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R822 IN92

INDIA

Evaluation Report

The Indo-Dutch Cooperation Programme on Rural Water Supply and Sanitation

APRIL 1992

JUNE

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SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 1) The water supply policy is by and large need based, with a special focus for the weakest sections. The policy priorities are in sequential order. Next to water supply comes sanitation. The VIII Plan has given some stress on sanitation, while there is also a focus on the weaker sections.
- 2) The priorities for development activities differ from state to state. In regions with inadequate traditional water supplies people give priority to water supply. The next priority is then sanitation (toilet and/or bathroom, depending on the land utilization pattern).
- 3) Drinking water is accessible to all communities by and large including SC/ST. There are exceptions however, due to social factors. Sanitation has made a beginning but is accessible for all members of society.
- 4) In case water supply facilities are adequately located and do function (which is the case for handpumps to the extent of 90 %, piped supplies function to a lesser extent due to low pressure and irregularity of the supply), the water is being used. Proper use depends on hygiene education. Sanitation facilities constructed under the Netherlands assistance are being used.
- 5) The majority of the population considers water and sanitation facilities as an improvement. The degree of benefits is region specific. Whenever watersupply is linked to income generating activities of the poorer sections, this has led to economic improvement.
- 6) The government policy to increase coverage with improved water and sanitation will continue. Compared to the past the central level policies are also broadened to include cost recovery, health education and community development. It will take time before the state level authorities have internalized the concept of the integrated approach and consider health education and community participation equally important as the hardware component.
- 7) A water management policy exists at the national level but is very ineffective. The institutional framework is not conducive for its implementation because of the farmers lobbies.
- 8) Considering the fact that the availability of minimum water supply facilities is being considered a constitutional right, there is no recovery of the capital cost. As to sanitation a minor contribution is being recovered.

- 9) Presently the contribution of the people for O&M is nil or insufficient due to traditional perceptions of the people, institutional weakness and lenient attitude of the implementing agencies (lack of political will) and a low level of tariffs.
- 10) The investment levels for the sector under the VIII Plan have increased compared with the VII Plan. The same goes for O&M budgets, be it that these levels are not sufficient for adequate preventive and curative maintenance.
- 11) Handpumps and sanitary facilities do function. Piped water supplies do not function smoothly due to irregular supplies, low pressure and leakage. Consequently people tend not to disregard traditional supplies for drinking water purposes.
- 12) Overall spare parts come from India, but sometimes have to be procured in other States.
- 13) The choice of water supply technology is on average appropriate in Gujarat and Uttar Pradesh. Observations in Kerala (1 case only) raise some doubts in this respect. Technology choice for sanitation (PF/twin pit design) is appropriate. The sanitation facilities are being constructed with heavy government subsidy. It is unlikely that government budget will be sufficient to cover large parts of the population on the basis of the present financing arrangements.
- 14) O&M of installed facilities by the state water agencies is not satisfactory due to insufficient financial resources and institutional constraints. The latter is due to political interference, bureaucratic/hierarchical set up, overstretched organizations, transfer of personnel and a lack of recognition and appreciation for the achievements of staff. Furthermore O&M as such has a relatively low status. Delegation of maintenance responsibilities to the Panchayats is (again) being considered, notably with regard to handpumps in UP.
- 15) The capacities of the state water agencies for planning and implementation of water supply are adequate insofar technical aspects are concerned. Planning of water supply systems can be characterized as a top down approach based on fixed design criteria. Rehabilitation of traditional supplies or the construction of protected wells is beyond the scope of the agencies. Attention for performance monitoring of completed schemes is hardly there. The Netherlands assisted program support units and NGO's are responsible for the formulation and implementation of non-technical aspects including community involvement and hygiene education. Planning and implementation of sanitation facilities is scattered over several ministries and departments.
- 16) Under the Netherlands assisted projects initial steps have been taken towards institutional development and training at the level of the implementing agencies and the Panchayats.

- 17) The integrated approach is realized through the efforts of the state water agencies and Netherlands assisted program units and NGO's. This approach is thus very much dependent on external financing.
- 18) The top down oriented Problem Village approach which is currently in use for the planning and implementation of water facilities gives little scope for involving the communities to a meaningful extent. Decisions regarding the selection of villages and the type of technology are taken without consulting the people. Program support units are, however, instrumental in involving the communities in the siting of taps and train them in sharing maintenance responsibilities with the state water agencies.
- 19) UP and Kerala cannot be declared ecologically vulnerable areas, at least not from the viewpoint of sustainability of water resources. The situation in Gujarat is completely different. In the Santalpur scheme in Banaskanta district groundwater levels are reported to drop 3 meters per year approximately, a decline which is irreversible.
- 20) Without proper drainage facilities water points can cause stagnant pools and thus create a unhealthy environment. The activities of program support units and NGO's contribute to better upkeep of the environment, reuse of water and income generating activities. The longer term impact on the sector is concerned with lowering of the water table mainly due to irrigation and deforestation.
- 21) Until the mid eighties the identification and formulation of projects proposed for Netherlands funding has merely been an affair of the state water agencies with a predominant focus on technical issues. For political reasons there was not much scope for incorporating Netherlands views and opinions in the program formulation, as maintaining the dialogue was the major objective. Appraisal was confined to technical and financial aspects only. From the mid eighties onwards the Netherlands side took a tougher stand on incorporating non-technical issues in the water and sanitation program.
- 22) The advisory services of IRC in the process of policy formulation are adequate.
- 23) Tendering is a full responsibility of GOI according to strict government procedures.
- 24) Implementation targets are overambitious and unrealistic, due to the fact that during appraisal the absorption capacity of the implementing agencies has not sufficiently been taken into account. Delays are due to financial, managerial and technical problems.
- 25) Project monitoring through the bi-annual Review and Support Missions works out effectively.

The same goes for the Netherlands assisted program support units which have notably contributed to community involvement and served the purpose of demonstrating the integrated approach.

- 26) The number of formal evaluations of projects carried out under the Indo Dutch cooperation program has been too limited in view of the long duration of the cooperation program and the considerable investments made. The outcome of the evaluations have influenced future project implementation. Recently it has been decided by DGIS/India desk to field regularly, 1 time per year, an external evaluation mission to allow for a sufficient feedback of field experiences into the process of policy formulation.

MAIN RECOMMENDATIONS

- 1) Netherlands financed projects should be supportive towards developing and testing approaches resulting in sustainable systems. This requires emphasis on a) adequate cost recovery and operation and maintenance, b) the involvement of other departments like Health and Social Welfare besides the state water agencies and c) institutional development and training activities.
- 2) Planning of water and sanitation projects should therefore be changed from the present top down approach into a demand driven, area based bottom up approach, enabling the beneficiaries to have a say in the type of technology. The latter will result in the construction of facilities that are tailored to the needs and capabilities of the local level with subsequently better prospects for cost recovery and O&M. Investment decisions should be based on the outcome of socio-economic surveys indicating the willingness and ability of the people to pay for the services. The approach towards designing financially viable systems through a certain ratio of house connections and public taps should be pursued; also the concept of metered house connections should gradually be applied on a wider scale. Augmentation of existing schemes should be seriously considered to improve the quality of the service and thus enhance the preparedness of the people to pay for it.
- 3) For sanitation the focus should be on developing lower cost technologies and financing arrangements that are affordable. Notably in UP there is a need to relax design criteria and go for lower cost options.
- 4) To enhance the sustainability of the integrated approach, other departments like Health and Social Welfare should take over responsibilities of the program support units with regard to the planning and implementation of non-technical interventions. The state water agencies are not appropriate to assume responsibilities for community development and hygiene

activities, since their prime function is the design and construction of water and sanitation facilities.

The nodal agency that will coordinate the inputs of several departments should operate from a neutral position. Leaving the coordinating role to the state water agencies creates the risk of continued dominance of technical aspects during planning and implementation of water and sanitation programmes.

The program support units should strengthen the coordination between the relevant departments at the various administrative levels.

- 5) HRD and institutional development activities should be intensified and carried out in the framework of comprehensive HRD plans prepared for each state in advance.
At the level of the implementing agencies and Panchayats the focus should be on developing their capabilities to plan, implement, maintain and monitor the performance of the facilities and sustain hygiene interventions.
Programming, planning and implementation of these activities should be done in close cooperation with the state level water training institutes.
Exchange of experiences gained under the Netherlands assisted projects should be disseminated within and between the state water agencies.
- 6) Changing the hygiene attitudes of people and involving them in a meaningful manner in the O&M of facilities cannot be realized overnight. Therefore village development activities should be extended well beyond completion of the technical interventions. Wherever necessary, the services of NGO's may be used to motivate the village community, and women in particular, for the better use of water supply and sanitation facilities and train them in proper health and hygiene practices.
- 7) Formulation of future projects under the Indo Dutch cooperation should be done through a multi departmental team with a certain guidance from the Netherlands side.
- 8) During appraisal of project proposals, preferably supported through independent missions, the absorption capacities of the implementing agencies should be taken more seriously into account.
- 9) The activities of IRC and the RSM's should be continued.
- 10) The program support units should assist the Netherlands Embassy and the RSM's in the monitoring of project implementation.
- 11) During policy formulation better use should be made of the considerable field experience that is accumulated in the RSM's.
- 12) Considering the size of the program the full-time assignment of a desk officer at DGIS/DAL-ZZ is highly recommendable.

1. INTRODUCTION

In the framework of the evaluation of the Indo-Dutch bilateral cooperation programme, the Operations Review Unit (IOV) of the Ministry of Foreign Affairs/Directorate General for International Cooperation (BuZa/DGIS) has contracted RIVM to carry out a study of the rural water and sanitation component of the cooperation programme.

In that regard Mr A.G.N. Jansen of RIVM/Bureau for International Cooperation has last October and November interviewed persons in The Netherlands who are or have been involved in the implementation of the programme. Also the planning of an evaluation mission to India was prepared in that period.

This mission was fielded in the period January 5th-February 4th 1992 and was composed of the following persons:

Mr A.G.N. Jansen	RIVM/BIS (mission leader)
Mr M. Nageswara Rao	Registrar of the Institute for Social and Economic Change/Bangalore
Mrs Philomena Vincent	Director of Aikya/Bangalore

During the mission discussions have been held in Delhi, Uttar Pradesh, Gujarat and Kerala with relevant parties including policy officials, planners, implementors and beneficiaries of the projects.

Debriefing on the mission's preliminary conclusions and recommendations was done on February 3rd during a meeting attended by the Royal Netherlands Embassy and IOV; a separate meeting on the same day was held with the Ministry of Agriculture/Rural Development Department.

This report contains the findings of the mission.

The itinerary is attached as annex 1.

2. METHODOLOGY

Broadly speaking the objective of this study was to give a description of the Indian rural water supply and sanitation sector, to assess till what extent the Netherlands assisted programme has contributed to poverty alleviation of the target groups and finally to give an opinion about the sustainability of the project interventions.

The TOR of this study are attached to this report as annex 2.

Following discussion about the draft TOR with IOV and subsequent slight modifications its contents proved to be adequate and workable throughout the study.

Data collection was based on literature review, interviews and field observations.

Interviews in The Netherlands were held with persons who are or have been involved in the policy formulation, planning, implementation and review of the water and sanitation projects.

A listing of persons interviewed is contained in annex 3.

The aim of these interviews was to receive opinions on a selected number of topics including cost recovery, integrated approach, O&M and organisational aspects of the Netherlands support. Reports of these interviews have been prepared and submitted to the interviewees for their comments. The above interviewees have also submitted in writing their views on the issues in the TOR related to poverty alleviation and sustainability.

Interviews in India were held with representatives of the Netherlands Embassy, other bi and multilateral donor agencies, counterpart organisations at central, state and local level, project related support units and NGO's. On average all issues of the TOR have been discussed during these exercises.

A listing of interviewees is contained in annex 1 of this report (itinerary).

Fieldvisits have been carried out to 15 project villages in the states of Uttar Pradesh, Gujarat and Kerala.

In the selection of villages in Uttar Pradesh (7 villages) and Gujarat (7 villages) the criterion was to cover as much as possible at least one sample of each sub-project carried out under the Indo-Dutch cooperation in the respective state and also be able to observe the project functioning in villages with technical and social interventions and others where social components had not yet been

established, and understand the dynamics of each case. Because of the time available only 1 project village has been visited in Kerala. A detailed reporting on these visits is contained in annex 4.

Data interpretation was done regularly in the course of the mission, while preliminary conclusions and recommendations have been formulated upon completion of the mission in Delhi.

Reporting was done in The Netherlands in close cooperation with the mission members in India who have contributed towards description of the case studies and gave valuable inputs towards community development and cost recovery aspects.

3. SECTOR PROFILE

3.1. SERVICE LEVELS

India's population amounts roughly 850 million people at present. It is estimated that about 75 % of the population live in the rural areas in about 560,000 villages. About 25 % of them belong to the so called Scheduled Castes and Tribes (SC/ST), who are socially disadvantaged.

Health conditions in rural areas are poor and result in Infant Mortality Rates that range between 100 and 150 per 1,000 live births depending on the state concerned (IMR in rural areas is approximately 2 times as high compared to urban areas).

Considering the fact that water related diseases contribute to 15 % of the infant deaths, the Indian Government has given emphasis to the provision of at least 1 safe water source to each village.

Improved water supplies will also lessen the burden and time required for women and children to fetch water from large distances in arid and semi desert regions.

So far approximately 85 % of the villages have been covered with improved supplies including handpumps (75 %) and piped supplies (10 %), the latter in cases where groundwater was not easily accessible or of inferior quality.

Due to the design criteria used (1 water point within a reach of 0.5 km and 250 person/tap) the actual use of the facilities will be much less, because villages in India are mostly composed of a number of hamlets and people tend not to fetch water beyond a reach of 150 meters. It is estimated that half of the population still relies on polluted water sources.

Coverage with sanitation facilities is poor in rural India. It is estimated that only 2 % of the population has been provided with sanitation facilities. The adequacy of their construction and actual use is doubtful however.

Furthermore, poor drainage facilities in the villages contribute to the transmittance of insect vector related diseases and thus add to the infant mortality rate.

3.2. INDIAN GOVERNMENT POLICIES

3.2.1. Water supply

The Indian government has subscribed to the objectives of the UN International Decade on Water supply and Sanitation.

The Decade targets included the provision by 1990 of 100 % of the rural population with adequate water (30 % through piped supplies and 70 % through handpumps) and 25 % with low cost sanitation. These targets have not been reached however.

Priority in the 7th 5 Year Plan (1985-1990) was to provide 100 % of the villages with at least 1 safe water point. Villages without adequate supplies are called Problem Villages, characterized by:

- the lack of an adequate source within 1.6 km (later reduced to 0.5 km) or a depth of 15 mtr;
- inadequate quality (due to excess salinity, fluoride, iron and toxic materials);
- incidence of endemic diseases (cholera and guinea worm).

Presently 88 % of the villages are covered with at least 1 facility, the actual use is, however, much less.

The status regarding population coverage (March 1991) reads as follows:

<u>Category</u>	<u>% coverage</u>
General	88.06
SC	61.83
ST	73.53

The aim of the VIII Plan is to cover the remainder 11 % of the rural population without adequate water (including 35 % of the SC and 25 % of the ST) that mostly live in difficult and inaccessible areas.

Since no exact data are available on the location of these habitats a nation wide survey on the status of drinking water supply in rural areas is presently being undertaken.

Apart from coverage of remainder villages the VIII Plan also announces the need for a strategy to maintain the assets created until now and to earmark sizable Plan outlays for O&M and rehabilitation/augmentation of existing systems.

The guidelines under the several programmes through which water supply facilities are implemented emphasize the provision of SC/ST localities with first priority. A minimum of 25 % of Central government funding for SC's and 10 % for ST's is to be earmarked for this purpose.

Learning from the past the government's policy, as expressed in the VIII Plan, is specific about involvement of the community especially women in the water supply projects. There is also the objective to improve on the performance of monitoring of the programme, through involvement of functionaries at the central state and fieldlevel.

Central government support (roughly 35 % of total allocation) for the rural water supply sector is channelled through the so called Accelerated Rural Water Supply Programme (ARWSP). The criteria of ARWSS include a per capita consumption of 45 ltr/day, a ratio of 250-300 people/water point, piped systems with standposts only, a design period of 30 years and adoption of effective designs developed by the National Drinking Water Mission.

State support for the sector is mainly through the Minimum Needs Programme (MNP), which besides rural water supply also funds other urban and rural programmes like roads, housing education, health etc.

In the 6th and 7th Plan the expenditures for the rural water sector amounted Rs 25 billion and Rs 35 billion (current prices) respectively.

Total foreign assistance (excl IDA) in the period 84-88 was about \$ 38 million per year, while IBRD invested \$ 175 million in that period. Foreign aid, therefore, contributes to the rural water sector in the order of 10-15 %.

In 1989 the recommended outlay for the VIII Plan amounted Rs 73 billion. To compensate for the steep price increase since then, the proposed outlay for the VIII Plan is now 114 billion.

It is realized that Government funding alone will not be sufficient to realize adequate service levels in the rural water sector. Therefore, the Government's strategy is to consider public contributions and investments (f.i. through the establishment of a national level financing institution), and also make efforts to mobilize funds from the communities/beneficiaries.

3.2.2. Sanitation

Although the VII Plan aimed at a coverage of at least 25 % of the population, the actual coverage by 1990 was only some 2.5 %.

Central government is aware of the fact that the implementation of sanitation programmes in the past has suffered from a number of draw backs.

It is realized that latrines are not always used due to insufficient educational campaigns for improving personal hygiene and hence raising the awareness for adequate sanitation is found to be one of the strategies.

Also the practice of spreading investments thinly over the villages did result in low numbers of latrines per village and thus did not create sufficient population response to give the programme momentum. It is also realized that the local population should have a say in the ultimate choice of the type of technology to be used (PF twin pit design or alternatives).

Government's objective is to provide 10 % of the rural population by 1994-1995 with adequate sanitation facilities.

Current guidelines of the Central Rural Sanitation Programme (CRSP) aim at involving the community, especially women in all stages of the programme so as to enhance acceptability, correct use and maintenance of the facilities.

Furthermore, it is the intention to concentrate investments on full coverage of specific project districts selected along criteria such as high demand for privacy (because of increasing population), high child mortality and priority for the motivated poor.

Specific consideration will be given to the beneficiaries of SC/ST and those living below the poverty line in the sense that 20 % of the earmarked outlay will be reserved for them. Also their contribution will only be 5 % of the investment cost (in cash or kind) and the remainder part subsidized.

The contribution of other community members as percentage of the cost will range between 10 and 25 %.

The possibility to carry out an integrated sanitation programme, i.e. construction of latrines concurrent with literacy, water supply and drainage projects and health campaigns. is considered an important criterium for selection of project areas.

Raising the awareness of the rural population for adequate sanitation facilities is considered vital and this will be done through the implementation of Information, Education and Communication Programmes (IEC).

About 10 % of the earmarked outlay will be reserved for this purpose.

To bring about the integrated approach the central government intends to establish inter-ministerial/interdepartmental committees at the central, state and district level so as to involve representatives of Rural Development, Health, Education and Planning Departments, state water agencies and NGO's.

Funding for sanitation programmes is through the Rural Landless Employment Guarantee Programme (RLEGP), the National Rural Employment Programme (NREP), the Central Rural Sanitation Programme (CRSP) and The Minimum Needs Programme (MNP).

The level of funding on sanitation under the VII Plan has been low (Rs 1.01 billion) compared to the rural water sector (Rs 35.39 billion).

No information was available at the time of the mission regarding the outlay for sanitation under the VIII Plan.

3.3. INSTITUTIONAL FRAMEWORK

3.3.1. Water supply

In August 1985 the responsibility for the rural water and sanitation sector at the central level was shifted from the Ministry of Urban Development to the Rural Development Department of the Ministry of Agriculture.

