

Resources for the future

Water body authorities need to be more vigilant to ensure future supply

BY JAYASHREE MENDES



There is no escaping the fact that in India, water needs to be distributed effectively and consumed carefully only to keep scarcity at bay in the future. However, this simple objective is hugely complex to execute.

In recent years, India's water sector has developed rapidly with the inflow of central government funds, the reform agenda of the government under JNNURM (Jawaharlal Nehru National Urban Renewal Mission) and the programmes of international donors like the World Bank, Asian Development Bank (ADB) and Japanese aid agency, JICA. The most significant change in the last five years has been the entry of the

central government as a major source of financing in the sector.

Despite this, the Indian economy faces daunting challenges in the water sector. The demands of a rapidly industrialising economy and urbanising society come at a time when the potential for augmenting supply is limited, water tables are falling and water quality issues have increasingly come to the fore. These challenges can only be met through a paradigm shift in the management of water resources in India if we are to move towards sustainable solutions to urban water and waste management. The 12th Five Year Plan had a high powered expert committee report on Indian urban infrastructure and services that pegged the total capital investment needed for

infrastructure in the water, sewerage and storm-water sector at ₹754,627 crore over the next 20 years.

Since 2005, 13 new public-private partnership (PPP) projects in water sector were awarded as compared to just four in the previous decade. With the influx of funds, more PPP projects were awarded in the past five years. Most of the PPP water supply projects during the 1990s were aimed at augmentation of bulk water supply systems. But after 2005, 80% of the projects awarded were to bring in private sector expertise for operations and maintenance (O&M) and improvement of distribution system. Today, approximately 60% of PPP projects address O&M improvements, 30% focus on bulk water supply augmentation, and

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the rest include both. In the year 2012-13, India has undertaken several water projects. The pace of development in the country's water sector has leapt forward in recent months. A report by Global Water Intelligence released in late 2013 said there are more than 100 water projects which are coming to tender, of which two-thirds are water and wastewater treatment plants and distribution systems that are expected to be structured as PPPs, in which a private company will take on a role in operations as well as engineering and construction.

According to Rishabh Sethi, chief operating officer, SPML Infra, "Aging infrastructure, managing operational costs, availability of funding and managing capital costs remain among the top issues in water sector. Water scarcity issue will bring strong focus on fixing leaks in aging infrastructure to conserve water resources with improving operational efficiency. We expect the current government will take special interest in the water sector and there will be far reaching reforms in the coming year."

Sethi is also hoping that there may be an independent regulatory authority at the national level with chapters in all states to resolve any disputes related to



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Rishabh Sethi, COO, SPML Infra

water. "There will be clear guidelines for bulk and retail water tariff determination and greater emphasis would be for ensuring quality and service standards. We also see that impetus would be on planning and approval of new projects, review of held up projects, appropriate regulation for private participation, enhanced government spending on infrastructure development and improvement and concentrated efforts towards ground water recharge and pollution control measures," he adds.

Sanjeev Sirsi, head - water utility, Grundfos Pumps India, says, "Resort to PPPs in the social sector often raises concerns about the commercialisation of services that are normally expected to be provided free or highly subsidised." These are important concerns but they can be addressed by well-drafted concession agreements and strict monitoring to ensure that PPP concessionaires abide by their commitments. "This must be reinforced with penalties for non-compliance. While extending the concept of PPP to social and urban sector projects, the need for people's participation in the design and monitoring of PPP schemes becomes crucial," he adds.

Realising the need for water conservation, there are many initiatives



Water audits are necessary post which the audit team needs to recommend best solutions to right size the systems.



It would help to have an independent regulatory authority at the national level to resolve any disputes related to water.

undertaken by industry, government and the public towards sustainable water management. However, there is a need for close co-operation between these stakeholders to further mobilise finance and skills for effective management of water resources. Due to rapid urbanisation in the country, it is important to attract investment in the water sector in order to cater to a population of 600 million people by 2031. This kind of growth will need massive capital, operations and maintenance investments in the water infrastructure which can be supported through public private partnerships.

