhoeal diseases.
- Create awareness about water, sanitation and health linkages among approximately 500,000 people.

**Investments.** Till end-1997, the community-based handpump maintenance component accounts for about 7 per cent of project expenditure.

**Achievements.** This reporting period has seen good progress in Uttar Pradesh, while achievements in Rangareddy, A.P., remained somewhat below expectations. Rajkot in Gujarat reported virtually no progress. In the areas of the three districts where the project is implemented in U.P., progress is such that much of the pump maintenance and repair will soon be taken over by the user communities. In Rangareddy, there is as yet little Government commitment for preparing communities to take over maintenance and repairs of their handpumps.

Training, orientation and social mobilisation		
Type	Participants (M / F)	
	05/95-10/96	11/96 - 12/97
Trainers trained	29 / 47	35 / 25
Handpump caretakers trained	75 / 375	135 / 1,038
Handpumps mechanics trained	170 / 70	75 / 75
NGO functionaries trained	65 / 28	22 / 28
Panchayat functionaries trained	674 / 480	829 / 429
Village contact drives conducted	203	92
Workshops held	5	0
KAP studies / surveys completed	3	1

**Community organisation.** Community organisation, capacity building and social mobilisation work is done mostly by local NGOs, with support from the water supply agency. In U.P., the Village WatSan Committees have five women and three men as members, including some mechanics and caretakers. It is increasingly realised that the Gram Pradhans must chair the Village WatSan Committees, and that the WatSan

Committees must formally and legally be part of the Gram Panchayat, as otherwise these Committees will have no future after the end of the project. Nearly 90 per cent of the handpump caretakers and half of the handpump mechanics trained in 1997 were women.

Water supply		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
India Mark III handpumps installed	344	1,675
Handpump platforms constructed	161	219
Old handpump platforms repaired	136	820

- **Water supply.** During this reporting period, the installation of easy-to-repair India Mark III pumps progressed well and the project target of 1,800 pumps has been surpassed.

In Rangareddy as well as in the U.P. districts, considerable attention is given to improving the handpump environment, including platform repairs and community education. In Rangareddy and in the U.P. sites, awareness about water quality is created through the use of H<sub>2</sub>S bacteriological test strips. However, well-organised systems of community-based water quality surveillance have yet to be developed.

In many villages in Rangareddy, project activities are resulting in community/user support and a feeling of community ownership, which is resulting in better upkeep, cleaner surroundings and thus improved care for the handpumps. However, there is as yet no indication that PRED plans to hand over maintenance and repair responsibilities to the user communities.

Hygiene education		
Type	Participants (M/F)	
	05/95-10/96	11/96-12/97
Villagers participating in training	130 / 100	220 / 261
Handpump mechanics/caretakers trained	156 / 114	86 / 132
Media (print, electronic, folk) personnel	55	0
NGO groups trained	30	12

- **Hygiene education.** In U.P., awareness has been created about water, sanitation and health linkages among approximately 150,000 people. In Rangareddy, health education has reached 36 schools in the project area.

The training of caretakers and mechanics has also included health and hygiene. In Rajkot, Gujarat, very little hygiene education has taken place so far.

- **Policy and Replication.** Throughout 1997, the Technology Mission has persistently followed up with the State Governments, seeking their active implementation of the recommendations adopted at the 1996 National Workshop on operation and maintenance of rural water supplies. Till end-1997, this follow up did not result in any substantive action in any of the States.

At the time of writing this report, the Mission is pursuing the States with renewed vigor, insisting that the States act to design and implement decentralised operation and maintenance systems for the rural water supply systems, initiating a pilot phase covering 20-30 blocks in each State.

In the process of designing the approaches for moving towards decentralised O&M for rural water supply systems, the Dutch-funded demonstration project components will provide crucial inputs in terms of lessons learned during several years of developing community-based handpump maintenance in the States.

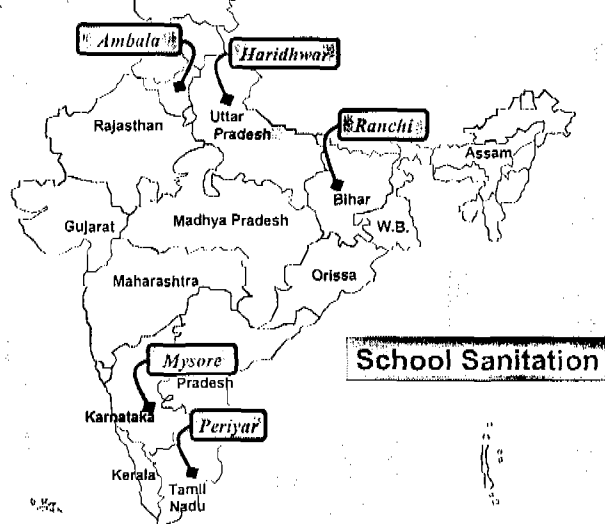


Selection of handpump Caretakers - Allahabad

- **Constraints.** In Rajkot, falling groundwater tables have compelled the project to replace the earlier India Mark III (65 mm) pumps with India Mark III (50 mm) pumps, resulting in inordinate delays in project implementation. The earlier supplies of 65 mm IMIII pumps will be moved to the CDD-WatSan areas in Panchmahal district.

# School sanitation

**National Rural Water Supply and Sanitation Programme**  
UNICEF; with funding from  
**the Government of the Netherlands**



A school and its environment can be an ideal ground to develop sanitary habits among children. This is mainly because children are far more receptive to new ideas than adults and can be influenced through the teachers whom they generally hold in high esteem. Besides, schools can serve as demonstration centres for the adoption of a sanitation package, which could be extended to the households, and to the communities at large.

## Objectives

The project aims at developing sanitary habits amongst school children and making the school, its teachers and the students the focal points for promoting a sanitation package among the households and the community. The specific objectives of the project are:

- Develop skills among the schoolteachers on the sanitation package, at 1,500 primary schools.
- Create awareness and motivate the school children on the various sanitation themes.
- Provide watsan facilities in the school premises, so that children can practice hygiene as taught.
- Build the required linkage between the school and the community through fora like the Parents-Teachers Association (PTA), Youth Clubs and Women's Groups.

**Investments.** Till end-1997, the school sanitation component accounts for about 12 per cent of project expenditure.

**Achievements.** During 1997, all five districts reached through this project component have reported satisfactory progress. The project now covers more than 1,900 primary schools, exceeding the target of 1,500. Not all schools have as yet been provided with adequate water supply and toilets/urinals. UNICEF field staff report that the project is resulting in better hygiene practices among school children and teachers. The impact on home and community hygiene has not yet been assessed.

Training, orientation and social mobilisation		
Type	Participants (M / F)	
	05/95-10/96	11/96 - 12/97
Orientation of district/block functionaries	872 / 29	162 / 248
Trainers trained	116 / 48	75 / 31
Teachers trained	199 / 493	1,421 / 499
NGO functionaries trained	192 / 32	1,613 / 118
Members of Panchayats / Village Task Forces / Mothers' groups trained	2,777 / 40	352 / 4,950
Handpump caretakers trained	0	380 / 453
Handpump mechanics trained	0	0 / 100
Villages reached through contact drives	188	438
Inter-school competitions	46	180
Wall paintings	207	536

- **Capacity building and social mobilisation.** As shown in the table at left, training/orientation and social mobilisation activities reached large numbers of officials, volunteers, representatives as well as the village population. Village sanitation drives were conducted to build the linkage between school and community.

