TRACER STUDY OF UNICEF INPUTS IN WATSAN SECTOR

Interim Report

Submitted to
UNITED NATIONS CHILDREN'S FUND
NEW DELHI

OPERATIONS RESEARCH GROUP
Baroda 390 007
January 1990

CONTENTS

1. INTRODUCTION

2. ADMINSTRATION AND ORGANISATIONAL FEATURES

3. TRACING OF EQUIPMENT AND INSTRUMENTS

4. TRACING OF INSTITUTIONAL SUPPORT

5. TRACING OF PROMOTIONAL MATERIALS

6. INDIA MARK-II HANDPUMPS

1.0 INTRODUCTION

United Nations Children's Fund (UNICEF) has been involved in the activities under Water Supply & Sanitation Decade (1981-90) Programme in India. The involvement of UNICEF in this sector has been both with regard to supply of hardware and development of indigeneous technical capability. The distribution of inputs from UNICEF has been wide with respect to both time and space.

At the close of the decade, UNICEF intends to examine the reach and the functionality of these inputs provided to various state Governments. As a part of this endeavour it was decided to generate accurate and useful information regarding delivery and functioning of these inputs through a tracer study.

1.1 Objectives

The objectives of the tracer study was as following:

i) to trace the deployment of UNICEF inputs in different States and to identify the features of the distribution process

ii) to assess the current functional status of these inputs

iii) to assess the level of utilisation of these inputs

iv) to identify the organisational features which influences the effective performance of these inputs.

1.2 Scope of the Study

The study was carried out in ten states and eighteen districts. Four major categories of inputs have been identified for the tracer study namely

(i) equipment and instruments

(ii) promotional inputs

(iii) training and manpower development

(iv) direct implementation support (India Mark-II handpumps)

1.3 Methodology adopted for the study

The study was carried out in ten states with one or two districts in each State being the target of the search. The States/districts included in the study were primarily determined by the need to follow up the 1985 study of handpumps. In addition some of the states not covered in the 1985 handpump study were included. While selecting the districts for this survey the advice of the respective UNICEF zonal offices and the state organisations were consulted.

Since the data to be generated is diverse in nature and cannot be obtained from a single source, different instruments of observation were used. They were (i) Division/District level schedule, (ii) Equipment/ instrument schedule (iii) Promotional inputs schedule, (iv) Field unit schedule, (v) Trainee schedule, (vi) Handpump schedule. The information collected through these instruments of observation was supplemented by discussions with state level and district level officers of the programme agency for WATSAN sector.

For the implementation of the study the States selected were grouped into four zones as following:

North zone : Rajasthan, Uttar Pradesh, Bihar

West zone : Madhya Pradesh, Maharashtra

East zone : Orissa, West Bengal, Andhra Pradesh

South zone : Karnataka, Tamil Nadu

Survey Supervisors under the direct supervision of zonal supervisors conducted the field survey in the States under their respective zones. The field survey was supplemented by the visit of executives to different state offices to gather background information. For village level data collection as in case of handpumps and Aanganwadis trained investigators were sent to different villages under the supervision of the state supervisor to canvass the respective schedule.

Generally the inputs given to States after 1.4.88 were selected for tracing so that more upto-date information was generated. However, in many cases the inputs given as far back 1981-82 were also traced to generate useful information. In the following chapters the organisational features and the results of the tracer study are presented. Results from three sample states are presented in this interim report to indicate the type of information gathered and the output of the analysis of this data.

2.0 ADMINISTRATIVE AND ORGANISATIONAL FEATURES OF THE STATE AGENCIES IN WATSAN SECTOR

The administrative set up and the decision making process observed in the implementing agencies for water and sanitation activities in three different States are discussed below.

2.1 Maharashtra State

The flow of inputs into water sector in Maharashtra is through Ground Water Survey and Development Agency (GSDA). The agency has a State level office with six regional offices in Pune, Aurangabad, Nagpur, Konkan Amravathi and Nasik. Each of these regional offices supervise the deployment and utilisation of inputs in four to five districts, coming under its jurisdiction.

The state level office is headed by a Director and the regional offices are supervised by senior Drilling Engineers and Deputy Directors. At district level Deputy Engineers and senior geologists are responsible for all the inputs. At district level the handpump maintenance is carried out under the jurisdiction of Zilla Panchayat (ZP).

The levels and type of inputs required each year is assessed by the regional offices after assessing and reviewing the work load at each district. The input requirement is based both on the target for achievements as well as replacement requirements. The state level office prepares the annual list of inputs after putting together the regional level requirements. From this list a proposal is sent to UNICEF which includes the number and type of items that has to be obtained from UNICEF. Not all inputs come from UNICEF. For instance, items like vehicles, handpumps, maitenance tools, spare parts, geophysical instruments are also directly procured from the market.

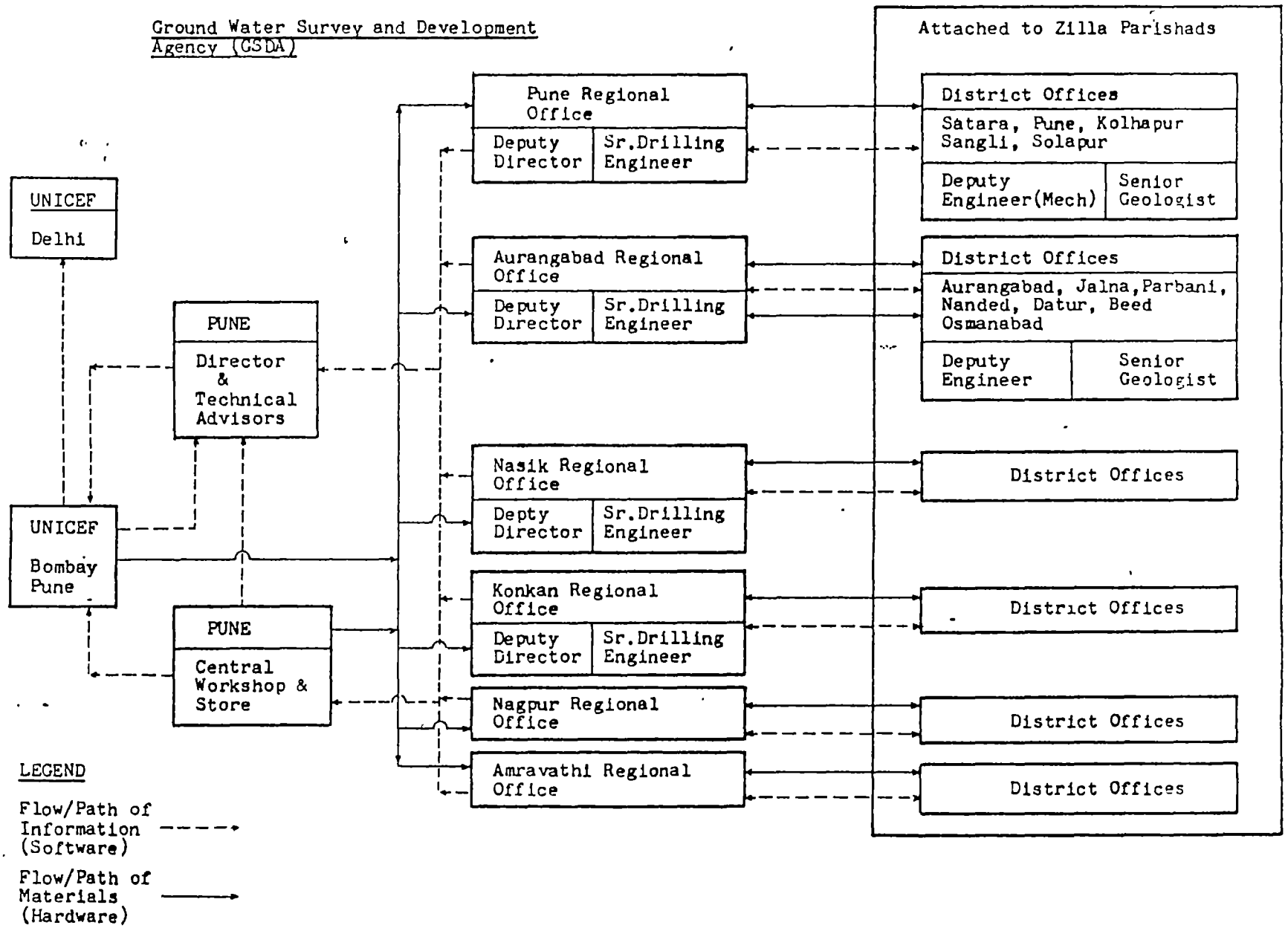
There is considerable delay in UNICEF inputs being furnished to the state agency. For instance the proposal for supply of inputs from UNICEF was prepared and forwarded by GSDA to UNICEF in October 1988 for the

year 1988-89. Till the end of December 1989 only a part of this input has been supplied by UNICEF. The inputs are directly send to respective regional offices under the direction of the state head quarters.

