

IMPROVING THE PERFORMANCE OF PUBLIC WATER UTILITIES –

A case study of Urban water supply systems in Karnataka state

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1. Introduction and over view of Karnataka Urban Water Supply and Drainage Board (KUWS&DB).

Karnataka is one of the leading states in India with a population of 52.73 million as per 2001 census. It is the 8th largest in area and 9th largest in population in the country. It is situated in Southern India between 11.5⁰N and 18.5⁰N latitude and 74⁰E and 78.5⁰E longitude. The urban population of the state is 17.92 million (33.98%) and rural population is 34.81 million (66.02%), as per 2001 census. Bangalore is the capital city of the state. Karnataka Urban Water Supply & Drainage Board (KUWS&DB) is a statutory body looking after planning, designing, implementation of water supply & sewerage schemes in 213 urban areas of Karnataka state except Bangalore city. The Karnataka Urban Water Supply and Drainage Board was constituted by an Act of Legislature in 1974 and is functioning since August 1975.

The present population of the above 213 urban areas is about 12.85 million, covering an area of nearly 1518 sq miles. The urban areas are classified as below:

Corporations (Population above 0.3 million)	6
City Municipal Council (Population 50000 to 0.3 million)	36
Town Municipal Council (Population 20000 to 50000)	78
Town Panchayats (Population 10000 to 20000)	93
TOTAL	213

The Board aims to provide adequate water supply from assured and safe sources and also proper sanitation in all the above urban areas of the state. After implementation of the schemes, the assets are handed over to the concerned urban local bodies for further Operation & Maintenance. However, as per the directions of the State Government, the Board is maintaining seven water supply schemes upto the consumer point and twelve water supply schemes upto bulkpoint. The details of the schemes taken up and completed by the Board since inception are as follows:

Water Supply Schemes–	430
Sewerage Schemes -	42
Total Cost (Rs. in Millions)	15483.4 (US \$ 336.60 m)

Among the above 213 urban areas, 168 urban areas having population of 11.36 million are covered with safe and assured surface sources such as river, canal, reservoirs, tanks etc. The remaining 45 urban areas having population of about 1.49 million are provided with bore wells / open wells as source of supply. The UFW in urban areas is observed to be more than 15%. Further the Board has taken up National River Conservation Plan works in eight urban areas of the state with the objective of abating pollution levels in the rivers.

The annual budget of the Board is Rs.4917.40 million (US \$ 106.90 m) for the current financial year 2006-2007.

The water rate levied for water usage by the consumers under an order of the State Government in all the above urban areas is Rs.45.00 per connection per month for unmetered domestic connections and Rs.1.10 per kL to Rs.6.00 per kL(based on category of towns) for domestic use.

2. Future Development plans and their linkage to the population growth.

The state is undergoing rapid urbanization and the demand of water supply and sewerage facilities is increasing year by year. All the 213 urban areas are provided with water supply and 45 urban areas are provided with underground sewerage system. The Board also aims to provide safe water supply and proper sewerage facilities to all the urban areas in Karnataka. The Board has prepared a master plan for improving water supply in 193 urban areas at an estimated cost of Rs.11020.00 million (US \$ 239.57 m) for covering all the urban areas of the state during the next five year plan. Further, it is proposed to provide underground sewerage facilities for 124 major urban areas of the state at an estimated cost of Rs.18540.00 million (US \$ 403.04 m) during the next five years.

Presently the source of drinking water in 45 urban areas is ground water. The ground water is not reliable and dwindling year by year due to over exploitation. The quality of water in the ground water source is also poor. Therefore, the Board has made an action plan to shift the source of drinking water in 30 urban areas from ground water to safe & assured surface sources by 2010 at an estimated cost of Rs.5314 million (US \$ 115.52 m).

Further the Board is also formulating proposals for recycling of waste water for industrial use in order to reduce the pressure on drinking water in major urban areas of the state.

3. Institutional and Policy Reforms introduced in the utility and their impacts on the utility performance.

- Development and Implementation of Management Information System (MIS) through Wide Area Network and Local Area Network by computerizing all the Offices in the State in collaboration with M/s Indian Institute of Science, Bangalore and M/s Tata Consultants, Bangalore. Due to implementation of MIS in the Board, the time taken for preparation of the projects have been reduced considerably. The required man power for preparation of the projects has also been reduced. The MIS is helping proper upkeep of the Accounts and HRD.
- Award of ISO 9001 – 2000 Certification for all the Offices of the Board across the State from 1st July 2002. Due to the same, the procedure and Quality Planning have been streamlined.
- To have best quality in execution of works, third party inspections of schemes have been introduced.
- To have transparency and speedy finalisation of tenders, eTendering has been implemented in the Board.
- Bio Metric based Attendance and Tracking System is introduced in all the Offices of the Board in the State, to monitor the punctuality of all the Officers/ Officials attending the Office.
- To have efficient disposal of LOCs, a customized software has been developed and implemented for release of funds directly to the firms/contractors.
- Development and installation of customised software for revenue billing & collection for Hubli-Dharwad Maintenance Division.