Sanitation / Hygiene Education		
Type	Participants (M / F)	
	05/95-10/96	11/96 - 12/97
Teachers	199 / 493	1,421 / 499
Anganwadi workers	0 / 506	5 / 1,237
PTA members	79 / 12,469	860 / 4,112
District/block officials	11	50
NGO groups	5	3

Physical facilities		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
<b>Sanitation:</b>		
Latrines for 656 schools	213	467
Latrines for anganwadis	0	30
Urinals for 179 schools	50	442
Drainage around water supply points	20	130
School garbage disposal	200	1,150
<b>Water supply:</b>		
India Mark III pumps (new installations)	25	154
TARA handpump	12	98
Drinking water storage tanks	630	530

- **Hygiene education.** Hygiene activities reached teachers, anganwadi workers, PTA member and district/block officials. School children are taught health and hygiene, in theory and practice, by the trained teachers.

- **WatSan facilities.** The provision of safe water supply, toilets and urinals accelerated during 1997. Even so, there is still a sizable proportion of schools which do not have adequate water supply and/or sanitation on the school grounds. Experience has taught that pumps, taps and toilets often get vandalised at schools which do not have good compound walls or fencing. Water supply and toilet construction usually follow compound fencing, which is often done by the parents with support from the Panchayat and/or District Administration.

**Tamil Nadu: Periyar.** To create awareness and motivate the children on various sanitation themes, street play scripts on the seven components of sanitation and IDD/CDD were developed, involving eminent artists. Nearly 20 trained Arivoli volunteers performed street play programmes related to sanitation, covering 180 schools. A sanitation booklet on the seven components of sanitation has been printed in Tamil and distributed to all schools. Newspapers have appreciated this book and allot one column every week for publishing the sanitation themes and one story from the book.

**Uttar Pradesh: Haridwar.** The strategy for school sanitation centres on the Teacher-Child-Parent-Community concept. Orientation of headmasters and training of teachers have refined their skills on the sanitation package. Children's Sanitation Clubs have been formed in the schools. These clubs take care of environmental cleanliness in the school, around the school water source, maintenance and upkeep of toilet complexes and ensure personal hygiene practices among the students. PTAs have been formed and their members are being oriented on sanitation issues. The PTAs regularly interact with the sanitation clubs, which will ensure improved environmental sanitation in the villages.



School Sanitation: Nail Cutting - Ranchi

**Bihar: Ranchi.** Schools have adopted messages on health and sanitation. School teachers are using communication material on health and sanitation. There is a degree of competition among schools on sanitation. Children actively participate in improving environmental cleanliness, by cleaning the school, proper disposal of wastewater from the handpump and gardening around handpump sites. Sanitation messages are made part of learning process, by painting of messages on sanitation, debates and essay writing and a KAP survey carried out by children.



Since Ranchi is also a CDD-WatSan district, schools stock ORS packets and children are involved in distribution and sale. Children are also actively helping to create demand for household toilets.

- **Policy and Replication.** RGNDWM has shown interest in the school sanitation project in Ambala, which figured in the newsletter of the Ministry of Rural Areas and Employment. In **Karnataka**, the Mysore district authority and politicians are taking a keen interest in the project and are very proud of it. There is



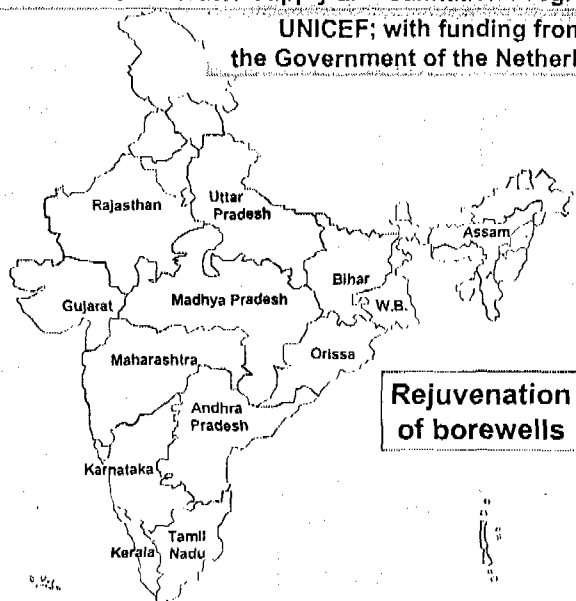
increased demand for the project to be extended throughout the district. The Karnataka State Government is recognising the importance of school sanitation in promoting the Nirmala Grama Yojna (NGY) - the statewide rural sanitation programme.

- **Constraints.** In Mysore, the planned supply of force-lift deepwell handpumps has been long delayed, because protracted testing of a prototype of this pump at a supplier in Hyderabad has yet to reach in conclusive results.

**School Sanitation: toilet cleaning – Erode (T.N.)**

## Water supply sustainability – borewell rejuvenation

National Rural Water Supply and Sanitation Programme  
UNICEF; with funding from  
the Government of the Netherlands



The borewell handpump system is the backbone of the rural water supply programme in India. The borewell-handpump is effective, inexpensive and potentially sustainable through community managed maintenance and repair. About 14 per cent of the borewells drilled in hard rock formations in the country are unsuccessful. The average drilling cost for one borewell with an average depth of 60 meters comes to US\$ 770. Given that 150,000 bores are drilled annually, the loss from failed borewells is US\$ 16.7 million.

A failed borewell can be rejuvenated, through hydro-fracturing, injecting water into the borewell at very high pressures which cleans, widens and expands the water-bearing fractures in the rock formation. The 39 hydro-fracturing units, now operational in the country, report an average success rate of about 70 per cent.

In some areas, the simpler and even less costly technique of air washing borewells, using tractor-mounted compressor units, can be used successfully. Air washing is used when the yield of a borewell is reduced because of siltation or encrustation.

### Objectives

- Provide safe water sources to one million rural people through the rejuvenation of defunct borewells using the techniques of hydro-fracturing and air washing.
- Reduce the need for imported hydro-fracturing units through the development of local manufacturing capacity.
- Capacity building of government personnel in hydro-fracturing and geophysical investigation.

**Investments.** Till end-1997, the water supply sustainability component accounts for about 8 per cent of project expenditure.

**Achievements.** Following the commissioning of three hydro-fracturing units and four tractor-mounted compressors, borewell rejuvenation using both technologies has commenced. With the exception of some components of the hydro-fracturing units, the well rejuvenation equipment is entirely manufactured in India. Extensive support has been given to train government users on well rejuvenation equipment and on geo-physical equipment supplied under this project component.



Hydro-fracturing Unit in use

- **Well rejuvenation equipment.** Three hydro-fracturing units (HFUs), four tractor-mounted compressors (TMCs) and geo-physical equipment have been supplied to the State Water Supply Agencies in seven States.

During 1996, UNICEF had adequate General Resources to fund the procurement of another 15 tractor-mounted compressors, which are deployed to Orissa, West Bengal, Uttar Pradesh, Bihar, Maharashtra, Madhya Pradesh and Andhra Pradesh.

The three HFUs are in use in T.N., M.P. and Bihar. The HFU in M.P. was commissioned earlier in 1997, and has successfully fractured 93 borewells in 1997. The other two HFUs have been commissioned in the second half of 1997. Both HFUs have achieved output well below acceptable levels. Poor management, including insufficient operational funds, are given as the reasons for the poor utilisation of these expensive units. The UNICEF Field Offices in Chennai and Patna are actively monitoring the status of these units, advocating for better management and adequate operating budget from 1998-99 onwards.