At that time it was felt that the Rural development Department would be in a better position to speed up the implementation of the programme but also to bring about the required integration with other rural development programmes(!)

Central government is responsible for policy formulation, the establishment of design criteria, funding and monitoring of the implementation.

At the central level the National Drinking Water Mission was launched in 1986 (recently renamed as Rajiv Gandhi Drinking Water Mission) and provided with budgets through ARWSS to carry out projects in some 50

selected districts in different states. The focus of these "mini missions" is on the design and implementation of water purification plants to cope with iron, salt and fluoride removal, the development of groundwater management techniques and water quality testing and also the improvement of social aspects of the rural water and sanitation programme, through the involvement of NGO's. Also the concept of the integrated approach, i.e. the provision of adequate water and sanitation facilities together with health education, is being emphasized. As such the National Mission and mini missions can be considered the Governments "think tank" to bring about innovations in the sector.

State water agencies are responsible for the planning design and construction supervision of rural water facilities.

A number of these agencies, on average large organisations with several thousands of people employed, have been converted into semi autonomous water boards or authorities in the mid seventies. Construction is usually done by private contractors.

Until the late seventies the local government authorities, Panchayats, used to be responsible for the maintenance of the facilities implemented. Because of their improper performance, mainly due to the lack of funds, by and large this responsibility now rests again with the state level authorities. Present policies, however, aim at decentralizing the O&M of handpump facilities.

Non-technical interventions in the programme are mainly through NGO's, while Government policy is geared towards also involving other Departments like Health and Education in this respect.

3.3.2. Sanitation

Environmental sanitation covers the provision of low cost toilet facilities, proper drainage, solid waste collection, and health and hygiene education.

Responsibilities for these activities are scattered amongst different Ministries/Departments including Public Health Engineering Departments, Rural Development, Local Self Government and Health/Medical Departments.

Apart from sanitation these organisations are also responsible for other activities, which they tend to give a higher priority.

At the state level for instance the Rural Development or Panchayat Raj Departments are responsible for the planning and implementation of the rural low cost sanitation programmes, as part of their rural employment programmes.

Fieldstaff of Health and Medical Departments is responsible for implementing health and hygiene education programmes in the villages; however, this responsibility is overshadowed by activities in the field of family planning and immunization.

Also NGO's are active in the field of planning and implementation of rural sanitation facilities and complementary hygiene education campaigns.

The responsibility for the provision of drainage facilities rests with the village Panchayats.

3.4. DONOR INPUTS

The multi and bilateral donors involved in the rural water and sanitation sector include IBRD, UNICEF, UNDP, EEC, The Netherlands, ODA, DANIDA, SIDA and KFW.

Their financial contribution towards the sector is estimated to amount roughly 10-15 %.

The focus of UNICEF is on rendering assistance at a national scale a.o. through the implementation of socio-economic surveys, drill rig operations for handpump supply, the development of the India Mark II handpump, the training of caretakers, and also to implement sanitation programmes.

All other donors concentrate their activities in a number of states: Tamil Nadu, Karnataka, Madhya Pradesh, Kerala, Himachel Pradesh, Uttar Pradesh, Gujarat, Rajasthan and Andra Pradesh.

Danida f.i. embarks on an area based approach, i.e. full coverage in a selected number of areas, while the Dutch aid can be characterized as a need based approach through the support for Problem Villages.

The main achievement of the donor input relates to the implementation (in recent years) of projects in an integrated way, i.e. combining interventions of water supply, sanitation and health education, the latter through the involvement of a.o. NGO's.

Although the donor efforts are relatively small compared to the overall size of the national programme, their results have definitely influenced policy makers at the central level, in the sense that they have become more receptive for the benefits of the integrated approach.

Subsequently state level officials need to be assisted in pursuing the idea of integration and therefore establish effective mechanisms to coordinate the activities of different actors including government agencies, NGO's and the communities.

In this regard UNICEF, DANIDA and The Netherlands have made a start through the establishment of so called socio-economic units that cooperate with the technical implementing agencies at state level on matters like community development, health education and sanitation.

In the recent past the Ministry of Agriculture/Rural Development Department has chaired meetings with the donor agencies and the Technology Mission on specific subjects like women participation. In

1991 the donors themselves have organised a few meetings, merely with the aim to exchange views and experiences.

3.5. INDO-DUTCH COOPERATION

3.5.1. Facts and figures

The Netherlands support for the rural water supply and sanitation sector in India dates back to 1978.

Activities are being carried out in 5 states, i.e. Uttar Pradesh, Gujarat, Andhra Pradesh, Kerala and (recently) Karnataka, while the accumulated level of investment amounts Nf 300 million approximately.

In the course of time, approximately starting from 1987, the approach under the Indo-Dutch cooperation has been broadened to cover not only water supply but also sanitation as well as non-technical interventions geared towards the development of water committees at village level and raising the hygiene practices of the people concerned.

These complementary sanitation and community related activities cover only a part (approximately 10 %) of the villages where water supply facilities have or are to be provided under the Netherlands assistance programme.

Presently about 140 piped water supply schemes are under construction or have been completed; together with about 19,500 handpumps these systems will serve water to about 9 million people living in 4,000 villages approximately.

Type and size of water supply projects financed under the Indo-Dutch programme reads as follows:

Project	No piped schemes	No handpumps	Design populat	No villages	Status as per 1/1/92
AP-I	54	-	718,000	171	Completed
			+ 44,000	30	
AP-II	45	-	648,000	232	Nearly compl.
			+	+56	
Gu-I	1	-	121,000	72	Completed
			+117,000		
Gu-II	2	-	452,000	147	Nearly compl.
Ke-I	2	-	595,000	16	Completed
Ke-II	5	-	512,000	15	Almost compl.
				+5 wards	
Ke-III	1	-	868,000	21	Progress
				+3 towns	
UP-I	22	-	912,100	724	Completed
UP-II	not taken up				
UP-III	-	5,830	669,000	603	Almost compl.
UP-IV	11	-	384,000	199	Almost compl.
UP-V	sanitation project				
UP-VI	-	13,599	1,810,000	1,410	70 % compl.
Total	143	19,429	7,850,000	3,704	

Apart from water supply so far 8,000 household latrines have be constructed, while another 80,000 are planned.

The ongoing or planned sanitation activities under the Indo-Dutch cooperation are presented below:

State	Project	Household planned	Latrines built	Instit planned	Latrines built	Commun. latrines built
AP	pilot	500	354	22	22	1
	implem	14,000	-	450	-	-
Gu	pilot	180	-	2	-	-
	implem	17,000	-	130	-	-
Karn	implem	p.m.	-	240	-	-
Kera	pilot	2,000	2,000	-	30	1
	implem	10,000	4,500	-	-	-
UP	pilot	40	40	-	-	-
	implem	3,551	1,232	-	-	-
		47,271 + p.m.	8,126	844	52	2

The status with regard to the third component of the integrated approach under the Indo-Dutch cooperation, i.e. village development activities covering the establishment of water committees and hygiene interventions, reads as follows:

State	No villages with RWS projects est/in progr.	No villages with village water ctees est/in progr	No villages with sanita- tion project est/in progr	No villages with hygiene education est/in progr
AP	433	256	256	256
Gu	269	43	2	95
Karn*	364	-	-	-
Ke	65**	147 (ward level)	6	21
UP	2,966	50	48	46
Total	4,097	507	327	433

* projects not yet started

** average population 25,000/village

3.5.2. Institutional framework

In The Netherlands the India desk of the Directorate General for International Cooperation is responsible for policy formulation and the preparation and evaluation of projects.

The International Reference Centre for Community Water Supply and Sanitation (IRC) acts as advisor for the India desk.

The sector specialist water and sanitation based at the Netherlands Embassy in New Delhi is responsible for the identification and monitoring of the implementation of projects. To that effect the water coordinator is assisted by Review and Support Missions (RSM) that are fielded bi annually to monitor progress and render advice.

Since 1987, India desk, IRC, water coordinator and RSM's meet biannually in "Joint Meetings" to exchange views and experiences.

The Ministry of Agriculture/Rural Development Department is the counterpart under the Indo-Dutch cooperation at the central level in India.

The water supply projects are implemented through state water engineering organisations, namely:

Uttar Pradesh	: UP Jal Nigam (UPJN)
Gujarat	: Gujarat Water and Sanitation Board (GWSSB)
Andra Pradesh	: Panchayat Raj Engineering Department (PRED)
Kerala	: Kerala Water Authority (KWA)

Netherlands financed programme support units, staffed with Indian experts, have been established in Andra Pradesh, Kerala and Uttar Pradesh. Their function is to render assistance to the implementing agencies on a daily basis, notably with regard to the non-technical components of the rural water and sanitation programme.

In Andra Pradesh the Netherlands Assisted Project office (NAPO) is rather small and has a coordinating function only.

The Programme Support Unit (PSU) in Uttar Pradesh and the Socio-Economic Units (SEU) in Kerala also employ fieldstaff to carry out village level development activities.

In Andra Pradesh and Gujarat non-governmental organizations (NGO's) are involved in this respect.

The responsibilities for the planning and implementation of sanitation programmes are assumed by different organizations in each state:

State	Coordinating	Fund flow	Implementing agency	
			State level	Community level
AP	State Water Agency(PRED)	PRED	PRED with State NGO	PRED with State NGO
Gu	State Water Agency(GWSSB)	GWSSB	State NGO	Voluntary Groups
Ke	NA Project Office (SEU)	SEU	SEU	Panchayats
UP	Dept of Urban Devt (DUD)	DUD	State Water Agency(UPJN) with NA Project office (SEU)	UPJN with PSU

4. POVERTY ALLEVIATION

4.1. INDIAN GOVERNMENT POLICIES

Out of the total population of India, presently amounting roughly 850 million people, 75 % or 600 million live in the rural areas.

It is estimated that about 40 % or 240 million of them live below the poverty line.

About 170 million of the rural poor belong to the SC/ST groups of the communities.

The selection of the states under the Dutch cooperation has been rather arbitrary and based on proposals submitted by the Ministry of Finance at that time. Although in the late seventies the Dutch policy was to emphasize poverty alleviation through directing a larger proportion of the aid to projects, at the same time the Indian side resisted project aid and too much donor interventions.

From a political point of view there was for that reason not much opportunity for a careful selection of regions.

A pragmatic approach was followed instead, geared towards maintaining continuity in the built up relations and thus allowing for a gradual introduction of the Dutch policy principles.

Although the states selected under the Indo-Dutch cooperation cannot be classified as the poorest in India, it can safely be assumed that the percentage of poor people living there is, in any case, not less than 25 %.

Most probably the selection of the poorest states, f.i. Rajasthan, Himachel Pradesh or Bihar, under the Indo-Dutch cooperation would not have been favourable in terms of sustainability of the project interventions. This is because the administrative infrastructure in these states is relatively less developed, and the bureaucracies are less receptive for donor involvement with regard to issues related to caste problems and cost recovery f.i.

The Indian government policies for rural water and sanitation do not directly and specifically aim at poverty alleviation. Their purpose is to provide basic services to the people living in Problem Villages, as many and as early as possible. The policies are, therefore, need based.

At the same time there is, however, a definite consideration for the disadvantaged groups in society including the SC/ST's.

This is reflected in government guidelines which emphasize the provision of water supply services to the SC/ST localities with first priority, through the reservation in funding programmes (ARWSS and MNP) of 25 % of the outlays for SC- and 15 % for ST localities.

Also the fact that the water facilities are provided free of cost to the communities is favourable for the poorer sections.

In sanitation programmes like the CRSP, 20 % of the allocated funds is earmarked to provide sanitation facilities to SC/ST's and house holds below the poverty line.

In these programmes the SC/ST members of society contribute to only 5 % of the investment cost of individual latrines (the remainder part state subsidy); other people's contributions range between 10-25 % depending on the number of latrines to be constructed under CRSP.

4.2. PEOPLES PRIORITIES

Water supply projects are being implemented in problem villages, i.e. villages where sources are inadequate in terms of location (beyond a reach of 1.6 km) or of insufficient quality.

The level of priority that people attach to an adequate water supply differs from state to state. Other priorities are employment, irrigation, electricity, roads etc.

On average the priority will be high when water is not easily available as is the case in drought prone areas like Gujarat or in hilly areas where people have to walk considerable distances and line up for fetching it.

Also in those cases where the water is saline or contains high levels of fluoride causing skeleton deformations, as is the case in specific regions in Gujarat, the peoples priority for safer alternatives will be high.

Whenever traditional sources are readily available but contaminated and thus likely to cause diarrhoeal diseases, the felt need for alternative sources will largely depend on the peoples perception of these type of diseases.

Studies carried out by UNICEF, however, have shown that the on average the relation between diarrhoea incidence and inadequate water supplies (and sanitation) is hardly understood. Diarrhoea is still very often perceived as something inevitable, and considered a punishment of the Gods.

Proper education is therefore required to raise the people's awareness for the benefits of good quality water supplies.

The same goes for changing the very low priority that people tend to give to sanitation facilities, i.e. latrines and proper drainage. for this reason the CRSP now recognizes the importance of Information, Education and Communication (IEC) programmes to generate demand for rural sanitation, particularly through the target audience of women and youth at schools.

Under the Dutch assisted programmes these hygiene education programmes form an integral part of the water and sanitation activities through the efforts of programme support units and NGO's.

In those areas where the population density is increasing and privacy becomes a problem (notably for women), the peoples' priority for

latrines will be higher compared with rural areas with a lesser population pressure.

In Gujarat women attach high priority to bathing facilities next to adequate water supplies. The reason is that the majority of them suffer from gynaecological infections due to insufficient privacy in or around the house for bathing.

The installation of water supply facilities at a proper distance often results in a considerable time saving, notably for women. Very often the people are positive towards using this available extra time for household work and income generating activities.

Under the Netherlands assistance the need for income generating activities is being met in some instances (Andhra Pradesh and Gujarat).

4.3. ACCESSIBILITY OF FACILITIES

The accessibility of the facilities installed under the water and sanitation programmes depend on a number of factors including the number of facilities per village, their location and caste relations.

Under the government programme at least 1 safe source is to be provided per Problem Village within a reach of 1.6 km.

People are, however, not easily prepared to fetch water from sources beyond a distance of 150 mtrs. It is therefore likely that, in a situation where the number of improved facilities per village is still limited, parts of the population will for the time being rely on closeby traditional (polluted) sources. In the course of time the number of improved water points per village will increase, however, and consequently the accessibility will improve.

Under the Netherlands assisted programme in f.i. Kerala the per capita investments are higher compared with the regular government programmes. Coverage and subsequently accessibility is, therefore, better.

Government programmes like ARWSP and MNP specifically stipulate that socially disadvantaged groups like SC/ST need to be provided with these facilities with priority. This either implies that these members of communities share a facility with the remainder population or separate facilities are provided for them.

Notably in the situation of shared facilities there is the possibility that in exceptional cases, due to caste problems, the access of SC/ST to the facilities might be problematic.

Such situations are likely to occur in very remote areas where the level of literacy and education is low.

The activities of the programme support units and NGO's in the Netherlands assisted projects are specifically geared towards ensuring the accessibility of the SC/ST members of communities to the water facilities installed.

Also earlier evaluations of Netherlands assisted projects have been instrumental in identifying whether the target population had been properly covered.

From the evaluation of the AP-I projects it followed f.i. that 84 SC/ST hamlets had not received a standpost of their own under the piped water supply programme.

The evaluation of KE-I systems showed that only the sections of the population living in and near the centre of the villages had access to the standposts.

These shortcomings have subsequently been rectified, while also design criteria have been improved.

Sanitation is in principle accessible for all groups of society. The government programmes focus on the construction of latrines for individual households with preferential treatment for SC/ST communities in terms of budget reservations and subsidy arrangements. Considering the fact that these programmes have only recently started and facilities constructed so far are probably to a large extent not being used, the factual coverage is still low.

Government's intentions to increase investment levels for construction and complementary hygiene education programmes will enhance the people's accessibility to sanitation facilities in due time.

Also in the Netherlands assisted programmes the investment levels are low compared to water supply.

Construction activities are complemented with hygiene education through the efforts of programme support units and NGO's.

4.4. USE AND APPRECIATION OF FACILITIES

Water is on average collected by women in the age group of 15-35 years.

The volume of water collected is region specific. In Uttar Pradesh the volume of water collected/household/day equals 256 ltr compared with 120 ltr in Gujarat.

On average 1.5-3 hours daily is spent on fetching water.

The available water points are traditional dugwells, shallow handpumps, surface water and facilities, like deepwell handpumps or public standposts, provided under the government programmes.

The degree to which people make use of the project facilities depends on their functioning, location and appreciation.

As to the functioning of facilities the general picture throughout India is that about 80-90 % of handpumps function, while half of the piped schemes perform inadequate. Unless maintenance schedules will be improved, the prospects for adequate functioning and therefore proper use will become worse in future.

An earlier evaluation of the Gujarat-I project showed that the majority of the beneficiaries use the tap water for drinking water purposes.

The picture in UP-I projects is completely different: here it was reported in an earlier evaluation report that only 8 % of the consumers use the improved facilities for drinking. Several parties have, however, commented that the methodology of this evaluation was inadequate. A recent study on the UP-IV project (March 1992) showed that the percentage of households using the water for drinking purposes, equalled 60 %.

People in Kerala keep relying on traditional wells for drinking water purposes. Only in the dry season when the wells dry up, they fetch water from project taps.

Also evaluations carried out by UNICEF have indicated that, although project taps and handpumps bring better water on average closer to the houses, this does not necessarily mean that people will switch over to the improved supplies.

The principal reason for non-use relates to the inconvenient location of project facilities: even the design distance of 500 mtr, presently used in Government programmes, is too far to effectively compete with nearby traditional sources. Also the salty and mineralized taste of water from deep well handpumps is often disliked.

For being effectively used the project facilities must therefore compete with traditional supplies, in terms of location as well as taste.

Literature is very specific about the fact that improper storage or handling of water in the households creates a risk of contamination and subsequently transmittance of disease.

Broadening the concept of proper use to also the household level therefore requires adequate hygiene education campaigns, complementary to the implementation of construction programmes.

These programmes should be tailored to water handling practices, which are state specific, and directed towards women as main users of water. The important message to be brought across is that handcontact with drinking water during collection, transport and storage must be avoided.

Under the Indo-Dutch cooperation substantial attention is being given to hygiene education in order to raise the people's perception of safe water and the need for proper storage and handling. Attention is notably given to the promotion of long handled ladles for taking water out of storage pots. Furthermore, efforts are made to raise the level of personal, household and environmental hygiene.

The actual use of latrines provided under the departmental programmes is low. This is partly due to their improper and incomplete construction.

In f.i. Uttar Pradesh the superstructures of latrines that are provided through the Panchayat Raj Department do not include a door and roof, while apparently the preparedness of the population to construct these items is hardly present.

Consequently, these latrines are not being used, at least not for the intended purpose.

Apart from the need to speed up sanitation programmes (only 2 % of the population is covered so far), it is required that the people's

awareness for the functioning and benefits of these facilities will be increased through educational campaigns. This is not yet common practice under government programmes.

From our visits to Netherlands assisted sanitation projects in Uttar Pradesh we found the use of latrines to be adequate. Completed toilet facilities and superstructures are being provided to the beneficiaries in the framework of these programmes. Social workers are involved efforts to raise the people's awareness for proper use and maintenance of the facilities.

The majority of the population consider the water facilities as an improvement.

From our discussions with the people in the villages in Uttar Pradesh it followed that the incidence of gastric diseases had decreased while also the workload of women to fetch water had lessened. Subsequently they have more time to engage in other work like childcare or agricultural production. Also hygiene has improved with the improved access to water sources: women and children reported to bath and wash their clothes more regularly.

