

24x7 Water Supply

Improving the distribution network

The concept of 24x7 water supply has garnered significant interest in India. Unlike previous attempts that were focused on merely providing access to water supply, urban local bodies (ULBs) are now focusing on delivering continuous water supply to every consumer throughout the day. This involves rehabilitating the distribution network, metering of connections, reducing non-revenue water (NRW), and introducing volumetric tariffs.

Over the past decade, a number of ULBs have implemented 24x7 water supply projects in pilot zones before scaling up. Most of these projects have been undertaken as performance-based management contracts with a private player. Under this type of contract, the public authority appoints a private contractor to manage all water operations, including the laying of distribution pipelines, installation of meters, collection of user charges, as well as operations and maintenance (O&M) of infrastructure. The bulk of the commercial risk and all the capital and investment risks remain with the public authority. On the other hand, there are also projects like the Malkapur and Amravati 24x7 water supply systems that are purely public sector projects.

Industry experts, however, are divided on

the need and relevance of 24x7 water supply. Some believe that such a system has several benefits including continuous high quality water supply, low operational cost, reduction in NRW, metering of connections, and less storage requirement. Rishabh Sethi, executive director, SPML Infra Limited, highlights the significance of 24x7 water supply: "Providing 24x7 water supply is a basic need which is a norm in the developed world. Round-the-clock water supply actually reduces water usage as people don't store and waste water. In addition, continuous water supply also reduces energy consumption at the household level." Another school of thought argues against the concept due to the problem of growing cities, high percentage of poor population, wastage of water, abrupt increase in water charges and higher costs of implementation of such projects.

Experience so far

Initial attempts to encourage 24x7 water supply were made in the mid-2000s. After much debate on whether India needs 24x7 water supply or not, the first demonstration project was initiated in 2005 in three cities of Karnataka – Belgaum, Hubli-Dharwad and Gulbarga. The demonstration zones of the three cities faced

acute water shortages, NRW levels of over 50 per cent, intermittent supply, etc. The project, however, attracted widespread criticism and protest from citizens, particularly on the fear of a sudden increase in water tariffs and transferring of water services to a foreign company.

The concept of 24x7 water supply came into focus in 2008, when the demonstration project in Karnataka commenced operations. In the demonstration zones, new water distribution pipes were brought into service, full metering was implemented, and the level of NRW reduced to around 7 per cent. The civic authorities conducted a massive awareness campaign as part of the project, which included door-to-door visits by ULB officials. Also, NGOs were roped in to assist in the campaign. Better quality and pressure of water, reduced consumer complaints, improved revenue collection and provision of 24x7 water services at subsidised rates for the poor made the case for 24x7 water supply in India.

In the late 2000s, a number of pilot projects in the cities of Malkapur, Amravati, Khandwa, Shivpuri, Badlapur, etc. were awarded. Citywide 24x7 water supply projects were also awarded – in Nagpur and Mysore. Most of these projects were awarded on a public-private partnership (PPP) basis with partial funding from the public partner. The revenue source for private operators in these projects comprised a number of variable components. These included management fees based on the operator's performance, which is measured on parameters such as number of connections, revenue improvement, leakages, and metering of connections. The used charges collected from consumers, which was the main source of revenue for the private operator, were fixed by the ULBs.

Initially, these projects faced delays due to lack of information on existing network facilities, and faulty project designs, which in turn resulted in cost and time overruns. In the case of the Khandwa 24x7 water supply project, a private operator was engaged to build a 60 km distribution network. During project implementation, the required length of the distribution system was found to be 192 km, affecting the project's viability. Moreover, the



local people, social groups and organisations raised serious concerns about the clauses in the concession agreement. These included a high base water tariff (to be increased every third year by 10 per cent), high additional costs associated with installation of meters, and high O&M costs.