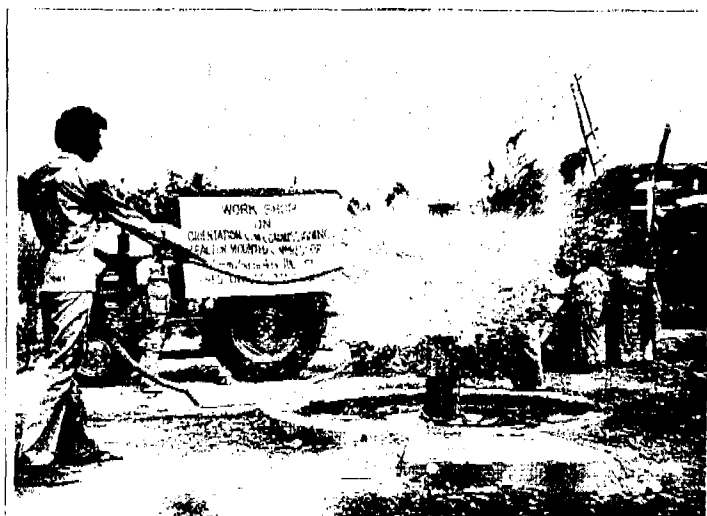
The four TMCs are based in M.P. and Rajasthan respectively. After commissioning in August 1997, the two TMCs in Rajasthan have performed well, and rejuvenated about 75 borewells till end-1997. On the other hand, the two TMCs in M.P. have been little used. PHED-Bhopal has asked UNICEF for a support vehicle and additional equipment to make the TMCs perform more efficiently on larger diameter bores.

Capacity building		
Type	Participants	
	05/95-10/96	11/96 - 12/97
Orientation of Govt. engineers/managers	6	8
Master trainers trained	8	11
Engineers trained	55	119
HFU crew members trained	51	63
TMC crew members trained	2	68
Staff trained on geo-physical equipment	43	138
Staff trained on HMS	10	33

**Capacity building.** Government personnel responsible for managing and operating the new equipment have been quite extensively trained. Unfortunately, some of the concerned State PHEDs are not very efficient at making best use of their new equipment for well rejuvenation and geo-physical investigations.

- **Monitoring.** Although not funded from the Dutch contribution, UNICEF continues monitoring of the 39 HFUs now in operation. The database now contains information on more than 7,000 borewells hydro-fractured in India over the past eight years. Historical data on more than 4,500 wells fractured in M.P. and Maharashtra is expected to be fed into the system soon. Most of the State Water Supply Agencies send their records on hydro-fracturing operations to UNICEF quarterly. Unfortunately, the Technology Mission is at present not operating the HFU monitoring system, after their national consultant responsible for this aspect left the Mission in April 1997.

- **Studies.** In 1997 UNICEF conducted a study on the use of UNICEF-supplied geophysical equipment for ground water investigation. The study found that the utilisation of the equipment varies significantly from State to State, with an average utilisation factor of 60 per cent.



Tractor-mounted compressor in use

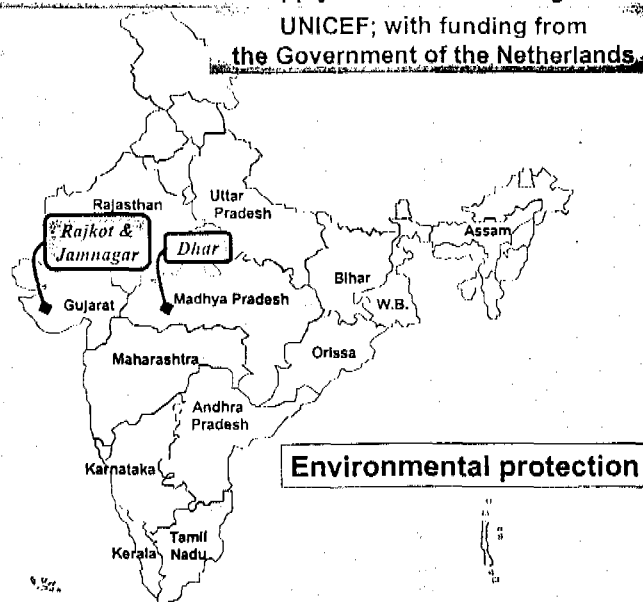
Major causes for the low rate of utilisation were found to be the poor institutional infrastructure, unfamiliarity with the equipment and inadequate maintenance. The study recommended refresher training of the geological cadre of the user departments on operation and maintenance and on computer-based interpretation methods.

- **Constraints.** Reports indicate that the average monthly output of HFUs in many States is still not satisfactory. Poor management and insufficient operating budgets continue to constrain use.

# Environmental protection/water resource management

## National Rural Water Supply and Sanitation Programme

UNICEF; with funding from  
the Government of the Netherlands.



During the last two decades, the use of ground water has increased significantly in India. While domestic water supply needs constitute less than six per cent of total ground water withdrawals, widespread and rapidly increasing pumping for irrigation and localised heavy withdrawals for industry have resulted in a lowering of ground water levels. This threatens the sustainability of drinking water sources such as borewell handpumps, particularly in drought-prone areas, in terms of both quality and quantity. As ground water will remain the principal source of water for rural supplies, it is essential that these resources are better protected and judiciously used. To ensure the protection of drinking water sources, UNICEF advocates for watershed management and the development of alternative water sources.

In some parts of the country the problem transcends ground water management. This is the case where ground water levels have already dropped below exploitable levels, or in the complete absence of ground water, or in areas with serious problems with ground water quality, or very difficult terrain that precludes the drilling of wells. In these areas it is necessary to develop alternative water sources or to treat, in a cost-effective and sustainable manner, polluted water to make it safe for domestic consumption.

### Objectives

- Protect ground water resources through better management, use planning, and ground water recharge.
- Promote the use of alternative sources of water for domestic use in areas with poor access, or with polluted/scarce ground water resources.

**Investments.** Till end-1997, the environmental protection component accounts for about 4 per cent of project expenditure.

**Achievements.** Progress on this project component has been slow in all four project States. Achievements in M.P. and Gujarat particularly have remained below expectations.

Type	Participants (M / F)	
	05/95-10/96	11/96 - 12/97
Orientation for engineers	66 / 0	64 / 0
Orientation of district/block officials	18 / 0	14 / 0
Trainers trained	28 / 0	0 / 0
NGO functionaries trained	1 / 0	0 / 0
Panchayat functionaries trained	0	14 / 2

**Maharashtra: Ahmednagar, Gadchiroli and Nashik districts.** Watershed management activities, including groundwater recharge, were initiated in a micro watershed in Ahmednagar district. This project aims to protect water supplies for about 2,000 people.

One tank collecting surface water has been completed in Nashik, while another two are in progress in Gadchiroli. Two horizontal roughing filter/slow sand filters are under construction in Gadchiroli. In Chandrapur, 55 rooftop rainwater harvesting tanks are under construction.

**Gujarat: Rajkot district.** By end-1996, GWSSB and UNICEF agreed on a broad project concept, covering two micro-watersheds (Vachivadi and Nagmati) in Rajkot and Jamnagar districts. GWSSB instituted a high-level recharge committee, with internal and external expertise, including acclaimed NGOs. This committee reviewed and approved the groundwater recharge components of the project. Following this, UNICEF and GWSSB continued the dialogue to formulate implementation strategies, including the important community participation aspects of the project. In August 1997, GWSSB and UNICEF organised a training-cum-project formulation workshop, where the details of the Vachivadi watershed project were worked out. It was decided that UNICEF will fund the Vachivadi scheme, while GWSSB will fund the Nagmati project. GWSSB has started work on recharge structures in Vachivadi, although the detailed project report is yet to be finalised.