In the drought prone area of Gujarat villagers faced water problems due to the constant lowering of the water table and desertification. Traditional tube wells are very deep, pumping saline water. Therefore, people very much looked forward to being connected to the Netherlands assisted regional scheme.

In the village visited in Kerala many traditional wells could be observed that reportedly satisfied the need of the people with good quality water throughout the year. Here the appreciation for the project taps is obviously much less compared to Gujarat.

Latrine facilities are appreciated in those areas with a high population density and consequently a lack of privacy.

During our visit to the villages covered under the UP-V sanitation project, notably women and children said to have been greatly benefitted by sanitation. It had added to their feeling of dignity and satisfaction not having to resort to the risks of open defecation.

Whenever water supply is linked to income generating activities of the poorer sections (as is the case in Gujarat), this has led to economic improvement and is definitely being appreciated by the people.

5. SUSTAINABILITY

5.1. INDIAN GOVERNMENT POLICIES

5.1.1. Support of the sector

There is definitely the will to continue government support of the sector. Rural water supply has a high political profile at the central, state and local government levels.

In follow up of the coverage of problem villages, i.e. the provision of at least 1 safe water point per village, the next stage will be to go for saturation. For UP this implies that the number of facilities will be increased until everybody has access to improved facilities based on a coverage of 150 people/pump.

The central government has established appropriate policies which seem more progressive and supportive to an integrated approach compared with the past.

Under The VIII plan the conceptual views are broadened and include cost recovery and community involvement.

In the same time there is a gap between policy formulation at the central level and its implementation through the state authorities. It will require time before the latter have internalized the concept of the integrated approach and consider health education and community participation equally important as the hardware component.

Although sanitation receives much less financial support compared with the rural water sector, the policies are geared towards increasing the number of latrine facilities and improve on its use through the implementation of information, education and communication programmes (IEC).

The guidelines of the Central Rural Sanitation Programme have set the stage to embark on an integrated approach. It is now up to the state and local authorities to translate these policies into practice.

5.1.2. Water management

In the National Water Policy Plan (1988) the planning and management of ground and surface water and its optimal economical and equitable use is considered as a matter of the utmost urgency. It is realized that water is becoming an increasingly scarce commodity and is of vital importance for human and animal life, for maintaining the ecological balance and that it plays an important role in economic and developmental activities of all kinds.

It is rightly pointed out in the policy plan that the success of national water policy will depend entirely on the development and maintenance of national consensus and commitments to its underlying principles and objectives.

One of these principles is that exploitation of groundwater resources should be regulated as not to exceed the recharging possibilities.

In the planning and operation of systems the recommended water allocation priorities are broadly as follows; drinking water, irrigation, hydro power, navigation and industrial and other use.

From the national water policy it also follows that water rates should convey the scarcity value of the resource to the users and foster the motivation for economy in use. The rates should, therefore, be adequate to cover the annual maintenance and operation charges and part of the fixed cost.

Although a water policy exists at the central level, its implementation is not very effective.

This has to do with the fact that at the state level the authorities are still in the process of building up the institutional framework for water management including the relevant legislation.

Crucial for effective water management are adequate data on available resources and rates of depletion.

At the central level the Central Groundwater Board assumes responsibility for mapping the available groundwater resources and monitoring of the groundwater levels. This is done through about 10,000 monitoring stations nation wide.

Also the state authorities assume responsibility for monitoring quality and aquifer depth through a network of observation wells. The number and distribution of these stations, as well as data collection and interpretation can be improved. Under the Netherlands assisted projects (in UP f.i.) attention is therefore given to the training of geohydrologists.

Another consideration frustrating effective water management is the strong farmers lobby. Numerous tube wells for irrigation have been sunk which draw upon the groundwater resources and thus compete with the interests of the drinking water sector.

In a number of areas this certainly contributes to a decline of the groundwater level and subsequently to the drying up of notably private wells for drinking water in the hot season.

Considering the fact that only 25 % of India's groundwater potential is on average being used, the decline is in most cases a temporary phenomena and groundwater levels recuperate following monsoon.

In some areas the decline seems irreversible, however, as is the case in Gujarat.

5.2. FINANCIAL SUSTAINABILITY

5.2.1. Recovery of investment cost

By and large rural people in India consider water supply as a basic amenity, to be provided free of cost by the Government.

Given the importance attached by the people to adequate facilities, the rural water supply sector has a high political profile. For

electoral reasons politicians tend to support the common belief that water is a public service, to be provided free by the government. This explains the considerable involvement of the government in terms of capital investment but also with regard to the operation and maintenance of facilities installed.

By and large capital works for rural water supply are being subsidized to the extent of 100 % by the central and state governments.

Substantial future investments will be required to keep pace with population growth and rehabilitate and upgrade existing facilities. It is realized that government funding alone will not be sufficient to provide adequate service levels in the rural water sector. Therefore, the government's strategy is to consider public contributions and investments (f.i. through the establishment of a national level financing institution) and also make efforts to mobilize funds from the communities/beneficiaries.

For latrines the beneficiaries are required to contribute to the investment cost (in cash or kind) while the remainder part is being subsidized. The amount of subsidy is region specific and is furthermore dependent of the socio-economic status of the recipient (whether or not SC/ST, above or below poverty line).

In UP the SC/ST and below poverty line communities receive 90 % subsidy compared with 75 % for other families.

In Kerala subsidy equals 75 % while the facilities are only being provided to families with an annual income below Rs 6,500 (applicable to 30-50 % of the population).

The subsidy for latrine investments in Karnataka is tentatively fixed at 87.5 %.

In Gujarat below poverty line families receive 86 % subsidy and others 80 %.

The subsidy level for SC/ST communities in Andra Pradesh is 94 % compared with 75 % for others.

5.2.2. Village contribution to O&M cost

The relationship between quality of service, people's willingness to pay/tariff revenues, complementary subsidies and level of maintenance was clearly illustrated during our visit to Allahabad district in UP: Rural water under UPJN in Allahabad district includes 57 piped systems (45,000 HC) and 12,000 handpumps covering 3 million people in 3,514 villages. Dutch assisted schemes comprise 4 out of 57 systems.

The 6 subdistricts of Allahabad are covered by 5 UPJN divisions for the rural areas and 1 division for Allahabad city. Each division consists of an executive engineer and approximately 50 staff, so in total 300 full-time employees and about 1,000 regular workcharge.

Since in the majority of schemes the production capacity is insufficient to maintain pressure in the tail end of the systems, the number of HC cannot be increased, therefore limiting the possibilities for raising tariff revenues. Investment capital to increase the production capacity is not sufficiently available.

The operational cost of UPJN Allahabad consist of 3 Crore Rs/annum for personnel, electricity, chemicals, maintenance of production and distribution systems. Revenues total 1.9 Crore Rs (40 lakh Rs from tariff revenues -based on a flat rate of Rs 10/month/house connection and 90 % collection efficiency- and 1.5 Crore Rs State subsidy). The deficit is made up by saving on maintenance expenditures, a.o by not paying the electricity bill; the arrears in payment to the electricity company amount roughly Rs 60-70 Lakh. People are not prepared to pay f.i. Rs 25/connection/month since the quality of the service is considered substandard.

The general impression is that underfunding for O&M of handpumps and piped schemes is common practice in India.

Norms for the annual O&M expenditures are issued by Central Government, i.e. 4 % of the capital cost investments (1 % for special repairs like replacement of lines and pumps, and 3 % for preventive and breakdown maintenance covering expenditures for energy, chemicals and establishment cost).

Variations exist however, f.i. as per the norms the annual O&M expenditures for schemes in hilly areas equal 5 % of the investment cost.

Annual expenditures for O&M in the Netherlands assisted Santalpur scheme (Gu-I) is equivalent to 3 % of the investment cost.

The practice of calculating maintenance budgets on the basis of centrally fixed norms is not likely to result in accurate and scheme specific estimates. Estimates do also not take into account depreciation of assets.

It is not uncommon that, due to insufficient revenues and government subsidies, the allocations do not match the requirements.

F.i. in UP Rs 400/annum is available for the maintenance of a handpump, while twice the amount is actually required.

The budget requirement for O&M of all rural water supply systems in UP amounted Rs 260 million in 1987, while Rs 160 million was made available.

The budgets available to UPJN under the VIII Plan for the O&M of rural water supply facilities are in the order of Rs 80 Crore, while actual requirements are estimated to be Rs 175 Crore.

The amount central government makes annually available for O&M equals 10 % of the investments under the Accelerated Rural Water Supply Programme; this is in addition to the state subsidies and revenues from house connections which are collected by the state water agencies; furthermore in some instances (Gujarat and Kerala) Panchayats have to contribute for the use of water from taps and handpumps.

The ratio of government subsidy/consumer revenues is region and scheme specific.

For public taps and handpumps the impression is that hardly any money is being collected.

Only recently Panchayats in Kerala are required to pay Rs 875/tap to the water authority.

Also in Gujarat the Panchayats should collect and pay Rs 5/household/annum to the water board. Although people are considered able to pay for the water, revenues are not being collected because local government's attitude is too lenient. In other cases revenues are collected, but the Panchayats block the transfer of the funds to the state government.

The maintenance of handpumps and regional piped schemes provided with standposts only is thus entirely subsidized by the central/state government.

Handpumps and standposts are still very much looked upon by the people as government owned facilities for which the latter is also expected to bear the maintenance cost.

From our visit to Varanasi district in Uttar Pradesh it showed that tariff revenues from house connections contribute to roughly 30 % of the maintenance expenditures:

Expenditures/revenues of the 8 Netherlands assisted piped schemes under UP-I in Varanasi district read as follows:

Annual revenues:

Tariff income : Rs 7.5 lakh
Subsidy : Rs 25 lakh

Annual expenditures : Rs 32.7 lakh

- 27 % electricity
- 50 % establishment cost
- 16 % maintenance of tanks, lines etc.
- 5 % chemicals
- 2 % transport

For proper maintenance of the facilities installed, about twice the annual budget (Rs 60 Lakh) would, however, be required.

From this example it also shows that establishment cost constitute a large proportion (50 %) of the overall maintenance cost. The centralized maintenance setup (overhead) definitely contributes to this.

House connections are appropriate to improve the revenue base of piped schemes. Although the policy under ARWSP funded schemes is to go for standposts only, the Netherlands policy now stipulates schemes to be built with a certain ratio of standposts and house connections, which is an adequate approach.

Under the Netherlands assistance there is also preference for metered house connections.

In 1984, under the UP-IV project, water meters have been installed already but the majority of them subsequently broke down and people were charged a flat rate of Rs 10/HC/month. Recently new meters have been installed again in order to increase revenues and limit wastage of water.

We found a strong opposition against the concept of metering house connections in rural areas. The state water agency in UP argued that

it would involve considerable investments (for installing meters) and also would add to staff requirements (for meterreading and repair). Also the people we spoke to in Ahladganj village, which is served under the UP-IV project, opposed metering for the following reasons:

- * comparative partiality in the public service delivery system (flat rate system in all other, non-Dutch funded, piped water schemes, particularly in the neighbouring villages);
- * payment for meter charges in rural areas is unjustified taking into account the low economic status;
- * metering system may not last for long in view of cost for maintenance;
- * metering HC is a type of disincentive as to discourage the poor and future beneficiaries.

From our discussions with government officials they realized that the maintenances expenditures on present systems are inadequate and will ultimately result in deterioration of the services. New systems will only aggravate the maintenance burden. Given the fact that government budget constraints will not be lessened, it is realized that a substantial community share in O&M responsibilities and improved cost recovery are the only ways out. This is reflected in the eight Plan that indicates the government's intention to attract private capital for investments and make efforts to mobilize funds from the communities/beneficiaries.

In view of this gradually changing political climate, we recommend that Netherlands projects will support the government in developing and testing approaches that result in financially viable systems.

In this regard it is advisable that future investment decisions will be based on the outcome of socio-economic surveys during which the willingness and ability of the people to pay for the services has been assessed.

To improve cost recovery furthermore requires the communities to be involved to a larger extent in planning, design and O&M of systems as is presently the case. Developing and testing approaches for community based low cost systems should therefore be taken up with priority.

The present approach under the Netherlands assistance towards designing financially viable systems through a certain ratio house connections and taps must be pursued.

Also the concept of metering house connections should be applied on a wider scale. Despite the objections raised against metering, we feel that this is the only appropriate way to limit the excessive water use and raise revenues proportional to consumption.

Augmentation of completed Netherlands assisted schemes (f.i. UP-I) should be seriously considered, since this will improve the quality of the services and therefore increase the preparedness of the people to pay for the water.

In the framework of human resources development projects the state water agencies should be supported in developing adequate maintenance management systems, covering technical and financial/administrative aspects.

The provision to the community of more conveniently located water points will lessen the burden of women to fetch water. The time thus saved can be spent on income generating activities. Under the Netherlands assistance activities in this sense have been set up in Gujarat and Andhra Pradesh. These projects contribute to the people's capacities to pay for the water and should be continued.

The maintenance of latrines provided to the beneficiaries is considered their own responsibility.

5.2.3. Future investments

It proved to be rather difficult to collect, within the time available, relevant data on investment levels and O&M budgets for the rural water and sanitation sector under the VIIIth Plan. One of the reasons was that the Plan was still under preparation.

Furthermore, available data on O&M expenditures under the VII Plan period are difficult to compare. Depending on the State concerned they cover specifically rural water supply (Uttar Pradesh), urban and rural water supply (Kerala) or expenditures for regional piped schemes only (Gujarat).

Nation wide the outlay under the VIII Plan for investment in the rural water supply sector equals Rs 11,400 Crore (compared to Rs 4,384 Crore expenditures under the VII Plan).

In Uttar Pradesh the provisions/expenditures under the VII and VIII Plan read as follows (Rs Crore):

	<u>RWS</u>	<u>UWS</u>	<u>USan</u>	<u>Total</u>
VII prov.	432	156	15	
exp.	456	109	11	477
VIII prov.	575	320	90	985

RWS : Rural Water Supply
UWS : Urban Water Supply
USan : Urban Sanitation

O&M provisions for the rural and urban water and sanitation sector will go from Rs 65 Crore under the VII Plan to Rs 117 Crore under the VIII Plan, out of which Rs 80 Crore is earmarked for maintenance of rural water supply facilities. The actual maintenance requirements in the period 91-95 for the rural water supply sector are estimated to be Rs 175 Crore, however.

Investment levels in the urban and rural water/sanitation sector are about 3 % of the VIIIth Plan outlay.

In Gujarat the provisions/expenditures for the urban and rural water and sanitation sector read as follows (Rs Crore):

	<u>RWS</u>	<u>RSan</u>	<u>UWS</u>	<u>USan</u>	<u>Total</u>
VII prov.	159	0.7	40	62	263
exp.	207*	1.4	39	43	280
VIII prov.	315	15	40	42	412

RSan: Rural Sanitation

* Apart from the regular budgets (ARWSP and MNP) Rs 360 Crore has been spent on scarcity measures due to drought conditions.

The total outlay for the VIII Plan is about Rs 7,250 Crore; the share of the urban and rural water and sanitation sector thus equals 6 % approximately.

The O&M expenditures for 270 regional piped schemes covering 3,000 villages (including 3 Netherlands assisted schemes covering 250 villages) read as follows:

<u>Year</u>	<u>O/M expenditures (Rs Crores)</u>
88/89	5.7
88/89	8.7
89/90	10.1
90/91	12.4

O/M expenditures are completely covered by state subsidies.

For Kerala the expenditures/provisions under the VII and VIIIth Plan for investment in the rural water and sanitation sector are (Rs Crore):

	<u>RWS</u>	<u>RSan</u>	<u>UWS</u>	<u>USew</u>	<u>OSch</u>	<u>Total</u>
VII	124	3	24	9	36	196
VIII	164	5	228	15	-	412

USew: Urban Sewerage

OSch: Other Schemes

O&M expenditures for urban and rural water supply in subsequent years read as follows:

<u>Year</u>	<u>O/M expenditures (Rs Lakh)</u>
85/86	988
86/87	1,180
87/88	1,306
88/89	1,467
89/90	1,607

From the above it follows that under the VIII Plan the government's capital investments in the rural water and sanitation sector have increased compared with VII Plan.

The same goes for O&M expenditures of which the levels are, however, not sufficient to carry out adequate preventive and curative maintenance.

Figures given represent current prices, however, and thus do not take into account inflation, which is considerable in India.

5.3. SUITABILITY FOR TECHNOLOGICAL INTEGRATION

5.3.1. Functioning

The proper functioning of water and sanitation facilities depends on their design, installation and adequate maintenance.

The design of the India Mark II handpump, the main deepwell handpump used throughout India, is well thought of. From site observations the construction proved to be adequate, including sufficient provisions for the drainage of spill water.

Although underfunding of handpump maintenance is very likely, this has so far not yet resulted in massive breakdowns. About 80-90 % of the pumps are reported to still function adequately, because they are relatively new. This was confirmed during our visits to handpump projects in Uttar Pradesh (UP-III and UP-VI).

The functioning of the piped systems is inadequate. From earlier evaluations of Netherlands assisted projects it followed that of the AP-I schemes less than 50 % functioned adequately.

In Gujarat the functioning of the Santalpur scheme is endangered on the long run by the ever declining water tables. Furthermore, an earlier evaluation reported substantial leakage (during our visit confirmed to be 30 %) which contributes to low pressure in the system, while residual chlorine in the village taps was low and tap drainage could be improved.

From the evaluation of UP-I projects it followed that piped systems were out of order at least 1 time per month, for an average duration of 2 days. Power failures which are a regular phenomena in India are mainly responsible for the frequent interruptions in the supply.

During our fieldvisits, the people living in villages which are covered by piped supplies provided under the UP-I and UP-IV projects, also reported that electricity failures or low voltage caused frequent disruption in the water supply. Also leakages in the distribution were a common phenomena.

Furthermore, the systems operate only during a few hours in the morning and the afternoon. Consequently people tend not to disregard traditional supplies for drinking water purposes.

Because inappropriate population figures have been used during design, the installed production capacity of many piped schemes in UP is already fully used. As a consequence, due to the low pressure, notably the tail end users can hardly be supplied with sufficient water.

The fact that systems in UP have been designed for 24 hours supply, but actually operate roughly 6 hours/day, also does not contribute to a proper functioning.

In Kerala we found that the production units of Netherlands assisted schemes have been connected (for the time being) with distribution networks of existing systems..

During our visits to UP and Gujarat we observed the upkeep of facilities at the village level to range from poor to adequate.

The 1989 evaluation of UP-I schemes showed that out of the standposts surveyed, roughly half of them had its taps damaged or missing. This picture was more or less confirmed during a study of the UP-IV project, carried out March 1992.

Sanitation facilities, i.e. latrines, constructed through Panchayat Raj Department in UP (200,000 units) definitely do not function as such. Due to the very poor and incomplete construction they are being used by the community as a storage facility or as a resource for building materials.

Latrines constructed under the Netherlands assistance in a small number of villages in UP made a much better impression in this respect, while people were clearly motivated to maintain the facility.

5.3.2. Availability of spare parts

By and large all system components under the Netherlands assisted schemes have been procured in India.

On average all parts are available in the state where the projects are implemented. Some materials must, however, be procured in other states, as is f.i. the case with ceramic pans used in latrines and the selfclosing taps applied in public standposts.

Although the supply of materials was sometimes reported to be irregular this has had not adversely affected the functioning of schemes.

Quality control of the spare parts should become an important issue in the discussion about decentralization of the maintenance systems. Presently the state level authorities are responsible for the maintenance of handpumps and piped supplies and therefore centrally arrange for the spare part supply and keep track of the quality. In case maintenance systems will be decentralized to the Panchayat level, as is being considered for handpump facilities in UP, this implies that the local level will become responsible for the procurement of spare parts and ascertain its quality. Decentralization of maintenance therefore requires concurrent training to raise the competence of the local level to deal with these issues.

