Analysis of Water Supply in Urban Areas

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Abstract

Urban population in Surat city has been witnessing rapid growth over the years as evidenced by the fact that the percentage of urban population of the city increased from 27% to 32% in 2001 and is accepted to increase to 50% by 2050. This increase in urban population has major implications for infrastructure systems, which are accepted to support the needs of the growing population and plays a crucial role in the proper functioning of these areas. The quality of infrastructure services available in the city governs, to a large extent, the quality of life their citizens have. However, the continuous growth in population without a corresponding upgrading of infrastructure services have seriously compromised the ability of this service to function at peak efficiency levels. The pressure on the water supply, sewerage, drainage, solid waste management services is evident from the results of data obtained from research by government and non-government organizations. Data derived from study on infrastructure services across various cities suggest that water is available for an average of 2.9 hours per day across cities and towns in India and non-revenue water including physical and revenue losses accounts for 40-60 percent of total water supply. Around 50% do not have sewerage connection and less than 20 % of waste water is treated.

Keyword- Water Supply in Urban Areas, Cost Evaluation, scientific planning utilizing modern techniques

I. INTRODUCTION

Amongst all the services affected by the growing pressure water supply is the most crucial service and needs to be assigned due to priority while addressing the service-related challenges in city. The issues facing the urban infrastructure sector are a result of massive urban transformation that has accompanied India's rapid economic growth, posing unprecedented challenges to India's growing cities and towns particularly in the provision of infrastructure such as water, sanitation and sewerage meeting he needs of the future urban population of millions by 2031. This growth needs massive capital and operation and maintaining investment in urban infrastructure, as highlighted by various Finance Commission and expert bodies. The water supply sewerage and storm water drainage investments about 24% of all urban sector requirements for 41% capital. In this situation enchasing capital efficiency is clearly a priority to use funds efficiently and effectively to deliver maximum benefit of investment.

II. OBSERVATION

Ensuring adequate and reliable water supply has become a major challenge for most of the corporations in India. Depleting of source, ageing and inadequate supply infrastructure, distribution losses and inadequate financial resources to maintain or upgrade infrastructure has made it difficult to find a solution to the problem. It has hence become difficult to ensure the quality of service in terms of adequacy and efficiency, with the result that city do not have access to 24 X 7 water supply.

Whilst the investment done will be needed to overcome service quality issues, it will not be sufficient on its own without significance change in the current governance arrangements.

The investments in urban water supply system need to be accompanied by actions to enchase the autonomy, accountability and costumer orientation of service providers, improve incentives and support sector professionalization.

Rapid urbanization is also having a detrimental effect on water resources both in terms of quality and quantity. Thus even greater attention is now needed to collect and treat waste water and to manage finite water resources, both surface and ground water, more effectively.

An exercise of collecting service level benchmarking data from 28 cities by the ministry of urban development reflects the similar story.

The data shows that the water is supplied for 3.3 hours per day on average, while the hours of supply ranges from 1 hour in three days to 18 hours per day. Poor water service levels lead to costumers adopting expensive coping strategies that include installing underground storage tanks, suction pumps on water mains or overhead tanks, boiling water or using household filters. As a result the cost of ensuring potable water is borne entirely by the individual.

In terms of the coverage of piped water supply and sewerage infrastructure, Surat is ahead from most of the cities in Gujarat. Water supply of the city is comparatively high but due to poor distribution management residents receive water for only a few hours a day. Resident of authorized colonies in the city receives piped water for total 8-10 houRs per day. It is not surprising

that nearly 75% of the population rely on the additional sources, such as bore wells and bottled water. Some estimates put the quantum of non-revenue water at 60%.

Under intermitted service, when pumping stops ant the pressure drops in the pipes, water leaking out of faulty joins can be sucked back in. this water could be polluted waste water seeping from toilets, septic tanks, domestic and road drains. Intermitted water supply thus not only leads to increased pumping cost, reduced lives of pipes and connection due to change in pressure, and an inability to know how the network is operating as meters fails to operate effectively. In short, the cost of intermittent supply is yet to be gauged.

Despite low level of service, arguments against idea of round the clock water have been strong. The government water authorities have been unable to do so for one reason or the other, like unavailability of water in water-scare state like Rajasthan, interment power supply, cost factor and the biggest our cites are growing too rapidly to support continuous water. With that approach the battle for 24X7 supplies is lost before it's fought.

If anything, the rapid growth due to urbanization demands that the sector receive needs urgent attention. Urban water supplies delivery system continues to be characterizing by the poor service quality – poor quality of access, low reliability of supply, poor water quality, high loss levels and low cost recovery.

