REPORT MID-TERM REVIEW
RURAL WATER SUPPLY
GENERAL PROGRAMME
INDIA

MAY 1988

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REPORT MID-TERM REVIEW RURAL WATER SUPPLY GENERAL PROGRAMME INDIA, MAY 1988

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1. BACKGROUND

Sweden has given support to rural water supply programmes in India since 1979. Since 1982 the Swedish support has been channeled through UNICEF. For the period 1985/86 to 1987/88 an amount of SEK 132 million was allocated for the support of UNICEF's Master plan of Operations i.e. for UNICEF/Government of India Rural Water Supply and Environmental Sanitation Programme. Out of this amount, however, SEK 17 million was utilized for the preparatory phase of the Integrated Guinea Worm Control Rural Water Supply Health Education and Environmental Sanitation Project in Banswara and Dungarpur districts, Rajasthan, for which in 1986 a separate agreement was signed with UNICEF for the period 1 July 1986 - 30 June 1990. An additional agreement to be signed with UNICEF and cost estimated to SEK 56 million to include Udaipur district in this programme from mid 1988 - 31 December 1992 is under preparation.

On a request from the Department of Rural Development, Government of India (GOI), UNICEF has proposed an expansion and intensification of Government of India and UNICEF cooperation in Water Supply and Sanitation programme for drought, for which support has been requested from SIDA.

As the Agreement to support the UNICEF/Government of India Rural Water Supply and Environmental Sanitation programme will expire by June 1988, an appraisal was carried out in February-March 1988, to review the Programme. The appraisal paid special attention to priorities and activities in the sector, in order to provide a frame of reference for the assessment of ongoing Swedish supported activities and for the identification of possible areas for future Swedish support. The report from the Technical Appraisal Study, March 1988 is the major input for this Review of SIDA supported water supply and environmental sanitation projects in India together with the findings of the Review Team based on discussions and field visits.

The Review took place between 16 - 25 May 1988. This report presents the views of the SIDA team.

2. RURAL WATER SUPPLY AND SANITATION IN INDIA

Achievements

The core concept throughout the RWSS operations in India has been that of a "problem village". Initially this was defined as one where the nearest water source is more than 1.6 km away, and/or at a greater depth than 15 m, and/or has an otherwise inadequate and unprotected water supply.

The strategy adopted was to make every effort to "cover" all problem villages with at least one safe water source, later to be followed by an augmentation of the number of installations prescribed by the "full coverage" norms (approx. 40 lpcd, 250 pop/point, distance, quality).

On the basis of the existing norms, there remains to be covered a total number of 99,000 villages (April 1988) with improved water supply. It is estimated that approx. 75 percent of the rural population will have access to safe water by March 1988 compared to 64 percent in April 1985, 100 percent coverage is expected to be achieved during 1990.

Dilution of the existing criteria to more intensive coverage of population, closer location of drinking water sources and more adequate supplies as raised in the seventh plan documents could however change the implementation targeting.

The total coverage during 1985-88 is estimated at 63,000 villages and during 1987-88 as 37,000 villages.

Although the handpump programmes form the major part of the rural water supply programme, piped water schemes, gravity feed schemes, conversion of stepwells are also important ingredients in the programme.

The number of modern drilling rigs in India is 3365 of which UNICEF is supporting 113 nos. The various States have purchased 952. 2 300 belong to contractors.

The total annual output from all categories of rigs is 160.000 wells.

2.1 Handpumps Development

An estimated 1,2 million handpumps are installed all over India. A survey in 1984 which covered 4,840 handpumps in 1964 villages spread over eighteen districts in six states revealed that 80% were in working order. The good performance could largely be attributed to the fact that most of the pumps at the time of the survey were fairly new installations, and the situation will most likely deteriorate with time. With a large number of pumps being added every year the problem of maintenance will be a major one within a few years time.

At present, however, the states are said to cope with the situation. 10% of the budget for the RWSS programme is set aside towards maintenance.

2.2 Environmental Sanitation

When the International Water Supply and Sanitation Decade was launched in India, the target set for rural sanitation was to provide 25 percent of all rural households with sanitary latrines. The progress has however been rather slow in physical terms. The creation of sanitation cells on intersectoral basis in some states seem to be an important step on the way to strengthening the institutional infrastructure, for carrying out improvements in environmental sanitation.There had also been increasing political will in respect of improvement of rural sanitation. The Prime Minister viewed "the absence of sanitary latrines in the rural areas, apart from constituting a health hazard, also present special problems for women due to lack of privacy". He advised the State Chief Minister to "emphasize the importance of the programme" and to take personal interest in its success to "rapidly transform the quality of life" in rural India.

2.3 Information, Education, Communication

The APEX Committee, which is the coordinating body constituted by GOI to guide the Decade operations, stated in 1986 in a report, as an assessment of the situation at the beginning of the seventh plan with regards to health education and community participation that no health infrastructure either at the state district or at the primary health centre, existed for carrying out health education relating to water supply and sanitation. Recommended actions and budget allocations were however not included in the Plan

Document resulting in the situation remaining basically the same.

2.4 Community Participation

One consequence of the massive effort to provide all with potable water before ending of the decade is obvious. It has not been possible to involve communities in preparation of plans and in physical installation of facilities. Thus the involvement in, and therefore identity with the water supply installation and awareness of the utility/benefit of safe water is seemingly lacking. This in addition to the fact that the present design of handpumps cannot be easily maintained on village level for technical reasons, greatly affects the maintenance of pumps etc.

3. UNICEF CONTRIBUTION TO RURAL WATER SUPPLY AND SANITATION

3.1 Water Supply

3.1.1 Drilling Programme

Technical achievements

UNICEF cooperation in drilling focused on introduction of new technologies in drilling, management and logistic support to improve efficiency of the equipment provided and support to human resources development.

The development in the field of hard rock drilling is impressive. The current number of rigs under WESS is 113 of these 14 were procured 1987. These rigs however constitute a small part of the total capacity available to the national RWS programme.

During 1985-1987 the UNICEF rigs (operated by state government personnel) have drilled some 18,000 successful tubewells providing water to an estimated 4.5 million people. The success rate is an average 85%, without any extensive hydrogeological survey being carried out.

3.1.2 Human Resources Development

To improve the overall capacity in drilling operations, UNICEF provides support for training programmes for over 100 engineers and about 2,600 drillers and mechanics. Support for conducting geophysical investigations has been stepped up and a

total of 159 geologists have been trained. Another 65 drilling and field engineers have been oriented in the same subject.

3.1.3 Maintenance

UNICEF supports operation and maintenance of the rigs provided, through supply of spare parts, training of personnel and periodic servicing.

3.1.4 Monitoring

The computerized Rig Monitoring System introduced for monitoring the UNICEF rigs has been found an effective monitoring tool. The system gives qualitative and quantitative information on the performance including number of wells drilled, depth and yield of the wells, causes of breakdown etc. With the assistance of UNICEF a similar system has recently been introduced to monitor and improve performance of government owned rigs.

3.1.5 Community Participation

The scope for community participation in drilling programmes is limited due to the complex technology. Villagers are said to be involved in the decision making when selecting the site of the well.

3.1.6 Future role of UNICEF in Drilling Activities

Major expansion in drilling activities is expected during 1988-89 to provide water sources to all remaining "problem villages". Emphasis shall gradually shift from procurement to improved efficiency of the existing drilling operations. Continued UNICEF role and support is envisaged in the improvement of management and operation of drilling equipment owned by the state government. The need for introduction of new and appropriate technologies for difficult and underserved areas is recognized.

3.2 HANDPUMP DEVELOPMENT

3.2.1 Technical achievements

During 1985-87 UNICEF supplied about 19,900 handpumps (India Mark II) to various states mainly to replace pumps of other types (the rejuvenation programme). These pumps are expected to provide safe water to about 4.9 million people.

The ORG survey carried out in 1984 indicated that about 80 percent of the handpumps were in working condition and in general the quality of the installation was good. The survey also revealed some weak areas e.g. the surrounding of the platforms in the majority of cases were found dirty.

The average cost for a typical installation including drilling is USD 1800.

UNICEF has played an important role in introducing and maintaining the handpump standardization and quality control procedure. There are 37 "approved" manufacturers in India producing a total of over 200,000 handpumps annually. The quality control will gradually be taken over by Indian Bureau of Standards. Approximately 4000 handpumps are exported to approx. 40 different countries.

New design concepts are under development. A modified version of the India Mark II pump to suit village level operation and maintenance (VLOM) is under extensive field trials.

Development of a low-lift handpump has been initiated in cooperation with UNDP/World Bank.

3.2.2 Human Resources Development

Training of about 13,000 handpump caretakers has taken place in nine states. The figure includes 1,500 women caretakers.

3.2.3 Maintenance

The development of the VLOM pump is a major activity to facilitate maintenance. Training of personnel, especially at grassroot level, receive increased attention. The above mentioned ORG survey found that the repair of damaged pumps often take longer time than expected, indicating the need for further improvement in maintenance system.

3.2.4 Monitoring

A system (Kardex System) is being introduced to monitor the functioning and utilization of handpumps.

3.2.5 Community Participation

UNICEF recognizes a greater need for community involvement and participation in the site selection, operation and maintenance of water facilities. Experiences from some states indicate that women are more effective than men as handpump caretakers. Importance of sub-national level planning is emphasized.

3.2.6 Future Role of UNICEF in Handpump Development

Continued efforts are needed to further develop low-cost technologies. The development of handpumps suitable for village level maintenance received high priority as well as the development of an operational village based maintenance system.

3.3 GRAVITY FEED SCHEMES

3.3.1 Technical Achievements

A total of 60 gravity feed schemes have been assisted by UNICEF providing water to an estimated 39,000 people. UNICEF provides pipes and fittings while the state governments bear the cost of installation.

3.3.2 Human Resource Development

Three training centres have been established in three states. Services of local training and research institutions have been used to train personnel at different levels. Over 100 engineers and other technical personnel have been trained in design and installation. In addition over 500 plumbers, fitters and village level caretakers have been trained in operation and maintenance.

3.3.3 Monitoring

The monitoring of gravity feed systems are being approved through the introduction of periodic monitoring of progress and spot surveys of zone office and state levels.

3.4 Environmental Sanitation

The GOI/UNICEF midterm review reports enhanced political will and commitment by the GOI to step up promotion of environmental sanitation in rural areas. Increased resources have been made available by the central

government, through programmes that focus primarily on the provision of sanitary latrines to the under privileged and low income groups at no cost to the beneficiaries. By 1987 it is estimated that about 3% of the rural population has access to sanitary disposal of human wastes against a target of 25% to be achieved by 1990.

A broader concept of environmental sanitation as a package of health-related activities including domestic waste disposal, clean home environment and personal hygiene rather than the restrictive definition of construction of sanitary latrines is gaining increased acceptance at policy levels. UNICEF support in construction of latrines is planned to be concentrated in selected states only while support for IEC activities will be extended to all the states. UNICEF supported schemes aim at increased participation and involvement of communities through contributions in cost and kind. School teachers and anganwadi workers are some appropriate channels for creation of awareness among children and communities. Support to NGO's in promoting sanitation was expanded through CAPART.

4.1 Human Resources Development

Capacity building, training and orientation of personnel is receiving increasing attention. A total of over 6,000 functionaries of implementing agencies as well as field level workers have been given orientation on the concepts of environmental sanitation. Increased attention is given to orientation of women motivators; thus about 25 per cent of those oriented were women. About 1,000 supervising technical personnel and masons have been trained in the construction of sanitary latrines. About 2,000 sanitation promoters including scouts and guides have also been oriented.

A wide range of communication channels including mass media are being increasingly used for promotion of environmental sanitation.

UNICEF has provided assistance to construct 37,000 latrines in households, 5,500 latrines in primary schools and anganwadi centres and another 4,000 latrines in public places like community centres, village markets, etc. These facilities are expected to benefit about 400,000 community members and about an equal number of children in the institutions.

5. Information/Education/Communication (IEC)

For promotion of environmental sanitation, a wide range of communication channels including mass media are being increasingly used :

A large number of training and educational materials including booklets, pamphlets, flip charts, posters, slide sets, and video covering different aspects of environmental sanitation and hygiene have been developed, produced and distributed. Radio and TV spot on hand-washing, good hygiene, hazards of exposed excreta, protection of water sources, and proper storage of drinking water at home have been prepared Attempts are being made to use the network of Indian Railways, Indian Chamber of Commerce and Industries and different commercial organizations for promotion of environmental sanitation.

A number of surveys supplemented by field visits indicate a wide variance in the functioning and utilization of sanitation facilities. Utilization of household latrines is between 65 - 70 percent, comparable figures for anganwadi latrines are about 50-55 per cent and those for school latrines range from 30 to 70 percent.

With the scaling up of the programme: there is a need for a wider based Knowledge, Attitude and Practice (KAP) study which will help to focus attention on specific behavioural change objectives and area-based educational packages. In order to establish a basis for analysis and planning of IEC and related activities, a KAP base-line survey to be implemented nation wide in selected states, has been initiated.

5.1 Achievements

Capacity building and related support to training institutions including I.E.C. elements and applied communication techniques.

A large selection of training and educationmaterials including booklets, posters, films produced.

Radio and TV spots on promotion of cleanliness and personal hygiene produced.

Knowledge, attitude and practice (KAP) studies initiated in 8 states to develop a more comprehensive communication/social mobilization strategy and media plan.

6. SIDA contribution to the GOI/UNICEF rural water and sanitation programme

The rural water and sanitation programme in India represents a vast investment. At the beginning of the 80's it was estimated that the fulfillment of the decade objectives would require an outlay of Rupees. 1,008,770 million in the sector as a whole. The sixth plan (1980-85) planned outlay was Rs. 21,342 million and the seventh plan provided for an increased outlay of Rs. 21,542 million. The Technology Mission for drinking water has been provided with an outlay of Rs. 1,500 million. An additional expenditure ceiling of Rs. 1,366 million has been provided for the current drought.

From 1979 onwards SIDA have made available to the RWS sector in India around SEK 385 million. Out of these funds SEK 339 million have been channelled through UNICEF.

At the time for the review, a financial statement showing actual utilization of funds for the various projects, was yet to be completed.

7. Disbursements and Financial issues.

Partly due to the fact that disbursements to and reports from the UNICEF water and sanitation programme have to go via UNICEF Headquarters in New York there is a considerable confusion as to how much has actually been spent under the various programmes.

With the intention to improve the situation in general the guidelines for payment and reporting on UNICEF Supplementary Funded Projects have been revised.

In SIDAs view it is fundamental that it is recognized that agreements between SIDA and UNICEF run for a certain, specified period and that the amount agreed upon is a maximum amount. Unless extended, the remaining balance at the end of the agreement period shall in accordance with the Guidelines, be transferred to the Special Account which has been established for i.a. that purpose.