The inputs sent to a region either remains at the regional office as in case of drilling rigs, geophysical equipment or at district office as in case of handpumps, vehicles, repair kits, etc. The inputs consigned to a region remains within the region and used in the districts located within the region. The allocation of inputs among the districts are carried out at the level of regional office. Exchange of inputs between two regions is however effected, if necessary, under the advice of the state headquarters.

The management of spare parts is little different from other inputs. The spare parts comprise of a large number of items including rig spares, vehicle spares, instrument spares, etc. Generally a minimum level of inventory of spares are maintained for the sake of preventive maintenance. These spares are supplied from the Central Workshop to the Regional offices as and when the request for such a spare part is made. there are other type of spare parts which are required in case of an emergency (break down) and for which indent are

Fig. 1 - Flow of Information and Materials Between UNICEF and Offices of GSDA for Water Sector

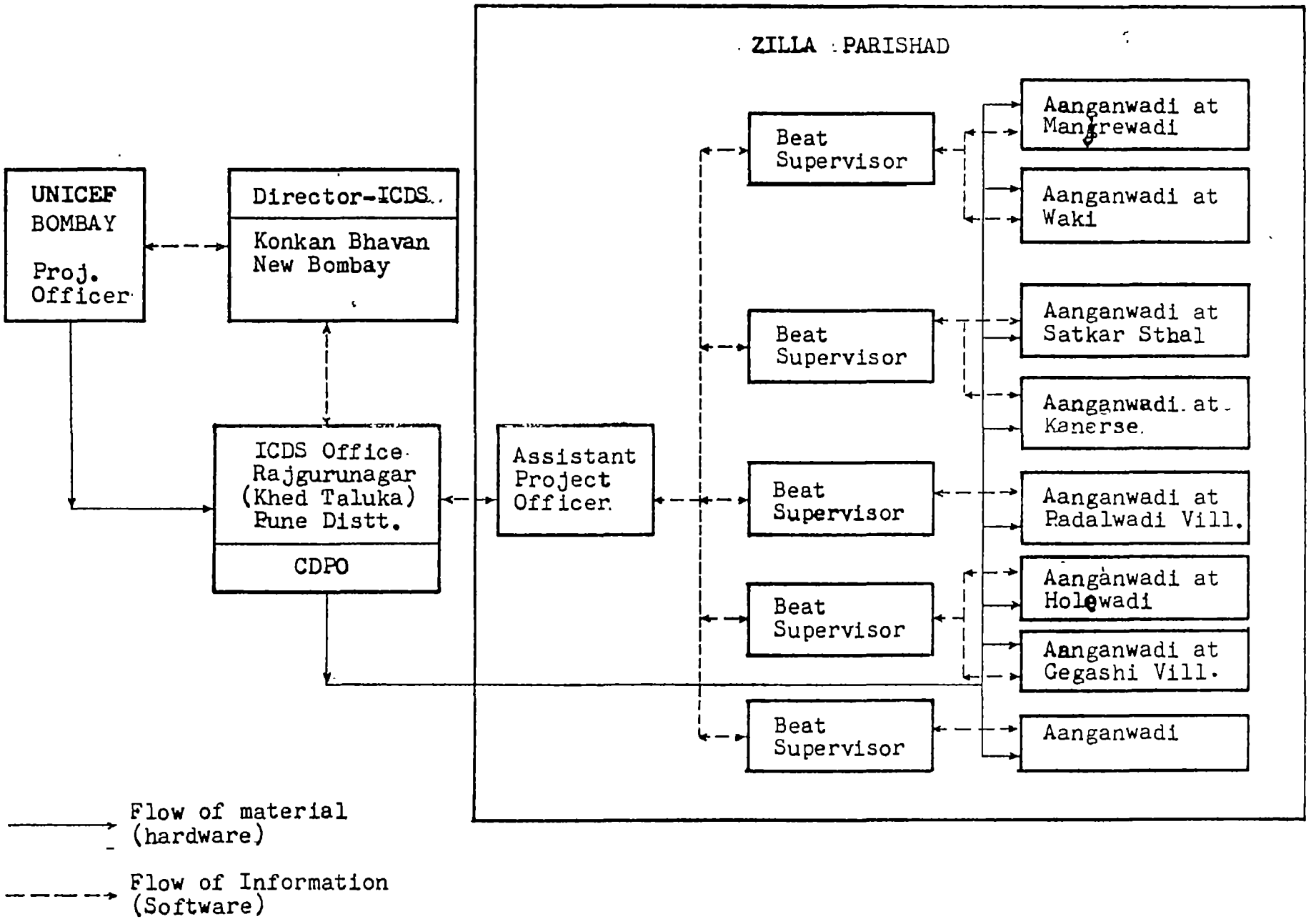


placed directly with the supplier. This item is put to use immediately without storing at any place.

The selection of the trainees and their deployment after the completion of the training is arranged by the state level office after informing the regional offices. The distribution of the number of trainees from different regional offices are even and generally the trainees are available immediately for attending the sponsored courses.

The inputs to the sanitation sector (promotional materials) are deployed through ICDS (Integrated Child Development Scheme) Programme as a pilot project. The ICDS Programme is supervised by a state level office with a Director being its head. At Block level the Chief Development Planning Officer (CDPO) supervises the ICDS programme. The CDPO is assisted by two assistant project officers, Beat supervisors and Aanganwadi workers. In Rajgurunagar Block there are 276 Aanganvadis each with an Aanganvadi worker. They are arranged into 14 Beats each having a supervisor. The Aanganvadi worker reports to Beat supervisor who in turn reports to APO and CDPO. There is a monthly review meeting at CDPO office for each Beat.

Fig. 2 - Flow/Path of Promotional Material Furnished by UNICEF Through ICDS Pilot Project in Pune District



The distribution of inputs through ICDS programme follows top down basis with UNICEF supplying the material to CDPO under the advice of the state level office. The CDPO distributes these materials directly to Aanganvadi during the review meetings held at his office each month. The materials are used by Aanganvadi workers in their mass contact programmes. The report of the utilisation and maintenance are forwarded to supervisors to APO to CDPO each month.

2.2 Orissa State

The major implementing agency in the state is PHED for water sector and the state sanitation cell attached to the C.D. & P.R. Department is the nodal agency for the sanitation section. The organisation of PHED is headed by a Chief Engineer with a number of Divisional offices who supervise the work in the districts. At divisional level there are divisional and subdivisional officers who are superintending engineers and executive engineers.

The inputs received from UNICEF are centrally stored at Bhubaneshwar. The distribution of inputs to different divisions are decided by the chief engineer in consultation with the UNICEF zonal office. The divisions where water is an acute problem greater

assistance is directed. Moreover, the divisional officer also indents to the State PHED giving their requirement. Based on the indents and stocks available, the State PHED directs the different divisions to come and collect the items from the central store. Sometimes UNiCEF inputs are directly consigned to the divisions with due intimation to the State office. In the divisional offices the inputs are kept in their stores. Within the division the distribution of inputs to the subdivisional offices based on the monthly indents prepared by them and the stock available in store. From the subdivision the materials are distributed among different sections based on their weekly indents and progress reports.

As regards the trainees, the training courses are conducted centrally at Bhuabaneshwar at two training institutes or at the district headquarters. The list of participants are decided by the Chief Engineer and the Superintending Engineer, PhED and intimated to the divisional officers of the division concerned. Generally the trainees selected for different courses are available for attending the training course immediately. Normally those who have not been trained are selected while due importance is also given to even distribution of trainees among all the divisions.

The Community Development & Rural Development Department,, under whom the sanitation inputs are deployed, supervise the Integrated Child Development Schemes in different districts and Blocks. The ICDS set up comprise of Chief District Programme Office (CDPO) at each block supported by supervisors and Aanganwadi workers posted to different villages. They utilise the promotional material of different themes like child health, immunisation, sanitation, etc. to motivate the people on proper health care. In case of distribution of input through ICDS the process begins from the top and flows downwards with distribution decided at higher hierarchies of the organisation. There are no indenting system from the lower levels. The UNICEF zonal office sends the material to the state headquarters. From there the State Programme Office carries the material in vehicle meant for sanitation cell to the respective blocks and distributes these to Block Development Offices. Sometimes the consignment is also despatched directly by post to the BDO concerned. On receipt of the material the BDO are expected to pass on the material to CDPO. But many a times the material lies in storage at BDO's office. When CDPOs attend a training programme at State Training Institute at Bhubaneshwar, they are given a set of promotional inputs which are

meant to be distributed among Aanganvadis. CDPO keeps one set of promotional input at the model centre which is usually the supervisor's office for display and rest are distributed to the Aanganvadis. The distribution from CDPO to Aanganvadi workers is generally carried out during monthly review meeting held at CDPO's office.

