CEPT UNIVERSITY

PERFORMANCE APPRAISAL SYSTEM (PAS) PROJECT

Meeting Report

Expert Group Meeting on Operations of Urban Water Supply Systems

9th January, 2010

Background:

CEPT University is developing and implementing a performance assessment system for urban water and sanitation in Gujarat and Maharashtra. The aim of this research programme is to develop better information on water and sanitation performance and to ensure its use by the cities. The pilot results from 30 cities in Gujarat and Maharashtra reveal that there are serious gaps in data availability related to water produced, distributed and losses incurred in urban water supply system. There is a need to tackle this data gap and identify potential reliable methods for measuring efficiency of urban water supply. Similarly, studies in selected ULBs suggest issues related to O&M of water systems. With this objective in mind, CEPT has organised an Experts group meeting on 9th January, 2010.

Meeting Outcomes:

CEPT team made a brief presentation on the PAS framework. The meeting discussed pilot city results and data constraints experienced during the pilot studies. A case study of Nadiad city was presented to describe the situation on the ground. The practices related to operations of water supply systems and data gaps with respect to technical operations as identified in the pilot study were also highlighted in the presentation. Experts on water supply operations and water audits shared their experiences on possible ways to gather optimum data and derive reliable methods to estimate water quantities at the ULB level. The discussions in the Expert group meeting are summarized below:

1. **Operational Indicators and Improvement Plans:**

The meeting participants appreciated the efforts being undertaken under the PAS project. They agreed with PAS team strategy of collecting the data related to the technical operations of water supply and systems in the first year as provided by the Urban Local Bodies (ULBs). While this baseline is established, the team can also carry out quantity measurement exercises for a few selected cities across different categories.

With regards to water supply system the following 4 indicators are very critical for proposing any type of improvement planning:

- Water supply Coverage
- Water quantity actually reaching the consumer in lpcd – has to be measured at the consumer end (in absence of metering this can be done through flow measurement, volume measurement through bucket survey method etc.)
- Revenue per m^3 of water,
- System efficiency to track the links between water supply and revenue mobilization through tariffs
- Staffing at the ULB level (categorize technical and non technical to assess the technical staff available for operation and maintenance of system)

The experts were of the opinion that with respect of operational improvements, the team should identify a range of performance improvement plans including process improvements and not get bogged down only in preparing detailed project report (DPR).

As part of improvement of the planning process, it was suggested that improvement to be proposed at ULB level should be reflected in the ULB annual budget and appropriate Operation and Management costs should be provided for. This will require an assessment of all current assets and related O&M costs.

The appropriate "entry points" for water improvement at the ULB level were discussed. It was agreed that in absence of critical data like system input volume, authorized consumption and losses, it is difficult to identify the macro picture. One can track the causes of system efficiency from lowest level for technical and commercial improvements. Some preliminary onsite surveys may be required to arrive at system efficiency.

2. Measuring Quantity:

PAS team had sought opinion of the expert group on simple and reliable methods for calculating water quantities in absence of metering.

The following three methods were discussed to record water quantities at source, distribution and consumer end to: (a) by use of ultrasonic flow meter and volumetric method at source, distribution and WTP, (b) by bucket survey at the consumer end, and (c) use of pump operation details and levels in sump and elevated service reservoirs (ESR). It was discussed that it may be easy to estimate quantity of water when surface water source is used. For ULBs using ground water source (borewell), ULBs is currently rely on the number of pumping hours and pump efficiency to measure water quantity. However, while using these methods one has to recognize that the quantities would vary by season depending upon ground water levels and on assumptions about pump efficiencies. .

It was suggested that in large cities, it is necessary to install ultrasonic flow meters at all supply points to have correctly recorded data on water supply. If smaller ULBs are not able to immediately purchase flow meters, it was suggested that periodic checks on water supply at

WTP, WDS and consumer level may be needed. Presently, in the smaller ULBs, there is no system to calculate water discharge on regular basis. Although records are maintained properly for pump start and end hours, but total volume of water discharge is not calculated on a daily / monthly basis. In such cases, improvement in formats that enable quick estimation of quantity was also suggested.

For measurements related to water quantities, PAS project will also attempt to document simple methodology (in local language) that can be used in day to day operations at ULB level (for Jr. Engineer, pump operator and other staff that record data).

As a start, it was agreed that simple process for data collection for Operations of urban water system should be followed for detailed studies for selected sample of ULBs. Steps include:

- Collect the information as reported by the ULBs
- Select a few sample cities (with variety of sources – surface, ground and other sources) and measure the quantity data through a mix of methods (volumetric flow, ultrasonic flow meters and level methods)
- Use the results from these studies to support ULBs to better monitor supply of water and measures such as ULFW and NRW

3. Incentives and Capacity for Urban Local Bodies:

Pilot city studies suggest that all the activities related to water production, treatment and distribution are carried out in specialized departments and there is no single mechanism to share, interpret or use this information to make informed decisions. At present there does not seem to be enough motivation for municipal employees to work towards performance improvement. In this context, the group members discussed the possible actions and incentives for ULBs to measure water production and distribution. It was pointed out that with state government interventions, one can create a culture of water conservation and awareness to achieve higher operational efficiency.