5.3.3. Appropriateness of the technical facilities

Selection of system's technology is governed by factors like water resources, water demands, peoples preferences, terrain conditions,

population density, service level, available finance for capital investments and O&M requirements.

In UP the strategy under the Netherlands assisted projects is to go for handpumps whenever the geohydrological conditions so permit, in other cases piped systems have been implemented. We consider this approach to be adequate.

Under the Netherlands assisted projects in Gujarat groundwater is abstracted in a specific area and supplied through large regional piped schemes. This is appropriate given the fact that the local groundwater sources in the supply areas are inadequate in terms of quantity (desert like area) and quality (high fluoride contents).

In Kerala the strategy of the Kerala Water Authority is also to go for piped schemes. In some cases this is appropriate, notably in coastal areas with brackish groundwater and when serving villages with an urbanized character.

Kerala in the same time is reported to be a state with an abundance of private shallow dug wells. According to KWA officials it is, however, not in their mandate to improve on the quality of these wells through adequate protection arrangements.

It is therefore likely that piped schemes are being implemented in villages where improved dugwells would also have served the purpose of an adequate water supply.

The programme support units have an important role in screening the appropriateness of villages to be connected to the piped systems, using the established water need as a selection criterium.

We consider it useful to broaden the scope of future Netherlands assistance towards also covering the improvement of the quality of existing dugwells.

Under the Netherlands cooperation programme latrines are being constructed, be it yet on a modest scale.

The systems technology, i.e. twin pit pour flush latrines, is not appropriate from a financial point of view. The investment cost/unit read as follows:

<u>State</u>	<u>Investment cost/unit (Rs)</u>
Uttar Pradesh	4,300
Gujarat	2,700*
Kerala	2,200

* Cost of one latrine unit implemented through IBRD assisted project. Under the Netherlands assistance latrines inclusive bathing facilities are being built in 2 demo villages in Banaskantha district at a cost of Rs 3,800/unit.

Presently these facilities are being constructed with heavy government subsidy, 50-95 % depending on the caste and/or socio-economic status of the beneficiaries. It is, however, unlikely that government budgets will ever be sufficient to cover large parts of the population on the basis of present financing arrangements. Replicability then becomes doubtful. We therefore recommend to

experiment under the Netherlands assistance with lower cost alternative technologies.

As in rural water supply people should be put in a position to make a choice out of a number of pre selected alternatives and be stimulated to contribute to a larger extent in the investment cost of the facilities.

The investment levels for latrine units in Uttar Pradesh are highest compared to Gujarat and Kerala f.i.

Although the quality of these latrine structures in UP is excellent in itself, they by far outweigh the quality of neighbouring housing units. We therefore recommend to relax design criteria and go for low cost options.

The provision of latrines combined with bathing facilities in Gujarat clearly satisfies a felt need of the female members of the village communities: due to insufficient privacy a large part of them suffers from gynaecological infections. Adequate bathing facilities were therefore given the highest priority next to water supply.

5.4. ORGANISATIONAL CAPACITY

5.4.1. O&M

Adequate operation and maintenance of the facilities installed requires competent people and sufficient financial resources organized in an effective manner.

Viewed against these criteria, there is substantial room for improvement of O&M practices in the rural water supply sector.

On average financial resources are hardly sufficient for proper maintenance. As has been described before the performance of piped systems is already clearly suffering from this.

An impediment for a proper management of the water supply operations is the insufficient mandate of management of the implementing agencies to recruit and deploy staff because of political interference (unions f.i.). Furthermore, budgets are curtailed and proposals to increase tariffs are compromised on. Politicians and bureaucrats are thus overpowering technocrats, which results in a situation that the latter tend to seek the path of less resistance. Overstaffing, nominal paid staff, pilferage and corruption hamper the task of management to go for an adequate operation. Nevertheless systems are kept running as good and bad as possible in those cases where management is able to take a stiff attitude against the bureaucrats. This is a delicate balance, however, since maintaining a too stiff attitude easily results in a transfer to another position.

Apart from these institutional constraints we feel in the same time that O&M has a low status in the state water agencies.

It is f.i. not common practice that implications for O&M, in financial or organizational terms, are already considered during the design stage.

Also the establishment of proper procedures for O&M of systems is not usual. The executive engineer of the Santalpur scheme in Gujarat was happy to show us 1 manual (only) which was prepared with the assistance of a Dutch expert.

State water agencies like UPJN are a government undertaking instead of a department. This requires these organizations to earn money in order to operate on a cost neutral basis. We have the impression that in this respect the design and supervising the construction constitutes a more attractive source of income, compared with maintenance activities. In the case of construction projects the organization is allowed to charge 4 % of the investment cost for project preparation and 15 % for construction supervision. On average a UPJN division is required to make an annual turnover of Rs 1.5 Crore to recover on average 30 lakh establishment cost.

Furthermore, we found that the district level organizations of the implementing agencies have tremendous responsibilities but lack sufficient mandate to run the water supply systems in a business like

manner. They are dependent on central and state governments regarding criteria for preparing O&M budget estimates, approval of tariffs etc.

Also the bureaucratic centralized set up of the state water organizations is an impediment for effective maintenance management.

There is an ongoing discussion to involve local level authorities in the O&M of water supply facilities. The extent to which this has materialized differs from state to state:

In Uttar Pradesh UP Jal Nigam is responsible for the O&M of piped and non-piped facilities.

For the maintenance of the handpumps UPJN has a decentralized system in place. At the village level so called runners will every fortnight check the performance of each pump and carry out preventive maintenance and do minor repairs (greasing chains and tighten nutbolts). In case of breakdowns these runners will call upon the services of a maintenance team at the block level consisting of 1 mechanic and 3 helpers. The handpump maintenance organisation of UPJN in Allahabad district f.i. includes 300 crews of 4 people each that are responsible for the maintenance of 12,000 handpumps in 3,500 villages. On average the time that elapses between the breakdown of a pump and repair is about 3-4 days. Further more also village officials, through the so called post card system can call upon the services of the maintenance team.

At the policy level it is presently being considered to decentralize the maintenance of handpumps to the Panchayats. In 1984 this has been tried already, but subsequently became a failure. It is now realized that the capacity of the local level authorities needs to be strengthened to receive this responsibility. Substantial efforts are therefore required to raise their ability in the maintenance of handpumps, arranging for regular payment of the mechanics and organizing the supply of spare parts.

Under the Indo-Dutch cooperation female handpump mechanics have been trained on a pilot basis in Allahabad. Furthermore, a start has been made to establish village water committees (Jal Samiti's) that a.o. look after the cleanliness of water points and liaise with the technical staff for timely repairs.

In Gujarat the water board at the state level and the Panchayats bear responsibility for the O&M of water supply systems:

Type of scheme	Nr	responsible for O&M	villages
pipid schemes	5,000	Panchayat	5,000
wells (rehab)	800	community	800
handpumps	4,200	GWSSB	4,200
regional piped	270*	GWSSB	<u>3,000</u>
			13,000

* Out of which 3 NA schemes covering 250 villages (10 %); no other donors involved in regional schemes.

All above schemes have been implemented by GWSSB, and the O&M for individual piped schemes resp wells has been transferred to the Panchayats resp the community. Although handpump maintenance is currently under GWSSB, this will in due time be transferred to the Panchayats as well.

Under the Netherlands assisted projects the concept of village based water committees or Paani Panchayats has been developed; this set up will be applied on a wider scale throughout Gujarat. The village committees share the responsibility for the O&M of the regional piped systems with the lines man (looking after blockages of pipes) and the GWSSB engineers at the division level.

In Kerala the previous experiences with decentralization of maintenance systems for urban water supplies to the corporations and towns has been disappointing; presently the state water agency (KWA) is fully in charge again.

Under the Netherlands assisted rural water projects, ward water committees (wvc) are being established at the village level. The wvc is chaired by a representative of that particular ward in the Gram Panchayat (elected village council). The wvc in turn selects a standpost committee out of which a standpost attendant is selected who is responsible for the reporting of leaks and looks after the cleanliness of the standpost surroundings.

From the above it follows a.o. that previous experiences with delegating maintenance responsibilities to the Panchayats has not been a success. The original situation was therefore put back in place again. To lessen the financial and logistical constraints of the state water agencies, the delegation of maintenance responsibilities is again under discussion. We feel that this should go hand in hand with the adding of powers and resources to the local level. F.i. it would require Panchayats to have a say in the type of system they are supposed to maintain. Furthermore, they should be strengthened to run the systems in a competent manner from a technical and financial administrative point of view.

The maintenance of latrines is a responsibility of the individual families who own the facility

5.4.2. Planning and implementation

The state water organizations can be considered adequate for water supply planning and implementation insofar as technical aspects are concerned.

Project departments are responsible for the implementation of area and source surveys and the preparation of consolidated designs. Works departments subsequently cover tendering and contracting for material supplies and civil and electromechanical works as well as construction supervision.

Planning of water supply systems can be characterized as a top down approach, based on fixed design criteria with hardly any involvement of the community. People are consequently not motivated to maintain the facilities and pay for the service, they consider that a government responsibility.

Rehabilitation of traditional supplies or the construction of protected wells is beyond the scope of the agencies. Further more attention for maintenance management is insufficient, as is also the case for performance monitoring of completed schemes.

In the framework of Netherlands assisted projects, the activities of the programme support units are geared towards involving the people in the siting of taps and train them to share a maintenance responsibility with the state water agencies.

We recommend the communities, however, to be involved in earlier stages of the planning process, notably when it is the intention that they are to contribute to a large extent to the cost of O&M.

The decision to start Netherlands assisted projects should be preferably be based on the outcome of thorough surveys that will assess the absorption capacity of the Panchayats to receive facilities that are appropriate for them in technical and financial terms.

Basically this implies a shift from the present top down Problem Village Approach into a bottom up, demand driven approach. The latter will result in the construction of facilities that are tailored to the needs and capabilities of the local level, with subsequently better prospects for sustainability.

Planning and implementation of sanitation facilities is scattered over several ministries and departments.

In Uttar Pradesh the responsibility rests with the Panchayat Raj Department that is not able to perform adequately, however, with regard to the technical and the sociological aspects of the programmes. Under the Netherlands assistance programme in UP the responsibility for sanitation has been delegated to UPJN, which turned out to work out much better.

In Gujarat NGO's are involved in sanitation programmes, while in Kerala the construction is done through the Panchayats under supervision of the Netherlands financed programme support units (SEU).

Also planning for sanitation facilities has thus far been along the lines of a top down approach, with a major focus on the construction of latrines based on the twin pit pour flush design.

Unlike the water supply programme, the present guidelines under the Central Rural Sanitation Programme provide more room for the involvement of the communities in an early stage of the planning process.

We therefore recommend that under the Netherlands assistance future investments in the sanitation sector will be based on the outcome of community surveys to assess the people's preferences for the type of facility and their contribution to investment cost in cash or kind. Also efforts should be made to develop and test least cost sanitation options.

5.4.3. Training

Under the Netherlands assisted projects initial steps have been taken towards institutional development and training at the level of the state water agencies and the Panchayats.

Employees of the implementing agencies (AP and Gu) have been sent on a regular basis to technical training courses in The Netherlands. Furthermore, they have participated in regional workshops related to the role of women (UP, Ke, Gu and AP) and community participation in relation to handpumps (Ke, UP).

The water agencies have liaised with the programme support units and NGO's in the preparation of hygiene education materials.

UPJN has been assisted in developing a manual on handpump maintenance and GWSSB received assistance in the preparation of a manual for O&M procedures for the regional Santalpur scheme.

In UP, Ke and Gu procedures have been developed for the establishment of village water committees.

The counterpart organizations in AP has been assisted towards implementing a strength/weakness analysis of its own organization and come fore ward with suggestions for follow up action (Object Oriented Planning Approach, OOPP).

Furthermore, GON assists in the development of a cell in the Rural Health Department to support the International Training Network (ITN) project. The latter's objective is to promote the appreciation and the implementation of low cost water and sanitation approach.

At the level of the Panchayats programme support units and NGO's support the establishment of water committees with a responsibility in O&M of the water facilities (notably handpumps) and implement training of mechanics and caretakers. Furthermore, they develop a village based network of facilitators and train them in the implementation of hygiene education campaigns.

We appreciate the interventions and importance given to human resources and institutional development aspects under the Indo-Dutch cooperation.

We, however, recommend that future activities will be carried out in the framework of comprehensive HRD plans, prepared for each state in advance.

In our opinion the state water training institutes are the appropriate counterparts for programming, planning and implementation of these activities.

The Jal Seva Training Institute in Gujarat f.i. has a mandate to provide in house and field level training. There are 2 class rooms and residence accommodation for 100 trainees. Training covers technical and finance/administrative aspects for management, middle level and operational staff from GWSSB staff or local bodies. The institute also coordinates the enrolment of GWSSB trainees in courses elsewhere (f.i. the Institute for Management Administration in Delhi).

In UP the Training Centre of UP Jal Nigam is responsible for institutional strengthening of organizations that work in the field of water and sanitation in that state.

At the level of the implementing agencies the focus should be on developing their capabilities to plan, implement, maintain and monitor the performance of water supply and sanitation facilities in close collaboration with the communities.

Areas of attention include the development of design alternatives and their optimization taking into account the O&M requirements in organizational and financial terms, improvement of traditional supplies, strategies and procedures for community and women involvement, concepts of community management in relation to maintenance and maintenance financing, decentralization of maintenance organization, performance monitoring and MIS development. During our discussions with field based executive engineers they expressed the need for an exchange of experiences gained under the Netherlands assisted projects with their colleagues employed in other regions and projects. In the framework of HRD projects this could materialize through arranging for field visits and seminars.

We also feel that the water programme will benefit from an exchange of experiences between representatives of the various state water agencies.

Enhancing the communication skills of the field based engineering staff was another area proposed to be covered under future HRD activities in UP and Gujarat.

Finally we feel that institutional development efforts under the Netherlands assistance should be supportive towards linking the activities of the implementing agencies and the other departments like Health and Social Welfare that are (to become) responsible for non-technical aspects of the water and sanitation programmes.

HRD activities could be implemented through in house training courses and the implementation of pilot projects with a focus on the development of community based systems.

Besides The Netherlands also other donors are involved in strengthening the capabilities of the water agencies. Under IBRD assistance f.i. a number of manpower development studies have been carried out for the Kerala Water Authority. These include: training need assessment, MIS development, cost/revenue analysis and the development of an accrual accounting system. We recommend to consider the possibilities for co-financing of HRD/ID activities.

At the level of the Panchayats efforts should be geared towards increasing their capacities to plan, implement and operate and maintain water and sanitation facilities and sustain hygiene improvements. This can be effectuated through pilot projects in selected areas to develop and test approaches for community based systems.

We consider the Netherlands assisted programme support units and other departments like Health and Social Welfare appropriate to be key facilitators in this regard.

5.4.4. Integrated approach

Under the Indo-Dutch cooperation the integrated approach is said to cover also "community participation and involvement of women in local planning, design, construction, O&M and evaluation of facilities/services".

We feel that the top down oriented Problem Village approach which is currently in use for the planing and implementation of water supply facilities, actually gives very little room to involve the communities to a meaningful extent. Although programme support units do their best to involve communities in the siting of taps and train them in sharing maintenance responsibilities with the state water agencies, this does not take away the fact that the principal decisions regarding coverage and type of system have already been taken without consulting the people.

If the concept of the integrated approach is really to be adhered to this would imply a drastic shift in the way projects are being planned.

One of the options would be to go for an area based approach instead. Panchayats would then be given the opportunity to express their willingness for improved water and sanitation facilities and come forward with their preference for certain technology options, the level of service, their financial contribution towards investment cost and O&M, the organisation of maintenance and cost recovery, the formation of village cadres for hygiene education etc. The number of technology alternatives is of course region specific.

Considering the fact that it is within the mandate of the Technology "mini" missions" to come forward with sector innovations, we recommend that these experiments with bottom up planning for water supply and sanitation might be developed in close cooperation with them.

Presently the non-technical interventions are done through the Netherlands financed programme support units and NGO's that cooperate with the implementing agencies.

In our view it is important that, in order to make the integrated approach replicable and sustainable, other departments like Health and Social Welfare will become involved in the planning and implementation of these programmes.

We do not recommend that the state water agencies will take over the responsibility for community development and hygiene activities, since their prime function is to design and supervise the construction of water and sanitation facilities. From our discussions with the agencies they expressed willingness to enter into a dialogue with the other departments like Health and Social Welfare to consider the possibilities for cooperation.

Also at the central level the climate is gradually becoming more conducive for a multi disciplinary approach.

This follows f.i. from the Central Government Orders, dated March 1989, to establish coordinating committees at the various administrative levels in order to facilitate the integrated approach for water and sanitation. We recommended that the Netherlands assistance will be directed towards strengthening these coordinating bodies in their performance, notably at the district and village level.

Also the guidelines under the current Central Rural Sanitation Programme stress the implementation of water and sanitation programmes together with Information, Education and Communication (IEC) campaigns through a cooperative effort between several departments.

In our opinion the type of nodal agency that will assume responsibility for coordinating the inputs of several departments is very important.

In the Dutch assisted states like UP, Gujarat and Kerala the state water bodies act as counterpart in the cooperation programme. Taking into account their size and the fact that major part of the finances will remain to be disbursed through them, creates the risk of a continued dominance of technical aspects during planning and design of water programmes.

The feasibility of the integrated approach would be enhanced if the nodal agency would operate from a neutral position. Basically that was one of the reasons why at the central level the responsibility for rural water and sanitation sector was shifted in 1984 from Public Works to the Rural Development Department.

The possibilities for integration are better in f.i. Maharashtra (ODA); here the Rural Development Department acts as the nodal agency and coordinates the technological inputs of the Maharashtra Water Supply and Sanitation Board, hygiene education of the Ministry of Health and community development through NGO's.

Appreciating the constraints for cooperation between vertical operating departments it is in the same time not necessarily true that f.i. Panchayat Raj, Health and Social Welfare departments are

eagerly waiting to become involved in the water and sanitation sector. Most probably they will have full agenda's already considering their activities in rural employment-, family planning- and immunization programmes.

This implies that these departments need to be supported under the Netherlands assistance in developing their capabilities in areas that are relevant for an integrated approach towards water and sanitation programmes.

5.5. PEOPLES PARTICIPATION

5.5.1. Involvement in planning, implementation and O&M

On average there is, for reasons outlined in the former paragraphs, a low level of direct involvement of the local population in the preparation, planning and operation and maintenance of water and sanitation facilities.

Peoples participation under the Netherlands assisted projects is mainly brought about through the activities of the programme support units and NGO's that a.o cover:

- * community involvement in site selection of taps and handpumps
- * establishment of village water committees that are to look after the cleanliness of the surroundings of waterpoints, liaise with the implementing agencies for repairs or carry out the repairs themselves.
- * village development activities a.o. through income generating projects; examples are f.i. diary and silk cooperatives in Gujarat and Andra Pradesh.
- * development of village based networks that play a role in raising the population's awareness about personal hygiene issues.

Apart from the direct benefits for the beneficiaries, the activities of the units also serve the purpose of demonstration in the sense that the implementing agencies are gradually becoming aware of the value of adequate community involvement.

Given the staff constraints of the programme support units and the size of the supply areas their coverage can only be limited. Replication on a wider scale, but also the sustainability of the project interventions, is very much dependent of the involvement of other governments departments with regard to village level development activities.

The coordination committees at the block and village level are important to enhance the involvement of these departments but also to provide a channel for dialogue between the government administration and the people in the villages. We consider the programme support units appropriate to strengthen the functioning of these committees.