The Sanitation Cell of the state comprise of a Assistant Engineer for Technical works and an Extension Educator for motivational purposes. At the district level there is a district saniation committee comprising of project officers, district sanitation officers and additional project officer. All the block level offices the sanitation cell comprises of Block Development Officer, CDPO, Sanitation Extention Office. At village level, the Sarpanch would be main members with Aanganwadi workers and school teachers being associate members.

The inputs are distributed by District Sanitation Officers (DSWO) to the block offices or to the CDPO directly. These inputs are stored in their respective offices till they are distributed to village Aanganvadis.

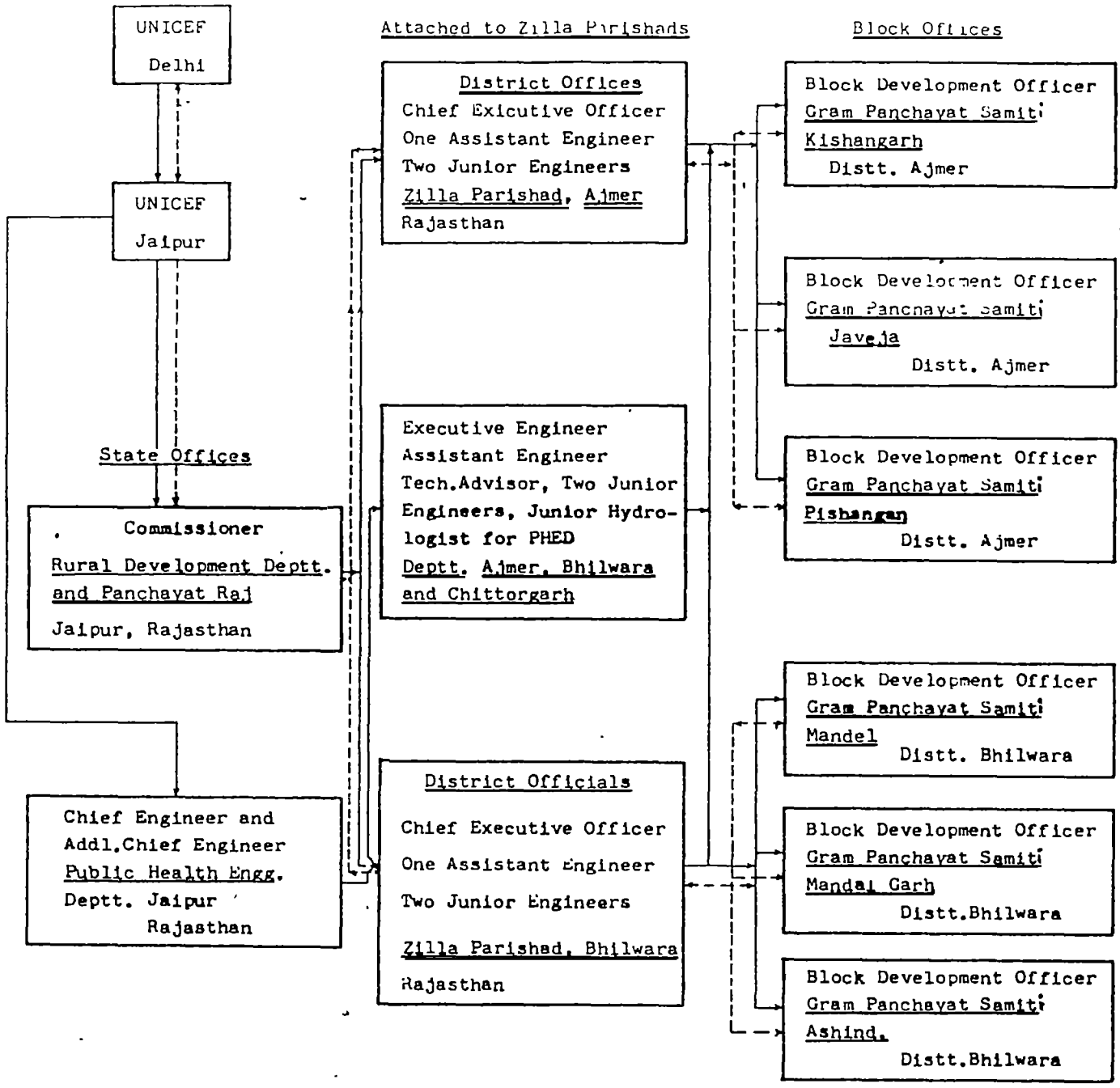
2.3 Rajasthan State

In Rajasthan two agencies which are responsible for distribution and utilisation of UNICEF inputs are Rural Development & Panchayat Raj Department and Public Health Engineering Department (PHED).

The PHE department is the nodal agency in water sector and its activities are supervised by a chief engineer and an additional chief engineer. The divisional officers and subdivisional officers are incharge of the works in the districts. In addition to engineers there are technical advisors, hydrologists, geologists at district level for supervising the use of UNICEF inputs. The divisional office covers the activities in the water sector in more than one district. For instance the PHED divisional office at Ajmer supervises the work in the districts of Ajmer, Bhilwara and Chittoragarh.

The inputs from the UNICEF are received at the State headquarters and then subsequently distributed to the divisional offices. The basis of distribution is the requirements (planned) of each division and the current availability. Some of the inputs like drilling rigs and terrameters are directly sent to divisional office with due intimation to the State Headquarters. The divisional officers monitors the work of each

Fig. 3 - Flow of Information and Materials Between UNICEF and State Officials for Water Sector — RAJASTHAN



LEGEND

Flow/Path of Information (Software) ---→

Flow/Path of Materials (Hardware) ——→

subdivision in the districts. Planning for use and deployment of inputs is carried out at sub-divisional levels. This planning process carried upwards to divisional level and set to Chief Engineer through Additional Chief Engineer (Drilling). Monthly review of the maintenance and utilisation of the Inputs is carried out at divisional level. The spare parts are maintained at divisional stores and are issued and replenished as and when required. The assessment for spare parts is based on the indents from block level which is then submitted to the additional chief engineer (drilling) by all the divisional officers.

The trainees are selected by the State Headquarters and the concerned divisional officers are intimated for the release of the concerned official. Generally the trainees are released for the training programme without delay. They are deployed back to their respective divisional offices after their training.

The Rural Development and Panchayat Raj is headed by a Development Commissioner. At district level (Zilla Parishad) the Chief Executive Officers are incharge of all the activities. These are assisted by Block Development Officers in each Block. At village level Sarpanch is the head of the Panchayat.

The planning of deployment of UNICEF inputs (handpumps, spare parts, promotional inputs) are done at Block, district and state level. At state level 2 year plan is made and at other levels quarterly plans are made. UNICEF programme office is consulted before the formal plan is made. The distribution to Zilla Parishads are based on their requirements and the availability of different inputs. From the Zilla Parishads to the lower levels the distribution of the inputs are on adhoc basis. The utilisation of these inputs are monitored using various formats from village level to block level to district level to state level. Formats are as per UNICEF action plan for 1989-90. Spare parts are maintained at both divisional level and block levels. The procurement of spares are arranged through Rajasthan Agro Industries. Information on quarterly requirement of each panchayat is collected by BDO and once the Rajasthan Agro Industries deliver the parts, the mistry collects every month the required parts.

3.0 TRACING OF EQIUIPMENT AND INSTRUMENTS

The tracing of equipment and instruments in three sample states included 30 items. Though tracer was aimed at recently deployed items (1987-89). Older equipment deployed between 1981-87 were also traced to have more variety of inputs. a brief description of the current status of these inputs in three sample states are given here.

3.1 Maharashtra State

A total of 12 items were traced. They were two old model pick up vans (1983), two new model pickup vans (1989), two tool kits (1989), one resistivity meter (1983), one terrameter (1987), two drilling rigs, slide projector (1982), one jeep (1987). the current levels of utilisation and management are as following.

out of how many

3.1.1 Kits and Vehicles

The pick up vans both old and new were found to be in working order being used for the maintenance work of handpumps in Satara and Beed Districts. The vehicles have been able to achieve the performance targets set for them and they tend to get over utilised during summer months. Currently the vehicles are parked in open space but require garage facilities. The vehicles are managed by trained drivers with 4 to 15 years of

Table 3.1 : Number of items traced in three sample States

Sr. No.	Items	Orissa		Maharashtra		Rajasthan	
		Ganjam	Mayur-bhanj	Satara	Beed	Bhil-wara	Ajmer
1.	Vehicles - Pickup Van	-	2	2	2	2	2
2.	Vehicles - Trucks	-	-	-	-	-	-
3.	Vehicles - Jeeps	-	1	1	-	-	-
4.	Rigs	-	-	1	1	-	1
5.	Tera Meters/ Resistivity Meters	-	-	2	-	1	-
6.	Tool Kits	1	-	1	1	1	-
7.	Slide Projector & 35 mm projector, etc.	-	-	1	-	1	-
8.	Audio equipment/ tape recorder/ cassettes)	-	1	-	-	1	-
9.	Video equipment	-	1	-	-	-	-
10.	Platform Shuttering	1	1	-	-	-	-
11.	Pipe Stand	1	-	-	-	-	-
Total		3	6	8	4	6	3

experience. In addition to drivers one helper mechanic is required for maintenance of the vehicles. Vehicles have adequate repair facilitis in nearby towns but spare parts have to be acquired from Pune. Log books are maintained regularly for recording the performance of the vehicles. Log books are verified by supervisors every week and by District officers every month. One of the older vehicles (1983 Hindustan pickup van) requires replacement as its performance is going down. A suggestion for better utilisation of these vehicles is to have an inventory of vehicle spares at the district level.