The group was informed of the Maharashtra government initiative on making water audit mandatory. This was done after observing 30 to 50% leakages in urban water supply system. The State Government has issued a government resolution (GR), which makes it mandatory for all Municipal Corporations and Class A and B level Municipal Councils to go for regular water audits. This decision has also ensured that new water supply schemes or additional demand for water will not be approved by the government without submission of a water audit report. About 75% of the water audit costs in this scheme are borne by the State government. In Gujarat, similar provision to incentivize/penalize ULBs to carry out Water audits may be required.

The group members also noted that detailed water audits are time consuming and costly exercises. Till the ULBs get support through special grants, it may be advisable to rely on simple proven methods to have an estimation of water quantities at the city level. It was also suggested

that the M-36 manual of (AWWA) and the IWA methodology of estimating NRW need to be adapted to Indian conditions, where water supply is often not metered.

The group also discussed possibility of vendor development for water quantity measurements / preliminary water audits at ULB level. The experts felt that a few pilot cases under PAS project could help in creating a possibility for exploring vendor market for such services. Such a market development approach would first need to **e**xplore possibilities of making annual third party water audit mandatory at ULB level. Another approach could be to every year place a performance assessment report on water and sanitation at the ULB General body meeting. This would be similar to the Environment Status Report required as per municipal legislation in Maharashtra.

4. **Performance based contracts:**

The members also shared some success stories on performance based contracts. Case of Sangli was discussed. It was discussed that smaller towns can also aim for performance contracts. Case of Pusad from Karnataka was discussed where project related to meter installation and maintenance contract has been funded through UIDSSMT and State government grants. One can also look at cluster of ULBs for implementing performance contracts (in case of smaller ULBs) as smaller ULBs may not been viable for such contracts in water sector on a stand-alone basis.

5. **Asset maintenance:**

With respect to Operational efficiency, the expert group also discussed about Asset management plan for ULBs. In Gujarat, after the implementation of accounting reforms in municipalities a list of assets is maintained at the ULB level from an accounting perspective. There are no detailed records maintained on technical assessment of asset condition or how much recurring expenditure is required for appropriate maintenance of the assets. Thus information available for assets is not necessarily helpful for bringing in any service level improvements. Further efforts are therefore needed to prepare a more detailed asset management strategy including technical assessment and developing approaches for repairs, refurbishment and regular maintenance. It was pointed out that the study of ULB financial processes has already highlighted the need for such assessments to improve budget process.

6. **Energy audits:**

A high proportion of total ULB expenditure is on street lighting and for water. Thus energy audits will be an important improvement measure to consider reduction in operating costs. The members pointed out that Maharashtra state government has also taken some efforts towards energy audits for ULBs. In Gujarat, the GUDC (Gujarat Urban Development Company Ltd) has carried out energy efficiency project in joint venture with IL&FS Ecosmart Ltd.

List of Participants for Experts Meeting on Operation of Urban Water on 9 Jan, 2010

S.No.	**Name of the Participant**	**Organizational Details**
1	Mr. VB Patel	Former Chairman Central Water Commission
2	Mr. Apurva Parikh	Multi Media consultants
3	Mr. Mukesh C Shah	Multi Media consultants
4	Mr. Roshanbhai Shah	Multi Media consultants
5	Mr. Anand Jalakam	Jalakam solutions
6	Mr. Prasana Shah	Shah Consultants
7	Mr. Dinesh Rathi	DRA Consultants Pvt. Ltd.
8	Mr. Kusnur	AIILSG
9	Mr. Thippeswamy M.N.	Arghyam
10	Mr. Ghanshyam Mehta	Forbes Marshall
13	Mr. Hiten Shah	VMS Consultant
14	Mr. M C Mehta	UMC
15	Ms. Manvita Baradi	UMC
16	Ms. Meghna Malhotra	UMC
17	Prof. Dinesh Mehta	CEPT University
18	Prof. Meera Mehta	CEPT University
19	Ms. Mona Iyer	CEPT University
20	Ms. Anitha Immanuel	CEPT University
21	Ms. Jaladhi Vavaliya	CEPT University
22	Ms. Maitri Patel	CEPT University
23	Ms. Chandan Chawla	CEPT University
24	Mr. Niraj Naik	CEPT University
25	Mr. Ashish Sontakke	CEPT University
26	Mr. Sunil Sapte	CEPT University
27	Mr. Dhruv Bhavsar	CEPT University
28	Mr. Hiten shah	VMS
29	Mr. Arvind Singh	UMC
30	Ms. Niddhi	UMC