It is here also essential that following an agreement a specific "form 300 number" is established soonest possible in order not to have to debit costs to other projects.

In accordance with the guidelines SIDA has now asked UNICEF to close the RWS II account and transfer the remaining balance - US$ 535.598 according to report to the Special Account and submit a Final Report to SIDA soonest possible.

SIDA had also asked to be informed about the justification for the transfer of costs amounting to US$ 446.942 from RWS II to the Water Supply and Sanitation Project, and whether this transfer constitute the total amount earlier debited to RWS relating to the General Programme.

SIDA expects to receive a Final Report soonest possible and before any Agreement is signed between UNICEF and SIDA on extension of ongoing project or support to the expansion.

8. Observations from field visits

8.1 Uttar Pradesh

For obvious reasons it was impossible for the SIDA team to gain little more than a brief overview of the total WESS activities. A visit to Uttar Pradesh and Mirzapur district was much appreciated and gave some insights about progress, problems and potentials. Information about the rural water supply programme in Uttar Pradesh and Mirzapur district can be found in Appendix VI and VII respectively.

The observations by the team are as a whole consistent with the findings of the Appraisal Team (Report March 1988). A few general observations however can be made.

The most impressive feature of the programme was the skill and capacity of the people involved in the various activities. It was the impression of the team that the programme staff on various levels was sufficiently trained and worked with commitment. The relations between UNICEF, state, district-staff seemed to be constructive.

The team saw a well functioning drilling programme. Installation of an Indian Mark II handpump and the casting of a platform was demonstrated. The assembly of the handpump, with a large number of tools required, further stressed the inappropriateness for village maintenance of the present design of the Indian Mark II handpump.

The loudspeaker tried to carry across a message of hygiene, education at the drilling site but it drowned in the noise from the rig. The initiative was appreciated - it is certainly important to utilize the interest from each and everyone in the village at the time of intervention. However, alternative approaches should be sought for. One approach discussed at the drilling site - to increase the crew staff with one member working fulltime with information and hygiene/health education - might be worth while trying out.

In the villages visited no activities related to environmental sanitation were planned.

A striking feature of the area visited was a number of old, well constructed open wells centrally located in the villages. Although the water was in most cases polluted and the superstructure broken, it is the opinion of the team that these wells constitute a very valuable resource to be improved. Even if they for a shorter period of the year will dry up - they will still be used due to convenience and/or tradition. Cast-iron handpumps were found on some wells and obviously maintained at village level.

Recommendations from the team

Any social mobilization and communication related to improved water supply, environmental sanitation and health/hygiene education should include among other aspects, improvement and use of the existing traditional water supply.

A long discussion with the Zonal Commissioner, Mr. Rajiv Shah revealed a genuine concern for the urgent maintenance problems of handpumps and other water supplies.

The discussion also emphasized the need for village participation and contribution in construction, operation and maintenance. The involvement of the private sector was stressed.

The review team was given the opportunity to meet staff from the Sanitation cell of the Uttar Pradesh Panchayat Raj. The cell which is supported by UNICEF, consists of staff members assigned to different districts and is intended to work on sanitation issues on a intersectoral basis Although the immediate task for the cell was to introduce and construct sanitary latrines to 100

households in a number of villages, the cost of which was distributed between household, Jal Nigam, UNICEF in the ratio 20% : 40% : 40%, the major emphasis of the group was on human resource development. Training through workshops involving government staff on district and block level as well as of village motivators was carried out. The enthusiasm and professionalism of the staff impressed upon the team.

8.2. Rajasthan

A visit to Udaipur, dungarpur, confirmed that the SWACH/IGEP is well under way. Drilling of wells, installation of handpumps and conversion of stepwells is said to be on targets. The quality of installations seemed to be good.

In addition, in spite of the relatively short time that has elapsed since the project was started, the program for community participation has made some progress. A number of publications and other materials promoting hygien and improved sanitation practices have been produced. A course where 30 - 40 women from villages in Dungarpur district had gathered to be trained as social "animators" for their own villages was very impressive.

It is hoped by the team that experiences gained from the SWACH - IGEP project can be used more extensively in the general RWS programme.

The expansion of the SWACH/IGEP programme to include UDAIPUR district

8.3 Visit to handpump factory

The team had through arrangements by UNICEF, the opportunity to visit the manufacturing plant of one of the major suppliers of India Mark II handpump; Ajay Industrial Corporation.

The Ajay Industrial Corporation is listed under the small scale industry scheme. The company which produces 35 - 40,000 handpumps per year had 200 employees. Except for shearing of steel plates and fabrication of steel rods for which heavy machinery was used, most of the fabrication process was carried out manually. Measurement control gauges were used parallel with sledgehammers to ensure a good quality end product. All individual pumps have to pass a final quality control, sponsered by UNICEF.

The present market and total production to India is around 300,000 pumps a year. There are 37 approved manufacturers. Around 4000 pumps/year are exported to 25 countries.

The present cost of one pump complete with 30 m rising main is approximately Rs. 3,200/-

9. Findings

9.1 UNICEF

With the Master Plan of Operation 1981-83 (extended to include 1984) UNICEF entered into a broader collaboration with GOI in water supply and sanitation, covering broadly the whole spectrum of integrated RWSS activities. This marked a shift away from the exclusive emphasis on equipment (rigs, vehicles, handpump development, etc) of the earlier years of collaboration.

The present MPO (1984-89) further underlined this shift in objectives and range of activities towards a more people oriented support. As part of this shift there has been a corresponding shift in the staff profile of WESS as well as a gradual decentralization of WESS operations to zonal/state offices.

Throughout this period SIDA has supported the RWSS activities of UNICEF with SEK 110 million 1982-84 or approximately 65% of the MPO requirements, and an ongoing support 1985-88 of SEK 117 million.

Compared to the gigantic resources going into the RWSS sector from GOI and the States, UNICEF's contribution is marginal. However, with its zonal and state network, it is clear that the organization is well placed to play an active catalytic role.

Within UNICEF/WESS itself the most noteworthy development over the years of SIDA support has been a change in the professional profile of the staff, and a decentralization of responsibilities towards the zonal offices.

In addition to this the decentralization over the last years is perhaps even more marked. At present WESS field staff are attached to and work in close liaison with zone/state staff. It is assumed that the decentralization is an ongoing process and the process so far is very encouraging.

A noteworthy feature of the decentralization is also that the UNICEF zonal staff, irrespective of their main field of responsibility, increasingly work as "multi-purpose workers" within the respective geographical areas allotted to them.

The main problem associated with the decentralization seems to be the internal information/communication. UNICEF's role is also to feed back, and develop on, the experience in the field in order to assist GOI to improve policies and operational guidelines. However, this "sharing of experience" both externally and internally, has not emerged as a strong point.

9.2 Water supply

The focus on hard rock drilling and handpump development in the 1970's and early 1980's has slowly shifted to become more community and people oriented. Drilling support and supply assistance still forms the bulk of UNICEF's budget, ranging between 75 - 85% of total disbursements. The present continued high level of support in this field is justified although now more as a matter of fulfilling and following-up of the initialinvestments.

At present UNICEF supports the operation and management of all new generation rigs. It is the impression of the Team that their level of performance is satisfactory, as is the level of support provided by/through UNICEF.

Maintenance, including spare parts procurement and distribution, for these rigs are still with UNICEF in spite of an old agreement for a gradual government take over. Such a take-over was initiated in the early 1980's but was never effectuated. At the request of GOI the responsibility has since remained with the UNICEF, putting a considerable strain on limited organizational and financial resources. Consequently decision has now been taken by WESS to pursue the hand over of spare parts storing and distribution to the Government. The team fully endorses this decision.

Regarding drilling rigs the Team observes that only a limited number of additional rigs for special heavy duty drilling and/or ability to reach areas with difficult access, should be supplied through external funds. Rigs for normal drilling conditions are manufactured within India.

In respect of handpumps UNICEF has, since the early 1980's participated in, and supported the development of a Village Level Operated and Maintained (VLOM) pump. Field trials are ongoing and it is hoped that the large-scale production/installation of this pump can be initiated by 1989/90. The introduction of this pump will hopefully improve the prospects for a functioning maintenance system.

The core issues that in the medium and long-term perspective overshadows all other is that of maintenance. A survey undertaken in 1984 on behalf of UNICEF indicated that approximately 80 % of all hand pumps installed were functioning. A common interpretation is that maintenance therefore must somehow be working or that the situation has improved since the early 70's. However, as the study itself made clear the main conclusions one can draw from this survey are that the India Mark II is indeed a very sturdy and maintainable pump; that maintenance is weak, and that the high percentage of hand pumps in working order was primarily due to the bulk of all handpumps having been recently installed, and that the break down rate increased progressively with the age of the pump.

One can therefore very well foresee a massive problem occurring during coming years. It is of course very easy to argue that the difficulties in arriving at a workable maintenance system only proves the point that the consumers have to be involved from the start or that the technology chosen was wrong and too dependent on central maintenance. But at the present juncture that is neither very interesting nor constructive. However, the fact remains that this is a very critical issue and will decide the whole credibility and impact of the programme so far.

In this connection the team fully endorses the observations made by UNICEF/WESS on the "Report of the Working Group for formulating operation and maintenance norms for rural water supply schemes" (GOI 1987), as well as the revised "Handpump Maintenance Programme - Intensive Coverage Districts" proposed for UNICEF support. It is the firm conviction of the Team that UNICEF is uniquely placed to play an active role in this field. In fact, in the medium and long-term perspective the Team is of the opinion that maintenance should be a major, if not the main, issue of UNICEF-GOI/state cooperation in the RWSS sector.

During the last years, great emphasis has been given by UNICEF in sponsoring/supporting courses in geophysical

exploration for groundwater The continuation of such courses is strongly emphasized by the Team.

9.3 Sanitation

Starting almost from scratch in the early 1980's and with virtually no activity taking place on the government side, UNICEF's involvement in sanitation has grown considerably over the years. In terms of focus the early emphasis on latrine construction seems to remain but has been expanded to include environmental and domestic hygiene education as well as simple waste water disposal techniques. Similarly, while the earlier attempts focused on ad hoc field experiments in some selected states, the present strategy is built on collaboration with "intensive coverage states" (presently eight) with which joint plans of actions are being finalized. In addition sanitation forms part of the "coverage" approach adopted by UNICEF, which implies that it is promoted as an additional complement to other ongoing programmes. Finally, UNICEF supports directly or through CAPART, NGO's capable and willing to carry on sanitation activities at the field level.

As pointed out above the major focus of UNICEF's efforts (as well as those of GOI) lies on promotion of household latrines and to a certain extent on household water disposal. With few exceptions the supportive IEC activities are also geared to this. The design of latrines promoted varies with a unit cost adapted from the GOI/UNICEF/UNDP "Feasibility Study", i.e. IRS 600 - 900 for the sub-structure.

While appreciating the considerable efforts put in by the sanitation staff of UNICEF the Team makes the following observations :

The Team understands that UNICEF is restricting the subsidization of sanitary latrines and that the focus will instead be on creating local production capacity ("entrepreneurial masons") able to respond to a possible demand, as and where this exists. The Team fully supports this approach both from the point of view of economic feasibility and in order to release resources and know-how for a broader concept of improving environmental and domestic sanitation.

The Team also endorses the observation made in the last SIDA Annual Review Report (1987) that UNICEF needs to introduce some measure of cost analysis on the techniques and approaches advocated. This is especially crucial in such an important but low priority field as

sanitation where demands on scarce public as well as community/domestic resources will need solid substantiation.

The responsibility for launching a general improvement of sanitation must lie with the government. It is the opinion of the Team that UNICEF must concentrate its resources on some strategic points or activities. In case this implies field activities, such a concentration is all the more necessary. As was stressed by the SIDA Annual Review 1987 in its observations on the Indore sanitation project, field experiments in this sector requires careful backstopping and follow-up.

Rural sanitation vary by its very nature socially, ecologically and technically between different areas. Consequently standardized techniques very seldom make sense. For example domestic soakpits, are only relevant under specific soil and subsurface conditions. A generalized promotion of these, is not a very sound strategy. In this context, however, the Team agrees with the view that sewage and waste disposal should indeed form part of UNICEF's strategic collaboration with GOI in the field of sanitation, perhaps even more than popularization of latrines.

9.4 Information/Education/Communication (IEC)

This area of activity is perhaps the most important one when it comes to determining the role of UNICEF as well as the efficiency of its collaboration with GOI/states.

When seen over time the increase in the number and range of activities undertaken by UNICEF is in itself a positive indicator. Before attempting any assessment of the material and activities reported on by UNICEF, it should be emphasized that only a proper field investigation could provide the basis for an appraisal of the IEC sector. As pointed out earlier, information/communication/education only makes sense when discussed in the concrete context in which it takes place.

The Team has the following observations to make in relation to IEC :

One is struck by the wide range of activities and promotional methods reported. While this no doubt in itself reflects the considerable efforts made, they appear to an outside observer to lack somewhat in cohesiveness. It is true that with IEC being a supportive/promotive activity, it is the physical RWSS

activities that provide the focus and orientation to the related IEC. Nevertheless, given the scarce manpower available to UNICEF it is difficult to see how the activities reported can represent a sustained thrust toward putting the women and children (or indeed the community as a whole) in focus. That something is wrong is also indicated by the fact that most activities are reported as having "no feedback". It appears to the Team that launching experimental activities without having inbuilt a feedback component will hardly contribute to an effective "advocacy" role. At least one zone is preparing a "communication strategy". This is of the highest priority and should be of great assistance also to GOI and the states. In fact without such a strategy it is difficult to see how UNICEF can claim any advocacy role at all.

The Team was also informed that a (Knowledge, Attitudes, Practices) study has been commissioned by UNICEF to provide the basis for developing relevant orientation and content to the IEL ahead. However, KAP-studies, particularly on a scale to be attempted here, are difficult to handle and the experience from other countries are none too encouraging. Of particular importance is that qualified staff from within UNICEF is closely associated with the study throughout.

Finally, the Team is somewhat at loss to understand the actual role and responsibility of the central WESS staff involved in IEC as well as their relation to their counterparts at the zonal level. It appears to the Team that a number of activities are carried out by central WESS/IEC staff which are either not coordinated with and/or not communicated to their other colleagues at WESS or in the zones. While "convergence" may or may not take place at the field level it appears to the Team that IEC perspectives should be more decisively involved in the overall WESS operations, not as purely supportive measures but as having an influence on framing the hardware activities as such.

10. SIDA Support to UNICEF

Based on the results achieved in the development cooperation GOI-UNICEF-SIDA and as exemplified in section 2 to 9 of this report SIDA is positive to a continued support to UNICEF for Rural Water Supply and Sanitation in India.

