

# WATER: ETERNAL SOURCE OF LIFE

By Tariq Siddiqui, Chief Strategist, TS Advisory Services



Driven by population growth, rapid urbanization and a universal rise in the standard of living, the need for clean water is becoming higher every year. The world is facing enduring water risks with the demand-supply gap increasing at an alarming rate. With a 40% gap between global water supply and demand by 2030 and water demand for manufacturing alone projected to swell by 400% between 2017 and 2050, it is not only the people suffering from scarcity, but the industrial output is being compromised due to lack of clean water.

Sourcing water and managing wastewater is becoming increasingly difficult and expensive and hence is an important aspect for the sustainability of water. Globally there are almost 2.2 billion people suffering from water scarcity and devoid of clean water sources. The Indian scenario is not different, over 600 million people suffering with severe to extreme water scarcity. A large population in several big states in India is finding it difficult to access clean water sources near their premises.

With population and demand growth, the industrial sector in India has become an important stakeholder in water resource management along with agriculture sector and both the sectors

**Water sector can learn more from other sectors when it comes to technological intervention and better use of resources with agility in decision making and taking the risk to make bold moves for greater sustainability.**



needs to be proactive in combating water risks. Increasing industrial production, especially in water-intensive industries like thermal power plants, steel, pharmaceuticals, tanneries, pulp & paper, textiles, fertilizers, beverages, and automobile etc. is putting pressure on the limited freshwater resources in India. This coupled with increased water demand from other sectors like infrastructure development, agriculture, domestic, etc. is leading to conflicts over water availability.

Industries that are heavily dependent on water have to cut down on their production at times due to scarcity mainly during the summer.



Such scenario has become more frequent in the past few years due to increasing water stress. Therefore, it is very critical that industries use water judiciously and reduce their water footprint as much as possible in order to be sustainable in the future.

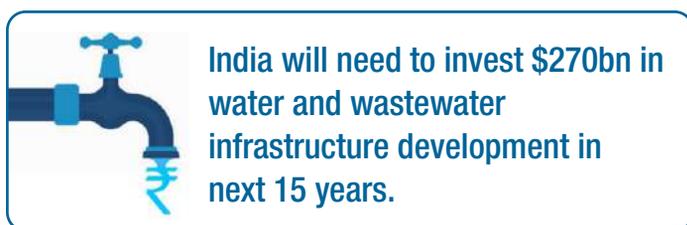
Most industries in India have wastewater reduction targets with zero liquid discharge (ZLD). Similarly all water utilities in India should have wastewater treatment and reuse targets as the commitment. We are seeing severe impacts of untreated wastewater discharge into water bodies at an unprecedented scale with high level of contamination in all water sources.

### Investment Conundrum

The continuous underinvestment in essential water and wastewater infrastructure puts the economic progress of India at risk. Closing the investment gap would make drinking water and wastewater systems more sustainable and will play a significant role in water security and industrial and commercial development leading to better economic return.

India's water infrastructure is aging, with most of the drinking water systems and wastewater treatment plants already surpassed or nearing the end of their respective design lives causing contamination and huge water loss. India's NRW is almost 50% of total supplies, losing almost 3.4 trillion litres of clean water annually to the leaking pipes.

United Nation's World Water Development report has expressed serious concern over



**India will need to invest \$270bn in water and wastewater infrastructure development in next 15 years.**

underfunding of water infrastructure around the world. In India also, the extremely significant water infrastructure has been aging for decades and at most places it has become precarious and unreliable. The underfunding in infrastructure development limits access to clean water leading a large population to face challenges related to poor drinking water quality. According to a report by the Bank of America Merrill Lynch, India will need as much as \$270 billion (INR 2.2 trillion) investment in water infrastructure over the next 15 years.