Changing the hygiene attitudes of the people and involving them in a meaningful manner in the operation and maintenance of water and sanitation facilities cannot be realized overnight. In that regard

we recommend village development activities to be extended well beyond completion of the technical interventions.

It is notably important to monitor the performance of the village organizations that have been established under the projects to assume responsibility for hygiene education and O&M of the water and sanitation facilities installed.

F.i. the establishment of village water committees or Paani Panchayats in Gujarat can be considered as an important, but only initial step towards involving the people. Follow up support is required to define their mandates and responsibilities, and establish their relation with the Panchayat as the body of elected representatives. To guide the process of organizational development of the Paani Panchayats requires proper performance monitoring and the rendering of remedial support if required.

5.5.2. Peoples preferences/requirements

The selection of villages that are to receive improved water supply is decided at central level through the Problem village approach. Also the type of systems and design criteria are to a large extent standardized. In that sense the preferences of the people are hardly considered.

Under the Netherlands assistance in Kerala the socio-economic units, however, refrain from siting taps in villages in case it appears that people do not actually need water of project facilities.

Community preferences are also taken into account insofar site selection of water points (handpumps and taps) and the provision of house connections is concerned.

As to sanitation it seems that government programmes have so far not taken into account the views and attitudes of the people. This is demonstrated by the fact that a large part of the latrines which are constructed through Panchayat Raj in UP are not being used.

The present guidelines under CRSP, however, stipulate that latrines will only be provided in case of an expressed need by the people.

The same criterion is used under the Netherlands assisted latrine programmes.

5.6. ECOLOGICAL CAPACITY

5.6.1. Projects in vulnerable areas

Because of the size of the country there is a large variation in rainfall patterns in India. Annual rainfall in Kerala is in the order of 3 mtr annum compared to 400 mm/annum in the desert areas of Gujarat.

In course of time the abstractions from ground and surface water resources have increased in rural areas. Compared with the demands of the irrigation sector, the abstractions by the water supply sector are only marginal.

It is estimated that presently about 25 % of India's groundwater potential is being used.

The abstractions by the irrigation sector can cause a temporary lowering of the groundwater table, as a result of which tube wells for water supply will go dry during summer.

By and large, however, the groundwater levels will recuperate following monsoon, with the exception of certain areas where the decline is irreversible, as is the case in Gujarat.

Surface water abstractions by the irrigation sector in Kerala cause problems of saltwater intrusion. To allow for an uninterrupted operation of the piped water supply systems, coordination between the Kerala Water Authority and the Irrigation Department is required.

Out of the states visited, UP and Kerala cannot be declared ecologically vulnerable areas, at least not from the viewpoint of sustainability of water resources.

The situation in Gujarat is, however, completely different. In the Netherlands assisted Santalpur scheme in Banaskanta district groundwater levels are reported dropping down approximately 3 meters per year, the main reasons being erratic rainfall coupled with uncontrolled abstractions by the irrigation sector. Also the fluoride levels in the groundwater show an upward trend, sometimes two times higher than the permissible level of 1.5 ppm.

Special technologies, like the construction of a radial well in Banas river, have failed to cope with continuous lowering of the water table. It is now planned to construct an underground checkdam across the river bed to retain as much as possible groundwater.

Despite these efforts the prospects are very gloomy: it is very likely that after a period of 10-15 years the present ground water sources for the Santalpur regional scheme will have been depleted.

To satisfy the water needs of irrigation and water supply in the future, a huge dam is under construction in Narmada river (IBRD assisted Sardar Sarovar Dam) as well as network of canals of a total length of 43,038 km spread over the state of Gujarat.

Critics of the project report the dam project to have serious consequences, a.o. the displacement of 300,000 people, damage to natural environment through submergence of 55,000 ha of forest lands, the destruction of fisheries and agriculture downstreams of the reservoir, destruction of habitat of wildlife, increase of water borne diseases like malaria and filariasis and waterlogging and salinization of the soil; also the critics report the project not to be economically viable. As an alternative to the dam construction they recommend control of agricultural water use (a.o. through regulating abstractions and cropping pattern), investment in watershed development tanks along main rivers, investment in urban industrial water recycling, control of domestic urban water use (metered connections and progressive tariffs) and the development of natural gas based power instead of hydro electric power.

5.6.2. Effects of projects on the environment

Without adequate drainage facilities the spill water from water points can cause stagnant pools that are a breeding place for

mosquito's and thus contribute to the transmittance of insect vector related diseases like malaria and filariasis.

Under the Netherlands assisted project provisions for drainage are covered under the designs. Their adequacy is very much dependent on quality of construction and local topography.

By and large the sites visited showed that the drainage of spill water was adequately taken care of.

Other short term effects relate to better hygiene practices of the people, brought about by the activities of the programme support units and NGO's. This results in a better upkeep of the direct living environment.

In Gujarat the NGO's also increase the awareness of the rural population that water is a scarce commodity and therefore stimulate its reuse for watering plants and trees in the villages. F.i the village water supply units (cisterns and taps) are so arranged, that the drainage goes to school garden, nursery, etc.

Income generating activities under the Indo-Dutch cooperation as is the case in f.i. Gujarat and Andra Pradesh lead to an economic improvement of the people concerned. In this regard Gujarati women are involved in the growth of saplings and therefore contribute to ecological regeneration.

The impact of the rural water schemes in terms of lowering of the water table is negligible compared to the effects of the irrigation sector.

5.7. PROJECT APPROACH

5.7.1. Identification, formulation and appraisal

Until the mid eighties the identification and formulation of projects proposed for GON funding has merely been an affair of the state water agencies with a predominant focus on technical issues. There was not much room for incorporating the Netherlands views and opinions in the programme formulation, because in the early days of the cooperation donor interference was not appreciated and maintaining the dialogue was the major (Dutch) concern. Basically proposals were taken "from the shelves", updated as far as population figures and cost are concerned and subsequently offered for donor/Netherlands financing.

The appraisal of proposals submitted by the Indian side was done by Review and Support Missions (RSM) and confined to technical and financial aspects only. Appraisal was conceived as a heavy conditionality by the Indian side who considered themselves completely capable in handling these matters.

In the mid eighties the Netherlands side took a tougher stand on incorporating non-technical issues in the water and sanitation programme.

It proved, however, to be very difficult to introduce these aspects in practice.

In 1987 the RSM of UP has f.i. tried to introduce a so called social wing in the UPJN organization. The purpose was that social scientists would assist the engineers in the siting of taps and the development of water committees. This attempt failed at the policy level at that time.

Following the technical oriented UP-I (piped supplies), and UP-III (handpumps) projects, a compromise was found in the starting up in 1988 of a separate project, UP-V, that focused on the construction of latrine facilities including hygiene education in a limited area of UP-I. In the context of this project also the Programme Support Unit (PSU) was established to become responsible for non-technical interventions. Approval of UP-V was part of a package deal that also included UP-IV (handpumps).

The proposal for UP-VI (handpumps and latrines) has been formulated by UPJN (technical aspects) with an addendum concerning socio-economic aspects prepared by PSU. However, the major part of the funding for UP-VI is spent on hard ware with only a relatively limited amount on community related issues (siting of taps and establishment of water committees).

During the start up of UP-VI it turned out, however, that already 40 % of the planned handpumps had been installed by UPJN in the past.

Also UP-VII (piped schemes in hilly areas) and UP-VIII, which are presently proposed for GON consideration, are based on a similar set up as UP-VI, in the sense that they have been formulated and will be implemented jointly by UPJN and PSU.

The same development towards attention for non-technical issues can be observed in Kerala where in 1987 SEU, financed by GON and Danida, was established and became responsible to formulate and implement elements of the integrated approach like sanitation, health education and women involvement, complementary to the technical interventions (8 piped schemes) undertaken by KWA.

In Gujarat NGO's like SEWA (income generation) and Chetna (health education) were contracted by GON to cooperate with the GWSSB in the implementation of community related activities complementary to the construction of the Santalpur scheme in Banaskanta district. Efforts to establish a socio-economic unit in the GWSSB organisation have not yet materialized. Task of this unit would cover the integrated planning and implementation of projects, liaison with NGO, s and monitoring and evaluation.

Also the AP-I series of projects in Andra Pradesh had a mere technical focus. During the bilateral negotiations in 1985 about AP II, GON has, however, stressed the integrated approach, a.o covering health education and community participation. It took about 2 years before in 1987 the Netherlands Assisted Project Office (NAPO) was established with the task to coordinate the activities of the

implementing agency and 4 NGO's. Experiences with NGO's in AP, however, are not favourable, for reasons of lacking management support and a (too) strong ideological basis.

From the above it follows that in time there has definitely been a trend from a purely technical oriented approach towards a more integrated one.

It is realized by all parties concerned that the non-technical interventions are brought about by the Netherlands assisted programme support units and NGO, s. Because of their external financing the question of sustainability and replicability of the non-technical interventions is at stake.

At present the central level policies, as expressed under the VIII Plan for rural water and the Central Rural Sanitation Programme are becoming more conducive for involving other departments besides the technical state level authorities in the planning and implementation of facilities, so as to shape the integrated approach.

It is therefore recommended that the formulation of future projects under the Indo-Dutch cooperation would be done through a multidisciplinary interdepartmental team with a certain guidance from the Netherlands side.

At the state level the so called "framework for collaboration" are also relevant in this regard. These documents outline the policy principles that will underlie the Indo-Dutch rural drinking water supply and sanitation programme in a particular state. For Kerala the document has been adopted, while the frameworks for collaborations applicable to other states (like Gujarat and Andra Pradesh) are being processed in India.

From the Kerala document it follows that projects will be formulated by KWA in cooperation with SEU to arrive at efficient O&M schemes and to carry out community participation. sanitation and hygiene education activities complementary to the implementation of 8 piped schemes. Also new projects should be of a multi component nature. As to organizational aspects it has been agreed that the integrated approach will be brought about by KWA (overall coordination and water supply), Panchayats and Department of Rural development (sanitation and community development) and Health Department (hygiene education).

Similar policy objectives have been formulated in the draft collaboration frameworks for Gujarat and Andra Pradesh.

Given the fact that the principles for cooperation are known, there is no established practice to render Netherlands assistance to the Indian side in the formulation of water and sanitation proposals, be it that the regular RSM's have a mandate to render supportive services at request.

Until recently the RSM's have also been involved in the pre appraisal of project proposals. We welcome the policy of DGIS/India desk to field independent appraisal missions for this purpose.

In The Netherlands IRC acts as an advisor to the DGIS/India desk. Their role is a.o to comment on reports submitted by the bi-annual RSM's, prepare thematic papers on institutional development, operation and maintenance, latrine programmes etc.

Furthermore, they have been supportive in preparing drafts for the "frame works for cooperation".

Finally they assist in the preparation of and reporting on the outcome of the biannual Joint Meetings that are attended by all parties concerned to exchange views and experiences.

Given their longer time involvement, IRC also represents continuity in the programme.

We appreciate the quality of IRC's contribution at the policy level and recommend their involvement to be continued.

5.7.2. Tendering and commitment

Tendering of projects is completely an Indian affair without any Dutch involvement.

Preparation and implementation of projects is often delayed for a number of reasons, f.i.:

- * proposals take quite some time for processing given the bureaucratic and hierarchical set up of the organizations;
- * cost of tenders are often not in conformity with actual market prices due to inappropriate PWD rates (inflation) and, therefore, have to be reinvented;
- * contractors are selected on the basis of financial criteria only (lowest bid); only in the course of time the contractor will face the fact that the rates are unworkable and quit the job. IBRD therefore stipulates prequalification of bidders. It is, however, possible to join smaller works together (floating bids) thus rendering the works more attractive for larger contractors. This was done in UP-IV which has benefitted the implementation and quality of water tower construction.

The water coordinator at the Netherlands Embassy and the RSM missions have repeated discussions with the implementing agencies for a more thorough prequalification, update of standard rates etc. We feel that The Netherlands might take a tougher stand towards the Indian authorities in order to get changes through.

5.7.3. Implementation and supervision

The implementation targets have the tendency to be overambitious. Delays in implementation are therefore not at all uncommon. This applies to the components implemented through the state water agencies as well as to the NGO's.

We feel that during appraisal of project proposals the absorption capacity of the implementing agency should therefore more seriously be taken into account. The capacity of the implementing agencies is stretched to the limit, resulting in a.o. insufficient attention for O&M.

From an earlier evaluation in Kerala it follows that the reasons for the delays are manifold:

- * financial problems: budget and ceiling limitations, excess tenders, irregular supply of funds, cost escalations due to delays in the approval of estimates;
- * managerial problems: delays in the supply of materials, lack of coordination with other departments, long procedures for land acquisition, inadequate project planning and staffing problems;
- * technical problems: shortcomings in design, insufficiently qualified contractors, quality problems with pipes. As a result of these factors implementation of schemes takes about 8-10 years approximately.

Also an internal evaluation of AP-I (300 % delay) reports the excessive delays to be related to a.o. insufficient staff, last minute changes in designs, problems with contractors, coordination problems with other departments, difficult land acquisition. Problems with the projects executed by NGO's relate to lack of management capacity and institutional constraints.

UPJN considers the Dutch support to have a number of advantages over other donor aided programmes: easier and prompt channelling of funds, relatively faster processing of papers, more direct communication, regular RSM's and the transfer of technology.

The supervision of the Netherlands assisted projects through the bi-annual RSM's works out very effectively.

The TOR for these missions are drafted by the water coordinator at the Netherlands Embassy.

Until the mid eighties 1 consultant was responsible for regularly visiting the 4 states where Netherlands assisted projects were implemented. Subsequently the monitoring of the water and sanitation programme in each state was contracted out to separate consultants. From that time onwards the RSM teams also covered technical as well as socio-cultural expertise. Occasionally also Indian experts are involved.

RSM's assist the Netherlands Embassy in monitoring of the implementation of the water and sanitation projects. Amongst other they recommend the Embassy on the approval of reimbursement claims. Furthermore, they render support towards pre identification and pre appraisal of project proposals.

The missions are also appreciated by the counterparts because of their advisory role.

The RSM reports that are being submitted upon completion of each mission are used by the counterparts as working documents. Their follow up is discussed during the next mission on the basis of compliance reports prepared by the Indian side.

These bi-annual reports cover a wealth of information on progress of the projects, assessment of constraints and proposals for remedial actions.

Discussions are ongoing, in our opinion for too long time already, that apart from these comprehensive reports, MIS reports will be drafted by the RSM's for use by the Netherlands Embassy, notably focusing on physical and financial progress and the monitoring of functioning and use of completed facilities.

Besides it is being considered to make Netherlands assistance available to improve on the information systems of the counterparts, to monitor project implementation as well as functioning and use of the facilities.

We consider the contribution of the RSM missions to the programme effective and their fielding should be continued.

As is the case with IRC as advisor at the policy level, the RSM missions represent a continuity factor. We consider this very important in view of the frequent staff rotation in India as well as in The Netherlands.

We also are of the opinion that during the policy formulation better use could be made of the considerable field experience that is accumulated in the RSM's.

This can be realized through allowing the RSM's more time to prepare contributions for the bi-annual Joint Meetings.

They could also be involved in the preparation of side letters and the Mid Term Review meetings, as far as the rural water sector is concerned.

Apart from the RSM's, also Netherlands financed programme support units at the state level assume responsibility in supporting the implementing agencies.

In Andra Pradesh a rather small unit has been formed consisting of 4 people; the function of the NAPO is to advise the counterparts on a day to day basis, monitor the project implementation and coordinate with other departments and NGO, s involved in the programme.

In Kerala the Socio-Economic Units have been established while earlier a Technical Liaison Officer (TLO) had been posted there to assist the Kerala Water Authority.

In UP the Programme Support Unit was established, initially only working in the context of the UP-V project.

Contrary to the NAPO in AP, SEU and PSU employ fieldstaff who actually implement project activities related to sanitation, hygiene education and community development.

NAPO, SEU and PSU also are supportive towards the RSM missions in rendering information with regard to monitoring of the projects.

A NAPO in Gujarat has not yet been established.

We feel that the inputs of these units have been effective. They have notably contributed to enhanced community involvement in the Netherlands assisted projects and served the purpose of demonstrating the integrated approach towards the implementing agencies.

From a sustainability point of view, part of their responsibilities, notably the implementation of non-technical interventions, should gradually be taken over by other government departments like Health and Social Welfare together with NGO's.

We therefore recommend the activities of the support units to shift from project implementation towards supporting relevant counterparts in the planning and implementation of the sanitation and community development activities.

Furthermore, they can render supportive services towards the nodal agencies that are to become responsible for the coordination between the several departments involved.

Finally they can play a role in progress monitoring of the Netherlands assisted projects.

5.7.4. Finalization and evaluation

The number of formal evaluations of projects carried out under the Indo-Dutch cooperation programme has been limited. This is surprising considering the fact that the cooperation programme has already been implemented for about 10 years and considerable investments have been made.

Evaluation reports are available for UP-I (Updesco/1990), AP-I (NAPO/1991), Ke-I/II (Lavan/1988 and the joint Indo-Dutch-Danish mission/1989) and GU-I (ORG/1990).

Furthermore, RSM's have carried out internal evaluations from time to time.

The outcome of the missions has influenced future project implementation a.o through increased coverage of SC/ST members of the community and improvement of designs and maintenance procedures.

The initiative for evaluation of projects formally rests with DGIS/India desk.

High staff rotation and the fact that the assignment of the desk officer was on a part-time basis only were reported to be the main reasons for insufficient initiatives to field evaluation missions.

Considering the size of the programme we feel that the full-time assignment of a desk officer is highly recommendable. We understood that the desk is doing its utmost in this regard.

Furthermore, we appreciate the desk's initiative to field regularly, 1 time per year, an external evaluation mission to allow for a sufficient feedback of field experiences to the process of policy formulation.

The next mission to evaluate projects in UP is planned for March 1992; projects in Gujarat, Kerala and Andra Pradesh will be evaluated in subsequent years.