**Madhya Pradesh: Dhar district.** In 1997, PHED started the construction of ground water recharge structures in seven villages, which would protect about 25 borewells serving a population of 3,000. Site visits in early 1998 showed poor progress, coupled with poor site selection for some structures. Two villages had to be dropped, because groundwater recharge was not considered feasible. All recharge work is planned without any social mobilisation or community participation. Overall results remain unimpressive.

**Tamil Nadu: Trichy, Namakkal, Nagapattinam districts.** Ground water recharge work in the form of three recharge structures has been taken up in the Karaipattinar watershed, Namakkal and Trichy district.



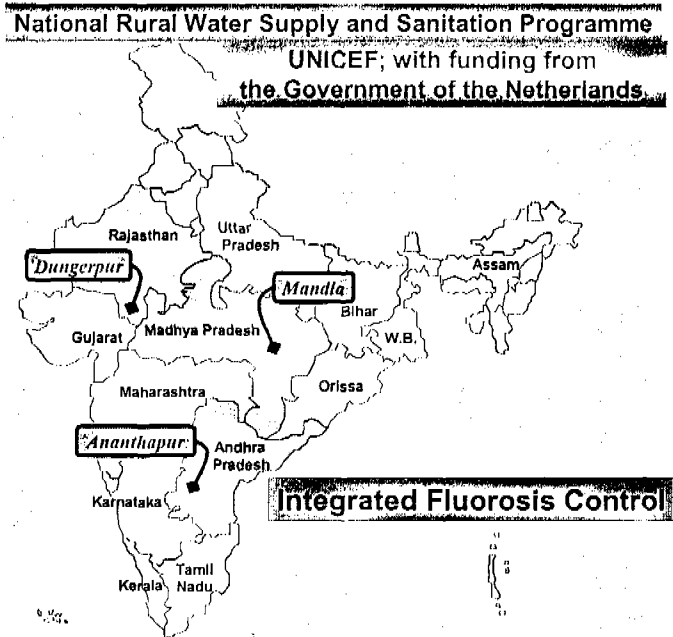
Checkdam in Karaipattinar – T.N.

This will sustain a number of borewells. Alternative water supplies have been taken up in **Trichy** and **Nagapattinam** districts. In **Trichy**, one traditional 'Urni' tank, which collects surface runoff water, improved with a horizontal filter and a collector well fitted with a handpump, is nearly complete. In **Nagapattinam**, three rooftop rainwater harvesting structures have been completed, while another four are in progress, serving people in areas where salt water intrusion is a problem. In the same area, sealed ringwells are sunk into the dunes, to collect fresh water during the rainy season. Two of these structures are in progress.

In **Tamil Nadu**, the following six studies on various aspects of watershed management have been taken up. (1) Corrosion study in Ammanampallam/Valayapatti (completed); (2) Sago pollution problem study in V.Kombai (in progress); (3) Deep fracture system study in Valayapatti (logging and pumping test in progress); (4) Bacteriological problem study in Kalappanayakanpatti.(in progress); (5) Nitrate in ground water study in Anakalpatti.(in progress); (6) Excess fluoride study in Natham (in progress).

**Constraints.** Implementation of the environmental protection component highlights the difficulties of developing and implementing groundwater recharge activities, which specifically benefit the village water supply sources. The State Water Supply Agencies often have limited capacity and experience in designing effective groundwater recharge projects. The tendency to use contractors for the construction of recharge structures reduces the already low levels of community participation to virtually nil. UNICEF field staff has the difficult task of working with the State Water Supply Agencies to develop their capacity in this area, while at the same time bringing in community participation and NGO involvement.

# Integrated fluorosis control



In many rural areas of 13 states in India, ground water is contaminated with excess fluoride. In these areas, water drawn for drinking and cooking from contaminated dugwells and tubewells can lead to fluorosis, especially among children. Prolonged use of water with excess fluoride can, under adverse conditions, cause skeletal deformities and crippling. When a pregnant woman drinks water with excess fluoride, her child may be born deformed, while the mother's breast milk will also contain high levels of fluoride. In addition to affecting the bone structure, prolonged use of water with excess fluoride can cause kidney problems, loss of muscle power, neurological complications and blocking of blood vessels, leading to cardiac problems. Health problems associated with fluoride toxicity are often not recognised as such, largely due to a lack of awareness.

Since late 1993, UNICEF has provided support for the implementation of the Integrated Fluorosis Control Project (IFCP) in Ananthapur district in Andhra Pradesh. This project is using 'fluorosis' as a main entry point to improve the quality of life of the people by building awareness of the importance of community safe water, improved sanitation and hygiene, better nutrition and health. Community participation is the focus for operation and maintenance of water supply and sanitation facilities. Some handpump-attached defluoridation plants were introduced, but community management of these units has been difficult to organise and sustain.

## Objectives

- Promote the use of water from sources with low fluoride levels, and proper nutrition to prevent fluorosis.
- Promote personal, home and environmental hygiene for better health and well-being among the people.
- Improve access to safe water sources and environmental sanitation, through community management.

**Investments.** Till end-1997, the control of fluorosis component accounts for about 3 per cent of project expenditure.

**Achievements.** With the exception of Durgapur, Rajasthan, progress on the fluorosis control component of the project remained lacklustre during 1997. Compared to 1996, more attention was given to strengthening Government capacity for properly testing water supplies for excess levels of fluoride and to the introduction of domestic defluoridation filters.

**National-level activities.** National level activities have focused on capacity building and improving the sector database. An activated alumina (AA) based, domestic defluoridation unit has been developed and is under field testing in Andhra Pradesh, Rajasthan and Madhya Pradesh. The main aim is to develop a replicable implementation strategy for the introduction of domestic defluoridation units to ensure long term sustainability.

IIT Kanpur continues screening of various brands of local activated alumina, to ensure the use of appropriate grades. IIT Kanpur also extends support to the field testing of domestic defluoridation filters.

Sector professionals from seven States have been introduced to the use and maintenance of domestic defluoridation units and grass-root level capacity building in the use of field water test kits and maintenance of DDUs at the village level. This will help in improving the access to safe water in fluoride affected areas without alternate safe water sources. Staff from PHED laboratories in four states has been trained on accurate measurement of fluoride, using ion meters. A few sector professionals were supported to exchange India's experiences in an international forum in Ethiopia and to acquaint themselves with current global trends in defluoridation techniques and fluorosis control.

Work is in progress to prepare a document to estimate the total population drinking water with excess fluoride, the extent of fluorosis and the remedial and preventive measures taken. This document will fill a large knowledge gap, and facilitate informed decision making at different levels.

Water supply improvements		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
India Mark III pumps (new Installations)	144	0
- do - (conversions)	359	0
Households using new/converted pumps	n.a.	n.a.
Handpumps spares & tools	324	0
New handpump platforms constructed	246	0
Old handpump platforms repaired	1,543	16
Domestic defluoridation filters	1,140	732
Rooftop rainwater harvesting tanks	0	0
Other alternative sources	29	0

#### Andhra Pradesh: Ananthapur district.

After a detailed review in late 1996, GoI approved phase II of the Integrated Fluorosis Control Project for Ananthapur in August 1997. The revised plan includes the introduction of domestic defluoridation, through a local NGO. The district laboratory has been strengthened with ion meters for fluoride measurement (not Dutch-funded) and training of staff.

Some 29 check dams were constructed to collect rainwater run-off and help in the recharge of groundwater. The major objective was to dilute groundwater with excess fluoride content. A number of checkdams were badly damaged in the 1996 monsoon. A study of the functioning dams concluded that the dams contributed to groundwater recharge. Although fluoride levels in wells near the dams were within permissible levels, it could not be conclusively established that the checkdams played a major role in this. The detailed report and video are available in the UNICEF WES Section.