10.1 Extension of existing Agreement

At the Technical Appraisal of UNICEF the General Water Supply and Environmental Sanitation Programme, February 1988 the Appriasal Team recommended an improved reporting set-up in order to make the picture of expenditure clearer and more relevant. The problems of reporting still remain and the actual expenditure up-to-date is not known. It is estimated that about half the total amount allocated will have been used at the end of existing 3-year Agreement.

Given that accounts and reports are presented and accepted by SIDA, SIDA is positive to an extension of ongoing Agreement utilizing the balance as per June 30, 1988. The new agreement will cover the period July 1, 1988 - December 31, 1989. Such Agreement can be signed between UNICEF/ROSCA and SIDA after due approval by GOI.

A second condition for SIDA support is that UNICEF presents a plan of proposed activities and projection for use of funds.

10.2 Support to the UNICEF/GOI proposal for intensified and expanded collaboration 1988-89

The proposal is in line with the targets and objectives laid down by the GOI/TM for the remainder of the Seventh Plan. As such it will make a substantial contribution to the sector in the short run even if its direct relevance for the prevailing drought situation is negligible. Furthermore, in scope it is also in line with the current MPO as well as with the SIDA water strategy. On the face of it and on the strength of the present SIDA-UNICEF cooperation there is therefore a strong case for a continued SIDA support to the Indian RWSS sector by way of this proposal.

The proposal is basically "more of the same" with respect to what has actually been done so far. At the same time it is clear that the present MPO was conceived as a transition tool whereby the infrastructural and hardware procurement role of UNICEF would gradually shift to a system and software development role more consistent with the overall orientation of UNICEF. And, as pointed out by the SIDA mission 1985, such a shift "can only be achieved by a purposeful and practical reorientation of inputs and performance in order to restrain the "built-in mechanism" of continuing and expanding the ongoing activities". Consequently, in the

overall perspective of UNICEF's role with respect to the Indian RWSS sector, the Team feels that the hardware provision contained in the proposal only makes sense if accompanied by a concrete declaration of what this intensified hardware procurement represents in the long run.

With respect to the software components the Team is of the view that a concrete plan of operation needs to be drawn up by each zone and for each state as a supportive first step. At present, the so-called IEC activities as well as sanitation is implemented in a rather ad hoc manned by an overworked zonal/state staff. Intensifying and expanding on activities without an inventory of capacity and a clear set of operational priorities does not make much sense.

SIDA has expressed willingness to support above proposal from the bilateral frame given the conditions stated in section 10.1 are fulfilled. The proposal has to be approved by Swedish Government. Expected time of signing this agreement between UNICEF/ROSCA and SIDA in India is at the earliest end September 1988.

SIDA emphasizes the need for an independent evaluation at the end of the Agreement period. SIDA will liaise with the other funding agencies about a joint initiative in this matter.

10.3 Rajasthan

10.3.1 Udaipur expansion

In 1986 it was proposed that the SWACH/IGEP programme should be expanded to include the UDAIPUR district. Due to several reasons the preparation of the project has been delayed but an agreement between UNICEF and SIDA is expected to be signed by mid 1988.

10.3.2 Review 1988

A joint Midterm Review of the SWACH/IGEP and Pedo is tentatively sheduled to take place 2 - 15 October 1988.

The review shall include meetings between SIDA/UNICEF/GOI.

10.4 Future SIDA support

The SIDA delegation expressed interest to support UNICEF activities in India on a longer term based on shared objectives between GOI, UNICEF and SIDA.

The Team also had the opportunity to discuss with the director of the Technology Mission on Drinking Water, Mr G. Ghosh, possible fields for future bilateral cooperation between India and Sweden in the sector. Although at this stage it was not possible to arrive at any concrete conclusions, integrated programmes with components of soil conservation, water management etc., parallell to RWS programmes in districts adjacent to the SWACH programme area were discussed. Such programmes could well be in line with the SIDA Water strategy.

10.4.1 SIDA Policies.

The overall objective of SIDA's assistance to India is to support and improve the local capacity to solve problems related to water supply, environmental sanitation and health/hygiene.

The development must be based on improvement of existing resources - human and physical. Human resources development on the lower levels is given special emphasis to ensure proper functioning and utilization of the investments made. A valuable existing physical resource is the traditional water supply system

The large number of various NGOs in India with a wealth of experiences constitute a very important resource to be utilized in the planned cooperation.

The output of the development cooperation shall meet specific criteria on sustainability, replicability and affordability. The water supply must be affordable for the community to run and maintain. Improvements of environmental sanitation must be affordable for the individual households. The methods used in mobilization, education, construction etc. must have such qualities that they can be replicated by other communities and organizations.

A specific objective in the cooperation is the involvement of women in the development process. Women are not seen as passive recipient of assistance but rather an active participant in decision making, planning, construction, maintenance and operation.

Experience has shown the need for involvement of the community in all stages of development work. Decentralization of decision making must be made down to relevant levels.

Further objectives and strategies/guidelines of the SIDA support are given in SIDA's Water Strategy which is enclosed. Appendix V.

10.4.2 Some Specific Observations

As per the targets and objectives of the Seventh Plan, the present phase of the Indian RWSS should in principle be completed by 1990(91. That is, all villages shall by that time have been provided with a safe and potable water supply point/source at the rate of 250 persons/point and in a quantity of 40 lpcd.

Regardless of whether this will actually be achieved by 1990/91 or not, the very fact that such a target can be put and appear to be within reach, accentuates the need for looking beyond into the next phase.

It appears to this team that one of the strategic reconsiderations that will have to be made pertains to the very underlying premise of the Decade operations in India. From the beginning, the objective has been one of making safe water available to all, availability being defined in terms of statistical consumption ratios and, distance to source. It should be emphasized that these ratios have not been determined by any assumed impact but as a reasonable basic and economically feasible level. The policy has been one of the government providing this service as part of its obligation towards the community. Given this it is hardly surprising that efforts to promote RWS as a participatory or health promotive exercise have been limited regardless of the capacity of the delivery system.

It goes without saying that a major, task to be faced is that of maintaining and consolidating whatever the level of RWS thus attained with the large number of handpumps then installed. This coupled with an equally large and increasing number of pipe schemes would in itself constitute a national effort on its own.

However, if safe water supply is to contribute to something more than a generalized improvement in the level of availability, further investment clearly has to be guided by some health/problem related criteria, in order to guide both the level, scope and location of

further RWSS investments. And it is only by setting an impact-related objective (as distinct from a statistical coverage objective) that the need for and utility of such activities as health education can be made explicit and operationally relevant.

Furthermore, the increasing reports of wells/installations going dry, points at the importance of water resource management. At present there is virtually no possibility to know whether these, frequently localized, developments are due to a low recharge caused by erratic monsoons, to over exploitation due to irrigation, or to depletion of non-rechargable groundwater basins.

Appendices

Infrastructure Division
J-O Johansson/KP

11 Maj, 1988

Appendix I

COMBINED MISSION TO DISCUSS THE UNICEF/GOVERNMENT OF INDIA RURAL WATER SUPPLY AND ENVIRONMENTAL SANITATION PROGRAMME FUNDED BY SWEDEN AND EXPLORE POSSIBLE AREAS FOR FUTURE SWEDISH SUPPORT TO THE INDIAN RWSS PROGRAMME

The mission is a continuation of an appraisal mission to India in February 1988.

Background

Sweden has given support to rural water supply programmes in India since 1979. Since 1982 the Swedish support has been channeled through UNICEF. For the period 1985/86 to 1987/88 an amount of 132 million SEK was allocated for the support of UNICEF's Master plan of Operations i.e. for the UNICEF/Government of India rural Water supply and Environmental Sanitation Programme. Out of this amount, however, 17 million SEK was utilized for the preparatory phase of the Integrated Guinea Worm Control Rural Water Supply Health Education and Environmental Sanitation Project in Banswara and Dungarpur districts, Rajasthan, for which in 1986 a separate agreement was signed with UNICEF for the period 1 July 1986 - 30 June 1990. An additional agreement to be signed with UNICEF to include Udaipur district in this programme ~~1 July~~ 1988 - 31 December 1992 is under preparation.

On a request from the Department of Rural Development Government of India (GOI), UNICEF has proposed an expansion and intensification of Government of India and UNICEF cooperation in Water Supply and Sanitation programme for drought,for which support has been requested from SIDA.

As the Agreement to support the UNICEF/Government of India Rural Water Supply and Environmental Sanitation programme will expire by June 1988, an appraisal was carried out in February-March 1988 to review the Programme before discussions on a possible continued Swedish support are initiated. The appraisal paid special attention to priorities and activities undertaken by the Government of India in the sector, in order to provide a frame of reference for the assessment of ongoing Swedish supported activities and for the identification of possible areas for future Swedish support. A report from this appraisal is now available.

SIDA has now decided to field a mission to review the ongoing programme and to tentatively identify areas for future support to Indias RWSS-programme. The mission has been given the following Terms of Reference.

MTRIND/KP

Aims and objectives

With respect to the SIDA-UNICEF collaboration the Mission shall:

- against the background of earlier annual reviews and the above mentioned technical Appraisal assess the programme implementation and performance of UNICEF with respect to the objectives laid down in the current SIDA-UNICEF agreement;

- assess the implication of the proposed intensification and expansion of UNICEF's RWSS activities for the remaining agreement period;

- assess the need for and feasibility of continued SIDA support to UNICEF during the remaining period covered by UNICEF's Master Plan of Operations;

- make recommendations regarding the ongoing and possible future SIDA-UNICEF collaboration based on the above.

With respect to other potential areas of SIDA Support to the RWSS sector in India, the Mission shall:

- explore possible broad areas of collaboration in line with GOI's long-term priorities and SIDA's water strategy

- recommend such steps as are necessary to arrive at concrete proposals for future collaboration.

Areas for special attention in the review.

In making the above assessment, particular attention shall be paid to the following key areas of the SIDA-UNICEF collaboration:

- sustainability and replicability of ongoing and proposed field interventions;

- activities and efforts to promote local, particularly women's, involvement in the RWSS programme;

- development of human resources and local capacity consonant with the orientation laid down in the MPO;

- monitoring and evaluation.

In exploring other forms and areas of collaboration particular attention shall be paid to:

- short-term direct bilateral collaboration based on the "mini missions" of the Technology Mission.

- maintenance and consolidation

- water resource management

- health promotive RWSS activities.

Participants

Mr Ulf Rundin, Head of SIDA, DCO New Delhi, Team leader

Ms Anna Runeborg, Senior Programme Officer, SIDA Delhi.

Mr Ingvar Andersson, Head Water Section SIDA-S

Mr John-Olof Johansson, Senior Programme Officer SIDA-S

Mr Gordon Tamm, Consultant to SIDA

Consultation

The review will be carried out in close cooperation with UNICEF, New Delhi. The review shall include discussions with GOI representatives of adequate level.

Time plan

The review shall take place in India between 17-26 May 1988 as per programme suggested by UNICEF/DCO, New Dehli Appendix I.

Reporting

The review team shall summarize their findings in a report in English as per standarized format outlined in Appendix II. The report shall be submitted not later than 30th June 1988.

Other aspects

While in India the Team works under the direction of the SIDA Development Cooperation Office.

References

- Agreement between the Government of Sweden and United Nations Children's Fund, India Rural Water Supply and Environmental Sanitation Programme, 1 July 1985 - 30 June 1988, E/ICEF/1985/P/L).2; December 6, 1985.

MTRIND/KP

- UNICEF General Water Supply and Environmental Sanitation Programme, Report from the Annual Review of SIDA Supported Water Supply and Environmental Sanitation Projects in India; February 1987.

- UNICEF-ROSCA; Water and Environmental Sanitaiton Section - Workplan 1987.

- UNICEF, Regional Office for South Central Asia, New Delhi; Water Supply and Sanitation. Second Progress Report July 86 to June 87. September 1987.

- Report from the SIDA Team participating in the First Annual Consultation between UNICEF and SIDA on The India Rural Water Supply and Environmental Sanitation Programme February 4-7, 1986; February 1986.

- UNICEF, New York; Special Report for the Government of Sweden, India - Water Supply and Sanitation (E/ICEF/1985/P/L.22); October 1986.

- UNICEF New York; Project Proposal: Water Supply and Sanitation Programme for Drought (E/ICEF/1987/P/L.39).

- Appraisal report: India Rural Water Supply and Sanitation: An appraisal of past performance, present achievements and future projections with particular reference to SIDA support. (Tamm, Möller, Srivastava March 1988)

LIST OF PARTICIPANTS

SIDA TEAM

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UNICEF / ROSCA

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Mr. Dick C. van Ginhoven, Programme Officer, WESS

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Mr. Esa Ovaskainen, Handpump Coordinator, WESS

Ms. T. V. Luong, Project Officer, Sanitation, WESS

Mr. Kumar Jagtiani, Monitoring & Evaluation Officer, WESS

Mr. G. Thimmichetty, Project Officer (Gravity Feed Schemes), WESS

Mr. Eugene Leonenko, Community Participation Officer, WESS.

UNICEF Lucknow/Varanasi

Mr. S. C. Bhargava, Zone Representative, UNICEF, Lucknow

Mr. M. A. Mansoor

Mirzapur

Mr. K. K. Govila, Executive Director, UP Jal Nigam

Varanasi

Chairman

PROGRAMME FOR THE SIDA/UNICEF MID TERM REVIEW OF THE WES PROGRAMME

Tuesday 17 May 1988	
9 00 - 1200 HRS	SIDA Internal Meeting
1400 - 1700 HRS.	Meeting in UNICEF/ROSCA
Wednesday 18 May 1988	
	Visit to Uttar Pradesh to meet UNICEF Zone Office Personnel and see project activities
	Visit to Drilling rig sites, handpump sites, discussions with District Officials at Mirzapur.
	Dinner hosted by Mr. S. C. Bhargava, Zone Representative, UNICEF Lucknow.
Thursday 19 May 1988	
	Meeting with Commissioner and other Senior Health, Social Welfare, U.P. Jal Nigam, Medical College, Panchayat Raj, etc. at Varanasi.