ITINERARY

1992

- 05/01 : - Departure of Mr A.G.N. Jansen/RIVM from Amsterdam
- Arrival in New Delhi, India
- 06/01 : - Arrival of Mr M. Nageswara Rao/Institute for Social and Economic Change (ISEC) and Ms Philomena Vincent/Aikya in Delhi
- meeting of the evaluation mission
- 07/01 : - meeting with Mr P.M. Flik/Sectorspecialist water supply and sanitation, Netherlands Embassy
- 08/01 : - meeting of the evaluation mission
- dinner hosted by Mr Flik
- 09/01 : - Meetings with:
* Messrs Bjorn K. Hanssen and Dilip Fouzdar/DANIDA
* Messrs Mesbahuddin Akhter and staff/UNICEF
* Mr Jim Drummond/British High Commission
- 10/01 : - Meetings with:
* Messrs Tauno K. Skytta, G.V. Abhyankar, V.R. Iyer, D. Davis/UNDP-World Bank Water and Sanitation Programme
* Messrs P.K Sivanandan (Joint Secretary), Jagdish Chander (Deputy Secretary Sanitation)/Department of Rural Development, Ministry of Agriculture, P.L. Punia (Secretary)/UP Department of Housing and Urban Development, K.K. Mankad (Member Secretary Gujarat Water Supply and Sanitation Board) and other staff
- 11/01 : - Internal wrap up by the evaluation mission
- 12/01 : - Transfer Delhi-Lucknow/Uttar Pradesh by plane
- 13/01 : - Meetings with:
* Mr P.L. Punia/UP Secretary Urban Development
* Mr Brijendra Sahay/Chairman UPJN
* Mr R.S. Singh/Managing director UPJN, Mrs H. Sharma/manager monitoring and other staff
* Mr J.De/director PSU and staff
- 14/01 : - Transfer Lucknow-Allahabad by car
- Fieldvisit to Rae Bareli District/UP-I Thulendi water supply and UP-V sanitation project facilities in villages Peethan, Karanpur and Jalalpur; accompanied by Mr B.N. Saran/UPJN and PSU
- 15/01 : - Fieldvisit to Allahabad District/UP-III handpump water supply facilities in village Mandari accompanied by UPJN and PSU

- 15/01 : - Boat trip to river Yamuna and Ganga confluence on the occasion of Mela, accompanied by Mr S.C. Banerjee/UPJN
- Discussion with Mr S.C. Banerjee/UPJN
- 16/01 : - Fieldvisit to Allahabad district/UP-IV Nidurai group of piped water supply facilities in village Ahladganj, accompanied by UPJN.
- 17/01 : - transfer Allahabad-Varanasi by car
- Fieldvisit to Varanasi District/UP-I piped water and UP-V sanitation facilities in villages Naipura and Chittupur, accompanied by Mr B.N. Saran/UPJN and PSU
- 18/01 : - Fieldvisit to Varanasi district/UP-IV Hati Barni group of piped water supply facilities in village Chaukhandi, accompanied by UPJN
- Discussion with Mr Athrie and staff/UPJN
- 19/01 : - Transfer Varanasi-Lucknow by car
- Internal wrap up by mission
- Dinner hosted by PSU
- 20/01 : - Fieldvisit to Lakhimpur Kheri district/UP-VI handpump facilities in village Dimoura, accompanied by UPJN and PSU
- Dinner hosted by UPJN
- 21/01 : - Debriefing by the mission with Messrs P.L Punia/DUD, R.S. Singh, Mrs Sharma/UPJN and Mr J.De/PSU
- Transfer Lucknow-Delhi by plane
- 22/01 : - Transfer Lucknow-Amedabad/Gujarat
- 23/01 : - Meetings with:
* executive engineers GWSSB of Netherlands assisted projects. Messrs C.C. Shah (Santalpur scheme), C.M Shah (Sami Harij scheme)
* representatives of SEWA (Ms Reema Nanavaty/ Coordinator Banaskanta Women's project) and CHETNA (Ms Pallavi Naik/ Training and Extension Programme officer)
* Mr K.V. Bhanujan/Secretary Health and Family Welfare, Chairman GWSSB
- 24/01 : - Fieldvisit to Santalpur scheme:headworks in Sahori and the village Vada/hamlet Kaharechavas; accompanied by Mr C.C. Shah
- 25/01 : - Fieldvisit to Santalpur scheme:villages Kohliwadi, Sharipura, Kalyanpura and Bakrutha, accompanied by Mr Shah and Mss R.Nanavaty and P. Naik
- 26/01 : - Internal wrap up by mission
- Discussion with Mr C.C. Shah
- 27/01 : - Fieldvisit to Sami Harij scheme: villages Gujarvada and Baspa; accompanied by Mr C.M. Shah/GWSSB

- 28/01 : - Transfer Radanpur-Amedabad by car
- Debriefing by the mission with Messrs Mankat (Managing Director), C.C. Shah, C.M. Shah and other staff/GWSSB, Ms Reema Nanavaty/SEWA and Ms Pallavi Naik/Chetna
- Meeting with Mr Ramesh M. Bhatt/Director Foundation for Public Interest (FPI)

Split of mission

Programme of Mr Jansen

- 29/01 : - Transfer of Mr Jansen from Amedabad to Trivendrum/ Kerala by plane
- 30/01 : - Meetings with:
* Messrs T.Haagsma/Technical Liaison Officer/KWA and K. Balachandra Kurup/ex coordinator SEU
* Messrs Padmanabhan Nair (Managing Director) and staff/ KWA, T. Haagsma and K. Balachandra Kurup
- 31/01 : - Fieldvisit to Vakkom Anjengo scheme, Panchayat Vakkom Penvlayat; accompanied by Messrs P. Subramonian/KWA and T. Haagsma and Balachandra Kurup
- Dinner hosted by Mr Padmanabhan Nair/MD KWA
- 01/02 : - Transfer from Trivandrum to Delhi

Programme of Mr Nageswara Rao and Ms Philomena Vincent

- 29/01 : - Transfer Amedabad to Lathi Liliya by car
- Field visit to Kalubhar Dam, Dam Nagar water works and Bhingrad water works
- Meeting with Messrs Dami, Saxena and Jami/GWSSB
- 30/01 : - Field visit to villages Tansa and Bhingrad/Lathi taluk
- Transfer to Amedabad by car
- 31/01 : Transfer from Amedabad to Delhi by plane
- 02/02 : - Internal wrap up of mission, preparation of summary conclusions and recommendations
- Meeting with Messrs Segaar and van Stuyvenberg/IOV
- 03/02 : - Debriefing of mission with:
* Mr P.M. Flik/Netherlands Embassy and Messrs Segaar and Van Stuyvenberg/IOV
* Messrs P.K Sivanandan (Joint Secretary), Jagdish Chander (Deputy Secretary Sanitation) and staff/ Department of Rural Development, Ministry of Agriculture
- Farewell dinner of mission
- 04/02 : - Transfer Mr Jansen from Delhi to Amsterdam

Terms of Reference for an evaluation of the development cooperation between India and the Netherlands

Study no. 3 - Project Aid to India in the field of rural drinking water and sanitation

I. Introduction

The Dutch first became involved in providing drinking water and sanitation in India in 1975. Initially, a purely technical approach was adopted, mainly involving the construction of drinking water systems. Since the mid-1980s, however, a more integrated approach has been followed, with specific emphasis on: the participation of the local population in every phase of the project, the improvement of operation and maintenance, the financial contribution by the users, aspects of health and hygiene, and income generating activities.

Between 1980 and 1990, about 13% of the regular aid budget (the so-called "cash ceiling") was spent on drinking water and sanitation projects. This amounted to Dfl. 300 million. For a long time now, the development cooperation in this sector has been concentrated in four states: Andhra Pradesh, Uttar Pradesh, Gujarat, and Kerala (see Annex). Project preparation also recently started in a fifth state: Karnataka. An important feature of the projects is that all the materials paid for out of Dutch funds have been purchased in India (local cost financing).

II. Objective and key questions

The objective of the evaluation is to answer the following two key questions (compare questions 3 and 4 of the General outline of the evaluation):

- 1) to what extent are the activities in the field of drinking water and sanitation facilities focused on the poor?
- 2) can the project activities and achievements in this field be considered sustainable (and what are the determining factors)?

III. Elaboration of the key questions

The key questions which this study is expected to tackle can be elaborated in some more detail as follows:

re.1. Poverty alleviation

To what extent do drinking water and sanitation projects cater for the poor? In order to answer this question, we must first look at the policy adapted in this sector, especially in rural areas and at federal, state and district levels. Then we must

ascertain the priority of the local people towards drinking water and sanitation facilities, where these facilities are located, and who has access to them (both in geographical and financial terms).

We also need to determine the extent to which different sections of the population (men and women, socio-economic classes, castes, etc.) are involved in the planning, implementation, operation and maintenance of the facilities. Finally, the importance to the poor of income generating activities, which are sometimes linked to drinking water and sanitation projects, will have to be examined.

The main indicator for poverty used in this evaluation are land ownership and the employment of labour. In other words, a small farmer is one who owns a relatively small part of land and lacks the capacity to hire labour.

re.2. Sustainability

The projects selected will be assessed according to a number of important aspects of sustainability, such as:

- the priority attached to rural drinking water and sanitation in the policy of Indian federal, state and district authorities;
- financial sustainability;
- suitability for technological integration;
- institutional capacity [the capacity of the existing organisation(s) in the field];
- participation by the local population;
- ecological capacity.

IV. Implementation of the evaluation

In order to answer the above key questions concerning the effects of the Indo-Dutch activities in the Indian drinking water and sanitation sector, field research is necessary. However, this must be preceded by considering drinking water and sanitation activities in its broader context (IV.1). After selecting the respective activities for the evaluation (IV.2), various tests need to be executed in order to be able to assess the extent of sustainability of Dutch project aid through drinking water and sanitation activities (IV.3).

IV.1. Context

- a. Indian context for the activities in the rural drinking water and sanitation sector:
 - content and scope of the problem;
 - policy priorities in India;
 - organisation of the drinking water and sanitation sector in India (federal, state, district, and village level).
- b. Dutch organisation structure (supervisory and advisory)

for the activities in the field of rural drinking water and sanitation programmes in India, including responsibilities with respect to:

- policy making regarding drinking water and sanitation systems;
 - identification, planning, implementation, operation and maintenance;
 - financing;
 - training;
 - participation by the local population (men/women).
- c. Dutch activities in the field of rural drinking water and sanitation in India, including:
- regional distribution (and how it has been chosen);
 - importance of the Dutch contribution (share in local costs and contribution to the formulation of the programme).
- d. Level of involvement of Dutch (and/or Indian) NGO's in the drinking water and sanitation sector.
- e. Role and policies of other donors.

IV.2. Selection of activities for the evaluation

For the field study, a choice will be made from among the activities listed in the Annex, in accordance with selection criteria still to be formulated.

The study is focused on the drinking water and sanitation programme in the four states in which the Netherlands has so far been involved. On the basis of studies on file, evaluation reports and interviews, the fieldwork in India needs to be delimited, and decisions need to be taken about the questions to be asked, their depth, and the persons to be interviewed. In addition to research at the level of federal and state authorities, research will also be conducted at the village level. In view of the number of projects and villages, it is likely to be impossible to base such research on representative samples. However, an attempt will be made to select a large number of illustrative cases.

IV.3. Testing criteria

As stated before, the activities carried out will be tested for their contribution towards poverty alleviation, and sustainability. However, it does not suffice to ascertain sustainability as such, but also to establish the factors which have been conducive to sustainability or which have been counter-productive. The following tests will be used:

IV.3.1. Testing criteria for poverty alleviation

- Test 1** (concerning the existing policy of the Indian authorities (federal, state, district))
- Does the policy concentrate on improving the

drinking water and sanitation facilities for the poorer sections of the rural population?

- Test 2** (concerning the priorities of the population)
 - Do the activities in this sector correspond to the priorities of all segments of the population in the villages?
- Test 3** (concerning the access to facilities in the villages)
 - Are the drinking water and/or sanitation facilities provided accessible to all segments of the population in the villages?
- Test 4** (concerning the use of the facilities)
 - To what extent are the facilities used by all members of the village population?
 - To what extent does the population perceive the new facilities as an improvement?

IV.3.2. Testing criteria for sustainability

- Test 1** (concerning the existing policy of the Indian authorities (federal, state and district))
 - Can it be expected that a policy will continue to develop in the next few years that is focused on improving the drinking water and sanitation facilities in rural areas?
 - Has a policy been developed for the distribution and use of water sources for drinking and irrigation?
- Test 2** (concerning the financial sustainability)
 - Is there any cost recovery on the funds invested?
 - Do the villages themselves make a sufficient contribution to the operation and maintenance of the facilities provided?
 - Can sufficient public funds be expected for future investment in drinking water and sanitation facilities and for their operation and maintenance?
 - Should other investments have been given preference from a financial point of view?
- Test 3** (concerning the suitability for technological integration)
 - Do the drinking water and sanitation facilities function reasonably smoothly?
 - Can parts be obtained locally?
 - Would technologically simpler solutions have been conceivable in order to achieve the same objectives?
- Test 4** (concerning the organisational capacity)
 - Is there an adequate organisation for the operation and maintenance of drinking water facilities in the villages?
 - Is there an adequate organisation for the planning

and implementation of future drinking water and sanitation facilities in rural areas in future?

- Is sufficient training given to the personnel of these organisations?
- Should other investments be given preference from the point of view of planning, implementation, operation and maintenance?
- To what extent is the integrated approach to drinking water and sanitation projects organisationally feasible?

Test 5 (concerning the participation by the local population)

- Are the various members of the population involved - or have they been involved - in the preparation, planning, implementation, operation and maintenance of the facilities?
- To what extent has account been taken of preferences and/or requirements of the population?

Test 6 (concerning the ecological capacity)

- Do projects take place in ecologically vulnerable areas?
- What are the projects' effects (both direct and indirect, short- and long-term) on the environment?

Test 7 (concerning the project approach followed)

- re. identification, formulation and appraisal: Who identified the activity? How effective have formulation and appraisal been?
- re. tendering and commitment: What tendering procedure has been followed? Is anything known about other bids and their conditions?
- re. implementation and supervision: How effective has the implementation been? How have the relevant procedures concerning supervision and advisory services functioned?
- re. finalisation and evaluation: Have evaluations taken place and, if so, what effects have they had on the implementation of the programme? Has the project approach been in the interest of the poor and was it conducive to the sustainability of project achievements?

V. Approach and Methods of the study

Those conducting the study will make use of the following methods: studies on file, including assessment reports, and interviews with various relevant civil servants, advisers, consultants, etc., both in the Netherlands and India. During the field study in the villages, as much relevant information as possible should be obtained from the inhabitants themselves.

VI. Organisation and Time Schedule of the evaluation

Research Team

The research team will consist of the following persons: Mr. B. Jansen (The Netherlands) and Mrs. Ph. Vincent and Mr. Nageswara Rao (India).

Time Schedule

- preparation: November and mid-December 1991;
- field study: January 1992;
- reporting: February 1992.

Report

- structure: in accordance with these Terms of Reference;
- envisaged length (number of pages): about 40;
- the report will be written in English, whereby WordPerfect is to be used as computer language.

**The Hague,
31 October 1991**

ANNEX**Summary of drinking water and sanitation activities in four states****Andhra Pradesh**

In Andhra Pradesh, projects have been implemented in eight districts. In Phase I (1978-1985) they involved 201 villages, and in Phase II (1987-1991) 234 villages. In Phase II, a much more integrated approach has been adopted. To that effect, local NGO's are involved in the monitoring.

Uttar Pradesh

In Uttar Pradesh, five sub-projects have been implemented since 1979:

- Sub-project I involved three districts (724 villages and about 713,000);
- Sub-project III involved four districts (603 villages and about 600,000 people);
- Sub-project IV involved two districts (202 villages and about 384,000 people);
- Sub-project V focused especially on community participation, training in hygiene and rural sanitation as part of sub-projects 1 and 2, and on the installation of latrines (in 13,350 households and four schools). As part of this sub-project, a Programme Support Unit was also set up for the purposes of health education and coordination.
- Sub-project VI involved the installation of handpumps in five districts (1,410 villages and about 1.8 million people).

Another sub-project is now in preparation in six districts.

Gujarat

Three districts were selected in Gujarat. Activities involved:

- Santalpur I Scheme (1978-1986) in 76 villages;
- Santalpur II Scheme in 48 villages and the city of Radhanpur;
- Sami-Harij Water Supply Scheme in 111 villages and the city of Harij (about 330,000);
- Lathi-Liliya Regional Water Supply Scheme in 36 villages and the city of Damnagar (about 100,000 people);
- Pilot Sanitation Project in two villages;
- development of a socio-economic unit in order to ensure an integrated approach to the projects.

Kerala

Eight drinking water projects are being implemented in Kerala for:

- Vakkom Anjengo district (six panchayats, about 194,000 people);
- Nattika Firka district (ten panchayats, about 400,000 people);
- Mala district (six panchayats, about 203,000 people);
- Thrikkunnappuzha district (eleven wards, about 10,000 people);
- Koipuram district (one panchayat, about 44,000 people);
- Cheriyannadu district (one panchayat, 35,000 people);
- Kundara district (seven panchayats, 218,000 people);
- Pavaratty district (four panchayats, 520,000 people).

In addition, socio-economic units have been set up in collaboration with DANIDA in three districts of Kerala: one in the north, one in the centre, and one in the south of the state.

INTERVIEWEES IN THE NETHERLANDS

M. de Graaf	Euroconsult
K. de Goede	Haskoning
R. Trietsch	DHV
J. Gussenhoven	ETC
J. Harnmeyer	ETC*
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C. v. Wijck	IRC
J.T. Visscher	IRC
H. Buikema	DGIS/DAL-ZZ
J. van Krimpen	DGIS/DAL-ZZ
P. Streefland	KIT
W. Wildeboer	DGIS*

* comments in writing only

CASE STUDIES

**THE INDO-DUTCH COOPERATION PROGRAMME
ON RURAL WATER SUPPLY AND SANITATION**

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1. METHODOLOGY

Fieldvisits have been carried out to 15 project villages in the states of Uttar Pradesh, Gujarat and Kerala.

In the selection of villages in Uttar Pradesh (7 villages) and Gujarat (7 villages) the criterion was to cover as much as possible at least one sample of each sub-project carried out under the Indo-Dutch cooperation in the respective State and also be able to observe the project functioning in villages with technical and social interventions and others where social components had not yet been established, and understand the dynamics of each case. Because of the time available only 1 project village has been visited in Kerala.

The fieldvisits were mainly focused towards the following objectives:

- 1) To have a direct experience of the operation of water and sanitation programmes at the village and block level.
- 2) Thereby gather through face to face interactions and observations and meetings a better understanding of:
 - the levels/role of community participation, especially women and members of the SC/ST sector in the projects.
 - operational clarity regarding needed policy and programme support for planning, implementation, management, monitoring, O&M of water supply and sanitation projects.
 - status/level of sustainability of the projects, actual constraints and prospects at the field level.
 - prospect of replicability and role of regional diversities in the implementation and sustainability of the water supply and sanitation projects.

Towards this the methodology of field studies included, meeting and face to face dialogues with:

- concerned officials of the implementing agencies at field level;
- project related social scientists, village level organizers and group organizers;
- community members, including local members, mainly from SC/ST sector, OBC communities and uppercastes members, water committee members, women from poorer households, local leaders, elders, elected representatives, volunteers, government functionaries including Angawadi workers, school teachers and health workers.

Questions raised to the various members were as follows:

- Enquiries about the actual status/extent/facts and data of the water supply and sanitation schemes in operation; details of size, number, number, investments, O&M costs, materials used;
- Details of the social components: the composition of the water committee, the village groups, the networking of the programme support units and the village members, the women's component;
- Actual functioning of the facilities, accessibility and usage;
- The benefits of the project as perceived by rural participants, specifically the women of SC/ST sector;

- The problems faced in this process outlined by them in their own words;
- The practices/attitudes in relation to cost recovery, O&M and their perception of how to sustain these services;
- Actual preferences/requirements of the population;
- Questions seeking an understanding of the prevailing community development approach vis a vis:
 - * role of the implementing agencies and programme support units or NGO's;
 - * their role as regards sustainability of project investments, institution building at community level and replicability.

2. CASE STUDIES UTTAR PRADESH

2.1. Case study I UP-I/V Rae Bareilly District Pithan village

Introduction

The village consists of 106 households and is one of the poorest villages in that Block, situated close to the main road and is covered under the Thulendi piped water supply (UP-I) scheme.

The main water sources in the village include standposts, handpumps and improved wells. From the standposts water is available at regulated intervals, for about 2 hours in the morning and about 2 hours in the evening.

Over 100 latrines have been built under the Dutch programme by UP Jal Nigam with the close collaboration of PSU to ensure community participation in each case. Each latrine costs Rs 4,800 of which each beneficiary directly contributes Rs 400 in cash, in addition he also contributes to the labour component in kind at the time of construction.

General conditions

Most of the standposts and handpumps are in good working condition. The drainage system is also being maintained by the community. Community awareness of proper maintenance of drainage and handpumps has begun and it needs to be strengthened further. The practice of having household soakpits has also been newly introduced by PSU and is getting established. Nearly 98 households have well maintained soakpits. The toilets are being used well and maintained in a hygienic manner.

Role of PSU and Jal Nigam

The quality of water supply and sanitation services provided by Jal Nigam is good and has been of great benefit to the community. The PSU, in its role of involving the community in the process of optimally using these systems, has developed an efficient monitoring system, functional at the village level and which is managed by the local village volunteer, Sreemathi Shama, who is the group organizer and an active member of the water committee, consisting of 8 members-6 women and 2 men. The PSU in concurrence with Jal Nigam has actively involved the community in the site selection, thus ensuring from the beginning the community's acceptance and involvement in the services being provided by them. Subsequently the weaker sections, SC/ST, have been involved in this process and on the whole the locations of both water supply and sanitation services are being well accepted and used here.