Orientation, training and social mobilisation		
Type	Participants (M / F)	
	05/95-10/96	11/96 - 12/97
District/block functionaries oriented	554 / 14	21 / 7
Trainers trained	10 / 1	16 / 4
Handpump caretakers trained	7 / 0	0 / 0
Handpump mechanics trained	65 / 0	0 / 0
NGO functionaries trained	64 / 14	63 / 24
Panchayat functionaries trained	35 / 0	0 / 0
Villages reached through contact drives	0	16
Workshops conducted	5	0
Wall paintings done	0	0

#### Madhya Pradesh: Mandla and Shivpuri.

The Plan of Action for UNICEF support in fluorosis control in Mandla was finally approved in August 1997. Little progress was recorded till end-1997. After the Mandla District Administration did not agree to the introduction of domestic defluoridation in those villages still taking water with excess fluoride, the available filters were diverted to Shivpuri. Some 300 domestic

defluoridation filters, using activated alumina, have been distributed among the households of five villages where dental and skeletal fluorosis are prevalent.

Sanitation improvements		
Type	Achieved	
	05/95-10/96	11/96 - 12/97
Household toilets	2,205	0
Institutional toilets	126	0
Drainage around water point improved	961	0
Rural Sanitary Mart set up	0	0
Production centres set up	0	0

**Rajasthan: Dungepur.** In eight fluorosis-affected villages, two NGOs have introduced 430 activated-alumina (AA) based domestic filters and 410 Nalgonda based domestic filters, in late 1996, with the users contributing part of the cost.

District level, block level and village level orientation, training, demonstration and awareness camps were organised. Household level monitoring is regularly done. The project has demonstrated that both technologies are feasible at domestic level. The cost of using and maintaining the Nalgonda filter has been almost completely passed on to the users. The cost of using and maintaining the AA filters is also gradually



**Fluorosis in Kanpur (U.P.)**

passed on to the users. Based on experience to-date, some improvements have been made in the design of the AA filter, which will also reduce its cost. IEC activities including film, posters, folk songs, street plays, aim to create awareness about proper nutrition, especially regarding the intake of calcium and vitamin C. Many households in the project villages have planted lemon and amla plants around their houses.

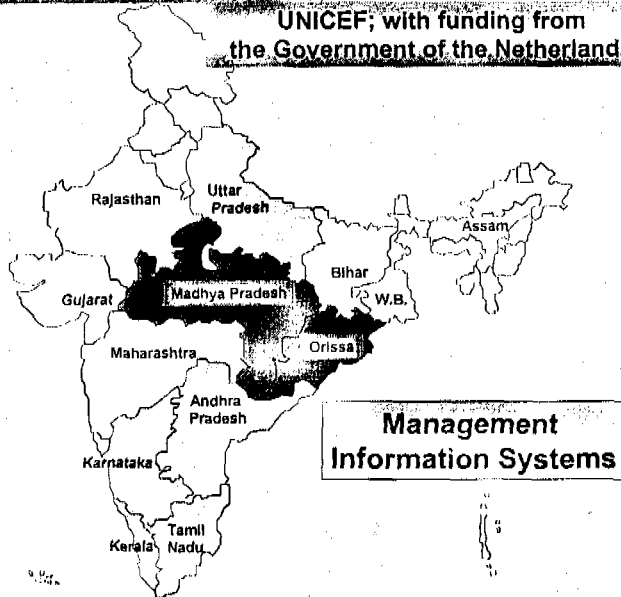
**Uttar Pradesh: Kanpur.** In late 1997, U.P. Jal Nigam, in cooperation with a local NGO, commenced the implementation of a fluorosis control project in ten selected villages of Kanpur. Activities will include the introduction of domestic defluoridation, awareness creation, health and hygiene education.

**Constraints.** In Mandla and Ananthapur, the District Administrations are involved in the implementation of large-scale water supply construction projects. As a result, UNICEF's approach of focusing on activities supplementing these projects with home water treatment, IEC activities and sanitation often do not get the necessary attention from the District Administration. Much of the work done in 1997 has been achieved through local NGOs, which is not necessarily easily replicated through the Government institutions.



# Management Information Systems for WatSan

National Rural Water Supply and Sanitation Programme  
UNICEF; with funding from  
the Government of the Netherlands.



Sectoral programme management at central and state government levels is responsible for programme planning, funding and monitoring. Since 1985, central and state governments have taken a number of initiatives on MIS, aiming to improve effectiveness in programme planning and implementation. RGNDWM is supporting computerisation of sectoral operations and reporting at national and state levels. A number of larger states, including Madhya Pradesh, Andhra Pradesh, Bihar, Orissa, Uttar Pradesh and Karnataka are trying to establish computerised systems, which allow capturing of basic processes, village-level baseline information updating and improved monitoring. From 1994, UNICEF has extended support for the development of State-wide MIS projects in Orissa and Madhya Pradesh. Support is also extended for computerised monitoring systems for specific purposes, including monitoring of rigs, hydro-fracturing units and spare parts.

## Objectives

- Ensure availability of sector-related information at national and state levels, for effective policy planning and optimal utilisation of resources.
- Build capacity for MIS within the institutions involved in sector management.
- Establish state-specific computerised MIS in seven states, including computer software to capture basic processes for completion of work at field level and automatic updating of village level baseline information.

**Investments.** Till end-1997, the MIS component accounts for about 7 per cent of project expenditure.

**Achievements.** During this reporting period, progress on the MIS component has been modest. The two State-wide MIS projects, for which UNICEF is supporting the development phase, are slowly progressing towards completion. The MIS modules for monitoring rigs (RIMS), hydro-fracturing (HMS) and spares (SPMS) received support in the form of hardware and technical assistance. The availability of RIMS, HMS and SPMS data improved to some extent.

Hardware and Software		
Type	Achieved	
	05/95-10/96	11/96-12/97
Main server computer	1	2
Desktop computer	17	8
Dumb terminal for PCs	25	0
Printer	19	8
RDBMS software	1	2
UNIX software	7	0

- **Hardware and software** were supplied for the projects in M.P. and Orissa, as well as to other States in support of RIMS, HMS and SPMS. At times, UNICEF experienced delays in the supply of hardware.

Orientation and training		
Type	Participants	
	05/95-10/96	11/96 - 12/97
Orientation for managers and engineers	5	11
Workshop on project formulation	2	2
Workshop on module design	12	0
Training of project core groups	15	3
Trainers trained on system modules	9	17
Dept. staff trained on system modules	71	40

- **Capacity building** again received attention. Delays in the supply and commissioning of computer hardware and software reduced the effectiveness of capacity building to some degree, because those trained could not always immediately use their newly acquired skills.

**Orissa.** The RWS&S headoffice is using a server with a number of dumb terminals, which will run on UNIX and Oracle 7.2 RDBMS. Software development was completed in early 1997. The training of staff has been partly completed. The head office module, which consolidates information from 30 districts, is under preparation and expected to be operational by end-1998. The system is linked with four pilot districts via modem for data transmission. Initial trials have been successful. Hardware for the initial phase has been supplied and is operational. Four offices in three districts (Puri, Ganjam and Khurda) have completed most of the data entry work.