The private operator in Mysore faced similar problems when the tripartite agreement was signed among the Karnataka government, the Karnataka Urban Water Supply and Drainage Board and Jamshedpur Utilities and Services Company Limited (JUSCO) for laying a network of pipelines of over 910 km with 117,000 connections. As against this, during the initial survey carried out by JUSCO, the length of the pipeline to be rehabilitated was found to be 1,910 km with 175,000 connections.

During 2010-15 (till November 2015), a number of 24x7 water supply projects were completed. Some of the major projects completed were the Malkapur, Badlapur and Amravati 24x7 water supply projects, and a 24x7 comprehensive water supply scheme for the Garulia Municipality. A few of these projects like the Badlapur, Malkapur and Amravati 24x7 water supply projects have shown positive results. There has been improvement in delivery time and services, and water quality and quantity, and reduction in wastage of water and water-borne diseases. Bill collection has also improved through metering of connections.

One of the biggest reasons for the success of these projects was effective communication with political representatives, the media, welfare associations and consumer groups. The implementing agency extensively discussed the need for continuous water supply and its benefits, and the strategy adopted to operationalise the system with employees, citizens and other stakeholders.

Also, IT has played a key role in monitoring networks, leakages and pressure on a real-time basis. Water utilities are increasingly implementing analytics and control systems across their water supply chains, including network meters and management solutions to achieve round-the-clock water supply. In the case of the Malkapur, Badlapur and

Key 24x7 water supply projects in India

State	Areas
Operational pilot projects	
Karnataka	Belgaum, Hubli-Dharwad, Gulbarga and Mysore
Maharashtra	Malkapur, Amravati, Mulund, Badlapur, Yamunanagar and Nagpur
Madhya Pradesh	Khandwa and Shivpuri
Rajasthan	Malviya Nagar and Mansarovar
Tamil Nadu	Madurai
West Bengal	Garulia, Naihati, Halishar, Kanchrapara, Kalyani, Chandernagore, Budge Budge, Panihati and Kult
Under-implementation projects	
Delhi	Mehrauli, Vasant Vihar and Malviya Nagar
Chandigarh	Vikas Nagar
Karnataka	Gadag-Betageri, Sindhanur and Haveri
Upcoming projects	
Karnataka	Banashankari, Jayanagar and JP Nagar
Assam	Guwahati
Surat	Vesu, Pal and Palanpur
Telangana	Greater Hyderabad and Hyderabad Metropolitan Development Authority limits

Source: India Infrastructure Research

Amravati 24x7 water supply projects, a geographic information system (GIS)-based hydraulic model was used for mapping the entire distribution network. An advanced software called WaterGEMS was deployed to create a modeling process to analyse the consumption data, prepare test maps and synchronise the process with GIS.

Another citywide 24x7 water supply project which has met with huge success is the Nagpur 24x7 water supply project. The city was the first in India to hand over its entire water service to private firms under Orange City Water Limited, a joint venture between Vishvaraj Infrastructure Limited and the Veolia Group. During the same period, 24x7 water supply projects were approved for pilot zones in Delhi, Karnataka, Madhya Pradesh, Gujarat, Andhra Pradesh and Assam. Barring the three pilot projects in Delhi, the majority of the 24x7 water supply projects are at initial stages of development.

Conclusion

Factors such as intermittent hours of water supply, high NRW, low metering, obsolete and

faulty pipeline networks, partial O&M cost recovery for water services and poor financial health of ULBs build a strong case for the need for 24x7 water supply in India.

Based on past experience, it is quite evident that conversion of intermittent to round-the-clock water supply in India is not only achievable, but also affordable. A number of cities have successfully implemented pilot projects for providing 24x7 water supply to select areas. These projects, though few in number, have provided key lessons with respect to improving the quality of water supply, transition to volumetric billing, metering of connections, local participation and effective communication.

Going forward, most cities have formulated plans or are planning to extend the existing pilot 24x7 water supply projects to cover the entire city. Upon completion, these projects are expected to bring in new technologies, new learnings and experiences, and professional and technical expertise. This will also offer significant market opportunities across the supply chain of water management. ■

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