Friday 20 May 1988	
1000 - 1300 HRS	Presentation of findings of the SIDA Appraisal Team
1300 - 1430 HRS	Lunch hosted by Mr. B. K. Rasmussen, Deputy Regional Director, UNICEF/ROSCA
1500 hrs	Joint UNICEF/SIDA courtesy visit to the Ministry of Agriculture, Government of India, Department of Rural Development.
Saturday 21 May	
Sunday 22 May	Report writing
Monday 23 May	
1500 - 1700 HRS	Visit to Ajay Industrial Cooperation manufacturer of India Mark II Handpump.
Tuesday 24 May	SIDA Internal Meeting IA
	Report writing

Wednesday 25 May		
900 - 1130	SIDA Internal Meeting	IA
1130 - 1300	SIDA discussions with Technology Mission and Ministry of Agriculture, Department of Rural Development, Government of India.	
1500 - 1700 HRS	Meeting with UNICEF/ROSCA for winding up discussions.	IA
Thursday 26 May 1988	Departure for Sweden	IA
Tuesday 24 May	Visit to SWACH-IGEP UDAIPUR-Dungarpur.	JOJ
Wednesday 25 May		
9.00 - 11.00	Visit to PEDO, Bichiwada	
7.00 - 20.00	Visit to SWACH/IGEP.	JOJ
Thursday 26 May		
13.00 - 17.00	Internal meeting DCO.	JOJ
Friday 27 May		
9.00	Departure for Kenya.	JOJ

MIRZAPUR: DISTRICT PROFILE

1. Mirzapur is the largest district in the state of Uttar Pradesh with a total population, according to 1981 census, of 2.023 million The geographical conditions in this district are different and difficult with the rural population being scattered in small villages and hamlets (3,024 villages). Water supply for domestic use is one of the major problems being faced by the district. Keeping the difficult situation of Mirzapur, this district was selected as one of the Technology Mission Districts on water supply .

2. HISTORICAL BACKGROUND

This district was established in the year 1795, and before that it was a part of Banaras State.

3. GEOGRAPHICAL STATUS:

This is the biggest district of Uttar Pradesh from the point of view of its area. The total area of the district is 11,310 km. It is situated on 23.52 - 25.32° in North and 82.72 - 83.33° in the East. The southern boundaries of the district touches Sarguja and Sidhi districts of Madhya Pradesh, Rohtas and Palamu district of Bihar in the east, district Rewa(M.P.) and Allahabad (U.P.) are situated in the west and in the north the boundaries of district Varanasi (U.P.) fix up its boundaries. The district has been divided into three major parts - (i) Ganges plain (ii) Plateau of Vindhya range and (iii) Sone valley.

There are four tehsils in this district - Sadar, Chunar, Robertsganj and Dudhi. The district is covered with forests except the Gangetic plain. The average rainfall is 1136 mm. There is periodicity of drought after every 3-4 years. Floods also cause havoc mainly by Ganges and Sone rivers of the district in alternate years.

4. POPULATION:

According to 1981 census, the population of the district is 2.02 million 86.84% of the population is rural and 13.16% is urban. The rural population is scattered in 3,420 villages. Other relevant norms are as under:

Birth rate	- Rural		39.9
	Urban		32.5
Death rate	- Rural		16.3
	Urban		9.4
Growth rate	- Rural		23.6
	Urban		23.1
Infant mortality rate	- Rural		167
	Urban		99
Under 5 child mortality rate	Total		180(app.)

5. Population Projections:

Year	
1985	2,237,992
1986	2,290,661
1987	2,344,569
1988	2,399,747
1989	2,456,223

6. No. of Births:

year	
1985	87,125
1986	89,176
1987	91,276
1988	93,425
1989	95,624

7. No. of infants survived:

year	
1985	73,223
1986	74,946
1987	67,711
1988	78,517
1989	80,364

8. No. of children survived (0-4 age group)

year	
1985	69,429
1986	71,063
1987	72,736
1988	74,448
1989	76,200

9. No. of children survived (5-9 age group)

year	
1985	69,106
1986	70,732
1987	72,398
1988	74,102
1989	75,845

10. Background Data on Health, Family Welfare and Water Supply Service

No. of Primary Health Centres	20
No. of upgraded Primary Health Centres	5
No. of Sub-centres	402
No. of upgraded Sub-centres	60
No. of Tehsils	4
No. of Blocks	20
No. of ICDS Blocks	11
No. of Junior Basic Schools	1,510
No. of Senior Basic Schools	69
No. of U.P. Jal Nigam Divisions	6
No. of problem villages	2,893
No. of villages covered by one source	2,546
No. of drilling rigs (New Generation)	5
No. of Indigeneous rigs	6
Literacy	23.57 %

11. Geology:

The district is essentially hard-rock district with alluvial tracts along the Ganga and Sone rivers. Sand-stones and hard quartzites predominate in the rocky areas which yield very meagre amounts of ground water. Some other crystalline rock types also predominate in the

southern part of the district.

12.a) STATUS OF UNICEF ASSISSTED RIGS IN STATE OF UTTAR PRADESH.

The programme of installation of India Mark-II hand Pumps was started in 1979. Beside other alluvial formation districts of Uttar Pradesh, there are rocky terrains in the districts of Mirzapur, Banda, Hamirpur, Jhansi and Allahabad. A severe drought persisted in the State in 1979 and to cope with itn the UNICEF offered their assistance by providing two fast working, compact hydraulically operated new generation D.T.H. CP-700 make rigs. The effeciency of these rigs was found appreciably better than the indigeneous departmental Rigs deployed side by side in the terrain. Motivated by the success and higher acceptibility of this hand pumps programme, the Government launched an ambitious programme of providing safe source of drinking water by hand pumps in every water scarcilty villages at the earliest. The help from UNICEF started pouring in continuously since then.

12.b) HAND PUMPS INSTALLATION PROGRAMME IN DISTRICT MIRZAPUR.

The district is almost fully rocky and the source of drinking water are very limited. The scarcity of safe potable drinking water is very badly felt in the villages. Most of the villages have no source of water during summer which makes the problem really acute.

12.c) In the year 1972 ; 1910 villages were declared problem villages and subsequently in the year 1985; 983 villages were declared problem villages. By the end of March 1988 2546 problem villages have been provided safe drinking water with at least one spot source in each village either by piped water supply or installation of hand pump. Thus balance 347 problem villages are to be provided safe drinking water during the current year. In addition to this balance 131 villages remaining in the district have also been declared problem villages in the year 1988.

12.d) In a village One hand pump as the only source of drinking water is totaly inadequate, there is a tremendous work load balance before the Govt. as follows:

1.	Providing one hand pump for every 250 persons in problem villages identified in 1972 & 1985 which have only hand pump so far.	2616 Hand Pumps.
2.	Providing hand pumps as above in remaining 131 villages	327 Hand Pumps.
3.	Providing hand pumps in remote hemlets of the above villages which are still devoid of a source of drinking water.	650 Hand Pumps.
4.	Providing hand pumps in 300 villages already having piped pumping water supply but do not get water due to shortage of electric power, specially during summer.	800 Hand Pumps.
5-	Providing hand pumps on specific locations for drought relief work.	1000 Hand Pumps.
6.	Providing hand pumps, one for every 150 persons ultimately.	3000 Hand Pumps.
		8393 Hand Pumps.

Out of the above about 6500 hand pumps will be required to the installed in the rocky Terrain with the help of rigs.

13. WATER QUALIITY TESTING:

The quality of water from the hand pumps for different parameters has been found within permissible limits except iron. Iron contents vary from 0.5 to 5.0 ppm. which rendess it unusable. National Environmental Engineering Research Institute has developed a unit for iron treatment which can easily be attached with handpump. One such iron removal plant was installed by NEERI in the month of November '87 and there after U.P. Jal Nigam has developed this technology and installed these plants on the handpumps in 20 villages which are functioning satisfactorily. Further identification of iron in water and installation of these plants are in progress and expected to be completed by the end of next year as per action plan included in the Technology Mission.

14. Community participation:

The process of community participation & involvment of beneficiaries with the selection of sites in the villages. The village Pradhan (Chief) obtains consensus particularly women in the most suitable location, Keeping in mind distances from individual households, drainage, ease of access etc. The users are further motivated about the need for safe water, how to use handpump and to keep the handpump area clean. Postcards are provided to a nearby user to notify the U.P. Jal Nigam mobile unit in case of break down.

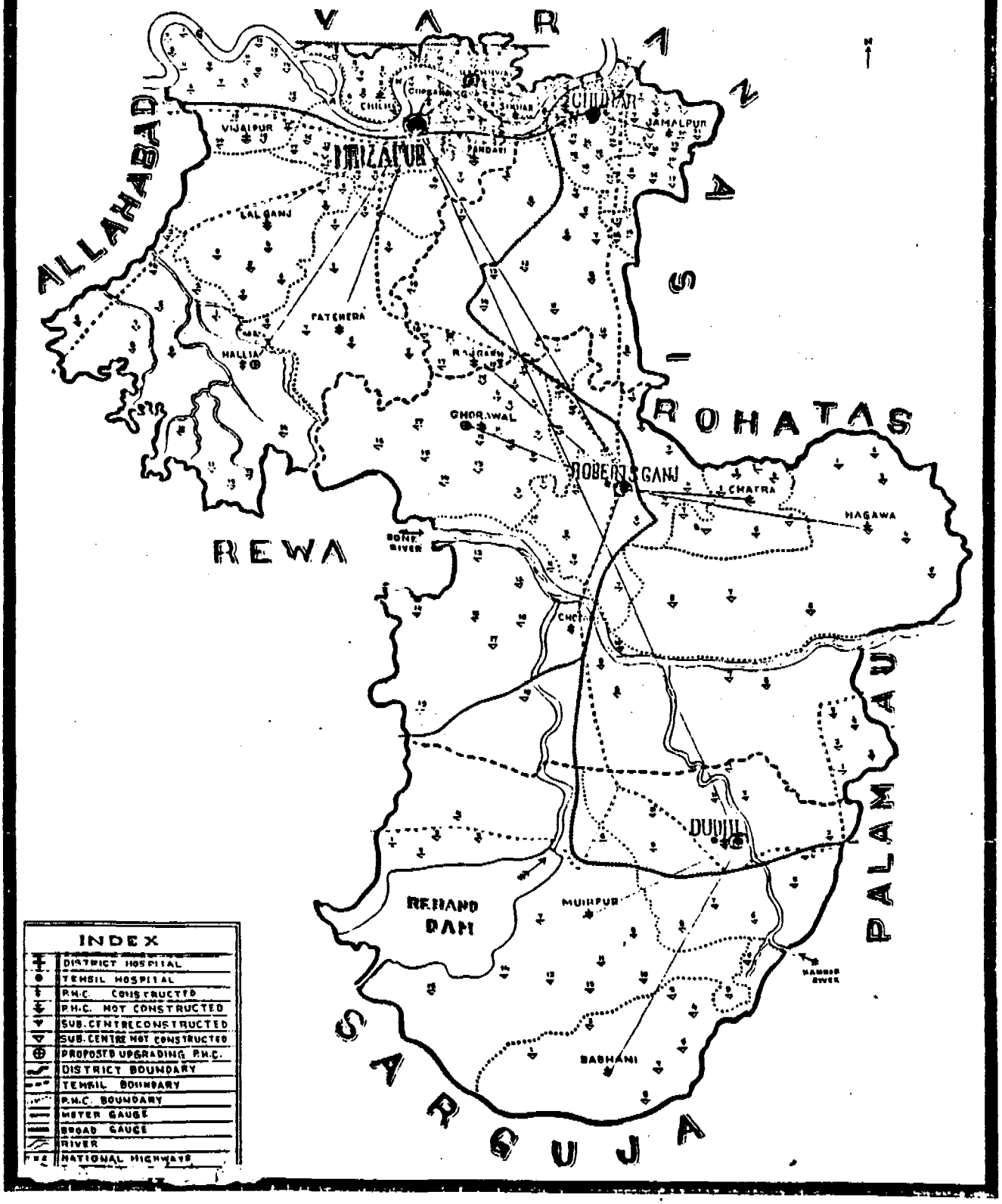
15. Environmental Sanitation:

There are 1,559 village Panchayat Committees in the district. The State Government has encouraged Environmental Saintation through these villages Panchayats. Efforts in this direction have been in the form construction of low cost drainage, construction of Panchayat Bhawans, construction of a market place, paving of village roads and other interventions to improve the sanitation aspects in the village. During 1986-87 Rs. 1.5 million was provided under the District Plan for Environmental Sanitation in which 125 village Panchayats were benefitted. In 1987-88, additional inputs have been proposed on the above lines for coverage of additional Village Panchayats.

(C.K.D. KULSHRESHTHA)
EXECUTIVE ENGINEER(E&M)
PROJECT UNIT(UNICEF)DIVN.
U.P. JAL NIGAM, MIRZAPUR.

DISTRICT MIRZAPUR

UTTER PRADESH



STAFFING PATTER OF U.P. JAL NIGAM IN MIRZAPUR DISTRICT

Sl. No.	Staff	Responsibility
1.	Superintending Engineer 22nd Circle U.P. Jal Nigam Mirzapur	Responsible for overall water supply activities of U.P. Jal Nigam. He is also the Executive Director of the Mini Technology Mission under Government of India scheme and General Manager, Ganga Pollution Control works at Mirzapur under Indo-Dutch Sanitary Engineering project.
2.	Executive Engineer Scarcity Division U.P. Jal Nigam Mirzapur.	Involved in installation & maintenance hand pumps and piped water scheme in certain blocks of Mirzapur District.
3.	Executive Engineer Construction Division U.P. Jal Nigam Robertsganj District- Mirzapur.	Involved in maintenance hand pumps and piped water schemes in Robertsganj Tehsil & Dudhi Tehsil.
4.	Executive Engineer Temp. Construction Division U.P. Jal Nigam Mirzapur	Takes up construction and maintenance of piped water schemes in the district Installation & maintenance of hand pumps also done.
5.	Executive Engineer Construction Div.(E&M) U.P. Jal Nigam Mirzapur	Operate drilling equipment in the entire district through 6 indigenous DC/DTH rigs . Essentially a Mechanical Division. Installs power/handpumps, involved inO&M of all E&Minstallation.
6.	Executive Engineer(E&M) UNICEF Project Unit U.P. Jal Nigam Mirzapur	A Mechanical Division, operates 5 UNICEF rigs, installs handpumps and shares responsiblity for mainten -ance of E&M installation. Involved in R&D activities of Technology Mission. Conducts orientation/motivation of village communities on safe water/ Environment Sanitation, Diarrhoea Management and Child Survival and Development. Installs power pumps on pumping water supply schemes and maintain also .
7.	Executive Engineer Temporary Project Division U.P.Jal Nigam Mirzapur	Involved in hand pump insrtallation, water storm water and severage work Indo-Dutch Sanitary Engineering Project.