**Madhya Pradesh.** In M.P., PHED, which has 110 offices throughout the State, is the nodal agency for water supply. PHED has decided to use the UNIX and INGRES RDBMS environment for its MIS project, with eight concurrent users at their head office and three concurrent users at each field office. Management Support System (MSS) software, consisting of 13 modules has been prepared, and trial runs were completed in late 1996. In November 1996, the system was installed at the MIS Cell in PHED headquarters and in seven field offices in Bhopal Zone. During 1997, PHED staff at various levels was trained on the use of the software. The project has supplied one netserver and INGRES software. An additional 12 computers have been ordered for the project in early 1998.

In mid-1997, the Expert Committee for Computerisation of the Department of Rural Development, GoI, reviewed the MIS project in PHED Bhopal and recommended that similar systems be adopted in the country-wide computerisation programme of the Department. Although GoI approved MIS programme in principle as early as 1995, there have been considerable delays in the supply of hardware and software. In the absence of adequate numbers of computers in the offices selected to the pilot phase of the MIS project, this system has not yet become an effective management tool at field level.



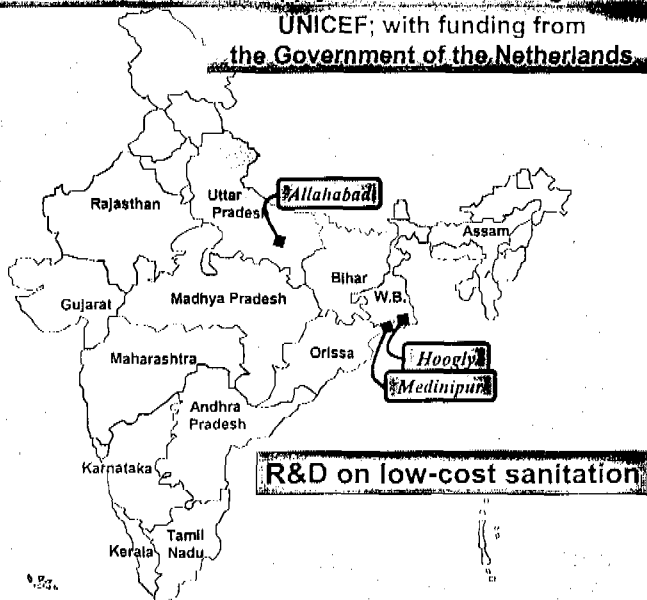
Computer training for U.P. Jal Nigam staff

- **Constraints.** UNICEF procurement of hardware for the MIS project components has at times been slow. RGNDWM is still continuing the long-drawn process of deciding the best hardware and software platforms to develop the country-wide MIS project.

All too often, staff trained on a particular computer application is transferred and replaced by a new hand. UNICEF has been required to provide frequent support to most of the State Water Supply Agencies to keep their operators trained, the software running and the databases up-to-date.

## R&D on low-cost sanitation

**National Rural Water Supply and Sanitation Programme**  
UNICEF; with funding from  
**the Government of the Netherlands**



To identify suitable technological options, the Technology Advisory Group (TAG)-India carried out extensive research, which resulted in the standardisation of the two-pit pour flush water seal latrine (TPFL) and this type was adopted for programme implementation. The TPFL functions extremely well in sandy loam soil with the water table two metres below the pit bottom. But India's varied geology (hard rock, partially weathered rock, black cotton soil, clay, loose sand, alluvial deposits, etc.) and hydrology (deserts, hills, shallow water table areas, flooded plains, etc.) demands a range of technology options for latrines. Even the existing TPFL designed for an average situation needs further improvements of the design parameters like sludge accumulation rate and hydraulic loading. There is an apprehension that, under certain geo-hydrological conditions, the leach pits attached to these latrines may pollute ground water used for drinking.

### Objectives

- Review available low-cost technologies, through literature survey and field visits.
- Assess the appropriateness of these technologies under different hydro-geological situations in India.
- Develop designs based on technologies chosen, field test these in selected areas and monitor the performance through a set of pre-determined parameters.
- Undertake a comprehensive study of ground water pollution resulting from the use of leach pits under different soil conditions and ground water tables.
- Develop appropriate and cost effective designs for low-cost latrines, along with required guidelines.

**Investments.** Till end-1997, the low-cost sanitation R&D component accounts for about 1 per cent of project expenditure.

**Achievements.** The study on ground water pollution from household pit latrines in Hoogly and Medinipur, carried out by the All India Institute of Hygiene & Public Health (AIHH&PH) in Calcutta, has been completed. A national level workshop is planned for June 1998 to discuss the results of this R&D activity. AIHH&PH is developing a training module to teach field level functionaries the relevant lessons learned from this study.

The project for testing a number of toilet designs under field conditions which the Institute of Engineering & Rural Technology in Allahabad had proposed, has not progressed as expected. Organisational problems in IERT have hampered work. We nevertheless expect that these problems will be sorted out, and that the work will indeed be carried out.

R&D work on community garbage management in selected low-income settlements in Mumbai has been initiated. As proposed, local action groups are working with a research institute in this initiative.

The Indian Institute of Technology in New Delhi is taking up a project on solid waste management through vermiculture, which is the composting of biodegradable waste. The aim of the project is to demonstrate vermiculture composting in solid waste management. The study will look into cost-effectiveness and user acceptability among different socio-economic groups.

#### 4. PROJECT IMPLEMENTATION AND MANAGEMENT

Implementation of the Dutch-funded project in 1997 continued through the ten UNICEF State Offices and the WES Section in New Delhi.

For most of the Dutch-funded project components, UNICEF and concerned State Government Agencies developed and agreed upon a Plan-of-Action (PoA), which outlines the problems to be addressed, the objectives, the activities, the inputs and outputs, and the modalities for implementation. Before approval, PoAs are reviewed by the WES Section to ensure compliance with the Master Plan of Operations (MPO). The PoA is the working document, used to guide implementation over several years.

The components of the Dutch-funded project are integrated into the UNICEF WES programme workplan and budget in such a manner, that the Dutch-funded project activities and budgets are clearly distinct from activities funded from other sources. For the WES Section in New Delhi, the workplan is broken into four parts: water supply, sanitation, communication and social mobilisation, and MIS/Guineaworm Eradication. The State Office workplans consist of activities and budgets related to each of these main programme areas. In each workplan, a UNICEF staff member and one or more counterparts are designated as responsible for execution of each activity.

The initial drafts of the 1997 workplans were prepared in late 1996. Each of the State Office workplans went through a series of reviews by the State Office management and the WES Section. Most of the workplans were finalised, and budgets allocated, in early February 1997.

UNICEF technical support for project implementation was fairly satisfactory in 1997, with one or two WES professionals working in each of the State Offices. The only exception was the State Office for Madhya Pradesh in Bhopal, where UNICEF had no professional programme support from April till October 1997, whereafter an experienced professional was transferred from the State Office in Chennai to Bhopal.

#### 5. PROJECT MONITORING AND REVIEW

The project is monitored and reviewed at different levels, in a variety of ways.

For the district-based demonstration projects, a District Coordination Committee, including representatives from all concerned Government departments and UNICEF, conducts formal reviews of implementation two to six times a year. Records of these reviews are maintained at the office of the nodal agency at the district centre. At State level, a high-level body reviews all UNICEF-assisted projects at least once a year. In all States where CDD-WatSan is actively implemented, a State level Coordination Committee reviews implementation once or twice a year.



School Sanitation in Erode (T.N.)

All UNICEF State Offices conduct quarterly internal reviews of the status of implementation of the workplans. Chaired by the State Representatives, these reviews assess progress, analyse constraints and seek solutions, and plan ahead for the next quarter. With all professional staff participating in these reviews, there is ample opportunity for bringing about maximum possible intersectoral cooperation. Each office prepares detailed notes on these reviews, which are shared with UNICEF New Delhi.