The maintenance at the village level is done by the water committee, facilitated by the group organizers' efforts of close contact, motivation and supervision. The back up support and training on health awareness and related aspects is given by the PSU. On the whole the presence of PSU and Jal Nigam in this village is meaningful and effective in promoting hygienic practices among the community.

Responses of the community members vis a vis these services

There were 9 women and 2 men who articulated their news freely as follows:

Sanitation has been a boon to women, especially the old, who no longer undergo the hazards and difficulties of open defecation in the field.

There is a wide spread feeling of relief and well being at having good access to safe water and sanitation.

The incidence of gastric diseases like diarrhoea, typhoid and other ailments like cough, fever and skin diseases, have been reduced.

Women's workload of fetching water from long distances of 2-5 kms away, has been lessened, they have more time to engage in other work, like child care etc.

They are willing to contribute their time and are interested to sustain the development activities, especially the water and sanitation services of their village.

Future prospects

The process of health awareness has just begun and needs to be strengthened. Besides the institutional building at the local level, organising the water committee into an empowered body and integrating it with other development services in the village, has not yet been done. Water storage practice is nil, resulting in cumbersome time consuming manner of water usage, by fetching water as and when required. The practice of using safe water has just begun, it needs concerted efforts of PSU and village organizers to get it internalized by the community at large.

2.2. Case study II

UP-I/V

Rae Bareilly district

Karanpur village, hamlets Chamanganj and Kondanganj

Overview

These hamlets consist of 66 SC totally. It has been covered under UP-I and V for piped water through standposts and provision of sanitation. In general the condition of water supply and sanitation was good, including maintenance and drainage. The community's involvement in the programme is seen from the active participation of the people in the water committee consisting of 6 women and 3 men. In the main hamlet there has been greater internalization of the sanitation and hygiene practices by the community; they seem to be happy with the standpost location and the drainage systems, that are kept clean. In the other hamlet the various members of the community have yet to be integrated and internalize the regular practice of maintenance of water services. However, their acceptance of sanitation is quite good.

Responses

In the 2 meetings conducted, one in each hamlet, totally 21 persons participated of which the majority (over 80 %) were women. A water committee had been formed only in the main road hamlet; in the other hamlet the process is just being initiated. As outlined by the members they perceived the benefits of water services and sanitation as follows:

General health conditions have improved, especially children's health, there are less of intestinal diseases, fever and vomiting. Women and children have been greatly benefitted by sanitation, it has added to their feeling of dignity and satisfaction, not having to resort to the risks of open defecation.

Among the SC's especially it has contributed visibly to a feeling of ownership of clean assets that they are willing to maintain with care.

Women's workload of fetching water having lessened, they feel free to look at other pursuits, think of their children's future and aspire and work towards a better life. On discussion they freely expressed their need for electricity services, and their willingness to pay for it.

In one hamlet, in Chamanganj, the members, especially women, had jointly contributed to build a thatched hut, to enable the organization of non-formal education programmes for their children within that village, as the primary school was 5 km away.

The role of PSU and Jal Nigam has been effective in mobilizing community acceptance of these services and using them well. PSU has also been able to introduce health awareness among them. However, the present community initiative needs to be developed further and more work is necessary in the formalising of community organisation in an integrated way.

2.3. Case study III
UP-III
Allahabad District
Mandari village

Background

The village is covered under the UP-III handpump scheme. totally 6 handpumps have been installed and are all functioning well. They all are of Mark II model and this design is appropriate for the area.

General conditions

On the whole the maintenance of handpumps and nearby drainage systems is good. Hygienic practices of water usage are becoming part of this community way of life. Gradually separate bathing platforms have been constructed near the handpumps and are used well.

In the past the pump repair was delayed, now with women mechanics it is done promptly.

Role of PSU and Jal Nigam

The Jal Nigam has provided quality handpump installations and the construction of bathing platforms is also of good standard. With the close support of PSU, village committees have been involved in the site selection. As a result all the 6 sites are well planned locations, easily accessible to the people including SC/ST sectors as well.

Jal Nigam looks after the operation and maintenance but in an effort to involve the community also, has jointly with PSU's initiative trained 25 village level mechanics, of whom 8 are women and the rest are men. From Mandari village 4 women, 3 Muslims and 1 Harijan women have been trained as caretakers and mechanics. The PSU has been very effective in motivating and mobilizing village women for mechanic training, thus establishing a precedent of women stepping in non-traditional roles and beginning the process of community being able to manage the maintenance of their own handpumps, with back up support of Jal Nigam.

Responses

This discussion involved 11 members, 4 women from this village, 2 other women mechanics from the next village and 4 men from Mandari village.

As regards the benefits of the handpumps it was unanimously expressed that women's workload has been reduced from 4-5 hours per day (as in the past they walked 1 km away to the well) to 1-1.5 hours due to easily accessible sites.

As a result most women are free to focus on other household work in a relaxed manner. Some have begun to do knitting in the time saved.

Hygiene and health in the village have improved with access to safe and clean water, unlike in the past when they mainly depended on worm infested well water. Cholera, jaundice, vomiting and gastric diseases in the village have reduced significantly. Women and children are able to bathe and wash their clothes regularly.

As regards the role of the newly trained mechanics, both men and women, the benefit has been that now handpumps are being looked after, better preventive maintenance is done, besides even breakdown maintenance is being done promptly as local mechanics, especially women, attend to it. In the past year they have repaired in that cluster of villages over 200 handpumps successfully without damaging the cylinder or defaulting in any way.

The problem of costs of O&M remains to be sorted out. For over a decade water has been provided by the Government through Jal Nigam as a free service, the community feels that O&M is also Jal Nigam's responsibility. Consequently the women mechanics are not paid by the community for their services. At present Jal Nigam pays them Rs 120 per handpump for a days' work to a team of 6 persons. Daily work is not available to these trained women mechanics who are willing and capable of handpump repair and maintenance. They are not fully accepted by the community who perceive them with mixed feelings of surprise, envy, disbelief and tolerance. The men mechanics, being more mobile, have taken up other casual employment, only they too lack support. The PSU has responded by providing two cycles to the women in the next village and is in the process of negotiating a workable solution in consultation with Jal Nigam and the community.

As regards costs, people can afford to pay Rs 2/family/month. However, they are reluctant to do it as they view it as a Government's free service. On discussion about decentralization, and assigning the Pradhan the role of collecting water tariff, they were very sceptical of his abilities to do so.

A lot more work is needed by way of community organization to create a social climate for community's defined role in O&M, including cost recovery, system of reasonable tariff collection and water management as a whole.

2.4. Case study-IV
UP-IV
Allahabad district
Ahmadganj village

Nidura group of villages are served with piped water supply from Nidura water works in Allahabad District of UP. The scheme comes under sub-project UP-IV. About 23 villages (including hamlets were initially envisaged to be covered under piped water supply and only 20 villages were finally brought under distribution network. The scheme was completed in the year 1984 with the capital cost of Rs 56.7 Lakh. The distribution network consists of about 606 domestic house connections (HC) and 149 public standposts (PT). In subsequent years a cluster of 8 villages were put together constituted as Town Area Committee (urban) but the waterworks O&M remains with the UP Jal Nigam. The proposal of transferring the O&M of that part of TAC is yet to be implemented. This part of TAC has about 370 HC covering about 18,000 people and the remainder 12 villages have 235 HC covering a population of 12,600. At the time of capital works all HC were fitted with meters but consumption charges were collected at a flat rate of Rs 10/HC/month (with a bonus of Rs 1 for prompt payment). The flat rate of HC was raised recently to Rs 15/HC/month. Simultaneously it was decided that all the old non-functional meters were to be removed and fitted with new meters to implement the metering system strictly (at the persistence of donor agency). An additional charge of Rs 2.5 is charged to the consumers to recover the cost of the meter and Rs 1 for additional 1,000 ltr. About two third of new metering has been completed. A meter repair workshop is stationed at Allahabad. Water is distributed from an overhead reservoir through distribution network and released normally 8 hours a day spread into 3 durations. However, in view of the frequent electricity failures or low voltage, disruption in water supply is very common.

Discussions with a cross section of the household beneficiaries, community representatives and local people on specific issues have revealed the following:

Introduction of metered HC has generated a strong dissatisfaction for the following reasons:

- * comparative partiality in the public service delivery system (flat rate system in all other piped water schemes, particularly in the neighbouring villages);
- * payment for meter charges in rural areas is unjustified taking into account the low economic status;
- * metering system may not last for long in view of cost for maintenance, and
- * metering HC is a type of disincentive as to discourage the poor and future beneficiaries.

When a point was raised that metering will reduce wastage in consumption, there was a felt expression amongst the people that they are aware of the judicious use of water from among their own experiences and also through publicity campaigns.

Though there are no external specialized agencies to impart training in community activities, the concept of group representation and committee formation are present unconsciously, as noticed in the way they have been jointly representing their demands as a group and succeeded in the past. Presently circumstances made them to realize the need and importance of a systematic organization of community level committees for water supply.

They found the drinking water supply through taps has benefitted the village to a large extent and has changed the daily practices of women (particularly). Even though some wells are being used sporadically, they have stopped the well water for consumption.

On the issue of payment for water to maintain, they agree in principle that they have to pay for that, but being the weaker part of society (rural), they expect the government to subsidize the water supply maintenance, as rural water and sanitation should not be compared with urban sections.

The locations of street taps are found acceptable by all households as these were decided after due consultation with all sections of the people by village Panchayat and Jal Nigam.

The beneficiaries are aware that they have to attend themselves to the repairs of street taps as they know the limitations of Jal Nigam.

In one instance, the users themselves have voluntarily contributed and got the street taps repaired.

It is also noticed that an old lady nearby a street tap in a SC colony takes the responsibility of cleaning the platform and drainage etc. However, she is facing the criticism of others when she questions them not to misuse the street tap.

2.5. Case study V
UP-I/V
Varanasi District
Naipura Kalam village

Naipura Kalam village in Varanasi District of UP received piped water under UP-I and is also being covered under UP-V with sanitary latrines which is under progress.

The village which is in the outskirts of Varanasi city has the urban influence and is experiencing the urban residential spill over effect. However, the village being covered under rural water supply scheme and being at the tail end of the scheme, the water delivery is being effected due to low pressure. It is reported from the residents of the village that there are frequent leakages in the distribution system causing water supply failure in addition to interruption due to power failure.

All the localities are covered with separate standposts. In some parts of the village HC are given with meters.

As for the water consumption charges by meters or flat rate, the households have very little resistance and they have no objection to pay regularly, subject to the condition that the quantity of water supply has to be increased. It is noted that in spite of shortage of water from piped water supply, construction of residential houses is going on briskly to be rented out to the urban (Varanasi) people from whom the demand for water is high. It is informed that there is no proposal to sanction any further HC's due to shortage of water.

In the case of community involvement in the maintenance of the standposts, there is no significant involvement among the people, mainly due to their interaction with the neighbouring urban centre.

In the opinion of the villagers the complete distribution network of pipes has to be changed in view of the increased population. The introduction of sanitation programme has been received with substantial positive response and majority of the households are demanding for it, recognizing that the benefit that occurs is mostly to the women.

The role of PSU in this part of the village is less pronounced in view of the urban characteristics of the habitation.

On the other hand the rural localities consisting of the SC households and other backward communities have expressed higher levels of satisfaction with the introduction of sanitation programme. Even though piped water supply levels are below average, the response to the toilets is significant.

The presence of PSU is felt in the responses of the women to some of the questions related to use practices, cleanliness etc.

Tailor made and ready made health awareness programmes linking water supply and toilets propagated by PSU is noticed with good publicity and training. The women are more receptive to participation in the community development activities. They have expressed their full

satisfaction at the introduction of toilets as the dignity and security of the village women is protected as compared to the earlier practice of using open fields for defecation, sometimes even without availability of water.

Comparing the toilets with the housing conditions of the village households, it is clearly seen that these toilet units do not fit harmoniously into the housing environment.

2.6. Case study VI
UP-IV
Varanasi district
Choukkhandi village

Chaoukkhandi village is covered under Hati Barni water works in Varanasi district. The village is served with street taps as well as house connections. HC's are metered and charged Rs 13 (+ Rs 2 as fine if default) and Rs 2.5 as meter charge. Though demand for HC is high, presently new connections are stopped due to shortage of water. It is proposed to give new connections and standposts after commissioning of UP-IA.

The village is not covered by PSU and there are no formal water committees. A part of the village has Hindu community, another part is of backward community and a separate hamlet is for SC community. In addition to the piped water, traditional wells are also used for drawing water for other than drinking water purposes. The people complain about the routine power supply interruptions obstructing the regular water supply, either with low pressure or stoppage of water. Hence they have not completely disregarded the old wells.

There are standposts in all the localities, located to the convenience of the residents. It is brought to the notice that in the backward caste locality, one of the women residents offered voluntarily a piece of land to install the street tap which is also conveniently located to facilitate the drainage in the nearby pond. She is proud of her contribution for the sake of water supply to the community. An old women very near to the standpost voluntarily looks after the upkeep of the standpost, platform, drainage and also regulates the misuse of the standpost and its surroundings.

Before installing of the standpost they were using a nearby village well whose water was fit for drinking. But now, in view of its limited use, the water has become dirty. However, this well water is used for other purposes like washing cloths, for animals etc. and hence the well is still in use.

The women of the community feel relieved with the tap water and they would prefer that water be available continuously. They are not involved in any type of committees and they do not have any idea of water committee. They feel that most of them are aware of the use of tap water and its importance, there is no need for a separate group. They are extending full support to the old lady who looks after the tap.

On observation the standpost and its surroundings require further cleanliness.

The users are not aware of payment of any charges to the street tap. In their view, any small repairs (particularly replacement of tap) may be got done by local people with small contributions and any repair to water pipes will be taken up by Jal Nigam. In their view, if HC's are given, they are ready to pay.

In SC locality, one standpost has been installed to serve about 40 households. They were earlier using well water in their locality. However, the water pressure is very low and insufficient. They want one more standpost but as per the norms of Jal Nigam, one standpost is sufficient for the small location.

A community education worker of the Education Department regularly visits the locality to educate the people. A village girl takes keen interest and she helps the department in mobilizing the people to participate and attend the evening classes. She also takes care of the standpost, its cleanliness and explains to other members about water and related health education.

Even though neither PSU nor any voluntary organisation is involved, there is an element of consciousness observed from among the group of residents about the street tap and water.

As they themselves are looking after the standpost, they feel that there is no need to pay regularly to the Jal Nigam. The local people are not happy with the village Pradhan.

The girl is favourable to form a group of women to work as a committee for the maintenance of standpost. Now after getting the water, she feels that at least for the sake of women, the Government should provide toilet facilities. For individual houses, who ever is willing to pay a small amount, they may be given private latrines.

2.7. Case study VII
UP-VI
Lakkimpur Keri district
Dimura village and 2 hamlets

This is a village situated in the foothills of the Himalayas in the Terai region to the North Eastern part of the State. The water table is good, over 6 handpumps have been installed successfully. Here it has been an example of a concerted integrated approach, Jal Nigam and PSU working in close collaboration to mobilize and built upon active community participation. The accessibility, functioning and usage of this service has been of high quality. Community's social acceptance is visible as also Jal Nigam and PSU's planned approach at decentralizing O&M at village level, by systematically working with them on the same. Consequently prospects of sustainability of this project in this area is good.

The interviews and dialogues with various representatives of the 3 villages and 2 hamlets included meetings with women, men, Jal Samithi members, Pradhan, trained mechanics, volunteers, school teacher and students, PSU social scientists, J.E. from Jal Nigam and local leaders of the village. Their responses were as follows:

The community was very much involved from the site selection onwards by PSU and Jal nigam ensuring their continued interest, usage and acceptance of the handpump service.

They unanimously expressed their satisfaction of having an easy access to regular and safe water, leading to reduction of time and physical energy spent by women in fetching water and consequent health benefits, specially the SC/ST sector, and women, children and the old.

Increased and regular water supply, coupled with conscious health awareness building has resulted in better drainage, hygiene and benefits like growing of household kitchen gardens, supported by PSU.

Formation of many Jal Samithis, one per handpump, consisting of 4-5 interested members (at least 50 % women on each committee) includes trained mechanics/caretakers, at least one per committee. A range of active members have been developed, ranging from the village school teacher, a potter community representative -Shiva Pyari- and the village Pradhan, not only trained as caretakers and mechanics but as catalysts in building public awareness on health, O&M of facilities, and sharing of responsibility of monitoring the project etc.

At every stage voluntary effort has been promoted and school children are being mobilized as "Jal Senas" and further the cause.

Thus in 6 months, an intensive handpump training and monitoring at village level, of Jal Samithi members, backed up by Jal Nigam's technical expertise and PSU's social awareness building campaign has been done. As a result 6 confident community leaders who are also trained as mechanics have emerged, who are willing to develop the community organizers network.

The local government functionaries like the school teacher, a healthworker, the Pradhan and school children are consciously involved in promoting health awareness and community's social responsibility in maintaining the water and drainage system.

Careful management information systems have been established by the joint and close networking of Jal Nigam and PSU at village level. In the process, local Jal Samithi members have been trained, they manage the handpumps and are actively involved in improving the hygiene of the local community.

People perceive these changes as positive and are requesting for sanitation, expressing a willingness to contribute their share of the cost.

On the whole this area provides a good working model of a sustainable process in the provision of water supply and how it can be developed further to related development work at village level.

The sustained and patient efforts and interest of each person from Jal Nigam and PSU involved here in being sensitive to the community's needs and their practices, and systematically being with them in a supportive manner is clearly visible and has to be acknowledged as a critical factor in the sustainability of such projects.

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3. CASE STUDIES GUJARAT

3.1. Gu-I

Banaskanta District Santalpur Scheme, General

Banaskanta district in Gujarat is highly effected by scarcity and drought conditions leading to a prolonged drinking water problem. The two taluks, Santalpur and Radhanpur are most effected in the district. Again, the ground water is non-potable. The regional water supply scheme was envisaged to supply drinking water to these groups of villages under Indo-Dutch cooperation project covering 72 villages in the initial stage, another 48 villages under extension scheme and further 21 villages under augmentation scheme, thus the coverage would be 141 villages.

Village Level Distribution Pattern

Under this scheme, each village is connected to the main pipeline through branch connections. Village level system comprising of:

- i) Cistern (water tank): with a storage capacity of the water at the rate of 45 litres per capita per day for 12 hours;
- ii) Standpost: A platform with a bunch of taps at the rate of one tap per 100 to 150 persons;
- iii) Cattle trough: two groundlevel water trough for feeding cattle, connected from the cistern, and
- iv) Drainage and protection: The standposts are provided with a drainage system such that the water drains into a ground or channelled to be used for garden etc. The place of installation of water system is protected by constructing a compound wall or fencing. Care is taken in installing the cattle trough separately away from standpost.

The location of the village level water system (cistern, standpost, cattle trough, drainage) in the command area is determined by an independent agency in consultation with the local people and community.

Each village water system is maintained and operated by a lineman, specially appointed (on daily wage rate) for the purpose. He has to regulate the water supply, cleaning, upkeep and supervising the day to day operation of water system. In addition he has to check a specified length of water pipes every day, maintain a logbook with all necessary entries duly endorsed by the village sarpanch and report to the assigned water authorities. In each village, a Pani Panchayat is constituted by the GWSSB with five members, chaired by village sarpanch, in which lineman, school teacher and two or three villagers including women are the members.