Wastewater management, sewage treatment and desalination in India have become an extremely important area of focus due to increasing health awareness and population pressure. Despite the wastewater sector witnessing major growth in the last decade due to increasing government support and private participation, the scale of the problem remains enormous.

Priyanka Tandon, communications, Veolia Water, says, “We collect and treat water in line with national and international regulations. Different treatments are provided depending on the level of pollution. Afterwards, the water re-enters the water cycle.”

In 2012, the Delhi Jal Board, authority in charge of water and sanitation, chose Veolia Water India to design, build and operate an innovative green wastewater treatment plant with a ca-



The entry of the private sector has given a boost to water projects in India.

capacity of 91 million litres a day in Nilothi. The 13-year contract covers an initial two-year construction phase followed by an 11-year operation and maintenance phase. The main job is to improve the distribution network in terms of replacement of pipes, stopping leakages and decreasing water wastage. The wastewater treatment used by the company will ensure the recovery of energy from the biogas produced by the sludge treatment process. The company’s wastewater treatment technology at the plant is expected to ensure the recovery of energy from the biogas produced by the sludge treatment process, and the treatment sludge will be recovered in the form of compost for use by the region’s farmers. The plant will serve the city’s western sector and will also improve the city’s



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wastewater treatment capacity to better serve future needs.

Veolia uses its expertise in wastewater management by:

Collection: Using a wastewater collection system consisting of a network of pipes, the wastewater is transported to the treatment plant. Collection systems are maintained regularly (cleaning, monitoring, etc.) to prevent blockages and corrosion.

Treatment: The way that the water is dealt with at a wastewater treatment plant is based on its degree of pollution and the legislative standards governing its discharge into the environment.

Discharge into the environment: After processing at a treatment plant, the water is returned to the natural environment in a way that does not adversely impact environmental balances.

One of the most efficient ways to conserve water is to use energy efficient pumps. Grundfos' sustainable pump solutions help the end-user to lower their water consumption and consume less energy. Sirsi says, "At our headquarters in Chennai, we have adopted a holistic approach to water conservation. We constantly monitor and reduce the consumption of water inside the facility. This is done by identifying the possible areas where the consumption of water can be reduced and by using both new and existing technologies which allows us to recycle water."

Grundfos India also conducts energy and water audits for industries and corporate. These audits are a complete system analysis of the energy and water consumption. Post the analysis the energy audit team recommends the best solutions to right size the systems; thereby helping conserve both these resources.

Umesh Ulavi, VP and business sector head – water resources management, Kirloskar Brothers (KBL), says, "We have taken initiatives in offering lowest life cycle cost (LLC) concept and solutions last three years. This is as per guidelines in Hydraulic Institute of Standards. The product offered has many benefits to the end client with regards to huge energy savings (which is otherwise not feasible) and reduced downtime. The efficiency of the pumps in LLC design pumps is sustainable



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over the conventional designs.”

KBL is the first company in India to launch a concept that has been well implemented by the water municipal authorities like Delhi Jal Board for their various projects which are under execution. Maharashtra Industrial Development Corporation (MIDC) and Chennai Metropolitan Water Supply and Sewerage Board have also placed orders for LLC design vertical pumps for their Roha and Kanaparthal schemes respectively. For Paltha and Tallah (more than 80 years old) pumping station at Kolkata, KBL has been awarded a contract to supply bottom suction arrangement, horizontal centrifugal pumps to handle high flow. The project is under engineering stage.

SPML Infra is also executing a number of water supply projects in different states. Some key projects are:

Pokhran water supply project aims to provide sustainable source of clean drinking water supply to over 12 Lac residents of 580 villages together with four towns. The scope include 400km of water pipeline, 125 MLD water treat-

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ment plants, 12 pumping stations with combined capacity of 40,000m³/hr with 9,350kW, two raw water and three clear water reservoirs, substations with PLC & SCADA systems and 10 years of O&M post commissioning.

For Bengaluru, SPML Infra will provide sustainable source of drinking water supply to a population of over two million. The scope include 21km of 3m diameter MS pipes with 18mm shell thickness, five lakh litres capacity elevated one way RCC surge tank, 100 million litres capacity of clear water reservoirs, 500 MLD water pumping station etc. At Saurashtra, it will transfer the excess water from the southern region of Gujarat to the drought prone areas of Saurashtra particularly to 8,215 villages and 135 towns and cities of Saurashtra and Kutch, North Gujarat and Panchamal districts.