A look at India Investment Grid portal is showing the opportunities available for water infrastructure development under different segments, as following:

| Sectors                                 | No. of Projects | Planned Investment            |
|---|-----------------|-------------------------------|
| Water Treatment Plants                  | 1547            | \$112.11 Bn (INR 91,163 Cr)   |
| Irrigation                              | 722             | \$161.35 Bn (INR 1.31 Lac Cr) |
| Sewage Collection, Treatment & Disposal | 432             | \$11.04 Bn (INR 8,978 Cr)     |
| Storm Water Drainage System             | 166             | \$3.37 Bn (INR 2,740 Cr)      |

These projects are apart from Jal Jeevan Mission projects for rural and urban India which already have a dedicated budget of \$796 billion (INR 6.47 trillion) for the period of 5 years leading upto 2024. The true challenge of water sector in India is not only to increase access to infrastructure but to increase access to reliable, sustainable, and

affordable services of drinking water supply and wastewater management.

### Water Use Optimization

The ardent need in India is to have effective water use optimization, improving water accounting systems, and identifying water losses and opportunities for water savings that can serve as effective approaches for reducing water consumption. Over 80% of fresh water is being used by agriculture both from surface and groundwater sources need definite target for year-on-year optimization. The industrial sector needs to optimize the consumption with recycling and reusing generated wastewater at least in the most water guzzling sectors. Optimization of water use by industries is important because it can lower water withdrawals from local water sources thus increasing water availability while also lowering effluent discharge and pollution load, reducing energy consumption, increasing productivity and making better commercial returns.

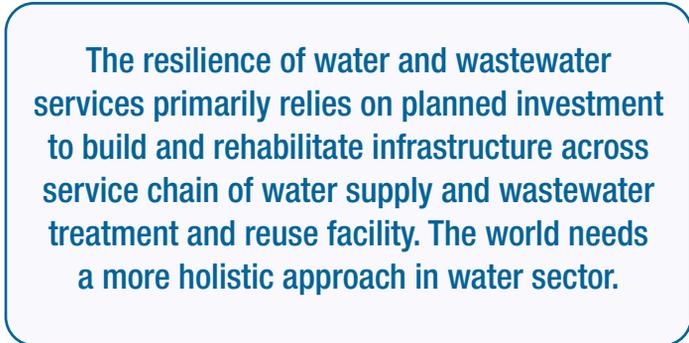
Also, efficient wastewater treatment technologies and recycling and reuse practices can bring down water consumption and wastewater generation. Further, substantial costs which are associated with water and wastewater management like water sourcing, pumping, water treatment, effluent treatment & disposal, etc. can be effectively reduced through better water and wastewater management. Periodic water audits will also help in understanding the requirement of optimization in a better manner.

### Pollution Challenges

India is generating approximately 72 billion litres of municipal wastewater and around 14 billion litres of industrial wastewater on daily basis. But the treatment capacity is quite limited as just around 40% of the municipal wastewater and about 60% generated industrial effluents being treated. A huge quantity of both kind of wastewater is not receiving any form of treatment and being disposed into water bodies making them more contaminated and polluted. This trend of releasing used water into fresh water sources has dire consequences on public health as well as economic burden for healthcare. It is estimated that water borne diseases affect almost 40 million people annually while nearly 7 lac premature deaths are attributed to drinking contaminated water.

### Remedial Measures

The world is changing with new innovations and the water industry has to pace with this change. There are new roles and expectations from water utilities; they do not only have to provide water supply and wastewater services, but care for the environment and the wellbeing of people they serve, while reducing carbon emissions and ensuring their services are resilient to disruptions. Technological interventions will be key to adapt and grow and embracing new ways of thinking and



**The resilience of water and wastewater services primarily relies on planned investment to build and rehabilitate infrastructure across service chain of water supply and wastewater treatment and reuse facility. The world needs a more holistic approach in water sector.**