Urban water supply, unlike other infrastructure sectors like power and telecom, still doesn't have a regulatory body either at national or at the state level that can monitor water supply services. Also other than the national water policy no other policy has been introduced for urban areas at national level.

III. COST EVALUATION

The reasoning for contracting out the water supply services is impeccable, except that it forgoes that the cost of the system has to be affordable, so that it can it can be sustainable. In India, municipalities rarely compile water and sewage accounts. But research in compiling city level data shows a difficult pattern to miss. Almost all cities are struggling to balance their accounts and failing. The one expense that is killing them is the cost of electricity to pump water from long distances to the city and then to pump water to each house and to pump the waste from the house to sewage treatment plant.

When a city search for new source of water it rarely calculates he distance and cost for bringing supply to the city. The fact is no municipality can do what economist preaches raise prices to reflect the full costs. Instead, they spend money on supply and as costs go up, they have to increase the subsidy to the use or supply less to most. On an average, Indian cities charge between 2-3 rupees per kiloliter, when they should be charging Rs 8-10 kiloliter. And if their distribution loss is considered into account charge between 10-14 Rs per kiloliter is to be paid. If we add sewage costs, then the bill increases by roughly 5 times the cost of water supply. In this case the family which pays Rs 2-3 per kiloliter will have to pay Rs 40-50 per kiloliter. Such high terrify are not feasible since they would be unaffordable for a large section of population in the cities and might prove counter-productive due to higher risk of defaults on payments.

IV. RECOMMENDATION

Large parts of the city have become water stressed, rapid growth in demand for water due to population growth urbanization and changing lifestyle pose serious challenges to water security. So the rapid increase in demand is to be controlled first. Issues related to water governance have not been addressed adequately. Mismanagement of water resources has led to a critical situation in many parts of the country.

There is wide temporal and spatial variation in availability of water, which may increase substantially due to combination of climate change, causing deepening of water crises and incidences of water related disaster that could be floods, increased erosion and increased frequency of droughts etc.

Climate change also may increase the sea levels. This may lead to salinity intrusion in ground water aquifers / surface waters and increased costal inundation in coastal regions, adversely impacting habitations, agriculture and industry in such regions. Access to safe water for drinking and other domestic needs still continues to be the problem in many areas. Skewed availability of water between different region and different people in the same region and also the intermittent and unreliable water supply system has potential of causing social unrest.

Groundwater, through part of hydrological cycle and community resource, is still perceived as an individual property and is exploited inequitably and without any consideration to its sustainability leading to its exploitation in several areas.

Water resource projects, through multi-disciplinary with multiple stockholders, are being planned and implemented in a fragmented manner without giving due consideration to optimum utilization, environment sustainability and holistic benefit of people.

Inter-regional, inter-state, intra-state, as also inter-sectorial disputes in sharing of water strain relationship and hamper the optimal utilization of water through scientific planning on basin.

Grossly inadequate maintenance of existing irrigation infrastructure has resulted in wastage and underutilization of the resources. There is a widening gap between irrigation potential created and utilized.

Natural water bodies and drainage channels are being encroached upon, and diverted for other purpose. Ground water recharges are often blocked.

Growing pollution of water sources, especially through industrial effluents, is affecting the availability of safe water besides causing environmental and health hazards. In many parts of the country, large stretches of rivers are both heavily polluted and devoid of flows to support aquatic ecology, cultural needs and aesthetics.

Access to water for sanitation and hygiene is even more serious problem. Inadequate sanitation and lack of sewage treatment are polluting water resources.

Low consciousness about the overall scarcity and economic value of water results in its wastage and inefficient use.

V. CONCLUSION

The lack of adequate trained personal for scientific planning utilizing modern techniques and analytical capabilities incorporating information technology constraints good water management. Also holistic and inter-disciplinary approach at water related problem is missing. The public agencies is charge of taking water related decisions tend to take these on their own without consultation with stack holders often resulting in poor and unreliable service characterized by inequities of various kinds

Characteristics of the catchment areas of streams, rivers and recharge zones of aquifers are changing as a consequence of land use and land cover changes, affecting water resource availability and quality.

However, the water policy is very weak in translating the ideas into becoming effective on ground as urban water supply is a matter of state and local bodies.

Better demand management, water-based partnerships, promoting water governance, promoting sustainable use, water harvesting and management are the needs that ave to be addressed and incorporated in the form of recommendation towards better water management.

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