Tool its are of recent supply and are in working condition. They are being used for handpump maintenance in Satara and Beed district. The tool kits are stored in the office store room when not in use. The tool kit are managed by ITI trained mechanics having 6 to 8 years of work experience. So far none of the tools of the kit have been broken or damaged. The number and type of the tools supplied with the tool kit are recorded in the stock book. A suggestion for better utilisation of the tool kit is to include 24" pipe wrench and 12 mm size die set in the kit.

Two rigs traced are located one each in Aurangabad and Pune region. These rigs have compressors, support truck and tankers as supporting elements. They are parked in the regional workshop at Pune and Aurangabad and are coverd with tarpaulin. Both the rigs have achieved the targets for performance set by the Director's office (i.e. 150 bores & 10000 meters boring per year). Weekly performance report is sent to Director, GSDA and monthly reports are sent to UNICEF Bombay and Delhi. The rigs are managed by experienced drilling engineer. The operation of the rigs are in the and of crew comprising of Assistant driller, mechanical supervisor and mechanics with 7 to 20 years of experience. Rigs have been working satisfactorily since deployment. Three break down reported during last one year in rig at Aurangabad (Beed) with Hydraulic pump, propellor shaft, electric generator and ignition system going out of order. Log is maintained for recording the rig utilisation data and is updated daily and is verified by the regional officers every month. Surprise checks are also made by the senior officers. Some of the recommendations made by the user for better management of rig facilities are (i) to have centralised workshop for all rigs, (ii) inventory of spare parts with the rig to avoid downtime, (iii) mobile unit for maintenance and repair on site.

3.1.2 Geophysical Equipment

Two instrument traced in the Pune regional offices are out of order, the resisitivity meter (model IC-69) being out of order since three years. Geophysicists or technicians with M.Sc. degree with 4 to 15 years of experience are assigned to operate the equipment. The ABEM terrameter deployed since 29.5.87 has not functioned properly and its potential box has been out of order since November 1988. No record or log book is currently being maintained. Local facilities for repairs is inadequate.

3.1.3 Audio-Visual Equipment

The slide projector (1982) with two sets of slides on (i) health, (ii) sanitation and (iii) Aanganvadis has been traced to ICDS office at Rajgurunagar. The instrument is in working order since deployment and being used intermittently in Khed taluka.

The instrument does not require trained personnel for its operation. Currently female supervisors with 6 years of work experience are operating the instrument. Records of the places where the projector has been used, persons who have operated have been recorded in a plain note book as and when the instrument is used. CDPO, Khed Taluka verifies this record book every three months.

3.2 Orissa State

A total of 9 items were traced in Orissa. They were two pick up vans (1988 and 1989) and Jeep (1988), Tool Kit (1989), two Audio Visual equipment (1989), two platform shuttering (1989) and pipestand (1988). The current levels of utilisation and management are as following:

3.2.1 Kits and Vehicles

The vehicles are being used for handpump maintenance and inspection work in Mayurbhanj district. The pick up vans are parked in the open space and requires garage for better protection. The vehicles are well utilised but tends to get overutilised at times. The performance report is sent to subdivisional officer every month. The vehicles are operated by trained personnel with 9 to 15 years of experience. Two of the vehicles have had one breakdown in last one year. Repair facilities are available all the time within the town. Log books are maintained and updated daily. The log books are checked by subdivisional officer monthly and by deputy secretary (in case of jeep) once in 3 to 4 months.

The standard tool kit is located with subdivisional office at Mayurbhanj and is used for repair and maintenance of handpumps. The special tool kit is with the mobile maintenance van in Ganjam Dist. Both tool

kits are overutilised. The tool kit is used by trained mechanics 9 to 25 years of service.

3.2.2 Audio-Visual Equipment

The audio visual comprised of video cassettes, slide sets, audio casette, casette recorder. They are used in the training institute and used during training programme. The quipment are utilised by instructors of the training institute with 5-8 years of work experience. So far no break down has been reported during last one year. It is recommended to have one trained instructor on full time for better maintenance of the equipment.

3.2.3 Platform shuttering

This item is being used in Ganjam district for making platforms after the installation of the pumps. They are stored in open air in the sectional office. This item is always underutilised because of transportation problems and inadequate supply of construction material. There are not any permanent staff to look ater the use and maintenance of this equipment in Ganjam. Hired masons are using this item as and when required. The platform shuttering in Mayurbhanj is being maintained by two permanent but untrained personnel with 10 years experience.

3.3 Rajasthan State

A total of 9 items were traced in the two districts of Rajasthan. They are four pick up vans (1989), one drilling rig, tool kits (1989), one terrameter (1989), two audio-visual equipment (1986-87). The current levels of utilisation and management are as following:

3.3.1 Kits and Vehicles

Of the four vehicles two are located in Bhilwara and the other two in Ajmer. All are of latest model (Swaraj Mazda). The vehicles are functioning satisfactorily since deployment and are being used for handpump maintenance and distribution of promotional inputs. These vehicles are parked in open space and requirs a garage for protection from heat & dust. Generally the vehicles are under utilised for handpump repair purpose because only one village is covered per day. However, during summer season and period of drought the vehicles are over utilised. The trucks are operated by trained drivers with 5-9 years of experience. However, one additional driver would be desirable to have uninterrupted service. spare parts and repair facilities are available at Ajmer but not at Bhilwara. The log books are maintained and updated regulrly. The records in the log books are verified by CEO/Accounts officer fortnightly or monthly. Some of the

recommendations received for better management of vehicles are (i) a tenative work plan for operation of the vehicle is to be prepared from time to time and it should be adhered strictly, (ii) vehicles should be used only for handpump maintenance, (iii) local arrangements for spare parts.

One standard and three special tool kits were traced in Bhilwara. They are stored in a small room in gram panchayat samiti mandal, Bhilwara. The storage is adequate and safe. Fitters and mistries are currently use these tools whenever any repairs has to be carried out for the handpumps. No maintenance is required. Record books are maintained of the village visited, which part was repaired, spare part used. The records are verified by the Block Development Officer. for better utilisation of this input for major repairs it is recommended to include fishing tool, chain block, chain pulley, clamps etc. as a part of this tool kit.

One drilling was located in Ajmer district. The rig has a compressor, one tractor, 25 drill rods, 2 hammers and tools & bits as accessores. The rig is parked in a open space which is not safe. It is presently used in Beawer taluka. One driller with nine year experience, two trained helpers and one trained driver with 12 years of

experience are operating this rig. During last month turbo compressor brokedown and its report has been sent to the headquarters. There is no repair facilities or spareparts available locally. Log book is maintained about the performance of the rig which is sent to the headquarters.

3.3.2 Geophysical Instruments

One terrameter is being used in both Bhilwara and Ajmer districts. The instrument is kept in different district's (Ajmer, Bhilwara and Chittoragarh) PHED offices and sometimes at the divisional offices. The instrument is operated by a junior hydrologist and junior engineer under the supervision of an executive engineer. The equipment is working satisfactorily since deployment. No log is maintained but performance details are sent to chief engineer PHED Jaipur. It is recommended to give training to the professionals operating this instrument for its better maintenance.

3.3.3 Audio Visual Equipment

One tape recorder and one 35 mm projector were traced at Rajasthan Institute of Local self Government Jaipur. These are stored at Jaipur and are occasionally sent to the distrits ((Jhunjhunu, Bhilwara and Dausha). At present these are used during National Refresher Courses

on Low Cost Sanitation, District Level Courses on Low Cost Sanitation, one year course for sanitary inspectors. It is used almost every fortnight. The caretaker of the instrument has been with the institute for 11 years and has been operating the equipment for the last three years. So far instrument has been functioning satisfactorily. The utilisation report for this equipment is sent to the UNICEF State Office at Jaipur.

