



## WATER, ENVIRONMENT AND MANAGEMENT

### Community, women and domestic water

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#### DOMESTIC WATER

'Domestic Water' word brings the image of women burdened with heavy pitchers filled with water traversing long distances. The responsibility of water supply is with the State Govts. who are providing the water supply schemes but are reeling with the burden of maintaining these inspite of best intentions. Inadequency in maintenance ultimately effect the community & women who have been bestowed with responsibility for drinking water and cooking, since ages in India. As such role of community and women in particular have been envisaged, encouraged and experimented in maintenance of rural water supply scheme.

The majority of rural water supply scheme consist of handpumps which is India Mark II type. This hand pump needs lifting appliances and more than common skill to repair. The repair is taken up by govt. mechanics and not many rural mechanic are keen to take up repair of Mark II pump. Need for hand pump which could be repaired by villages mechanic has been felt. Importance of providing reliable and sustainable ground water supply system and a cost effective hand pump maintenance system has led to the " VLOM "

#### VILLAGE LEVEL OPERATION MAINTENANCE PUMP

In late 1983, the Govt. of Tamil Nadu, Unicef, UNDP/World Bank Water Decade programme under took a joint project to field test the India Mark II deep well hand pump and an experimental variation of certain components. Two types of the India mark II hand pump were tested under conditions of actual use in Coimbatore Distt. Results of testing were encouraging and the National Drinking water mission of the Govt. of India initiated four demonstration projects in the states of :

- 1 Bihar                      Ranchi Distt.
- 2 Madhya Pradesh      Betul            , ,

- 3 Maharashtra          Pune,Satara,  
   Aurangabad,Distt
- 4 Andra Pradesh        Rangareddy Distt.

In Betul Distt. of Madhya Pradesh demonstration project activities were carried out by Public Health Engg. Deptt. with ELC Water Development Project a voluntary agency, as a co partner in following blocks

- 1      Betul Block
- 2      Shapur Block
- 3      Ghodadongri Block

Main objective of demonstration project were

1. Evaluate Hand Pump performance
2. Assess spare parts requirement and consumption
3. Determine meantime before failure (MTBF)
4. Develop a village level hand pump maintenance system and community participation, specially women.
5. Improvement of Platform design.

The India mark III hand pump / VLOM pump is designed to over come difficulties encountered with the India Mark II hand pump assembly, below the ground level,generaly 40 metres. Water lifting elements are taken out to the surface by pulling the connecting rod and valve assembly with or without check valve, but without pulling out the riser pipe assembly. Modification have been incorporated in the fixing components for an improved working system, simplified for easy maintenance,by reducing repair time, the man power&aintenance tools in VLOM.

Maintenance methodology has been accepted by the village black smith, cycle repair mechanic and men and women hand pump users after basic training in India Mark III hand pump maintenance. India mark III hand pump - VLOM has excellent performance and durability and can be repaired at village level. Users have distinguished the difference and prefer Mark III.

Table 1 gives an indication of spare parts used from April '88 to Jan. '90 in 25 mark III HP and Table 2 indicates the time taken for repairs.

Table-1: Spare Parts consumed due to manufacturing defect, change in design, faulty installation and as part of preventive maintenance.

1. Piston Assembly	- 3
2. Check valve assembly	- 3
3. Space	- 1
4. Follower	- 1
5. Plunger rod	- 1
6. Chain Assembly	- 1
7. Nitrile Rubber Cup Seats	- 3sets
8. Rising Main Pipe Joints	- 5
9. Check valve 'O'ring	- 7
10. M-12 nuts	- 29
11. Upper valve rubber seating	- 1

Table-2: Time consumed for repair of India Mark III HP

CASE 1. Min. Time taken	- 50 minutes
Depth of cylinder	36.60 mtrs
CASE 2. Max. Time taken	- 105 minutes
Depth of cylinder	42.70 mtrs
CASE 3. At present time taken.	- 32 minutes
Depth of cylinder	33.60 mtrs

#### WOMEN'S PARTICIPATION

##### Rajasthan Experience.

The role of women as hp mechanic and caretaker in SWACH PROJECT of Rajasthan is total and women repairing h.p. is common site. SWATCH means clean in Hindi and it is also abbreviation for Integrated Sanitation, Water, Guinea Worm control and Community Health Project, Rajasthan.

##### New Delhi Experience

Kusumpur Pahadi as the name suggests is a hard rock terrain, slum area in southern end of Delhi. Hand pump are the main source of domestic water and are being maintained and repaired by women who have been given training by Jawahar Lal University (JNU), UNICEF, and slum wing of Delhi Development Authority (DDU)

##### Padar Experience.

Padar area of Betul Distt. is being looked after in respect of HP repairs and maintenance by women mechanics who are also involved in community promotion activities.