PRAMOD//

U.P. JAL NIGAM- MIRZAPUR

DATA ON GIRL CHILD CARRYING WATER

Pump Sr.No.	Period of recording data	No.of hours	Total Male Nos.	Total Female	Children under 12 M.	F.	Cap(ltrs) carried Male	Female	Child M.	F.
1	6.30-8.30 am	2	10	21	2	6	7.7	9.9	5	4.5
2	12.00-2.00 pm	2	13	7	3	1	9.0	7.8	3	[illegible]
3	5.30-7.00 am	1.5	11	16	1	1	10.5	8.5	16	12
4	6.00-8.30 am	2.5	23	20	3	4	9.2	9.2	3	3
5	1.00-2.30 pm	2.5	11	7	0	0	8.0	6.8	[illegible]	[illegible]
6	4.00-5.30 pm	2.5	12	19	1	5	10.0	7.5	6	4.2
7	6.00-8.00 am	2	14	20	2	1	7.8	7.1	4	4
8	6.30-9.30 am	3	37	55	11	31	15.8	10.0	7	8.2
9	11.00-2.30 pm	3.5	4	8	1	0	4.6	10.8	1	0
10	4.00-7.00 pm	3	26	57	10	28	9.2	11.2	8	8.2
	8.00-9.00 pm	1	7	5	0	7	9.5	10.8	0	8.7
11	6.30-12.00 am	5.5	59	87	13	31	10.5	10.5	9	7.5
	4.00-8.00 pm	4	23	21	3	8	10.6	10.5	6	9.0
12	5.00-6.00 am	1	20	38	2	7	6.5	6.7	7	7.0
	1.00-2.00 pm	1	15	21	0	2	7.3	7.2	0	6.0
13	6.30-7.00 pm	0.5	10	26	0	5	6.5	7.0	0	7
14	5.00-6.00 am	1	14	36	0	8	6.4	7.2	0	7.8
	1.00-2.00 pm	1	6	19	0	3	5.6	6.6	0	7;3
15	6.00-8.00 am	2	23	24	1	8	7.3	7.4	8	7
	TOTAL	38.5	327	507	53	156	162.0	162.0	83	114
	AVERAGE	2.56	21.8	33.8	3.5	10.4	10.8	10.8	5.5	7.6

USAGE PATTERN OF HANDPUMP WATER SIGNIFYING SITUATION OF CHILDREN

WATER CARRIERS - GIRL CHILD SITUATION

1. More women are required for collecting same quantity of water.

2. The average number of girl child on a handpump is thrice the numb of the male child. It could mean that the male child may be going school while the girl child does domestic chores.

3. Girl child between 4-12 years carries 7.6 litres (average) of water from a visit to a handpump as against 5.5 litres carried by males.

4. Average quantities of water collected by males is 10.8 litres per person and the same quantity is collected by almost double the number of women.

5. Females waking up early to collect water is double that of males.

6. Ratio of males to females (specially adolescent girls) using handpumps is 152: 230 during the period 5.30 am to 9 am. In all probability makes come to bathe whereas females come to wash clothes or carry home water.

7. There is a Larger usage of water by males during the period 11 am to 2.30 pm.

8. Nearly double the number of females make use of handpumps late in the evening indicating usage for washing of utensils.

RURAL WATER SUPPLY PROGRAMME IN UTTAR PRADESH

The programme of installation of India Mark-II handpumps was started in 1979 mainly in the hard-rock areas of Bundelkhand and Mirzapur during the drought. This programme also served as a first experience in the State to tackle the problem of domestic water supply in critical scarcity hit villages which existed in both the hard-rock as well as plains area of the State covering almost all the 57 districts. UNICEF support in the handpump/tube-well programme was provided in the early stages itself where assistance through NGO drilling rigs was provided in Jhansi, Banda and Mirzapur regions. The State Government requested UNICEF for assistance in the form of rigs, accessories and handpumps after this first positive experience in the southern region.

From a few hundred handpumps in 1979 to 162,396 handpumps (upto 31 March 1988) in 23,082 identified problem villages indicate the massive efforts made by the State Government in combating repetitive scarcity/drought conditions in the State leading to the largest handpump population in India. This is also an indication of the high priority provided to this sector with massive investments already made in provision of safe water.

The highlight of UNICEF involvement in the Rural Water Supply Programme of the State has been the provision of high capacity new generation drilling equipments backed by adequate and timely support of spare parts, mobility, special attachments, accessories, handpump tools and equipments. Where locally available equipment met extremely difficult drilling conditions and became inoperable, the new generation rigs succeeded in rapidly changing the water availability situation in the problem villages.

Support on training of drilling and handpump crews and a strong accent on operation and maintenance of the equipment provided, has resulted in exceptional productivity and efficiency. The 1987 performance report of the drilling equipment in the State is an indication of one of the more successful programmes run by the State giving a little over 130% achievement Vs. target which in real terms means a larger coverage (benefit) was provided.

The 9 rigs provided by UNICEF, each has a Action Plan for 3 years in which the area of operation for the rig in terms of number of blocks is demarcated. A route map is provided and the rig covers problem villages according to a priority list, set against an annual target for each rig. Except for the TIGER-II, all rigs have an annual target of 150 tubewells per rig per year. TIGER-II rig is expected to drill 120 tubewells. Due to the continuous drought situation, the U.P. Jal Nigam has revised the target for new generation rigs to 260 tubewells/year on a two-shift operation. Rig crews trained on a particular rig are retained on the same rig (including Supervisors) for a period of atleast 3 years, thereby ensuring better productivity as well as maintenance and upkeep.

.../

The details of drilling equipment provided to the State and their performance is as follows:

Sl. No.	Type & make	UNICEF Fleet No.	Commissioned on	District of Deployment	Total No. of hand-pumps in the District upto 31.3.88
1.	CP-700	220	5/80	Mirzapur]	
2.	Halco V-596	261	11/83	Mirzapur]	
3.	Rotamec-50	277	12/85	Mirzapur]	4,950
4.	Rotamec-50	290	6/86	Mirzapur]	
5.	Halco Tiger-II	296	6/87	Mirzapur]	
6.	CP-700	221	3/80	Jhansi	2,719
7.	Rotamec-1302	33B(SIDA)	1/81	Banda]	3,246
8.	Rotamec-50	278	6/86	Banda]	
9.	T.H.55	234	4/82	Hamirpur	

DRILLING PERFORMANCE OF UNICEF RIGS - JANUARY TO DECEMBER 1987:

Months	No. Rigs	No.of Bores	Successful Bores	Percent Success	Targets	Achievement Vs. Targets
103	9	1,679	1,533	91.3%	1,287	130.45%

A comparision of all the UNICEF rigs shows that the CP-700 rig was found to be fastest, sturdy and maximum capacity rig machine among the fleet. At the same time due to its larger size, it faces some difficulty in negotiating the narrow access/ approach to most villages in this terrain.

Halco V-596 and the two Rotomec-50 rigs were able to overcome this difficulty because of their se being two truck type of mounting. The two Rotomec-50 rigs have some problem in operation during peak operating (summer) temperatures (upto 48°C). Necessary rectification has been carried out by M/s Atlas Copco, Sweden, and it is functioning satisfactorily during this summer. Evidently, this type of rig shall be better suited for Mirzapur district.

Difficult access situation

The undulating rocky terrain of the district and total absence of approach to several villages was posing a problem during the past years. The solution was provided by the latest UNICEF assisted

.../

Rig - the Halco Tiger-II. This rig has a special carrier with all terrain mobility. It is a slow moving and comparatively slower penetrating rig, but it has great advantage of being able to cross drains and negotiate sharp bends on narrow forest roads and unbuilt approach/paths to reach the remote villages. The performance of this rig will be further enhanced if a suitable support truck is supplied at the earliest.

A need of atleast two personnel carriers (jeeps) will improve the quantity and quality of work because of better supervision. It is also emphasised that the installation and maintenance of handpumps will undoubtedly improve if 4-5 pick-ups or small trucks are available for the programme.

Motivating the Community

Since last year, U.P. Jal Nigam have, in an organised way, started educating the rural people with the help of posters and pamphlets and guidance rendered by UNICEF, Lucknow. It enables the rural folk to understand the necessity of safe drinking water, health, sanitation and proper use of handpump facility. This process of motivation of people will get a real boost if it is made more attractive with the help of audio-visual aids.

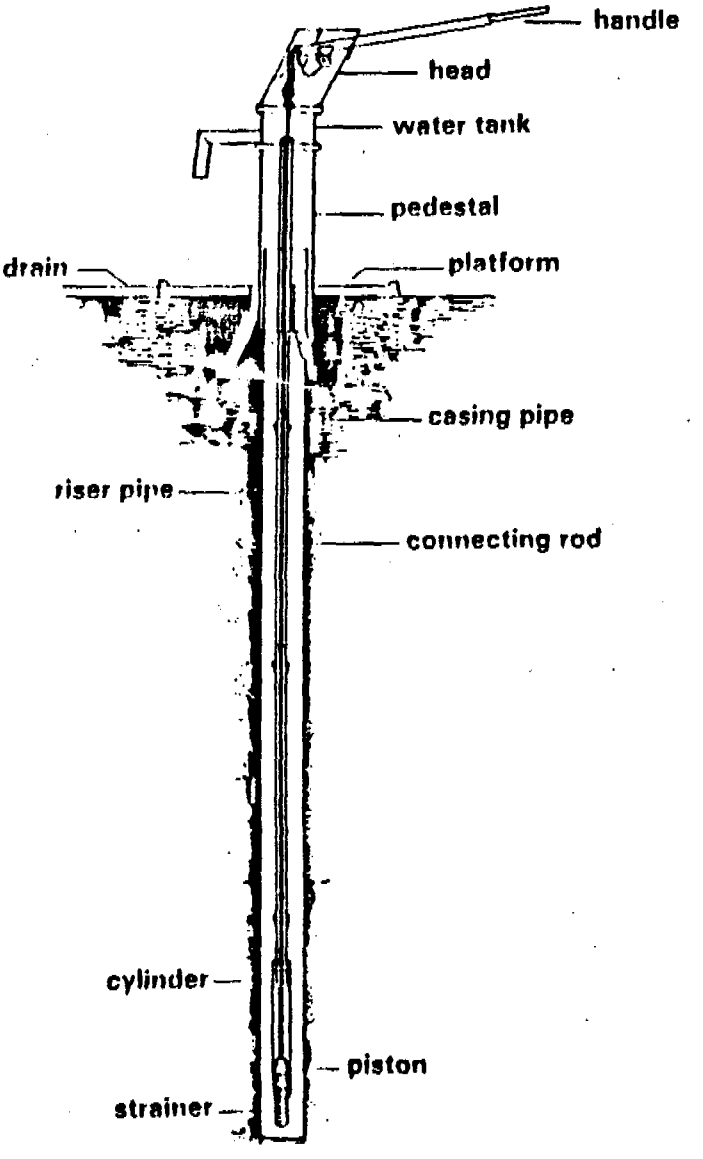
The prevailing sustained acute water scarcity has forced the Mirzapur district to adopt a still more vigourous programme for providing a safe source of drinking water in all water problematic villages latest by 1990. This enhanced time bound work load has, therefore, to be completed more speedily. This target can only be achieved if some more UNICEF assistance in the form of rig machines, hydro-fracturing units, geophysical equipments, rig attachments, etc. is made available in the nearest future, in addition to the presently available resources with the department.

In order to sustain the present pace, it is also necessary to have training programmes organised at various levels, including community levels. A strong training back-up would enhance the current capability. Although training programmes on drilling, handpump installation and piped water schemes have been held, and a large number of U.P. Jal Nigam personnel have been trained, there is still a requirement of increasing awareness on technical procedures and social mobilization at all levels, for which large scale training orientation is required.

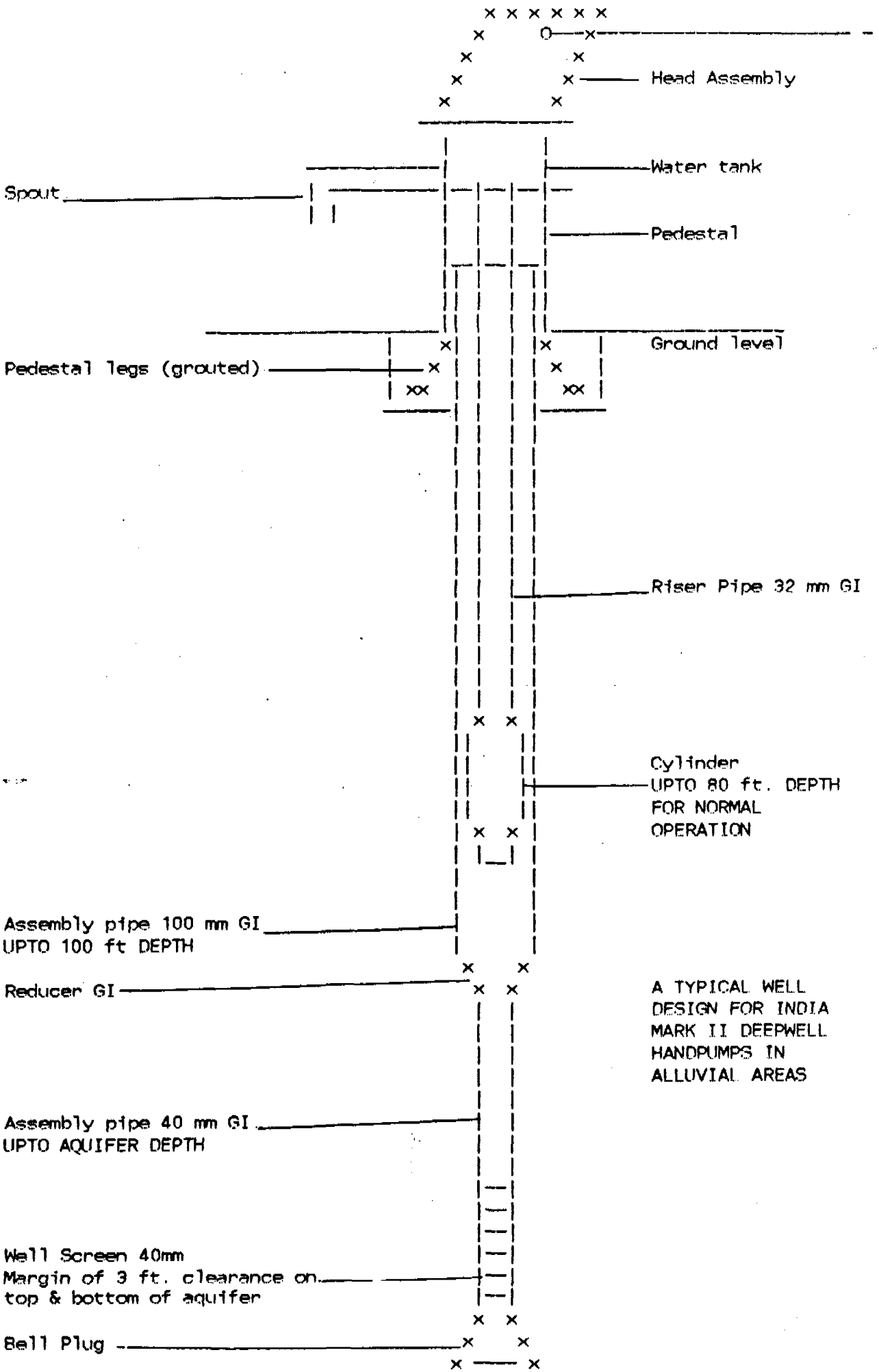
MMA:gsp:

INDIA MARK II

DEEP WELL HAND-PUMP



A TYPICAL HARD-ROCK BOREWELL
HANDPUMP INSTALLATION

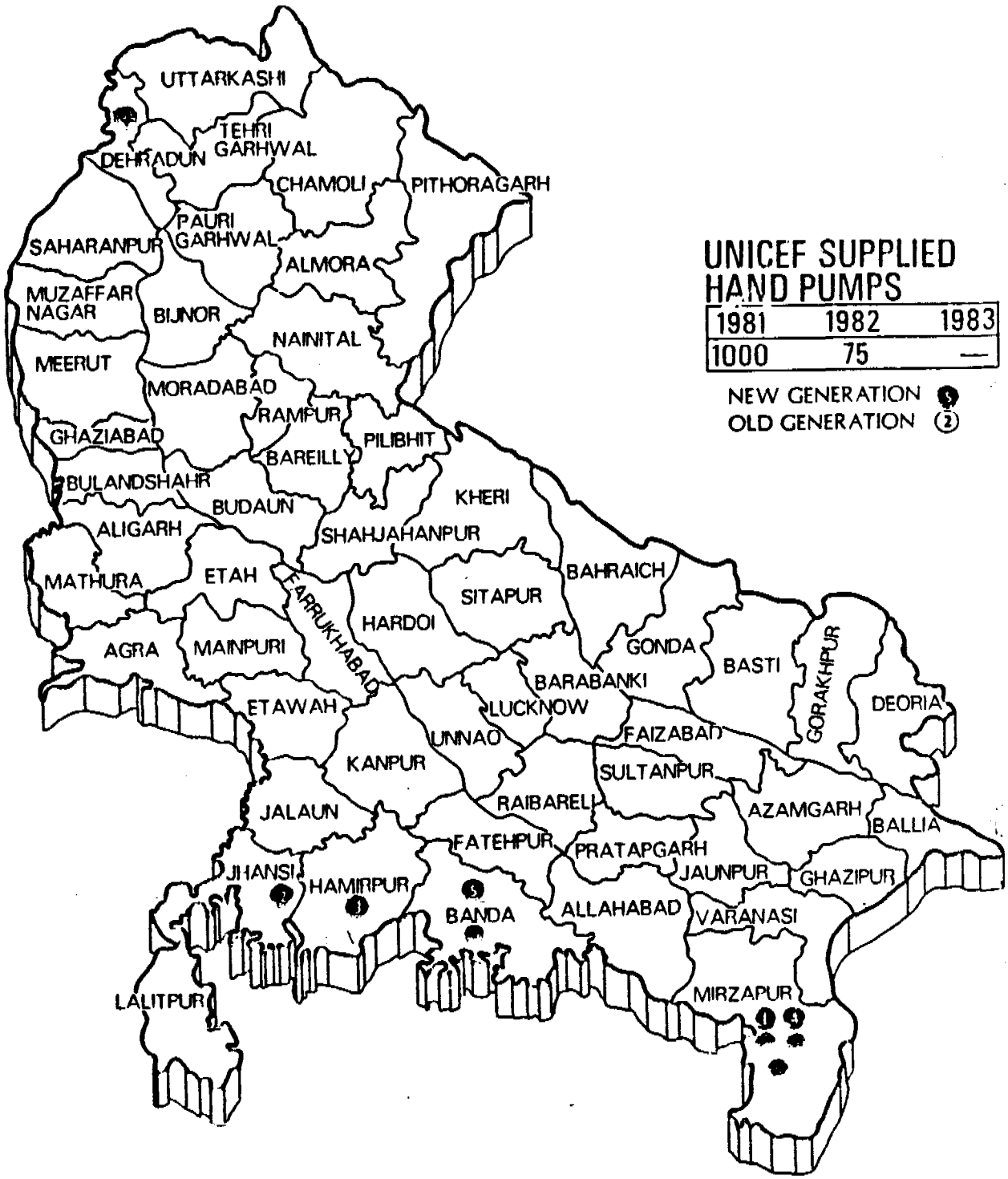


A TYPICAL WELL DESIGN FOR INDIA MARK II DEEPWELL HANDPUMPS IN ALLUVIAL AREAS

IMIIWELLDESIGN

UNICEF NEW AND OLD GENERATION DRILLING RIGS

UTTAR PRADESH



UNICEF SUPPLIED HAND PUMPS

1981	1982	1983
1000	75	—

NEW GENERATION ⑤
OLD GENERATION ②

NEW GENERATION RIGS

1 CP-700 220/ARH/CP-700/80
2 CP-700 221/ARH/CP-700/80
3 TH-55 234/ARH/TH-55/81
4 HALCO V-596 261/AR/HAL-596/2T/83
5 ROTAMEC 1302 MCU-00033B - SIDA

OLD GENERATION RIGS

1 ROPRODUCTOR
2 SM22R 105/CT/SM22R/79

CONTENTS

1 INTRODUCTION

The supply of water for domestic purposes has been an integral part of SIDA's development co-operation programmes since the middle of the 1960s. This paper is based on SIDA's experience of cooperation in the domestic water sector in five countries. In the paper guidelines for the design of cooperation programmes for the coming five-year period are specified. The paper covers first and foremost bilateral cooperation, but it shall also serve as a guide for assistance from SIDA to international and non-governmental organisations. It is intended for use in the identification of projects, in the assessment of requests, for the follow-up and control of projects, in evaluations, in discussions with recipient countries as well as for information purposes where assistance to the water sector is concerned. The paper shall not be interpreted as an expression of a static policy, but rather as a strategy for participation in a dynamic process. The content can accordingly be changed as new experience is acquired. A five-year perspective has been chosen. A strategy for water supply in rural areas was written in 1979 prior to the "International Decade for Drinking Water Supply and Sanitation - 1980-1989". This paper is intended to update and complement the strategy of 1979.

2 SUMMARY OF THE STRATEGY FOR WATER SUPPPLY IN RURAL AREAS

2.1 Target groups and goals for Swedish assistance

Target groups: The programmes for water supply in rural areas are directed towards poorer groups in rural populations, particularly in less developed areas. However, rural areas in this context can also include those towns and peripheral areas of towns where rural technologies for water supply and related matters of hygiene are present. Women and children constitute particularly important groups that should be reached on account of their special positon in the handling and use of water.

Poorer groups can be roughly defined as the 40% of the rural population with the lowest incomes. Less developed areas are districts/regions/provinces that receive lower public investments, foreign assistance etc in comparison with other areas. A detailed definition of target groups and poorer groups can be found in SIDA's strategy for rural development, 1980.

Main goals: Swedish assistance to the water sector is directed towards improving the health of the people and towards creating better prospects for social development and economic growth.

Operative goals: The main goals shall be reached by the achievement, in relation to the present situation, of

i) improved water supply which is

- continuous
- of better quality
- of greater quantity
- more easily accessible
- available for various household purposes

ii) improved health by

- increasing awareness as to how the quality of water can be maintained from source to consumption
- increasing popular participation, especially the participation of women
- health and hygiene education directed towards the target groups and to combat water-related and hygiene-related diseases

iii) improved hygiene by

- latrines which are more sanitary, socially and culturally acceptable
- drainage
- waste disposal
- vector control

2.2 Aims

Co-operation with a recipient country is directed at two levels:

I. The national level in order to increase the country's capacity to implement water programmes.

II. The regional/local level, i e clearly defined areas where the projects are based on local priorities and where there is popular participation.

The activities supported by SIDA fall into five categories:

Water supply; protection of water sources and environmental hygiene; water use/health and hygiene education; coordination measures; and measures to increase recipient capacity.

2.2.1 Water supply

Construction of new installations

SIDA shall only give support to installations where satisfactory maintenance can be guaranteed. The planning goal shall be that every household in the installation area shall be reached by the improved water supply system. The target groups shall benefit fully from the installation. Popular participation is a precondition in the planning, construction and maintenance of the installation. Installations shall have a technical design which facilitates popular participation and which is adapted to local conditions, resources and knowledge.

Operation and maintenance

SIDA shall give assistance to activities which, in the long term, lead to improved operation and maintenance of the installations. This includes organisational and administrative activities and appropriate training for personnel working in these fields. However, the responsibility for the installations and their upkeep shall provide assistance to meaures which can lead to better consumer participation.

Rehabilitaion

Rehabilitation means, in this context, re-equipping installations, which are worn out or have fallen into disrepair, to their original capacity. Installations which are rehabilitated shall be subject to the same requirements as new installations where operation and maintenance, accessibility for the target groups, and levels of technology are concerned.

Enlargements/extensions

An extension of an installation shall be subject to the same considerations as a new installation and follow the same preparatory activities and fulfil the same criteria as the construction of a new installation.

Water quality and legislative measures

SIDA shall provide assistance to measures which promote an equitable distribution of water between different groups in society and between different income groups. Assistance shall also be directed towards measures which improve water quality. Questions of legislation, regulations, pollution control, and water quality studies are examples.

Water tariffs

If tariffs are to be set, SIDA shall give priority to activities which:

- Lead to a levelling-out of difference between income groups.

- Prevent misuse, over-consumption and deterioration of installations.

- Encourage continuous use of water from the installations.

- Make possible an analysis of the consequences for the target groups.

Activities designed to increase production

Measures designed to raise productivity such as improvements to the environment, soil conservation, drainage and gardening are expected to have positive effects in long term and should, therefore, be supported by SIDA.

2.2.2 Water use

Health and hygiene activities

SIDA shall give assistance to

- health education which can provide knowledge about water-related and hygiene-related diseases and explain the connection between water and health

- information about hygiene which clarifies matters relating to the handling of water, the storage of water, personal hygiene and other questions of hygiene and the spread of water-related and hygiene-related diseases

- measures which prevent the emergence and spreadin of water-related diseases in the installation area.

2.2.3 Protection of water sources and environmental hygiene

Protection of water sources

SIDA shall give assistance to

- surveys of geological conditions and ground water conditions as the basis for coordinated planning of water supply and latrines

- the determination of the water potential in order, among other things, to guarantee that ground water is not overutilised

- the development of integrated ground use and water use plans, policies

- the siting of water supplies in a satisfactory way from en environmental point of view
- the establishment of protective areas around the water sources in order that ground water pollution is avoided
- the construction of separate water facilities for cattle where necessary for protection of the water sources.

Questions of hygiene

- the construction of separate washing places
- construction of socially accepted and functional latrines
- improved waste disposal
- good drainage at the standpipe and for waste water in the home
- water hygiene campaigns
- vector control.

2.4 Coordination measures

SIDA shall work for

- coordination at activities relevant to the water sector but carried out by different authorities in the recipient country
- coordination between the water projects of different donor countries
- cross-sector co-operation between water-health-agriculture-education activities
- coordination of activities at the local level by non-governmental organisations, local organisations, women's groups, village societies etc.

2.2.5 Measures to increase capacity

SIDA shall provide assistance to

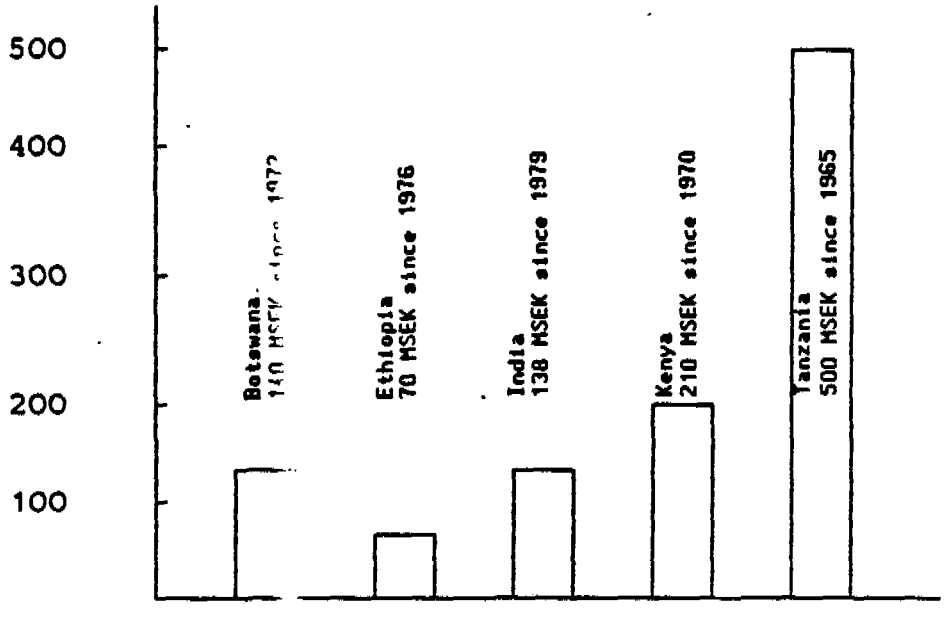
- functions of an administrative nature designed to increase capacity and efficiency such as organisation development, planning, follow-up, accounting, purchasing, and training at the water authorities. The aim is, in the long term, to increase the capacity of the authorities to receive and utilise development assistance effectively and to decrease dependence on personnel assistance
- activities which lead to more effective participation by institutions, associations, and groups which run villagebased programmes

- personnel assistance directed towards making effective those projects which are included in the Swedish development assistance programme.