4.Ø TRACING OF INSTITUTIONAL SUPPORT

UNICEF has assisted in the strengthening of the organisations, which utilise and manage the inputs in water and sanitation sector, by sponsoring training programme to a variety of personnel. In some cases the UNICEF has organised the training courses and in some cases other agencies have organised the courses. The type of personnel that have been benefitted from these training programme include engineers, geologists, mechanics, fitters, administrators, school teachers, caretakers etc. A brief description of the personal profile and the current status of these trainees in the three selected States are presented here.

4.1 **Maharashtra State** - Sample details od eight trainees are presented here:

4.1.1 **Engineers** - Two engineers who were trained are having technical backgrounds with a service length of 15 and 26 years. They have been in their current locations at Beed and Satara since 1987. Both attended handpump maintenace and inspection training course conducted in Pune in 1988 and 1989. The course was for four days covered topics like maintenance of handpumps, inspection procedures, strengthening of three tier system etc. The training included field training and had 25-3Ø participants. Both the trainees have been back to their respective location and have been busy in the supervision of the handpump programme. The department has provided adequate staff

Table 4.1 : Different Types of Trainees Traced in Sample States

Sl. No.	Type of Trainees	Maharashtra		Orissa		Rajasthan	
		Satara	Beed	Mayurbhanj	Ganjam	Ajmer	Bhilwara
1.	Deputy Engineer/ Junior Engineer	1	1	2	1	-	-
2.	Drilling Engineer	1	-	-	-	-	-
3.	Geologist	2	-	-	-	-	-
4.	Mechanics	2	-	-	1	-	-
5.	Handpump Mechanic/ Mistry	1	-	1	-	2	-
6.	Primary School teacher and Village Sanitation motivator	-	-	-	-	1	2
7.	Fitter	-	-	-	-	2	1
8.	Caretaker	-	-	1	1	-	-
9.	Sanitation Supervisor	-	-	1	-	-	-
10.	Chief Development Planning Officer	-	-	1	-	-	-
11.	Sanitation Extension Officer	-	-	-	1	-	-
12.	Mason	-	-	-	1	-	-
	Total	7	1	6	5	5	3

and vehicles for their use. The training programme which they have attended has been relevant and useful with regard to their current duties.

4.1.2 **Drilling Engineer** - The trainee has a engineering degree with 11 years of service with GSDA. Prior to joining GSDA he was with Irrigation Department for six years. He attended a training course on operation and maintenance of hydraulic rigs and equipments held in Bhubaneshwar in 1986. The course comprised of subjects like development in technology of hydraulic equipment, drilling with foam and polymer, use of odex system etc. Over thirty persons all over India participated. Subsequent to his training he has been posted to Pune as a regional officer in charge of drilling work. The training programme has been useful and relevant in introducing the trainee to the latest trends in drilling technology and provided an opportunity of sharing his experience with similar officers from other States.

4.1.3 **Mechanics**

Of the three mechanics interviewed two of them had education upto high school and one had a diploma in mechanical engineering. Their service length with GSDA varied from 4 to 10 years. They attended handpump training programme organised in Pune and New Bombay in 1987 and 1989. The course covered subjects like repair of handpumps, training the villagers for maintenance of handpumps, platform construction, etc. The training

programme included two days of field training. Twenty persons attended the course. Subsequent to their training they have been deployed back in their previous locations and have been assigned the work of supervising handpump maintenance. Department has provided vehicles, tools and helpers to these mechanics for their work. The training programme imparted to these mechanics has been relevant with regard to their current job responsibilities. A recommendation received for improvement of the training imparted is to enlarge the duration of the programme to include training in OTC handpump maintenance.

4.1.4 **Geologist** - The two geologists have technical backgrounds with service length of 23 years and 4 years respectively and working in Satara since two years. Both have attended course in 1989 at Pune and Hyderabad. Both the trainees have benefitted from the training programme. However one of them has not been able to put to use his enhanced capabilities as his current duties are not consistent with the training imparted. Due to heavy official work utilisation of this training programme has not been satisfactory till date.

4.2 **Orissa State** - The profile of trainees interviewed in Orissa are presented here.

4.2.1 **Engineers** - Two engineers in the handpump programme and one from sanitation programme. All of them have education levels with diploma in Civil Engineering. The engineers of PHED have attended the handpump installation and training programme. The training covered theoretical subjects like repairing, installation of handpumps, platform construction and included two days of practical field training. Subsequent to lthe training they have been posted back to PHED Mayurbhanj district where they are supervising the handpump programme. They have been provided with six supporting staff and a jeep for their work. The trainees feel that the training was relevant and useful but the duration of the training was not adequate. The Junior Engineer and the Sanitation Extension Officer in the Sanitation Department attended a course in Rural sanitation at Puri. The course involved topics like how to promote sanitation programme, utility of sanitation programme in rural areas etc. There was a field training for one day. Subsequently they have been posted to Ganjam district in the BDO's office. They have been given posters and booklets on Rural sanitation to be used as promotional material. Their training is consisted with their current duties.

4.2.2 **Mechanics/Fitters** - Two mechanics who were trained having different educational backgrounds. One was an illiterate while other was having diploma in Mechanical Engineering. Both the permanent employees posted at Mayurbhanj and Ganjam. They attended training course on Indian mark II handpump installation and maintenance of their district headquarters. The course involved theory subjects like installation and repair of handpumps, platform construction, waterborne diseases and treatment of water etc. Two days of practical field training was also a part of the training course. Subsequent to their training course they have been posted back to their original location. They have been provided with 4 to 8 supporting staff, one jeep and adequate special tools for expansion of the maintenance work of handpumps.

4.2.3 **Caretaker** - Two caretakers (both of them females) were interviewed one each in Ganjam and Mayurbhanj districts. Both had education upto primary school. Both were temporary workers. They attended village level caretaker training course held at district level. The subjects covered were Minor repairs to the pump, cleaning of head assembly and included film shows and practical training. Both are now working as handpump caretakers in the village and are capable of managing

minor repairs. They have been given set of spanners to facilitate their work.

4.2.4 **Mason** - Mason with temporary service and high school background was trained in construction of different types of latrines, smokeless chulas. The course included two days of practical work at training centre Bhubaneshwar. At present he is serving as a Mason in the Ganjam district. His training is being fully utilised in line with his current duties.

4.2.5 **Sanitation Supervisor** - He is a permanent staff at CDPO office at Mayurbhanj district and having a Bachalor of Arts degree. He was trained in demonstration of latrine at Bhubaneshwar. He is at present working as Supervisor at CDPO office and has been provided with a vehicle for his work. His training has been relevant and useful for his current responsibilities and duties.

4.3 **Rajasthan State** - Three category of trainees were traced in Rajasthan namely Mechanics, Fitters and School teachers/village sanitation motivators. The details of their training programme and their current duties are presented here.

4.3.1 **Hand Pump Mechanics** - Two of them were interviewed one each in Ajmer and Bhilwara. Both were having less than High School level education. Both of them are new recruits having joined the Department recently. Both of them have undergone handpump mechanics training programme at SWRC Tiloniya for 3 months. The course included handpump theory, workshop training and 45 days of field training. The workshop and the training programme was useful in imparting the skills required for their current duties of handpump repair and maintenance.

4.3.2 **Fitters** - Three trainees were interviewed, two of them in Ajmer district and one in Bhilwara district. All of them had diploma from Industrial Training Institute (I.T.I.). They had work experience of 6 to 8 years. They attended handpump repair and maintenance training course in Jaipur at different times. The training programme comprised of handpump theory, workshop training etc. Subsequent to their training they have been posted back to their district office. They have been provided with tool kits for their work. Their training programme was useful and relevant for their current work responsibilities. However one of the fitters at Kishangarh, Ajmer felt that the training programme did not add much to his knowledge.

4.3.3 **Village Sanitation Motivators (Teachers)** - of them were interviewed in Bhilwara and one in Ajmer. All of them were graduates. Two of them working as school teachers and one as a village level motivator. All of them attended village sanitation motivators training course. The course comprised of theoretical subjects like towards better health, cleanliness is life, home sanitation etc. Training programme was useful in improving their awareness and knowledge of environmental sanitation. Subsequent to their training they have been assigned to create awareness among the village population regarding correct sanitation practices. For their work promotional material and an incentive of Rs.50/- per month has been provided. All of them expressed the opinion that the duration of the training should have been more and subjects coverage should have been more wider.

CHAPTER - V

TRACING OF PROMOTIONAL INPUTS

5.1 Background

The UNICEF assistance in water and sanitation comprises of both hardware (equipments, handpumps, etc.) and software materials (manpower development and awareness promotion). In the latter, emphasis is laid primarily on the development of skills and knowledge among implementors as also use of visual aids in dissemination of knowledge to the villagers.