For the supplementary funded projects, UNICEF has developed an elaborate system of collecting data on the various components and activities of each project, accumulating data over a number of years. The UNICEF field staff collect this information from the implementing agencies on a quarterly basis, and share this with the WES Section in New Delhi. Field visits serve to verify the information shared by the implementing agencies.

In the WES Section, these reports are scrutinised and compiled to have a proper overview of each of the project components. In a separate note, field staff also report on progress towards achieving project objectives.

UNICEF professional staff at the State Offices normally spend about 30 per cent of their time on field visits, providing expert guidance to implementers, discussing progress, helping to overcome problems and monitor actual progress in the villages to confirm progress report and assess qualitative aspects. On each visit a detailed field trip report is prepared for the State Representative.

The performance of UNICEF staff is assessed through the Performance Appraisal System (PAS). In January each year, the main assignments a staff member is expected to complete are recorded. Progress is reviewed twice during the year, followed by a final evaluation in December.

Financial implementation is monitored through UNICEF's Global Field Support System (GFSS), with clearly established links to the programme/project workplans. GFSS can provide the status of financial implementation any time, although transactions in the State Offices, other Country Offices, and Supply Division takes some time to be reflected in the New Delhi database. Actual annual expenditure is usually known by April the following year.

### **Project mid-term review**

In February 1997, the Royal Netherlands Embassy conducted a mid-term review of the Netherlands assisted UNICEF India Rural Water Supply and Environmental Sanitation Programme. UNICEF has taken careful note of the recommendations. At this stage of implementation of the project, the situation is as follows.

- ❖ **Field Organisation.** The review repeated the recommendation of the late 1995 intermediate review, that UNICEF's capacity to support, facilitate and monitor the project components is inadequate and in need of significant strengthening. This recommendation related more specifically in relation to the CDD-WatSan strategy component of the project, which is more complex in nature, and therefore requires better managerial support.

In general, UNICEF's approach to implementation continues to rely on available government structures, complemented with NGO support wherever available and acceptable, rather than establishing separate project offices or implementation units. Most of the Administrations of the districts implementing the CDD-WatSan strategy have designated one Government functionary as

the nodal officer and Project Coordinator, not necessarily paid from project funds. We find this arrangement to function satisfactorily in most districts.

UNICEF has conveyed the concern of the review mission to the concerned State Offices, some of which have advised the District Administration that the project is ready to meet the cost of one person to assist the Chief Executive Officer (CEO) in facilitating, coordinating and monitoring project implementation.



**School Sanitation Play - Ambala**

- ❖ **More active monitoring.** In all UNICEF State offices, except Bhopal, the staffing situation has been satisfactory in 1997. Following the mid-term review, the WES programme staff in the State Offices have given higher priority to project monitoring and facilitation.
- ❖ **Changes to school curriculum and use of television.** As the curriculum for primary schools is worked out at the national level, UNICEF initiated a dialogue with the Director, Primary Education, National Council for Educational Research and Training (NCERT) to incorporate sanitation and hygiene components in the syllabus. NCERT will review the guidelines for the training of teachers, developed by RGNDWM and suggest steps which need to be taken for making changes in the school curriculum at the national level, which would also be reflected at state level. Draft Training Modules for Primary School Teachers are ready and will be published once these are finalised by an expert group of academicians.

Based on the results of the 1997 nation-wide School Health Survey, it was noted that almost 12 percent of children have dental problems. The R.V. Dental College in Bangalore was engaged in developing a guidebook for school teachers on dental problems and the dental care. The draft guidelines are ready and these guidelines will be used as an advocacy tool to include dental hygiene in the training curriculum for school teachers.

In 1997, new TV spots were developed on hand washing, use of latrine and community-based hand pump maintenance. RGNDWM interacted directly with the Director General Doordarshan, and Doordarshan has telecast these TV spots all over the country on the national network.

- ❖ **Continued advocacy to avoid subsidies.** From 1996, all States, with the exception of Karnataka and Maharashtra, have limited subsidies for toilets to families living below the poverty line only. UNICEF is continuously advocating for the promotion of home toilets, using low or no subsidies. This is an ongoing dialogue taking place at various levels of Government. Given the political sensitivities towards reducing subsidies and after decades of fully subsidised interventions for water supply in the same sector, advocacy against the use of subsidies for home toilets is inevitably an uphill battle. Nevertheless, progress is visible in a number of States, including Assam and Ganjam (Orissa), where the authorities decided to reduce subsidies.
- ❖ **Monitoring at State level.** At State level, a high-level body reviews all UNICEF-assisted projects at least once a year. State-level reviews with individual line agencies take place more often. In all States where CDD-WatSan is actively implemented, a State level Coordination Committee reviews implementation once or twice a year.
- ❖ **Project management training.** The Research and Training Centre of the Maharashtra Jeevan Pradhikarn is offering a three-week course on Management for Sustainability, in cooperation with IRC, Holland, which would provide appropriate training for Government personnel responsible for the management of the Dutch-funded project. The WES Section has informed all UNICEF Field Offices of this course, proposing to sponsor counterpart participation. A.P., Karnataka and Gujarat informed that it is not possible to allow senior Government managers to leave their duty stations for three weeks during the peak summer months. The UNICEF State Offices organise project orientation for District functionaries, whenever there are changes in the leadership of the Administration.
- ❖ **Village information system.** It is our experience that basic village data, such as the number of household, the number of handpumps, the number of toilets, etc. is generally available at the Village Panchayat. In the CDD-WatSan villages in Bihar, display boards have been set up in each village, showing basic social development indicators.

**TITLE: The National Rural Water Supply and Environmental Sanitation Programme in India:  
Second Progress Report**

The Government of the Netherlands has conducted a progress evaluation of the Netherlands assisted UNICEF India Rural Water Supply and Environmental Sanitation Programme to cover 1997. The guiding principle of this Government of India/UNICEF cooperation is the protection of children from diarrhoea and other diseases caused by the use of unsafe water or unhygienic practices, the reduction of drudgery for women and girls who must carry water over long distances, and the improvement of women's access to better knowledge on primary environmental care. This document contains the results of the 1997 assessment. It gives background information on the objectives and achievements in rural water supply and sanitation and UNICEF's role in the programme. Then it presents a detailed evaluation of projects carried out under the programme. In general, the report finds that in 1997 project implementation proceeded without major interruptions. While some project components such as CDD-WATSAN, school sanitation, rural sanitary marts and community based handpump maintenance have made good progress, two components, environmental protection and integrated fluorosis control, have not been as successful. Each component is assessed on such factors as its overall achievements, its contribution to sanitation and water supply improvements, its contribution to hygiene education, community involvement, policy, replication and constraints. Successful hygiene education promotion contained in many of the projects has been implemented through group meetings, school rallies, village contact drives and PRA camps with increased emphasis on convergent community action. The report also looks at project implementation, management, monitoring and review. In February 1997, the Government of the Netherlands conducted a mid-term review of the programme and this report contains a point-by-point review of recommendations made to UNICEF at that time. Although the project is scheduled to come to an end on 30 April 1998, since funds are still available, it will continue well into 1998.

- ❖ **More comprehensive coverage.** Certain components of the Dutch-funded project are executed to demonstrate a specific technology or approach. For example, the community-based handpump maintenance component primarily aims to demonstrate the approaches and technologies needed to achieve handpump maintenance and repair by the user communities. Expanding the scope of the demonstration projects to include the range of activities adopted in the CDD-WatSan strategy would divert attention from the primary objective of the project.