Grundfos is at the forefront in promoting and facilitating energy efficiency and sustainable technology, ensuring that water supply and wastewater facilities meet future challenges and regulations. It supplies a range of equipment and solutions designed for water utility applications. Its innovation of the S-tube impeller sets new standards for wastewater hydraulic design, offering greater hydraulic efficiency than any other type of wastewater impeller without compromising free passage. With the S-tube impeller, the efficiency is higher compared to other



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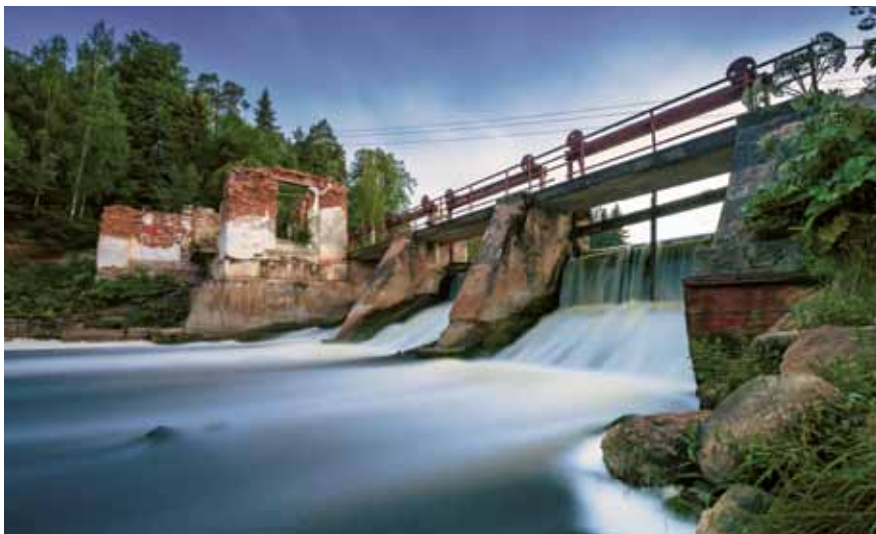
Umesh Ulavi, VP & business sector head, water resource management, KBL

wastewater impellers, as there are no edges, dead zones, or cutting functions that get worn over time. Besides, the S-tube impeller features an innovative and patented labyrinth and sealing system, for years of trouble-free operation.

However technology is not always the solution to every problem. Tandon says, “Asset management is also very important. Instead of systematically promoting the construction of new infrastructures that may result in increased financial burden on the end-consumer, Veolia focuses on O&M of the water infrastructure to supply more people while using the same capacities. For example, in Karnataka, without increasing the amount of water produced, Veolia managed to provide water on a continuous basis to all citizens only by focusing on leakages in the old pipelines. Also, a strong database and information system for water resources management is critical for India. Good water data allows for greater water use efficiency, appropriate infrastructure investments, fair pricing, equitable access, advance warnings of variability and a prudent approach to environmental flows. Furthermore, skill and technology gaps also have to be identified and worked upon. Veolia gives priority to training in order to improve the quality of its services for the benefits of its employees and the employees of the municipality.”

Sethi says, “Developing a long term, integrated water resource plan involves all elements of the reduce, reuse, and recover. Customer engagement and education on the importance of conservation is necessary. Innovative tariff mechanisms combined with tools that enable customers to monitor and manage water usage will help in conservation. Proven technologies and processes for treating reclaimed water can also be used to recover valuable energy resources.” Planning and building water reuse infrastructure is another essential step for sustainable water management to reduce industrial demands on freshwater supplies, and replenish water reservoirs and aquifers. Other sustainable practice would be to recover valuable resources contained in wastewater, reduce operational costs and generate new revenues for utilities.

Safe and reliable water services are a cost-intensive process. However, by implementing best practice, asset management and leveraging technology, utilities can effectively manage these costs, achieve conservation goals and be more resilient to future challenges, both anticipated and unpredictable. ☐



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