While it is easy to trace the hardware support within a state, the process is relatively difficult for the software items, particularly the promotional material.The promotional inputs relate to flascards, charts, posters and booklets depicting key messages on drinking water and sanitation. These inputs being meant primarily for distribution, change hands frequently thereby creating problems while tracing. The persons who are enlisted as having received some promotional material might have distributed them to others within/outside the same locality.

5.2 Organisational Set-up

Generally the promotional inputs are dealt with by the Panchayat Raj Engineering/Rural Development/Community Development Department. In states covered under intensive sanitation programmes, sanitation cells have been created in different departments. The ICDS is a common forum for deployment and distribution of promotional inputs within the nodal departments.

The administrative structure of ICDS varies from state to state. The ICDS programme in Maharastra is managed by Director at state level. At district level the programme is managed by the CDPO. In Khed Taluka the ICDS office and the CDPO are located at Rajgurunagar. The ICDS office has two assistant project officers (APO). The entire taluka has 276 Anganwadi each managed by a village level worker. The supervision of these Anganwadis are arranged under 14 Beats with each Beat having a supervisor. The Anganwadi worker reports to the Beat supervisor who in turn reports to the APOs and the CDPO. In Orissa, the Community Development and Rural Reconstruction Department (CD & RR) is the nodal agency for implementing the sanitation programmes. At the head is the Secretary of the department assisted by a Dy.Secretary. The state sanitation cell is attached to this Department with an Assistant Engineer and an Extension Educator on the technical and promotional side respectively. While the former is entrusted with the task of providing technical support to the sanitation programme (construction of latrines etc.) the latter has the responsibility of educating and motivating the villagers through distribution of leaflets, pamplets, booklets and charts. In Rajasthan the sanitation cell is vested in the Rural Development and Panchayat Raj Department with a commissioner and Assistant Development Commissioner at the state level. At the district level, in Orissa there are district sanitation committees comprising of the

Collector of the concerned district and the District Social Welfare Officer (DSWO) alongwith the project officer, DRDA who monitors the progress of the work from time to time. In Rajasthan, the Chief Executive Officer of Rural Development is incharge of monitoring the progress of work. The CDPO is the chief functionary at the block level who implements the programme in consultation with BDO. Directives have also been issued to the block development officers to form village sanitation committees (Orissa).

5.3 Distribution of Materials

The promotional inputs, are given to the concerned CDPOs by the project officers of UNICEF zone office/programme office as the case may be. In Orissa these items are received from the zone office at Hyderabad and despatched to the state where it is usually stored at Home Economic Training Centre (HETC) or in the room of the Assistant Engineer, State Sanitation Cell (SSC), Bhubaneswar.

From the State H.Q., the materials are despatched to the ICDS blocks where the programme is in operation either by UNICEF officers or the Assistant Engineer, SSC in the Swaraz Mazada van provided to him (Orissa). Sometimes,it is sent by road transport to the concerned Block Development Officers (BDOs). In such cases, the parcels are found lying in cold storage in the office of the BDO. The CDPO are not aware of the receipt of the materials in their block. It is only when the Extension Educator enquires of the materials that a search is made for the same and then distributed to the CDPOs. However in no case are the inputs distributed on the basis of indents from lower offices. They are just deployed to different districts on the basis of decisions taken by the State level functionaries.

A similar system of distribution prevails from the block to the village level functionaries. In Maharastra, the CDPO directly give the inputs to the Anganwadi workers in the villages. In Orissa, the materials are distributed during training at Bhubaneswar organised by UNICEF. There is no norm as regards the exact number of such material given to each worker. In Rajasthan, the materials are given to the workers either by the CDPO or by the local voluntary organisation like the Social Research Centre, Ajmer. Further in the states covered under intensive sanitation programme many village sanitatioin motivators and school teachers have also been selected for promotion of messages. The too were contacted in the present survey. They had been called by the BDO to attend the training and given the materials (booklets, posters etc.). All the teachers contacted were residents of the same village where the school was located. The teachers belonged to the adult education centres, non-formal centres or lprimary schools in the locality. Further there were also men and women motivators from local organisations (Rajasthan) who were residents of the village for a long time.

5.4 Utilisation

The CDPOs utilised a few of the posters for their headquarter office as also for the supervisor's office in model centres. These were meant for display purposes only. The balance of posters, flipcharts were usually distributed to the Anganwadi workers, school teachers in consultation with the supervisors. The poster were lusually hung on the walls of the centre/classrooms. The booklets/filipcharts etc. were carried by the workers for display during visit and stored in the centre or library or classroom when not in use. These masterials were displayed once/twice in a week.

5.5 Operational details

A work plan is prepared every month in consultation with the CDPO's and supervisors regarding meetings to be held and matters to be discussed. Review of the work is also done by the CDPO. In case of additional requirement of inputs the CDPO is intimated verbally. The CDPO is also required to keep a record of the materials received and distributed. But in most of the cases such a record is non-existent. In Orissa, the CDPO of Khallikote could not quantify the materials she received as it is related to an earlier period (prior to her posting). However she had received one set of pamplet/filipchart in May 88. The CDPO Kukudahandi had not received any thing so far. As the materials are distributed to the field. There is no need felt for maintaining such a registers. Thus the process of distribution and monitoring of promotional inputs is rather weak. Coming to the village level, the materials were used as often either in the village meetings or in the classroom with prior intimation. The village meetings were usually held at different places (temple, hamlet, AWW centre, club etc.) to enable all persons to attend. The teachers on the other hand, alloted a period in the day for educating the children. They too move around in the selected hamlets.They attracted the attention of male members of the village. The AWW had a largaer female clientele. In a few other cases, the materials were circulated among members who attended the meetings in non-formal centre. Tour diaries were maintained by Anganwadi workers as also the village sanitation motivators (Rajasthan) indicating houses visited and items discussed. These were checked by supervisors (ICDS) of BDO's (in selected cases). However in Orissa while the work of AWW was monitored there was no follow up of the activities of the school teachers.

5.6 Adequacy

However there was a general feeling that the material was not adequate to meet the requirements. 50 sets of flash cards and 5 posters for a block is not sufficient to cater to all the Anganwadi centres. The posters, filipcharts must be given in larger number for distribution among village folk. Currently they were only shown during meetings and hung on walls. After the meeting was over, they were taken back to the respective places. Also the provision of more booklets than posters proved to be futile in these areas.

5.7 Suggestions

In order to improve the utility of these inputs, it is felt that more of visual aids must be provided. This alone will arouse the interest of the large illiterate mass in rural areas. For school children, the posters should be larger and more colourful. Moreover they must be made of more lasting material (plastic,tin,etc.) as they are handled frequently. It is also desirable to change the desing of the flash cards. Presently the written messages pertaining to the picture are printed on its reverse. However, it must be printed on facing page itself so that during display, the anganwadi worker/teacher can easily handle the flashcard. Currently he/she is constantly referring back and forth to correspond the picture with the message. Cassettes may be supplied in order to show the film on sanitation to the children in school as TV and VCR are already provided there.The training institutes could lend their cassettes to the concerned school authorities on request. It would be ideal if the CDPO's are supplied with VCPs so as to cover their block. It is also desirable that the pictures depicted in the flash-cards must be more akin to local people (tribals) so that persons could develop more interest. In fact,local ingenuity

in designing the flashcards, charts while retaining the broad messages of health must be promoted. In this connection, the use of metal stencils for quick and colourful display of messages on health is to be encouraged. The utilisation of the promotional inputs would be better if the CDPO's are the consignees of the materials, rather than the BDO's who are engaged in multifarious development work further CDPOs must develop a register for maintaining record of distribution of inputs. This will enable them to monitor the work easily.

CHAPTER - VI

INDIA MARK-II HAND PUMPS

6.0 Introduction

To identify and examine the direct implementation support as part of the tracer study of UNICEF inputs in watsan sector, we had studied 60 to 90 hand pumps per selected district.

6.1 Sampling Methodology

As the study aims only to trace out UNICEF hand pumps in the reference period of 1.4.88 to 30.9.89, the following methodology has been adopted for selection of hand pumps in the study areas :

Firstly we had collected the number of UNICEF hand pumps installed during this period in all the existing units (block/taluka/section) of the selected districts. Secondly, the highest concentrated hand pump unit was selected for village selection. Thirdly all the existing villages of the selected unit were arranged in descending order according to the pump density. Fourthly taking the average size of the pumps density of the selected unit the existing villages weres arranged in high, medium and low pump density ranges. Fifthly, from each range, minimum three and maximum four villages were selected for indepth study making a total of ten selected villages for the unit of the study.

Whereever (selected district) pumps were not installed during the reference period data were collected previous to this period for getting statistics per pump density.

6.2 Findings

For this interim report purpose all the data were analysed at state level only for the following broad sub-headings/ variables :

1. Hand pumps and their use,
2. Environment around the hand pump,
3. Performance of the pump, and
4. Maintenance of the pump.