## INDEPTH

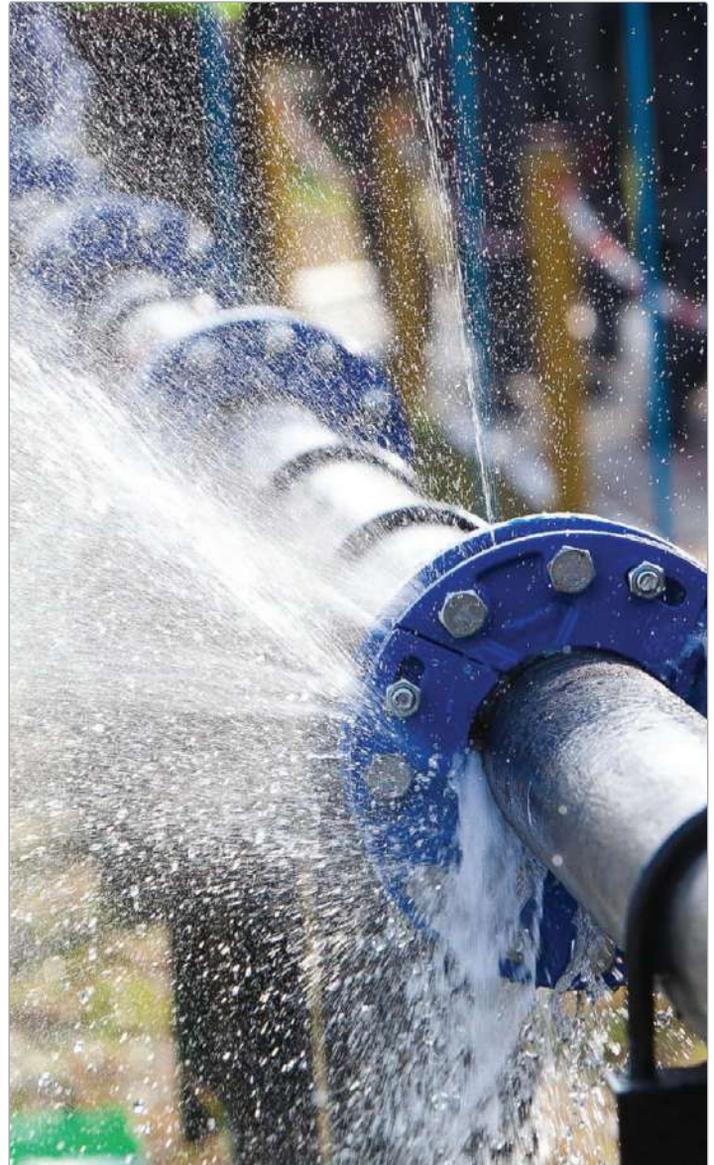
anticipating risks. Unfortunately, binding constraints – short-term planning, safety and quality concerns, budget limitations, higher water loss percentage, and technological gaps pose severe risk impeding progress at the required pace and scale.

Mitigating the risk should be on the agenda of not only the water utilities, but the government should support the efforts with matching grants and required permissions. Some of the measures that could help is listed below:

- Better manage water supply complexities with a unified view of consumer data across the supply and distribution network for production of potable water and collection of used water.
- Address market dynamics and use data to monitor demand and supply capacity in real time. Correct data will help better manage network complexities with a unified view of improved asset utilization.
- Unlock valuable data for better decision-making from strategic planning to daily operations. With information at hand, utilities can ensure uninterrupted water supply while saving time and additional expenses.
- Scale new alternatives of generating water by recycling and reusing municipal and industrial wastewater.
- Building infrastructure for both supply augmentation and distribution network and addressing management of service with the goal of sustainability.
- Adopt, implement and use digital technologies such as advanced analytics and intelligent information system, AI and visualization to improve system reliability.
- Easy access of financing to create infrastructure coupled with overlapping responsibility of policy making, planning, financing, implementation, maintenance and regulation.
- Training of water engineers with the aim of providing a wider understanding of the water challenges, source augmentation, aspects of water audit, wastewater management, recycling and reuse.

Our thinking has evolved over the last few decades around wastewater as a risk to be managed rather than a resource to be captured needs to change for creating 'new water' from the wastewater. Similarly, our thinking around water harvesting and capturing storm water need to evolve into our responsibilities around the water cycle rather than being seen as separate substance.

Currently, the way water is being perceived does not match with the natural water cycle, and we are seeing the limitations of finances, regulatory and governance structures that require serious thinking and planning for the long term sustainability.



### ABOUT THE AUTHOR

*Mr. Tariq Siddiqui is the Chief Strategist of TS Advisory Services responsible for developing, evaluating, and defining marketing and communication strategies for water companies. A doctorate in media, he has over 26-years of experience working with different sectors including water and wastewater.*

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