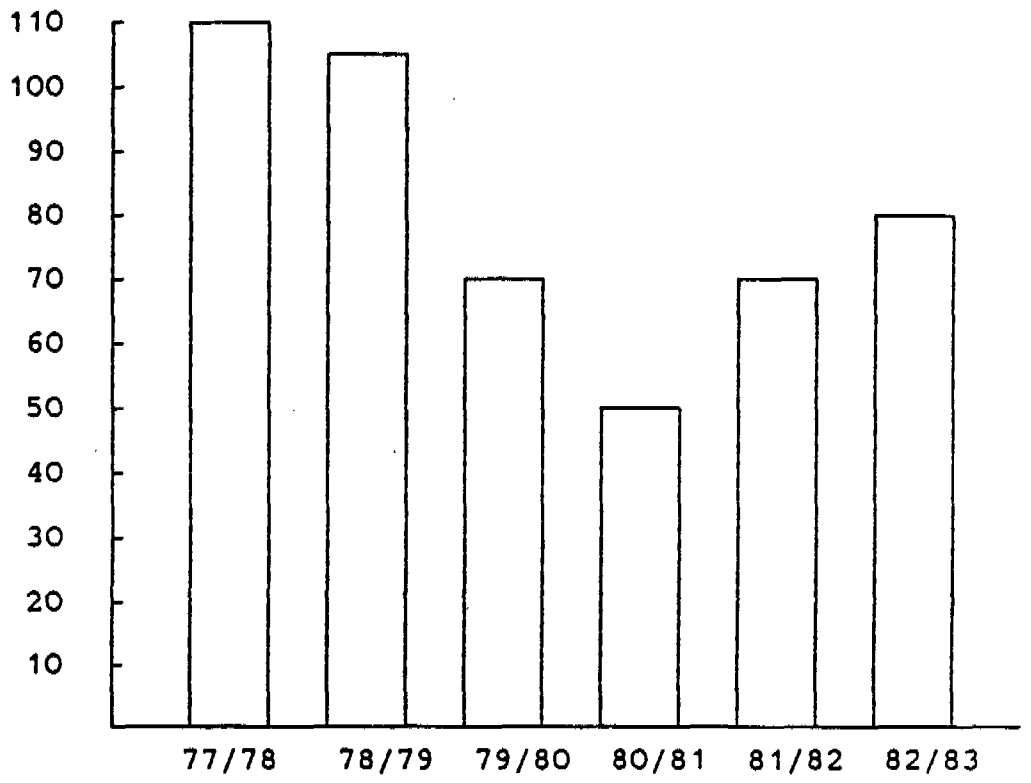
3 EXPERIENCE

3.1 Volume of programmes

Ten countries have received considerable Swedish assistance towards their water programmes. In five countries Botswana, Ethiopia, India, Kenya and Tanzania, water constitutes a major sector in development cooperation with Sweden. In four countries, India, Angola, Zimbabwe and Guinea Bissau, water is included as a component in other sector programmes. Experience has shown that, to reach desirable results, the projects have to be monitored over long periods. Sweden has supported programmes in this sector in Tanzania (since 1965), Kenya (1970), Botswana (1971), Ethiopia (1976), and India (1979). The total amount of assistance actually disbursed in SEKm is shown in the diagram below.



A total amount of SEK 1 058 m was disbursed to these five countries up to 1983/84. During the last twenty years Swedish assistance to water supply in rural areas has amounted to SEK 1 250 m. Since 1977 annual disbursements to the sector have been made as shown in the diagram below.



The major part of the Swedish contribution has been utilized for the construction of water supplies, workshops and training facilities. Only during the last five years have such related software activities as water legislation, health/hygiene training, environmental hygiene/sanitation, consumer participation, promotion and research been included in the water programmes.

3.2 Numerous breakdowns in water supply

At the beginning Swedish assistance to water programmes was directed towards the construction of installations. These installations were often of considerable size. In view of the local situation they were too technically advanced. Experience has shown that the large scale installations with distribution systems which were constructed during the 1970s were, in most cases, a wrong investment.

Unfavourable developments in the world economy and the resultant limited growth in the economies of the recipient countries led to a situation where the countries were unable to cover the costs for maintenance. It was not uncommon that a scheme which cost several million SEK to build has remained idle for months because a small spare part was not available.

3.3 Need for rehabilitation of water supplies

Water systems have in many cases fallen into such a state of disrepair that they must be totally re-equipped before they can function again. The reasons for this state of affairs are, among other things, shortcomings in planning, organisation and training of personnel, the use of a too advanced technology, inadequate popular participation in the planning and construction stages, too detailed purchasing procedures, an unwieldy local administration, lack of fuel, or quite simply a lack of interest in the installation among the local population. Rehabilitation therefore calls for action to rectify not only the technical faults but also the non-technical short-comings affecting the schemes.

3.4 Need for technological adaption

Choice of technology and adaption of technology have become increasingly important questions. Some of the reasons are:

- Economical constraints for central financing.
- Import restrictions that hamper a proper supply of spare parts.
- Lack of technical know-how at village level in operation and maintenance.
- Lack of popular support of the supplies.
- Opportunity for increased community participation.

Most countries are now trying to create a better balance between central budget financing, development assistance financing, and local financing by the consumers themselves. Both donors and recipient countries have accepted the view that the direction of the water programmes of the 1970s must be changed. The 1980s can therefore be characterised as a decade of adaptation in the water sector.

3.5 Consumer participation

Many installations have been planned, projected and constructed without consultations with the consumers. This has led to a situation where the consumers do not feel any sense of participation in or responsibility for the new installation. One common result has been that the installation has been neglected, that repairs and maintenance have not been carried out that its use has suffered from a lack of care and attention, and this has led rapidly to decay and disrepair. Popular participation in the planning, construction and upkeep

of the installations is an essential precondition if the installation is going to function.

3.6 Pollution

The consumers are not always aware of the benefits which clean water can give. Standpipes are often polluted by animals, bad drainage and a general lack of care. Puddles form places where water-related vectors germinate. Water is polluted by transport and storage in dirty containers and by unhygienic routines in the household. Here considerable information about water and its use is required. Different societies can have very different ideas about what is clean or not and how water should be best handled and used. It is therefore important to conduct a survey into current knowledge and attitudes before an installation is constructed.

3.7 Difficulties in reaching the target groups

It is not uncommon that the greater part of the poor population within the water supply area does not have access to the water produced. This applies especially to installations with distribution systems and tariff charges. The economically weak consumers can rarely afford to pay the charges for water or find them too high. They can be without water in those cases where there are so many individual private connections that there is not sufficient water for the communal standpipes.

4 GUIDELINES FOR WATER SUPPLY IN RURAL AREAS

4.1 Definition

The purpose of Swedish assistance to water supply in rural areas is to improve access to clean domestic water for the poorest groups in rural areas with the intention of improving the health of the people as well as creating opportunities for social development and economic growth. In this context, domestic water means water which is consumed in the household, i e drinking water for people and animals, which are kept in the home, water for washing purposes and hygiene as well as water for other needs in the household such as for plastering floors and walls, for cottage industries and for vegetable gardens.

4.2 Model for domestic water programmes

Swedish assistance to the supply of water in rural areas has two main components:

I. Development of central functions at the implementing authority, and

II. Physical projects within a clearly defined area, based on local priorities and popular participation.

In this context, projects at a central level means and includes assistance to functions which contribute to increasing the recipient's capacity to receive assistance and to implement water programmes. It can cover administration assistance and educational programmes, hygiene campaigns, legislation and so on.

A project at the regional level can include all those components taken up in this paper, for example health and hygiene education, mobilisation of consumers, construction of installations, re-equipping existing installations, operation and maintenance, sanitation, environmental hygiene and so on. In addition water components can be included as complementary measure in programmes in other sectors. For example, a small scale irrigation project can easily be extended to include a drinking water component. Since the project organisation is already on the spot, the recipient can profit from the fact that the relative costs for the extension will be lower than for setting up a new programme. Co-operation with organisations existing in the field, both formal and informal groups, should be encouraged.

4.3 Components related to water

The water programmes shall be simplified as much as possible without hazardising the goals. This applies both to the number of components and their complexity. Limitations apply to the water sector in order to avoid it swelling to unmanageable proportions. Programmes within the sectors water-health-agriculture-industry tend to overlap each other to various degrees. This can constitute an asset for the fulfilment of goals, but it can also create conflicts during implementation. A cross-sector perspective shall be promoted, but designed in such a way that the components which relate to domestic water from other sectors are included. The activities listed below can be included to advantage. However, it can be assumed that the recipient country will implement these via separate authorities with their own spheres of interests. SIDA should, therefore, give assistance to measures which can lead to a coordination of these interests. Complete integration and a lack of sector division exists only at the local level (village level).

Towns - Rural areas

Domestic water programmes shall be directed towards the needs of rural areas. Larger towns, which require completely different technical solutions than rural areas and smaller urban areas, are not included in SIDA's programmes. Conditions vary so greatly in recipient countries that it is difficult to define the concept "town". For purposes of guidance a town is a densely populated area with more than 3000 inhabitants which has its own administration, post and telephone communications, electricity, a school and a health clinic.

Towns are often surrounded by fast growing, unplanned densely populated areas which lack the technical infrastructure of towns. In certain cases these areas can be included in rural area water programmes, in particular where rural technologies for water supply and related matters of hygiene are present.

Water supply for towns shall otherwise be regarded as independent projects outside the rural water supply sector.

Water-Health

Domestic water programmes should suitably incorporate

- sanitation programmes, initially at schools and institutions, which include water supply as well as the construction of latrines and the installation of hand basins and the planning of sanitary systems. Here the intention is to show the advantages of latrines and to protect ground water

- environmental hygiene which includes 1) waste disposal, 2) drainage of waste water, 3) drainage at standpipes and wells, 4) vector control, 5) protection of ground water, 6) measures aimed at preserving the environment

- the combating of water-related diseases by means of information to consumers and assistance to health and hygiene education in the areas of the installations. New or re-equipped installations shall be designed in such a way that the spread of water-related and hygiene-related diseases is minimised

- information about personal hygiene related to water use.

Water-Agrigulture

- Domestic water programmes can include the arrangement of a separate drinking water supply from the well/standpipe for those animals which are kept near the installation, with the aim of protecting the water source from contamination.

- The watering of smaller vegetable gardens used by individual families can be included as a complementary measure if the quantity of water is deemed adequate. In the first place an investigation should be made into the possibility of using water over from the household for this purpose. Cattle troughs, dams, watering of arable land and similar activities shall be regarded as independent projects outside the domestic water programme. (Such programmes can, however, originate from the domestic water programme and constitute spin-off effects from them.)

- Flood control and other means of regulating the flow of water can be included where recurring floods make it impossible to maintain a high quality of the drinking water or where the construction is a precondition for obtaining an adequate quantity of domestic water.

- Water resource planning in order to identify water resources and their possible distribution. Hydrogeological calculations and analyses, legislation, and pollution control can be included.

- Water conservation measures including constructions for improving and directing run-off, rock-catchments and subsurface dams may be included but not such physical activities as soil conservation, tree planting, open dam buildnings, erosion controls and forest planning.

Water-Education

Domestic water programmes are characterised by a multitude of educational activities. At the village level local health workers are needed who can give information about the connection between water, sanitation and health and who can initiate improvements in hygiene. Specialised vocational training at various levels, for example education of pump attendants, further education for installations, special courses in project management and in the fields of operation and maintenance, further education in different fields, grants for university studies and international courses. For purposes of merit rating and adjustment to promotion systems in force, there shall be coordination with the education sector in the country where the more formal vocational training and teacher/instructor training is concerned.

Water-Industry

Industry consumes and pollutes great quantities of water. Its use of water, consumption and discharge must be regulated by legislation. For the domestic water sector it is important that a continuous dialouge is maintained in questions which concern

location, recycling and discharge. It is also essential that the domestic water sector is strongly represented in the country's control system for the use of water resources. Such a system can incorporate studies of water quality and tests as well as measures which concern legislation, environmental protection and pollution control. Accordingly this area can cover projects at both central and regional level. Water supply to industry is, on the other hand, not included. This supply shall be built by industry itself or be dealt with as a special project outside the sector for water supply to rural areas.

4.4 Water use - Water and health

Only 20% of people living in rural areas in the developing countries have access to water of satisfactory quality and quantity. Less than 10% have proper latrines and waste disposal facilities. According to the World Health Organisation 80% of all diseases which inflict people in the third world are connected with water and hygiene. The number of working days which are lost as a result for these diseases, especially during the farming season, represent enormous values. In India an annual loss of 73 million working days has been estimated as a consequence of water-related diseases.

Unhygienic handling of water or the water source often leads to the water being polluted before it is consumed. Information about the handling of water, and preventive measures against water-related diseases shall therefore be included in the programmes.

The reduction in sickness as a result of the transition to an adequate water supply is difficult to assess. Studies made in East Africa show that the frequency of the most common water-related diseases can be reduced by 50% if a satisfactory water supply is available continuously and if only the improved water is used.

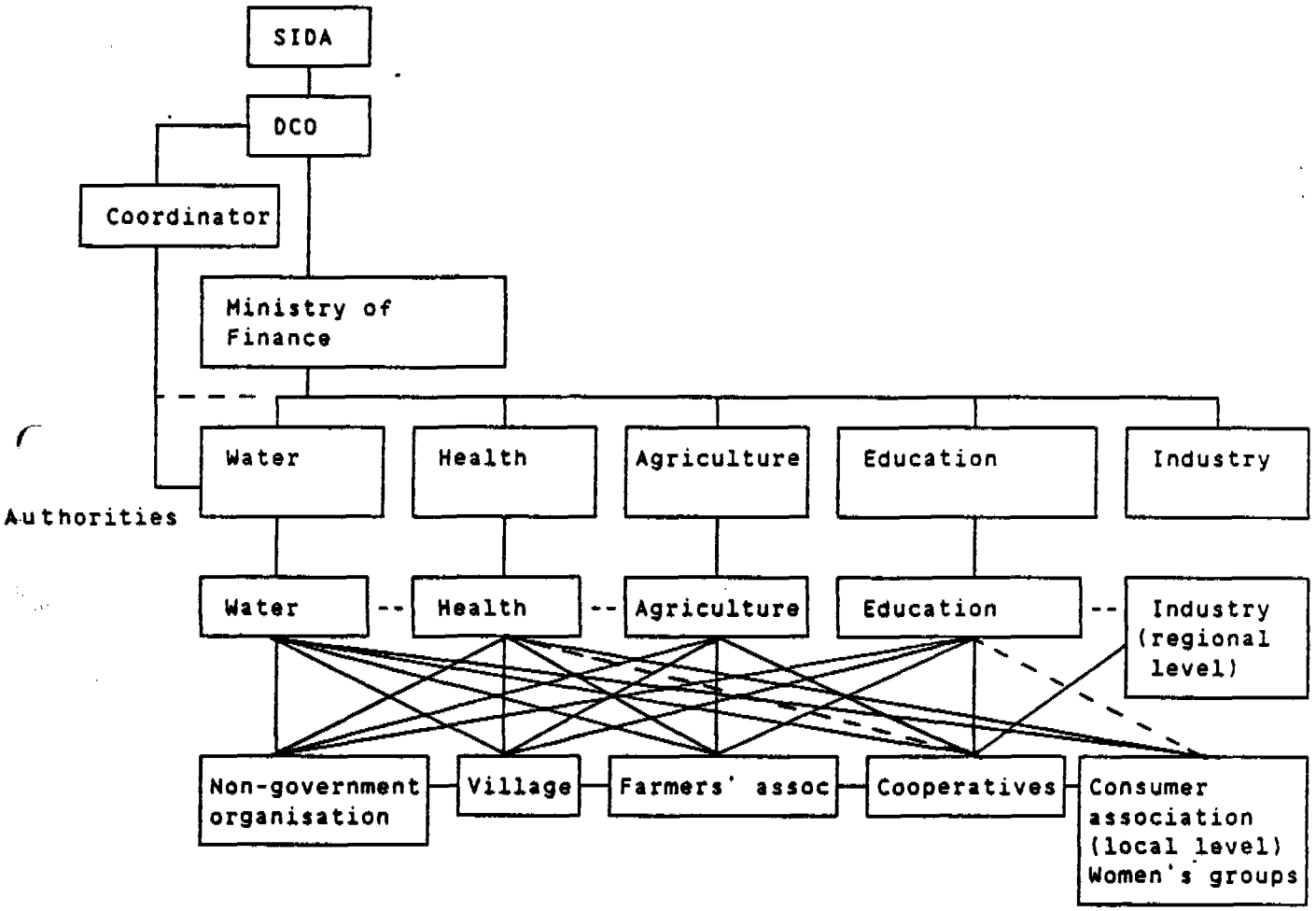
A proper water supply does not lead in itself to better health. The water shall be made accessible, the supply continuous and the level of service so high that the consumer can have access to the new water without too much difficulty. Knowledge about the handling and storage of water must be developed. Hygiene needs to be improved by organised water disposal, more and better latrines and the drainage of excess water. Special attention must also be paid to the proper disposal of children's excrement in order to prevent the spread of infection. Water supplies for people and animals should be separate. Furthermore, it is absolutely necessary that health education and hygiene information, based on the handling and use of water, are introduced from the beginning and prefer-

ably before the installation is constructed. This education must be so designed that it promotes respec for the local population's knowledge and traditions.