6.2.1 Location of the pumps

The rate of usage of the pump is directly correlated to its suitable location in the village. It is assumed that the rate of usage of a pump is higher when it is located in the middle of a village or nearby habitation. In this regard the investigators had been instructed to observe and note down the exact location of the pump as well as some important land marks such as school, temple and any other public place. The data in Maharashtra shows that majority of the pumps are located at one end of the village in Orissa also majority of the pumps are located in one end of the village followed by middle of the village and close to a public place such as school, office etc., and in Rajasthan the data indicate that majority of the pumps are located close to a public place followed by middle of the village and one end of the village (Table-6.1).

6.2.2 Condition of the pedestal

Majority of the pumps in Maharashtra are having a firm pedestal. In Orissa majority of the pump pedestal was firm. Only in few cases the pedestal was loose. It is heartening

to note that in Rajasthan also a majority of the pump pedestal was firm (Table-6.2).

6.2.3 General observations on condition of pump

To get a better picture of present status of a pump in the selected villages all the investigators were instructed to observe keenly all the aspects of the pump specially above the ground level that is to see : 1) whether handle is firm. 2) does the handle move smoothly, 3) is the chain rusted. 4) does the connecting rod rub against the guide bush etc. For this purpose all the investigators were provided with two spanners (size 19/20 which is the usual size required for opening the inspection cover)so that they could actually verify some of the questions raised in the hand pump schedule. These observations are presented in the Table-6.3. In Maharashtra the observations indicated that in majority of the pumps the handle of the pump was firm and it moves smoothly, inspection cover was in proper place, all the flange nuts were in place, chain would not fold during return stroke. In Orissa, in majority cases, the handle of the pump was firm, handle moves smoothly, inspection cover was in proper place, all flange nuts were in place, chain would not fold during return stroke, chain and pedestal were not rusted. In Rajasthan in majority cases handle was firm and moves smoothly, inspection cover was in place and all the flange nuts were in place, chain would not fold during return stroke. In Maharashtra, Orissa and Rajasthan, people complained that majority of the pumps do noise and connecting rod rubs against guide bush while in operation. In Rajasthan majority of the pumps' chain and pedestal were rusted. In Maharashtra only in the case of chain of the pump majority was reported to be rusted. Again in Maharashtra it was reported that there were cracks on the surface of the platform immediately surrounding the pedestal in slightly

more than half of the pumps. It is a welcome sign that in all the three States it was reported that in majority of the cases the water from the pumps looks clean and also it is suitable for drinking (Table-6.3).

6.3 Environment around hand pump

For any hand pump a better environment (surroundings) around the pump will definitely increase the efficiency of the performance of the pump. In this connection, our data in Maharashtra shows that in majority of the hand pumps, the platforms were cracked, had water logging on the surface of it and their edges were broken. In some cases the platforms were infested with moss and dirt. In Orissa in majority of the hand pumps surveyed, the environment around the pumps is better in terms of good condition of the platform, provision of a drainage etc. Specially in majority of hand pumps, the platforms do not have any cracks, no edges of the platforms were broken and there was no water-logging etc. on the surface of the platform.In Rajasthan the situation is slightly in a bad shape. In almost less than half of the pumps, there were cracks on the surface of the platforms and in more than half of the pumps the edges of the platforms were broken. Regarding water-logging, moss and dirt around the platforms of the pump, more than two-thirds of the pumps were reported to having dirt on the platform, in slightly less than two-thirds of the pumps there was water-logging on the platforms, moss was noticed in less than half of the pumps.

6.3.1 Drainage and accumulation of water

As we have studied the first aspect of condition of the platforms under environment around the handpump in the previous section, now we are presenting the second aspect of

the environment around the pump in terms of whether the pump has any draninage outlet and if so, is there any water-logging around the pump in different seasons etc. in the following section.

In this point of view the data in Maharashtra denotes that majority of the pumps were having drainage and water accumulates throughout the year. In Orissa the condition is slightly better as majority of the pumps were reported to having a drainage. When specifically asked, does water accumulate around the pump during different seasons, in majority of the cases the answer was negative. Only in few cases the water accumulates throughout the year.In Rajasthan it was reported that in only slightly more than half of the pumps were having drainage (Table-6.4).

6.4 Performance of the Pumps

6.4.1

In this section the performance of the pumps is discussed in connection with number of households depending upon the pumps, number of pumps used for more than 8 hours per day during summer and rest of the year, purpose of using water from the hand pumps during summer and rest of the year, reasons for not using or sparingly using the water for drinking and cooking and number of pumps currently working vis-a-vis quantum of water delivered by the pumps after 40 complete strokes.

6.4.2 No.of households depending upon the pumps

The pumps' performance is directly dependent upon number of households using the pump for getting water for different purposes such as drinking, cooking, bathing, washing utensils and clothes, feeding to cattle etc. The data collected

from the three states shows in majority of the handpumps it was reported that more than 50 households are depending in Maharashtra in majority cases. In Orissa in majority cases below 50 households depending upon the pumps whereas in Rajasthan it was almost evenly distributed between below 50 and above 50 households depend on the handpump for different purposes. The reasons for less dependence on hand pumps in Orissa may be less number of households existing in village coupled with the fact that there are other sources of water other than handpumps existing in the villages, such as wells, tanks etc.(Table-6.5).

6.4.3 No.of pumps used more than 8 hours

The pumps' performance is also taken into account if it was used for more hours by the households. In this regard a yardstick was fixed whether the pumps were used for more than 8 hours in a day or not. Interestingly the data in Maharashtra indicates that almost three-fourths of the pumps were used for more than 8 hours during summer as well as rest of the year which itself indicates the high dependancy rate of the households on the pumps. In Orissa only during summer majority of the pumps were used for more than 8 hours and only in half of the pumps surveyed were reported to be used for more than 8 hours during rest of the year. In Rajasthan also the pumps were used for more than 8 hours were reported in majority cases only in summer (Table-6.6).

6.4.4 Purpose of using water

If the water drawn from the handpump was used for more than one purpose it also indicates that the performance of the pumps vis-a-vis dependancy of the households on the hand-pumps during summer as well as rest of the year. As we had noticed in earlier section, the dependancy rate of

households on handpumps was very high in Maharashtra almost throughout the year which also reflects from the data presented in Table-6.7. The data indicates, in alsmost all the cases a balance was maintained in summer as well as rest of the year for which the water is used by the households such as drinking and cooking, bathing, washing clothes and feeding cattle. In Orissa also there was no significant differences in using water for different purposes. The same trend follows in Rajasthan also (Table-6.7).

6.4.5 Reasons for not using/sparingly using

Even though it was reported in majority of the handpumps that water was clean and used for drinking, in a few cases it was reported that they were not using or sparingly using water for drinking and cooking. When specifically asked for the reasons for which they were doing so,a majority reported in Maharashtra that the water was dirty followed by bad smell or salty water, no flow of water during summer and ironic taste. In Orissa in majority cases it was reported that the water's taste was ironic/mettalic followed by bad smell and salty water, water was dirty and no flow of water during summer and the handpump was far away from the house. The similar responses were reported in Rajasthan also (Table-6.8) for not using water for drinking only. Regarding reasons why they were not using water for cooking, in Maharashtra majority replied that the water was dirty followed by rice turned to black after cooking/hard water and no flow of water in summer. In Orissa the responses indicate that majority were not using the water for cooking since their rice turned to black/hard water followed by food not boiled properly, no flow of water, dirty water, distance from the house. Whereas in Rajasthan it was reported that in majority cases the food do not boil properly followed by rice turned to black/hard water, dirty water and distance from the house (Table-6.9).

6.4.6 No.of pumps currently working

It is interesting to note in all the three states surveyed almost all pumps were currently in working order except a few pumps in each state. Specially in Orissa where the pumps were of recent origin (1.4.88 to 30.9.89) there was no major breakdown since installation, which is the main reason for currently in working order (Table-6.10). This also supports the finding that notwithstanding the age of the pump, the majority of them is currently working.

6.4.7 Flow of water after forty strokes

It is assumed that after giving a full forty strokes to the handle of the handpump, the pump should deliver water more than a normal bucket. It is heartening to note that in all the 3 states surveyed, in majority cases, the pumps were delivering more than a bucket full of water after forty strokes. It is slightly more in the case of Orissa (Table-6.10).

6.5 Maintenance of the pump

6.5.1

While the India Mark-II handpump is consideered a very reliable and efficient pump, it also requires a certain minimum level of maintenance to function without any breakdown. In fact there is a monthly and annual preventive maintennce schedule. Since the monthly maintenance schedule does not involve pulling out the pumps, a very elementary level of skill would be required to follow this chedule. The system of preventive maintenance as practised in the three states varies in nature and type. In states where a 3 tier system has been introduced, the caretaker is supposed to be the village level functionary to attend to routine check up and minor repairs with the tools provided to him/her.

