



WATER SUSTAINABILITY

India needs to scale up water recycling capabilities as the natural water resources are gradually depleting in the country. In this scenario, sustainable practices in water infrastructure will play a crucial role in creating a circular economy in water infrastructure. **Construction Times** finds out the scenario



Water is becoming scarce with depleting natural water bodies and resources. It has become imperative for the people and authorities to look for the smarter and wiser way of preserving and using water. While an efficient water storage and distribution system is need of the hour, it is also important to the recycling and reusing of wastewater in the best possible way to minimize the dependence of the already reducing natural water resources.

WATER WOOS

The growing population and urbanization across the country has put a significant pressure on the water infrastructure of the country. The country has 18 percent of the world's population, but only 4 percent of its water resources, making it among the most water-stressed in the world. A large number of

Indians face high to extreme water stress, according to a recent report by NITI Aayog. The available water infrastructure is insufficient to meet the growing socio-economic developmental goals. Over the years, government has put significant efforts to provide safe and clean drinking water to urban and rural populations. However, an aging infrastructure has become the most challenging concern. Increasing population, higher economic and industrial activities, rising demands, poor infrastructure maintenance, lack of rehabilitation, slow adoption of advanced technologies, depletion and contamination of ground water sources, water supply thefts, high level of non-revenue water (NRW) are some of the key challenges faced currently.

"A considerable amount of water is wasted in distribution system because of leakage pipes, joints, fittings, water mains etc. India has about 50%



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Managing Director,
Aquality Water Solutions
Pvt Ltd

distribution losses, roughly estimated to be \$600 million per year in economic terms,” says **Naser Azeez Mohammed, Managing Director, Aquality Water Solutions Pvt Ltd.**

Population growth in urban areas, water scarcity, climate change effect, water supply risk, inadequate regulatory framework and aging infrastructure will remain some of the main challenges to be faced by the water industry. The industry must also

consider how it will address the escalating energy costs, environmental risk, infrastructure security, restructuring of institutions, distressed groundwater situation, and equitable supply amidst increased demand.

Currently, the large portion of Indian population depends on groundwater for irrigation as well as for rural and urban domestic water supply. However, overexploitation of the valuable resource has led to the gradual depletion of the ground water.

Owing to uncertainties in rainfall, coupled with periodic dry spells and heavy cyclones and floods during the monsoon season has created rainfed agriculture a risky affair in the recent past. This has necessitated an efficient water pipeline infrastructure to fulfill the requirements of irrigated agriculture.

CREATING AN EFFICIENT WATER STORAGE AND SUPPLY INFRASTRUCTURE

Government of India has done a commendable job under the flagship scheme of Jal Jeevan Mission. With a massive budget of Rs 6.7 lakh crore, JJM has seen a significant progress in last three years in the coverage of tap water facilities to rural households. The JJM scheme was launched in August 2019, since then almost 63.5 million additional rural household have been provided with functional water tap connections (FHTC). The JJM scheme is being implemented on a mission mode in all Indian states. The coverage of tap water connection on pan India basis have increased to reach 50.10% from just 16.92% at the beginning of this scheme, thus covering 95.82 million rural households out of a total of 191.27 million in the country.

“Toward building robust and future-ready wastewater treatment infrastructure, the government has sanctioned 402 projects so far, of which 224 are



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already completed and the rest are in various stages of progress,” **Hiroaki Kobayashi, Chairperson and Managing Director, Toshiba Water Solutions Pvt Ltd.**

We need to look for more rainwater harvesting facilities to preserve maximum possible rainwater for various usages. India, with relatively good rainfall is able to store only smaller quantities of rain water compared to arid rich countries such as the US and Australia building over 5,000 cu m of water storage per capita. While China can store about 1,000 cu m per capita, India’s dams can store only 200 cu m per person. Moreover, India can store only about 30

days of rainfall, compared to 900 days in major river basins in arid areas of developed countries.

RECYCLING FOR WATER SUSTAINABILITY

Reducing freshwater consumption is one way of achieving sustainability. Today's sewage treatment technologies enable us to treat sewage to potable water standards. This water can definitely cater to the requirement of non-drinking purposes such as industrial use, gardening, flushing, washing etc. If made mandatory, this will reduce the demand for freshwater for non-drinking purposes to a great extent. Recycling of used water is the single biggest contributor to sustainability initiatives.

Rapid urbanisation and steady economic and population growth have increased the demand for water, thereby increasing the generated wastewater. The demand for water in tier 1 and tier 2 cities is expected to increase to 110,000-120,000 MLD and sewage generation is expected to increase to over 87,000-97,000 MLD by 2025. On the other hand, the industrial demand for water is expected to increase multifold with higher level of industrial effluents. In order to meet the growing needs of water for domestic and industrial usage, we have to find new sources of water. Desalination of saline water, treated wastewater, rainwater harvesting etc are the other ways and means to safeguard the water resources. The use of treated wastewater for non-potable purposes is being encouraged by the government. These sources hold immense potential for easing off pressure on fresh water resources. World over, many countries are using the treated wastewater to fulfill their water demands.

"Agricultural sector accounts for majority of freshwater consumption followed by industries. The irrigation with reclaimed water could potentially yield the greatest benefits to water resources. In fact, reclaimed water is used to supplement agricultural



MOHAMMED ABDUL RAHMAN
CEO, Sahara Industry

irrigation in almost all arid areas of the world," says **Mohammed Abdul Rahman, CEO, Sahara Industry.**

Water sustainability is imperative for any country globally. For India, it has to be accorded the highest priority given our increasing population and corresponding demand. Thus far only 50% of our rural households have access to tap water. We clearly have a long way to go and the government has ensured that creation of water infrastructure is put on MISSION MODE to achieve time-bound results.

SEA WATER DESALINATION AND ITS PROSPECTS

India has abundant sea water resources with a vast coastline on its east and west coasts. However, currently the sea water desalination capabilities are minimal in the country. "The country has a long coastline and abundant seawater resources, which makes it an attractive location for seawater desalination projects. States of Tamil Nadu and Gujarat have been investing on desalination for potable water and achieving water security. Now other states like Andhra Pradesh and Maharashtra are planning to set up desalination plants," points



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out **Rajneesh Chopra, Global Head - Business Development, VA Tech WABAG Ltd.**

The sea water desalination concept has gathered momentum in the recent past. Tamil Nadu has been the pioneer in using this technology, setting up two desalination plants near Chennai near Minjur (100 MLD) and Nemmeli (110 MLD) in 2010 and then 2013, while there are two more to come of 150 MLD and 400 MLD. Gujarat has started executing four SWRO desalination plants with a capacity of 270 MLD for potable supply. Similarly, Mumbai also has proposed a desalination plant of 400 MLD which is expected to commence by 2024.

According to Abdul Rahman, one of the major constraints in setting up sea water desalination plant is the high cost of energy, requiring large investments, operation, and plenty of maintenance. Currently, this technology is more expensive to build and operate than harnessing freshwater from rivers or groundwater. However, when it comes to largescale manufacturing, technologies can evolve and make the overall operations economical in the long term.

FOR A SUSTAINABLE FUTURE

According to NITI Aayog, under business-as-usual, 6% of GDP will be lost by 2050 due to the impending water crisis and the status of water availability will deteriorate rapidly. Best estimates indicate that India's water demand will exceed supply by a factor of two by 2030, with severe water scarcity on the horizon for millions. This is where innovative technologies and best practices will play a lead role in creating a sustainable water infrastructure. Water and wastewater technology and solution providers will have a significant opportunity in the coming years in developing a sustainable water infrastructure in the country.