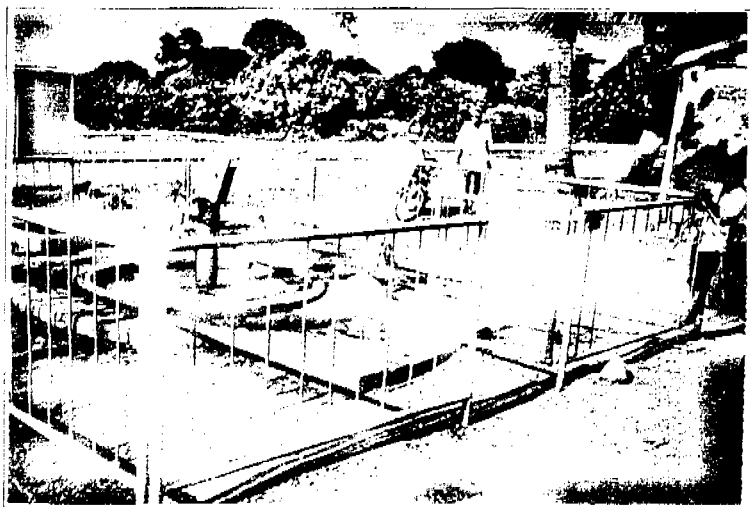
Nevertheless, all project components do have elements of sanitation, hygiene education and water supply improvements, although the emphasis varies from component to component. UNICEF has learned that spreading activities over too large a geo-graphical area dilutes the ability of the few UNICEF WES staff to adequately support and monitor implementation.

- ❖ **Women masons.** The recommendation to place more emphasis on the training of women as masons has seen a positive response. In the CDD-WatSan component, more than 200 of the masons trained were women. In the rainwater harvesting component, nearly all of the more than 260 masons trained in 1997 were women.

## 6. FUTURE PLANS

Although the project comes to an end on 30 April 1998, it is evident from this report that nearly one-third of the project funds is still available for utilisation in 1998. The workplans related to the implementation of the Dutch-funded project indicate that activities aimed at completing the project will continue well into 1998. Increasingly, UNICEF staff is seeking to determine the achievement of the objectives set for each of the project components.

Even when the Dutch-funded project is nearing completion, it is important to keep in mind that this project has not been executed in isolation. In many of the districts where Dutch-funded activities are carried out, UNICEF had already been supporting programme development prior to the start of the Dutch-funded project. Similarly, after the end of this project, UNICEF will continue work in many of these districts to lead demonstration projects to completion and seek to absorb the strategies, approaches and technologies in the State/national Government programmes. The continuum of UNICEF support is one of the strengths of the programme and we hope that the Government of the Netherlands will continue to be an active partner.



Environmental Improvements around Handpump - Mysore

In line with the project agreement extension, UNICEF will end call forward action against the Dutch contribution on 30 April 1998. Expenditure against the Dutch Call-Forwards will cease on 30 October 1998. A final report will be submitted in December 1998.

After the 1998 monsoon, UNICEF and the Royal Embassy of the Netherlands will decide on how to evaluate the project. The major WES programme evaluation, planned by UNICEF for 1998-99, could also contribute to the evaluation of this project.

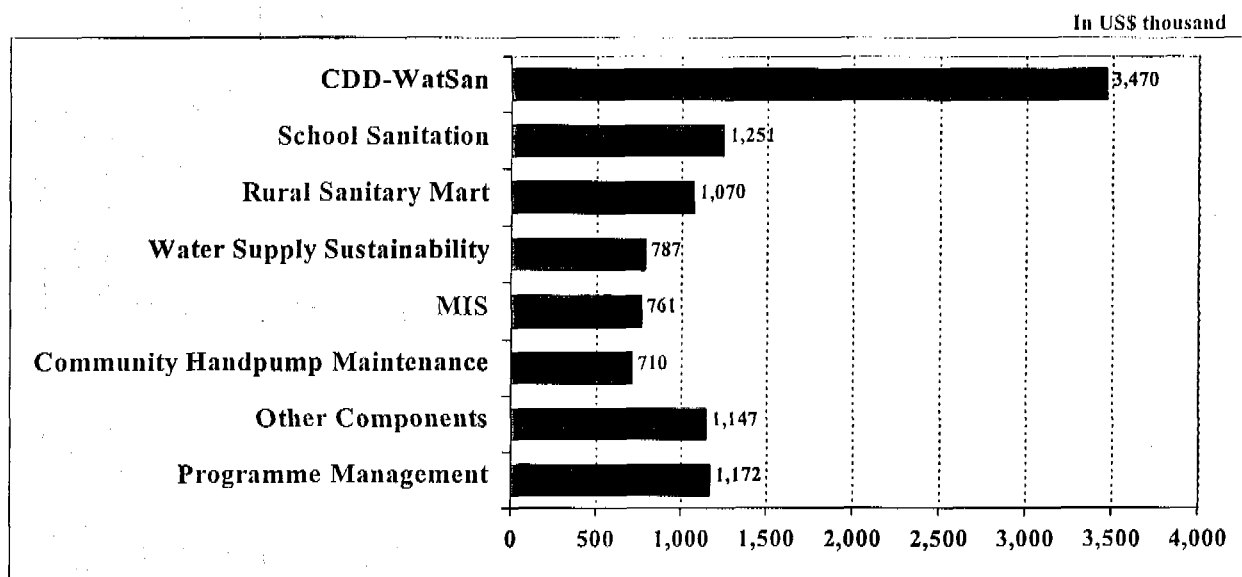


## 7. PROJECT FINANCIAL IMPLEMENTATION

The graph and table below present the status of financial implementation of the project, as of end-1997:

### National Rural Water Supply and Sanitation Programme UNICEF, with funding from the Government of the Netherlands

#### Fund utilisation, till end-1997



Sln	Project Component	Budget		Utilisation	
		(US\$x'000)	%	(US\$x'000)	%
1	CDD-WatSan Strategy	4,781.1	31.6 %	3,470.2	72.6 %
2	Rural Sanitary Marts	997.7	6.6 %	1,070.3	107.3 %
3	Rainwater Harvesting	395.0	2.6 %	307.7	77.9 %
4	Community-based Handpump Maintenance	1,009.5	6.7 %	709.5	70.3 %
5	School Sanitation	1,582.9	10.5 %	1,251.1	79.0 %
6	Water Supply Sustainability	1,301.7	8.6 %	786.8	60.4 %
7	Environmental Protection	856.0	5.7 %	411.6	48.1 %
8	Fluorosis Control	1,425.3	9.4 %	325.3	22.8 %
9	MIS	1,296.4	8.6 %	760.9	58.7 %
10	R&D Low-Cost Sanitation	286.3	1.9 %	102.9	35.9 %
	Programme Management	1,195.5	7.9 %	1,171.7	98.0 %
	<b>TOTAL (US\$x'000):</b>	<b>15,127.4</b>	<b>100 %</b>	<b>10,368.0</b>	<b>68.5 %</b>

## 8. UTILISATION REPORT

### UTILISATION OF DONOR FUNDS

Donor:	Government of the Netherlands
PBA No.	SC/95/0241
Programme No.	YW 904 (1996-97); YW 004 (1998)
Description:	Water Supply and Sanitation Programme
Contribution No:	9113
Period covered by report:	1 December 1996 till 31 December 1997
Total funds pledged:	
Less 6 per cent recovery:	
Total available for Programme implementation:	US\$ 15,127,387
Funds utilised till end-1997:	US\$ 10,362,522
(Based on PBA (Supplementary) Status; NYHQ; closing 16; 1997)	