6.5.2

For major repairs the services of the block mechanic becomes necessary while for dismantling the pump and for replacement of parts below the ground, the district mobile team is used. However, in the three states under study, the lowest level functionary at the village level hardly exists. Though many of them have been trained in the preventive maintenance of handpump, they hardly ever attend to routine checks as prescribed in the "Trainers guide to Filipchart" prepared by UNICEF. In most of the villages, the cards supplied to the caretaker has been exhausted while the log book was commonly utilised by the children while attending school. None of the caretakers had any oil and grease. According to officials, the weakest link in the maintenance system is the village caretakers who do not function due to lack of any incentive. Even in Rajasthan where payment is made to the Handpump Mistry according to the number of pumps in working order, the system of preventive maintenance is below par.

6.5.3 Repair System

In the absence of any preventive maintenance, the performance of pumps depends largely on efficient system of repair in the three states covered under the study which is more or less similar. The PHED is the nodal agency entrusted for repair of pumps. In the absence of village caretakers the block machanic is responsible. Only if he fails, the district mobile team is summoned for any repair of the pumps. The district mobile team comprises of 1 mobile unit supervisor, 1 tubewell mechanic, 1 fitter mistry, 3 khalasi and 1 van-driver. Sometimes due to pressure of work, the mobile team is split and 1 fitter mistry and khalasi are sent to the site from the concerned PHED section. This is particularly in summer when complaints of pump breakdown are more. However, the mobile team is not able to attend to all

complaints on account of operational constraints. There is a restraint on vehicular movement in order to reduce fuel expenditure. Hence often pumps in accessible areas are repaired while those in the interior of the villages remain unattended. Thus in most cases, the mobile team does not function satisfactorily.A deviation is observed in Rajasthan here the fitter mistry/block mechanic is not a paid employee of the PHED. His remuneration is linked to the number of pumps in working order. The selection of the mistry is done by the panchayat samiti whereas supervisor is vested with the Zilla Parishad. Each mistry is expected to cover approximately 2 panchayats and 30-40 handpumps.

6.5.4 Reporting system

In order to assess the effectiveness of the reporting system, we enquired as to how the breakdown of a pump is brought to the notice of the mechanic. This included those pumps which had not reported any major breakdown since installation.There appears to be a weak communication system between the users and the officials responsible for repair. This largely reflects the attitude of the persons who do not consider handpumps important as long as alternative sources of water supply is available. Usually, there was nobody specifically responsible for reporting the breakdown in the village. However, in Maharashtra and Orissa the Sarpanch undertook the responsibility of informing the block. Again such reporting was resorted to only when majority of the pumps started giving trouble in Maharashtra. Thus there seemed no urgency to repair the pumps in time. In Rajasthan however the temple priests/shopkeepers usually took initiative of informing about pump breakdown.Apparently they are more concerned and committed to the water programme. The teachers also informed the block officials about repair. The mode of reporting breakdown was on adhoc basis. More often

than not, verbal complaints were given. There was considerable time lag between receipt of complaints and repair of pumps due to the operational constraints mentioned earlier.

TABLE - 6.1

LOCATION OF THE PUMP

(% of pump)

Zone	Name of the state	Locations			Total
		One end of the village	Middle of the village	Close to public place	
West	Maharashtra	51.3	29.3	19.4	100.0
East	Orissa	47.5	29.2	23.3	100.0
North	Rajasthan	28.4	33.1	38.5	100.0

TABLE - 6.2

INSTALLATION CHARACTERISTICS

(% of pump)

Zone	Name of the state	Characteristics			
		Pedestal firm	Pedestal slightly loose	Pedestal very loose	Total
West	Maharashtra	85.3	13.3	1.4	100.0
East	Orissa	72.5	23.3	4.2	100.0
North	Rajasthan	73.0	23.0	4.0	100.0

TABLE - 6.3

GENERAL OBSERVATION/CONDITIONS OF PUMPS

(% of pumps)

Zone	Name of the state	Conditions						
		Handle firm	Handle move smoothly	Inspection cover in place	All flange nuts in place	No noise during operation	No chain fold during return stroke	Chain not rusted
West	Maharashtra	56.7	77.3	93.3	84.0	11.3	90.0	46.7
East	Orissa	92.5	87.5	99.1	96.7	45.0	97.5	79.2
North	Rajasthan	78.0	76.0	90.0	70.0	31.0	92.0	35.0

Contd....

Table - 6.3 (Contd...)

Zone	Name of the state	Pedestal not rusted	Connecting rod not rub against guide bush	No crack on the surface of pl[illegible]m	Water locks clean	Drinking purpose
West	Maharashtra	66.7	24.7	44.7	98.0	96.7
East	Orissa	80.8	50.0	56.7	86.0	88.0
North	Rajasthan	[illegible]	40.0	32.0	94.0	96.0

TABLE - 6.4

CONDITION OF PLATFORM

(% of pumps)

Zone	Name of the state	Cracked	Water logged on the platform	Moss	Dirt.	Broken edges	Having drainage	Water logging within 15 feet of handpump	Water accumulate			
									throughout year	During monsoon	Occasionally	Never
West	Maharashtra	58.7	58.7	20.7	44.7	56.0	64.7	80.0	67.3	6.7	6.7	19.3
East	Orissa	13.3	17.5	17.5	23.3	13.3	81.7	80.8	30.8	15.0	17.5	36.7
North	Rajasthan	48.5	65.6	42.0	78.1	62.1	57.9	82.2	79.2	5.3	6.5	9.0

TABLE - 6.5

NO.OF HOUSEHOLDS DEPENDING UPON THE PUMP

(% of pump)

Zone	State	Upto 50	More than 50	Total
West	Maharashtra	39.3	60.7	100.0
East	Orissa	80.9	19.1	100.0
North	Rajasthan	48.5	51.5	100.0

TABLE - 6.6

NO.OF PUMPS USED MORE THAN 8 HOURS DURING SUMMER & REST OF THE YEAR

(% of pump)

Sone	State	Summer	Rest of the year
West	Maharashtra	71.3	71.3
East	Orissa	85.8	55.7
North	Rajasthan	85.2	73.3

TABLE - 6.7

PURPOSE OF USING WATER

(% of pump)

Zone	State	Summer				Rest of the year			
		Drinking/ cooking	Bathing	Washing cloths	Feeding cattle	Drinking/ cooking	Bathing	Washing cloths	Feeding cattle
West	Maharashtra	92.7	90.7	74.7	55.3	94.7	95.3	76.7	54.0
East	Orissa	85.0	83.3	82.5	76.7	86.7	64.2	73.3	69.2
North	Rajasthan	88.2	91.1	90.5	88.7	88.2	89.3	90.5	87.0

TABLE - 6.8

REASONS FOR NOT USING/SPARINGLY USING THE WATER FOR DRINKING

(% of pump)

Zone	State	Reasons				
		Ircnic taste	Bad smell/ salty water	Dirty water	Far from house	No flow of water
West	Maharashtra	10.0	30.0	40.0	-	20.0
East	Orissa	64.0	20.0	16.0	4.0	16.0
North	Rajasthan	37.5	25.0	25.0	15.0	-

TABLE - 6.9

REASONS FOR NOT USING/SPARINGLY USING THE WATER FOR COOKING

(% of pump)

Zone	State	Reasons					
		Food not boild properly	Dirty water	Distance from house	Rice turns to black/hard water	No.flow of water	No.of pumps reported
West	Maharashtra	-	50.0	-	30.0	20.0	10.0
East	Orissa	36.0	12.0	4.0	48.0	16.0	25.0
North	Rajasthan	35.4	22.9	14.5	29.2	-	48.0

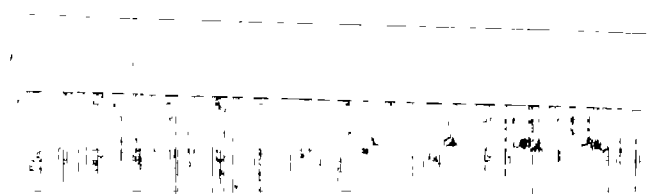


TABLE - 6.10

FLOW OF WATER AFTER FORTY STROKES

(% of pump)

Zone	State	No.of pumps curr-ently working	Not working	Total	Flow of water				
					Less than 5 ltr	Less than ½ a bucket	Less than full bucket	More than a bucket	Total
West	Maharashtra	144 (96.0)	6 (4.0)	150.0	5.5	2.1	4.2	88.2	100.0
East	Orissa	118 (98.3)	2 (1.7)	120.0	1.7	0.8	0.9	96.6	100.0
North	Rajasthan	163 (96.4)	6 (3.6)	169.0	14.7	3.1	1.2	81.0	100.0