#### COMMUNITY MAINTENANCE OF HAND PUMPS

Betul block of Betul distt. has been chosen for the pilot study for Community - Specially Women - Maintenance Of Hand Pumps. Institutional Analysis, Development has been studied and approach for the project has been chosen as "BOTTOM UP" rather than "TOP DOWN" and "PARTICIPATIVE" and not "DIRECTIVE".

Phased introduction of India Mark III (VLOM) hand pumps and conversion of existing hand pumps to India mark III village wise, will act as catalyst in village based handpump maintenance system. It is also envisaged that in the village based maintenance system, user's perceptions/participation on repair/maintenance, environment around the handpump and usage of the facility will improve substantially and will reflect positively on the health of women/community.

The proposal is prepared to demonstrate the benefits of a community-specially women - village based handpump maintenance system in Betul Block of Betul District of Madhya Pradesh, India and involves State govt. Public Health Engg. Deptt. WATSAN Committee, NGO (ELC-WDP) and UNICEF, time frame being two years i.e. 1992-93.

#### OBJECTIVES :

To develop and demonstrate a sustainable village based and community/women managed handpump maintenance system which can be replicable in a national scale.

To motivate handpump user and groups to manage and repair/maintain handpumps and environmental sanitation in their village, through skill development. Establish viable mechanisms at village level (Watsan Committees) for planning, execution and maintenance of Handpump based water supply system.

Table-3 : Project Area Details

Betul district Area	-	10061 Sq.km.
Rainfall	-	40 to 50 inches
Betul Block Area	-	896 Sq. km.
Population	-	98375
Tribal pupulation	-	36885
SC population	-	9564
Inhabited villages	-	182
Gram Panchayats	-	40
No. of Borewell } with Mark II HP }	-	518 Nos.
Bore well with } 100mm dia }	-	167
115/125mm dia	-	351

### Implementation Steps

#### 1. Social mobilisation/motivation

One day workshop at Betul will be followed by Village Contact Drive/Campaign to induce and collect base data using trained motivators in 182 villages. The Village Contact Drive (VCD) can be repeated until it produces desired effect on awareness, safe water, environmental sanitation, health & hygiene.

#### 2. Village water - sanitation committee of users

Awareness and motivational activity will culminate in the formation of Village Water / Sanitation (WATSAN) committee for each village. WATSAN committee will have 8 to 12 motivated women and men, who will participate in one day orientation camp.

#### 3. Panchayat mechanics / village HP caretakers

The Panchayat/Village H.P. mechanic and village HP caretaker/Users Representative will be selected during orientation camp. For each pump one /two women caretaker will be selected. A two day training camp for pump caretaker and two weeks 'hands-on' training will be conducted for pump mechanic.

#### 4. Responsibility/function of village HP caretakers / user representative

The pump caretaker will keep the surrounding clean, grease the chain and tighten the bolts and nuts and report to the committee for any repairs.

#### 5. Responsibility / function of HP WATSAN Committee

Village committee will take up the responsibility of hand pump maintenance. In case of pump breakdown, the committee will call the pump mechanic who will carry out the repairs under their supervision. WATSAN committee will participate in inception framing, implementation, site selection of water supply items, like HP standposts, user contribution, operation, maintenance and hygiene activity.

#### 6 User contribution to HP maintenance

Panchayat will collect a nominal amount from the user household, quarterly/annually for purchase of spares/wages of the panchayat mechanics through WATSAN committee and maintain account of income and expenditure.

#### 7 Conversion/upgradation of HP

WATSAN committee may request for upgradation from India Mark II to Mark III HP which will be done in phased manner.

#### 8 Tools spares and other logistic support

The PHED will procure quality spare parts and tools for supply to WATSAN committee on payment basis.

#### 9 PHED/Support /backup on repair / replacement

PHED will take up any special repair work which the WATSAN committee will request including major repairs/replacement of HP and fishing of fallen riser pipes in the tubewell.

### 10 Water Quality Surveillance

PHED will do pre and post monsoon test for tube well water on regular basis.

### 11 Progress monitoring

Once in a quarter, the data will be reviewed by PHED and Unicef officer. The data will be analysed and a consolidated program/performance report will be brought out by PHED.

### 12 Dissemination of feasible experience and Recommendation.

After the successful completion of the project, the final report and the guidelines to introduce the community based HP maintenance system for the distt, will be prepared for dissemination. The redefined strategies adopted in the final project report will form the basis of enlarged implementation of the community based HP maintenance system in other district / state.

The whole strategy can be summed up as below :

Go to the people  
Live among them

Learn from them  
Love them  
Start with what they know  
Build on what they have :  
But of the best leaders  
when their task is accomplished  
their work is done  
the people all remark  
'We have done it ourselves'

Tao To Loa Tzuching (700 BC)

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### References :

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SWATCH project of Rajasthan.

Trials and Triumphs - A case study of women Hand Pump Mechanics in Delhi - AMBUJA-MAHAPATRA

UNICEF, PHED, 1991 Community Maintenance of Handpump Project of Betul Block district Betul.



*A woman hand-pump mistry at work.*