- Board is developing workflow solution for all its activities for making the organisation a paperless office.
- Board has taken up the construction of a Water and Waste Water Learning Centre(Theme Park) in Bangalore city for training all the employees of the Board and Urban Local Bodies and also for educating the general public in the Water & Waste Water Sector.
- The Board is maintaining water supply systems in seven urban areas. In order to increase efficiency in utilization and minimizing the water losses, the Board has taken action for replacement of damaged distribution lines, replacement of damaged & leaky valves, creating awareness in the public, providing parallel feeder mains and linking it to the distribution systems at the tail end reaches to increase the supply levels at tail end reaches.

4. Key areas needing strengthened capacities.

The Research and Development(R&D) wing will have to be strengthened by capacity building. The Board looking forward regarding reducing UFW/NRW in water supply system. Even though, the Central Public Health and Environmental Engineering Organisation (CPHEEO) Manual limits transmission losses to 15%, it is observed that UFW is more than 15%. Hence there is an immediate need to reduce the level of UFW.

The Board is looking forward for efficient recycling of sewage water for industrial purposes.

5. Summery of standards being applied to manage water quality to meet the basic requirements.

The norms prescribed in the Manual published by Central Public Health and Environmental Engineering Organisation (CPHEEO), Government of India is being followed for water supply and sewerage schemes under taken by the Board. The Board has set up laboratories to test the quality of water being supplied. The parameters such as residual chlorine, pH, turbidity etc., are being tested regularly. The Board is maintaining the water supply systems upto consumer points in seven towns only. The concerned urban local bodies are maintaining the water supply systems in the other 206 urban areas. The Board is checking the quality of water

including the residual chlorine. The parameters tested at laboratory include bacteriological test, turbidity, pH value, residual chlorine etc.,

6. An over view of water management measures being implemented and their impact

It is proposed to change the drinking water source from ground water to surface source, in order to supply safe and assured drinking water in urban areas of Karnataka. The water meters are being introduced both at the bulk point and consumer point wherever presently such system does not exist so as to account for correct usage for drinking water.

7. Strategies to generate resources to meet the financing gap

Presently the water supply & sewerage schemes are being taken up with grant/ loan from the state Government, Financial institution loans from Housing Urban Development Corporation, Life Insurance Corporation of India, Commercial Banks, Asian Development Bank, World Bank etc. However, new PPP(Public Private Partnership) ventures are being examined for tapping alternative financial sources to meet the financing gaps.

8. Nature and extent of private sector participation

The Board has made attempts with various PSPs such as M/s Anglian Water International Pvt Ltd, UK and M/s Northumbrian Water Group, which would lead to improvement in efficiency. Commercial terms were not encouraging and hence did not take off.

The three pump houses at Belgaum Water Supply have been privatized and O&M is being taken up with targeted performance standards. Similarly the bulk water supply system constructed under ADB assistance in twin cities of Ramanagaram & Channapattana is also privatized for O&M. The maintenance of the Hubli-Dharwar bulk water supply scheme has been entrusted to a private sector firm. Similarly a private sector firm has been entrusted with O&M of STPs (sewage treatment plants) in two towns ie., Ramanagaram & Tumkur.

9. Nature of partnership with other utilities

KUWSDB is one of prime organisations of India, taking up several ventures for improving water supply sector in the country such as implementation of MIS, getting the ISO certification, adoption of E-tendering etc., Several Indian water utilities are regularly visiting KUWS&DB and holding interactions and exchanging their experiences for mutual benefits of both the utilities.

10. Key recommendations

- Access to safe drinking water to entire population.
- Creating public awareness in economic use of water.
- Rigid protection of natural water bodies.
- Rejuvenation of surface and ground water sources. Adoption of rainwater harvesting methods.
- Development of systems for recycling of waste water for reducing the burden on domestic water source.
- Taking up of comprehensive sewerage schemes including Sewage Treatment Plants for reducing the pollution of natural water bodies.
- Private sector participation both in capital investments and Operation & Maintenance of water supply and sanitation sectors.
- 100% metering of connections to increase the revenue.
- Extensive use of Information Technology in Operation & Maintenance to reduce loss and to enhance revenue.

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