Observations

Four villages are visited along the distributary main in the command area from headworks to tail end. The distributary main follows the pattern broadly with increasing intensity of water scarcity and level of development. It is noticed that in all the villages there is a prevailing practice of payment of water tax (along with property tax) to the village Panchayat to maintain the water sources by the Panchayat. This is being continued even after piped water system is introduced. In all the villages visited the households are paying Rs 5 per year per house to the Panchayat for the use of standposts.

3.2. Case Study I
Gu-I
Banaskanta District
Koliwada Village

Koliwada village is about 10 kms down from Radhanpur distributary system. The population of the village is about 1,600 persons. The village is served with a cistern and one standpost with 12 taps with a compound wall. Drainage is diverted to the near by school where the drain water is used for gardening. Another standpost with 4 taps is installed in another place of the village about 200 meters away from the main standpost mainly to facilitate the small group of SC community. There are six to eight other backward community people in the village.

During the discussions with the public, it is noticed that some degree of caste discrimination is present in the village. Even though the use of main standpost is common to all communities, it is practised that two of the 12 taps of the standpost are separately kept for SC people. In earlier days, SC people were still kept at a distance. The past long experiences of the people with vagaries of famine and drought and introduction of piped water supply to the village community with standposts have to a large extent made them to compromise on untouchability and paved the way to reduce the caste discrimination. This may take a longer time, but there is a definite evidence to show that all sections of the rural society have the easy access to the safe and potable water.

It is recollected by the people that in earlier days, they used to go long distance to fetch a pot of water from a pond which used to cater 4 to 5 months only and the remaining months they used to make ditches and collect water in small quantities.

At least one person use to spend full day to get one or two pots of water. They were experiencing many diseases, deaths (infants) and seasonal migrations. Now, such problems have become history. They never dreamt of water coming to their village from far off places.

The practice in the village is that fetching of water is the duty of women. Majority of the people around the standpost are women. A few adult males are also seen collecting water.

When enquired with some adult male members about the water tax, they said that they are paying Rs 5 along with house tax to the village Panchayat and on further enquiry, they agreed and are ready to pay Rs 5 per person per year.

They are aware of the existence of Pani Panchayat but they are not very much clear about its existence along with village Panchayat. Lineman is always available in the village to look after the water supply etc. Village Panchayat is strict on the use or misuse of water installations. Once or twice, they imposed a fine of Rs. 8 to 10 for grave misuse and damage caused to the standpost and that fine amount was used to feed the village birds. One of the village Panchayat members informed that the Panchayat has constructed the compound wall to the water installation out of the funds of Jawahar Rojgar Yojana.

All the households and women are aware of the water use and its value.

SEWA is the NGO working for introducing employment to the women as most of them now find time to work. About 15 women are working in the nursery plantation and earning about Rs 10 to 12 every day. They also earned nearly Rs 1,000 each as their share in the profits. Some women are also working in crafts, introduced by SEWA.

Many women are now asking for house connections, but they are not aware of the existing water resources conditions. Next to the water, when asked about their next priority, they prefer to have bathrooms. as they do not have much problem with toilet facility as land use pattern is very less.

It is the prevailing practice that boys go to school and girls look after the household work or smaller children when women also go for work. Though there is a balawadi, it is ineffective. The village has a Primary Health Care centre and people are quite happy.

3.3. Case Study II
Gu-I
Banaskanta District
Shavepura Village

Shavepura is located further down in the water supply stream. There are about 800 people in the village. While many aspects are similar to Koliwada village, glaring differences are found in fetching water from about 2 kms away from the pond or well in pre-public water supply scheme period. They used to take nearly 2 hours every day and this water was saline but they used it for drinking as well.

Major diseases were not a problem as they used to get water from good wells also. Dehydration was the problem earlier which is stopped now.

There are 4 taps at the standpost which they feel is not sufficient. In view of one standpost, all communities (including 4 to 5 houses of SC communities) are using the standpost even though caste discrimination is still prevalent. They did not have any objection against the location of the standpost. Cattle trough and its drainage are in a bad condition as there is no way to drain the water.

Women are found reasonably involved in community gathering. CHETNA (NGO) is actively imparting the social and health education. They are giving special attention to girl children with various types of visual media. Sone Baia, a puppet used by CHETNA is a favourite attraction to all groups of women.

Asked on the water charges, they informed that they are paying the tax to the Gram Panchayat and if Panchayat is not paying it to the GWSSB, they requested the board to bring it to the notice of the Taluk Committee. But they do not want to be deprived of water for no fault of them. If proper arrangements are made, they are ready to pay to the Board or Pani Panchayat.

They are sure that the Board and village community take utmost care to sustain the water supply system as the water is their life and death.

The role of CHETNA is clearly visible. They used the Bhajan Mandals as their nodal points. The lady member of the Pani Panchayat and lineman are the contact personnel for Chetna.

Similar to the women of Koliwada village, the next priority of the people is bathroom. In spite of availability of water, they feel that taking bath regularly near their houses is a problem rather than toilet facilities.

3.4. Case Study III
Gu-I
Banaskanta District
Kalyanpur Village

Kalyanapura village has a piped water supply and is also selected as one of the two villages for the sanitation programme. In addition to one main stand post, one more standpost with four taps is installed in the other part of the village. However, only the main standpost is being used to control the misuse of the other small standpost. The lineman informed that if both standposts are opened, some people use the other for washing cloths, vessels etc. and thus waste the water. All the residents agreed not to use the second post regularly, except during summer or festivals. There are no restrictions on use of taps of standpost and all communities are allowed to use it. However, lower caste (SC) people are given differential treatment as they have to use only two allotted taps.

In view of the availability of water, people express their satisfaction that they are now taking bath more frequently. The people of the village never expected that they will get safe water from such a long distance.

The village is also provided with sanitary latrines under the Indo-Dutch Programme. Under this programme, each house is given a unit of a Pour Flush latrine and a bathroom. About 85 houses have been already given the facility. The cost of the unit is Rs 4,000 (present cost), of which the beneficiary contribution comes to Rs 650 (mostly in terms of labour and materials). While the ground structure is fully subsidised, the superstructure is subsidised by 50 % for the above poverty level households, and 75 % for below poverty level households. The toilet/bathroom programme is being implemented by the Environmental Sanitation Institute.

The units are found more convenient and within the reach of the rural people. The design and architecture closely fits into the housing environments. However, the quality of finished units has to be improved with proper supervision. The households are given required instructions to use the toilet.

From the discussions it is observed that the women are most satisfied with the safe water, bathroom and toilet facilities. There is a great demand for toilet/bathrooms and all sections of people are ready to pay their share of the cost.

The Pani Panchayat has been duly constituted by the Board. There was a problem in constituting the Pani Panchayat due to caste differences.

SEWA is working in introducing a number of employment generating activities. In view of the information spread, many women are voluntarily coming forward demanding any type of work which can give them some income.

3.5. Gu-II
Mehsana District
Sami Harij Scheme, General

Sami-Harij regional water supply scheme was taken up to cover about 111 villages which are badly affected by saline water and depletion of ground water sources. The scheme is also planned to supply drinking water to Sami town. It is learnt from the Board officials and local people that the depletion of ground water is due to excessive drawal of water through tube wells by the farmers for irrigation purposes. There are about 12,000 to 15,000 tube wells in Sami and Harij taluks. As year by year the ground water level is going down, the farmers are also deepening their wells and lifting the water by higher and higher powered electric motors (increasing from 10 HP to nearly 30 HP motors). They informed that 15 years ago the water was available at a very high level.

The scheme draws water from 5 tubewells at Saraswati river near Kamlivada village, Patan taluk, and is collected into a chamber. This water will be conveyed by gravity into Ground Level Reservoir (GLR) of 30 lakhs litre capacity near Hajipur village, Patan taluk. The water will then be conveyed by gravity to a distance of about 34 kms. Here, the water is again pumped into Elevated Storage Reservoir (ESR) of 10 lakh litre and from here, water will be distributed to the villages. The scheme uses village level infrastructure wherever already available (also with rejuvenation if necessary) and proposes to construct the cisterns, standposts and cattle trough where ever necessary.

To maintain the systematic water pressure throughout the distribution network, the system proposed independent distribution mains with boosters, if necessary, so that the tail - end villages also get sufficient water. The project work is almost ready and water will be made available in stages in 2 to 6 months time from now.

3.6. Case Study IV
Gu-II
Mehsana District
Gujarvada Village, Sami Taluk

The population of Gujarvada village is about 1,000, of them about 150 belong to SC community and others belong to Brahmin, Patel, Thakur and other higher caste communities. The village got the first independent water supply scheme in 1985, operated and maintained by the village Panchayat. The scheme has a cistern, one stand post with 14 taps and a separate cattle trough. All communities have equal access to the public standpost taps without any discrimination. However, in view of long distance and the policy of central government, water is supplied through one pipe line to the SC locality and a few house connections are also given. In the SC locality, some of the house connections are outside their houses which are being used by other SC people also. The cost of this extension is met out of Jawahar Rojgar Yojana funds given to village Sarapanch.

The old Scheme (existing) is however not in a position to supply sufficient water and the water is saline. The people informed that when the regional scheme was under the proposal stage, most of the villages resisted the introduction of group water supply and they represented to the government not to implement the scheme. Subsequently when the Santalpur regional scheme was completed and commissioned, these people realised that they have done a mistake and further approached for the implementation of the scheme. They also heard from the Santalpur scheme that they are having Pani Panchayats for water supply maintenance and operation and they are also willing to have such Pani Panchayats.

The economic status of the village is good. The village Panchayat is not having any technical personal for maintenance of water supply system. However, one person is employed on a part-time basis, who is paid Rs 150 per month by the Electricity Board for street lighting and Rs 250 by village Panchayat for water supply operations. For any major repairs the people themselves manage to get it repaired as most of the villagers have some experience with their own irrigation tube wells.

The Panchayat collects Rs 30 per house along with property tax. But the village Panchayat has not paid the electricity bill to the extent of Rs 10,000 as arrears.

The people are happy to get the safe water from the new scheme and the Panchayat is eagerly awaiting the release of water. The Panchayat is ready to take O & M of the scheme with the help of the Board.

3.7. Case Study V
Gu-II
Mehsana District
Baspa Village

Baspa village is in the tail end of the Sami-Harij scheme. The village is already operating an individual scheme. The village got a borewell in 1950 by Sri Ravishankar Maharaj which served for 15 years. In 1967 one more borewell was dug under scarcity relief works of the government. Subsequently in 1975, an open well was dug. In the course of time this water became saline and non-potable. In 1987, a new borewell was dug which is being used now.

The village has about 3,000 population (600 Households), of them about 900 belong to SC community and the majority of the remaining population come under backward communities. The village is in the backward region adjoining the Radhanour Santalpur region. The village suffers from acute water shortage almost every year and the people are accustomed to drink the saline water.

The environs of the standpost and the condition of the cistern and cattle trough are bad due to the lack of proper maintenance. However, people are aware of the value of water and they use it very carefully. They do not like wasting of water as they suffered earlier with lack of water, even for drinking.

Individual house keeping and level of hygiene, as traditionally maintained by the people, is of good quality even without any outside intervention in health and hygiene education. Cautious storing of required water for drinking and cooking separately within their houses is observed. For cooking grains and pulses, they add "cooking soda" as the water is saline which is not suitable for cooking.

3.8. Gu-II
Amreli District
Lathi Liliya Scheme, General

The Lathi-Liliya regional water supply scheme is designed to tap the river water from the Kalubhar dam. The scheme is designed to collect raw water from the dam reservoir (about 3 MLD) by using 2 jet pumps and one borewell (with alternative uses), and collect at Damnagar water works where the treatment plant is located. From Damnagar, six villages are given water directly. Again from Damnagar, water is pumped to ESR at Bhingrod water works from where water is supplied to about 20 villages. The scheme is currently supplying water to about 21 villages and the remaining 10 to 12 villages are yet to be connected. The work is in progress. In addition to rural water supply, the scheme is also planning to supply water to Lathi town in future.

At the reservoir source, the water level is going down in view of failure of rain. As priority is given to drinking water, water for irrigation purpose is regulated. There is also a water seepage at the dam. To preserve water, the scheme is repumping the leakage water back into the reservoir.

The main objective of the Lathi-Liliya regional water supply scheme is to supply potable water to the villages where the ground water in this region has a high fluoride content ranging from 1.5 to 11.00 ppm. There are about 12 villages with 2.8 to 11.00 ppm level of fluoride in the ground water. Many people are physically affected by the excessive fluoride in the water used by these villagers. However there was no shortage of water. Many villages in this region are already served with individual water supply schemes and maintained by the village Panchayats. Under the Lathi-Liliya water supply scheme, infrastructure already available (such as storage tanks, standposts, cattle trough etc.), is used and only in some villages new infrastructure is given. The new scheme is restricted to public standposts only and house connections are not given. Water is being supplied on alternative days so that this water is used for drinking and cooking and the old system water is used for other purposes.

Though caste discrimination is present in general, in the case of drinking water such restrictions are relaxed by the people themselves as far as the public standposts are concerned. All sections of communities use the standposts, sometimes with equal preference (first come, first collect) also. However, in view of the distance and the central government policy, SC localities are given additional standposts and also house connections.

3.9. Case Study VI
Gu-II
Amreli District
Thansa Village, Lathi Taluk

Thansa village is about 4 kms from Damnagar head works but water supply is not yet given in view of some controversy with respect to the house connections. This village already has a individual water supply scheme maintained by village Panchayat. The village has about 2,200 persons and about 1,000 heads of cattle. Individual piped water supply scheme was introduced about 15 years ago. The water level went down, and the fluoride content increased. There is one standpost with 12 taps at the entrance of the village and one cattle trough. These taps are used by all sections of the people. In addition, one separate standpost is installed near a SC colony consisting of about 150 houses. In addition to standposts, the village is also having 4 handpumps, of which one is located in SC colony, another in general locality. There are also about 250 house connections. Nearly 200 persons are physically effected by the fluoride. Two women, Otiben Kanjeebhai, aged 65 and Paresodhankala, aged 60 are suffering from a limping leg problem and they find it difficult to sit and get up.

All men and women are equally aware of the health hazard caused by the water and they are very thankful to the Board and Dutch government in bringing river water from a far off place. They informed that they are quite happy and confident that their children and next generation will live peacefully with the new system of safe water.

The Panchayat collects Rs 3.50 per capita per year as water tax (number of persons is determined from the Ration cards) along with the house tax. House connections are charged at the rate of Rs 15 per two months. Panchayat will collect and spend the revenues on water supply. The collection rate of water tax does not exceed 70 per cent. There is no separate technical staff to look after the operation and maintenance, but the Panchayat peon is given an additional charge to operate the distribution. Cleanliness around the standpost is poor. All are ready to pay Rs 5 per capita per year if the new water supply connection is given to the village.

When asked about their next priority they feel that they prefer to have toilets as their women require privacy. Next priority is bathrooms. They are ready to contribute their share if bath room and toilets are given to individual houses. The overall economic status of the village is average. However, there are no community based activities.

The women, particularly in SC community, feel that the daily time schedule of water release is irregular and consequently they are facing problems when going to their daily jobs. If the daily water release timings are regularised, they could programme their activities in an organised form.

The women are fully unaware of any community based activities such as Pani Panchayat or public health related to water and sanitation. However, when proposed, they expressed their desire to know and participate in such community based activities and also their eagerness to involve themselves in planning implementation and management of water use and related issues.

3.10. Case Study VII
Gu-II
Amreli District
Bhingrod Village, Lathi Taluk

Bhingrod village is near Bhingrod water headworks. The village has about 2,700 population with 125 to 150 SC community people in a separate colony. The ground water in this village contains about 3.5 ppm of fluoride. The village got its individual water supply with borewell about 15 years ago. Before that, they used to collect water from two open wells situated in two corners of the village. These used to go dry every year. Physical disability (becoming old early, weakness in knees and tiredness) is the main problem effecting many people. The scheme also supplies water to about 300 houses (house connections) including 21 in a SC locality. The public standposts have access to all sections of the people.

The fluoride affected people are enquired about their health. They replied that they feel better with the new water. They know that the disease may not increase (if not decrease) in view of the new safe water. They are psychologically relieved of the disease.

The village people are well aware of the value of water and they use it very judiciously. In view of the expected health improvements, the village women are willing to take income generating activities such as papad making, stitching, soap preparation etc. There is no systematic community organisation. Many of the village people are engaged in diamond cutting activity and on an average they get Rs 60 to 100 every day. The income levels of many households are reasonable. Housing conditions are reasonable.

There is a system of village water supply management by the village Panchayat. A general water tax is levied at the rate of Rs 20 per house (with property tax). House connections are charged at the rate of Rs 80 per year for non-Sc communities and Rs 30 per year for Sc households. The tax collection rate has, however, not exceeded 70 %.

The revenue from water tax alone is not sufficient to meet the expenditures. The Panchayat has appointed two persons separately for water supply operations and lighting and other cleanliness and maintenance activities. They are paid Rs 600 and Rs 250 respectively. On average, every year, the revenues from water supply comes to Rs 25,000 and the over all total expenditure per year is Rs 60,000. The village Panchayat has a system called Lok Phalav (public donations) through which the Panchayat fills the revenue gap by collecting contributions from the public whenever necessary. They are not aware of a Pani Panchayat system. The women in the SC colony are happy with the new water supply from the river. They use their water for drinking and cooking. They have also one borewell which is used for all other works. Due to the availability of water, women are now taking regular bath.

Most of the women in the SC locality are engaged in charka spinning as their household activity. Earlier, they use to spend nearly 2 to

3 hours in fetching water and then go for spinning work. Now they are able to attend to their economic activity more regularly. They do not know about community participation and organisation.

4. CASE STUDY KERALA

4.1. Case I

Kerala/Vakkom Anjengo scheme Village Vakkom Penvlayat

Vakkum Ajengo scheme (capacity 9.7 MLD) will ultimately serve 6 Panchayats with a design population of 194,000 people in 2010. It consists of river water intake works (Vanamapuram river), treatment plant (rapid sand filtration), clearwater reservoir, overhead tank, booster pump station, ground tank, 3 km mainlines and 190 km distribution lines. Total cost of the scheme (90 % coverage): Rs 533 Lakh (additional works will include the construction of 25 km distribution mains).

One Panchayat visited, Vakkum Penvlayat has a population of 16,000 people approximately. So far 1067 PT have been installed. There are many multi story buildings, called "Gulf Houses" and built with savings from labour force in the Middle East.

Everywhere private wells can be noticed as well as latrine units, the latter constructed by SEU and costing only Rs 1,800, of which household will contribute Rs 400. The latrines have an adequate outlook, twin pit design with ceramic pan and superstructure with roof and door (3 alternatives available: wood, plywood, iron). Many problems are faced with the taps of the standposts (self closing type) that are constantly leaking.

Discussion with community members revealed that:

The water presently used by the household is taken from a well owned by their neighbours who spent about Rs 50,000 for its construction. Even in the dry season water is available and of good quality.

They are clearly aware about the relation between unsafe water and diarrhoea: in case children suffer from this disease they will go to the Panchayat and ask for bleaching powder to disinfect the well.

The household does not know all 3 members of the ward water committee, which was established only 6 months ago. They do know the chairman of the committee however, who is a representative in the Gram Panchayat and who visited them some time back.

They would appreciate the piped water and be willing to pay for it (Rs 1/month) because one never knows if the neighbour's willingness to share his well might change in future.

The intake works and treatment plant have been visited during the trip. It appeared that 3 out of 6 MLD clean water produced, is presently supplied to Panchayats outside the Dutch schemes.

Finally the mission had an opportunity to visit a surface water plant including laboratory, established in 1971 (!) and supplying water to Atingal city (30,000 inhabitants approximately). The plant had a reasonable outlook, confirming the opinion that O&M is done up to the level of 75 % approximately.