4.5 The water programme's organisation, integration and coordination

There are three main channels for the flow of resources to the water sector: through the country's central budget, through development assistance, and through the participation of consumers at the local level. These three main channels include many institutions, donor agencies, lokal associations and other parties. Coordination is required in order that the flow of resources through these channels is utilised optimally.

The contry's water authority is normally responsible for the technical and administrative aspects of water production. The sanitary aspects can be the responsibility of different ministries depending on the organisation and structure of the country. Health education is the responsibility of the ministries of health and education. Irrigation and water for cattle are usually the responsibility of the ministry of agriculture. Small scale water supply projects can be implemented by different central authorities, by non-governmental organisations and by local groups. Coordination of projects shall be promoted between the authorities concerned. Preferably the projects should be integrated at both the donor and recipient levels. However, since this would require a far too fundamental reorganisation, a coordinated crossector effort should be made instead. It may therefore be necessary to divide the components of the water programme between more than one ministry and to have the components coordinated by steering committees and representatives of the various authorities. What is the most important in this respect is to strive towards the goal that the various benefits are received at the same time by the consumers of an installation. One precondition is the active participation of the recipient authority.



It has become all the more common that some form of organisation outside the country's regular administration of the sector is appointed, partly to increase recipient capacity and partly to be able to circumvent unwieldy purchasing routines, in order to implement programmes more effectively, to control activities and to assist and provide support in the dialogue between recipient and donor, as well as to follow-up activities continuously. Such an organisation shall be regarded as temporary. Programmes shall be carried out which aim at reinforcing the recipient's administration and restoring responsibility and control to the regular organisation of the authority. The recipient country is responisble for ensuring that programmes are designed in such a way that they lead towards the development goals of the country. The donor's participation is directed towards programmes being carried

out effectively in comparison with agreed goals and content. One way to increase efficiency in implementation is to assist the different parties at the local level. As is shown by the diagram above a certain amount of integration can take place at the local level without the need for detailed agreement between the central authorities.

SIDA shall support the activation and integration of parties at the local level in the implementation of programmes at the same time as it will provide assistance to organisational development and coordination at the central level.

4.6 Popular participation/consumer participation

At the end of 1970s it was obvious that the construction of water supplies requested by a country cannot be done solely by its central authorities. The initiatives and participation of the people are also required. "Participation" is seen today as a decisive factor if an installation shall work or not. Services which are provided free of charge, without any demands for participation by the consumers, tend to be mismanaged. Perferably the projects should come from the initiatives, needs and priorities of the local population. The amount of assistance to such activities would, in most countries, be very small.

It is essential that there is a recipient organisation for the installation at the local level (for example in the village), i e some form of consumer organisation. As examples of such consumer associations can be mentioned farmer's associations in Ethiopia, village councils in India, Botswana and Tanzania, and women's groups in Kenya, Tanzania and Ethiopia. A consumer group can receive assistance if it is judged to be satisfactorily capable of:

- mobilising interest in obtaining a new installation
- participating in the siting, planning and construction of the installation
- contributing financially to investment and operating costs
- being responsible for the operation and maintenance of the installation
- guaranteeing a fair distribution of the water to all inhabitants in the local community.

It is advantageous if the installation can be completely or partly owned by the consumer group.

In development cooperation between states it is therefore probably necessary to work on two fronts. In

addition to assistance to governments and local authorities, organisations and other parties which work at the local level must be supported. In both cases the projects shall be agreed and accepted at the local level as far as possible. It is therefore important to open up channels of communication with local consumer organisations and groups. In the first place cooperation which can be channelled directly to the local recipient organisation shall be promoted.

4.7 Women

In developing countries the responsibility for water for domestic purposes rests almost exclusively with women and children. These can therefore be said to be the most important group when we speak about "target groups" and "popular participation". The role of women in the handling and use of water must be utilised. The problem is that women are almost always the most difficult group to reach since they are often illiterate, poorly represented in the craft professions, and have limited possibilities to participate in the decision at the household and village levels.

SIDA should strive as far as possible towards reaching those women's groups which can take on the responsibility for a water installation. Such an aim would promote the participation of women in the decision-making process at the local level and contribute towards increasing the number of women who participate in the educational activities linked to the water programme.

Women should be an obvious target group for health education and hygiene information as well as for the development of vegetagble gardening since they are responsible for the handling and use of domestic water to such a great degree. The long-term educational plan within the sector should be directed towards a greater number of women. SIDA should encourage the inclusion of information about hygiene and water handling in the curricula of primary schools.

The fact that most of the formal decisions, and even decisions in the household, are made by men must be taken into consideration in the planning of individual projects.

4.8 Protection of water sources

When selecting a water source, preliminary investigations should be made concerning the ground water potential and environmental consequences as well as the consumers' situation and their possibility to participate. Water sources should be tested to determine the quality and quantity of the water. The water installation shall be built in such a way that the water source is protected against pollution and that the

quality of the water source is maintained. Assistance can be given for the enactment of water legislation and the protection of water sources. Examples of measures which must be taken during construction work are: to coordinate planning of latrines and water installations, particularly where satisfactory waste disposal at institutions, schools and health centres is concerned; to screen off water sources from animals; to drain off surplus water and other water as well as protect the water source. Assistance for the purpose of increasing capacity can also be provided for analyses of water quality, base studies, water legislation, the extension of the capacity of simple water quality programmes, laboratories and personnel training.

4.9 Operation and maintenance and tariff financing of installations

Operation and maintenance constitute the weakest links in all water programmes supported by SIDA. This depends, among other things, on local ignorance about the value of clean water, a lack of interest centrally for the problem, poor popular acceptance, obsolete purchasing routines, shortcomings in standardisation, education aimed at wrong goals and poor organisation. Efforts must be made both centrally and regionally to improve the situation. It is essential that the consumers are organised and that they assume responsibility for the operation and maintenance of installations. This must be guaranteed with reasonable reliability before a decision is made to implement a project. In those cases where special expertise is required, confirmation must be obtained that the groups can pay for the service, otherwise simpler technical solutions should be chosen. If the financing of operation and maintenance costs cannot be guaranteed in the long term, the investment should not be made.

The charges consumers pay vary depending on the type of installation. Self-financing tends to increase the consumer's awareness of costs and the upkeep of the plant. The total revenue must also cover running expenses i e upkeep, chemicals, spare parts, repairs fuel etc. Some form of subsidy must be made available to areas with both problems of access to water and few consumers. It is important that charges are progressive, partly to avoid uncontrollable water consumption which can exceed the capacity of the installation and thus its function, and partly in order that the poorer groups shall profit from the better water supply. Charges must therefore be adapted to the capacity of different consumer groups to pay for their water.

4.10 Choice of technology

The choice of technology for the production and distribution of water must, in the first place, be seen from the national perspective. The country can have problems with oil supplies, imports and spare parts supplies, technological know-how, finance for operation and maintenance, and so on. The choice of technology shall therefore be adapted to the country's situation in these respects.

Furthermore the choice of technology must be steered by hydrological and hydrogeological considerations. The requirement of reaching the poorest groups, and that the consumers themselves shall be capable of assuming responsibility for the installations, constitute further decisive factors in the choise of technology.

As a result it can be stated that SIDA's participation is dependent on the following

- the choice of technology shall be determined in each individual case by local considerations (hydrogeological, economic, social environmental)
- simple and inexpensive solutions (for example open wells, handpumps) are chosen in the first place. If, for example, the consumers are not considered to be capable of looking after and maintaining handpumps, SIDA will not contribute towards the installation of handpumps in that particular case. Instead open wells are to be built, or the project can also be directed towards improving existing water supply systems
- installations with distribution systems shall only receive assistance if these represent the only conceivable solution. In those cases were the hydrological and hydrogeological conditions compel a choice of technology which is inconsistent with the possibility to guarantee operation and maintenance, the project shall not be supported by SIDA
- SIDA shall avoid giving assistance to installations including distribution systems for private, individual connections.

4.11 Rehabilitation

In this context the rehabilitation of an installation means that it is re-equipped to the original design standard. Assistance to the rehabilitation of even relatively new installations shall be given high priority compared to new constructions. The reasons for this are that the investment cost per person receiving

water is lower, and that the importance of looking after and maintaining installations is concretely demonstrated.

The following conditions apply for SIDA's support to the rehabilitation of water installations:

- An adequate amount of water exists or can be obtained with limited effort.
- Continuous operation and maintenance can be guaranteed.
- A consumer group who can assume responsibility for operation and maintenance exists or can be organised at each installation.
- The rehabilitation programme includes measures to guarantee that the poorest groups are reached by the improved water supply. Such measures can be for example an addition or modification of the distribution system - to open communal water taps or to limit over-consumption at individual connections.
- Swedish assistance shall, in the first place, be directed towards those installations which were built previously within the framework of programmes supported by Sweden. This does not mean, however, that SIDA is obliged to take care of all installations previously financed by SIDA and now in a state of dispair.

4.12 Enlargement

Enlargement means the extension of an existing installation over and above the capacity and distribution area originally intended. Extension of an installation shall be considered as a new construction and shall thus be subject to the same preparatory activities and fulfil the same criteria as the construction of a new installation. Since old installations are extended at the same time as they are rehabilitated, the two concepts are often confused. It is important that the two activities are kept apart, in order to avoid that certain areas are favourised at the expense of other, more needy areas by receiving an extended water supply under the guise of rehabilitation.

4.13 Follow-up and evaluation

SIDA shall support the development of evaluation instruments and procedures for the recipient authority's own continuous follow-up of the sector. Furthermore, SIDA shall provide assistance to ensure that those water programmes which have been supported by SIDA are followed up regularly both financially and

physically. Annual sector reviews shall be carried out. In addition sub-sector studies and individual project studies can be made with the intention of controlling activities.

At regular intervals, and at least every fourth year, each water programme shall be examined by a group consisting of persons with experience from the various fields associated with water programmes. Their result shall be compared with original plans and goals. Function, use and result shall be measured. Shortcomings will be acted upon by the follow-up sector reviews, in the design of plans of operation, and during the preparation of further projects.

4.14 Personnel assistance

Personnel assistance has two aims: 1) to increase the central capacity of the authority in those functions which are vital to the effective implementation of planned programmes. Some such key functions are planning, budgeting, follow-up, accounting purchasing, personnel planning and training, transport, operations and maintenance, and 2) to reinforce the authority's capacity to carry out all components in the projects agreed with Sweden, chiefly at the regional level. The post of coordinator shall be established where necessary. The coordinator will have the task of increasing the capacity for the implementation of the programme and to strengthen communication between the parties concerned on both donor and recipient sides.

In this context personnel assistance means all capacity provided from outside the country in the form of personnel: consultants, contract workers, associate experts, short term employees etc. The goal shall be to keep personnel assistance to a minimum without hazarding the fulfilment of goals. An addition goal shall be to transfer to the recipient those functions performed by Swedish personnel as soon as possible.

4.15 Education

Conventional education programmes have only contributed to a limited extent to effectiveness in the organisations. This is mainly due to the fact that education (often only theoretical) is considered as positive in itself. Authorities and educational consultants speak about needs in terms of individual qualifications and numbers trained, and leave out the more "uncomfortable" side, i.e. to what extent education has improved the organisation's working capacity.

In order that education shall be able to solve those problems which are fundamental to the programmes, it

is necessary to identify, at the same time, those factors which influence the effectiveness of education, e.g. organisation, supervision, places of work, equipment, transport, promotion and salary systems, housing, and other social conditions. More education is perhaps not the only solution to shortcomings in an organisation's capacity.

This standpoint shall be applied in all education projects in the water sector. It is often difficult to influence the course content in institutional (often theoretical) educational programmes. Education within the water programmes can often be carried out more effectively locally, in connection with the work that shall be done (on-the-job training).

The following four steps shall be considered in the design of local education programmes:

1. Needs analysis - to establish priorities of educational needs as they are understood on the basis of working plans and on-going activities.

2. Work analysis - to determine what the different personnel categories need to know and are expected to achieve.

3. Education programmes directed towards performance - on the basis of points 1 and 2 above to design (tailor make) educational programmes which meet needs.

4. Follow-up - to follow up if the education activities have resulted in improved performance and if they have solved the problems they were intended to solve.

In order to carry out local education programmes local instructors, who have been trained for the task, are needed. The opinions of supervisors and attitudes to change, and the goals of the organisation comprise important, often fundamental, preconditions for the results that can be achieved by education. On the national level seminars and vocational training of direct relevance for the water programmes could be supported. Furthermore, assistance can be given to the local production of manuals, instructions, check-lists etc. Otherwise education should be concentrated to the regional level.

4.16 Local production

Dependence on imports causes problems for water programmes and is one of the reasons for long breakdowns in operations. Factors here can be delays in deliveries, unwieldy purchasing routines or a shortage of foreign currency.

This situation can only be improved in the long term. Efforts shall be made to improve purchasing routines and to reduce dependence on imports, among other things by the adaption of technologies and support for local production. Already today the countries can produce steel, tanks, buckets, handpumps, taps and valves, reinforcement bars, iron sections, cement and wood products. However, there are a number of problems, for example:

- processed raw materials must be imported
- production is limited and unreliable
- quality is often uneven
- prices are high
- experience of running companies can be negligible.

SIDA shall contribute towards improvements in local production wherever possible by, among other things, encouraging the utilisation of local products and services in the water programmes. Furthermore, contact should be made with small scale industry programmes where they exist in order to initiate production for the needs of the water sector.