

THE WATER CONUNDRUM



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Mohammed Naser Azeez is a first-generation entrepreneur, he is an avid innovator and risk-taker. He established the acclaimed Aquality Water Solutions with the idea to provide technologically advanced water treatment solutions to domestic, institutional, and industrial clients. With an ardent interest in clean drinking water facilities, he contributed immensely to improving the lives of people with commitment, technological innovations, and quality excellence.

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Water is essential! This realization took us a very long time. We were not concerned about water a few decades ago as it was available everywhere in abundance. But the situation started changing and we are in the midst of a historical water crisis all over the world. Many regions are on the brink of going waterless and facing extreme scarcity. This crisis is more of a man-made than a natural condition.

Many cities across the globe are at greater risk of running out of water. Water availability is now cited as one of the greatest risks to survival, business continuity, and growth. It is very clear that the way water is managed today in many parts of the world poses serious risks to human wellbeing and sustainable development. We cannot imagine a day without water or going through our days with very limited access to clean water for drinking, cooking, washing, bathing, manufacturing, and all other activities. But in reality, it is happening with greater frequency in most places.

Water in India

Our country had an ample amount of fresh water available not too long ago. The situation has become grimmer with every passing year and we are staring at 'day zero' in most of our large cities. We were not aware or maybe did not notice the knock of the crisis at the appropriate time and here we are staring at severe scarcity in large parts of the country. The Niti Aayog study has revealed the startling fact that India is suffering from the worst water crisis in its history and millions of lives and livelihoods are under threat. A study has estimated in 2019 that about 600 million populations in India are facing severe to extreme water stress along with more than 20 megacities are facing serious risk. The Financial Express has echoed this concern by saying "in a few years' time, water would be the most precious commodity in India".

It is not only the quantity of water that has become challenging, but the quality has also

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worsened drastically. To report that more than two lakh people die every year due to inadequate access to safe water is very heartening. India is an agrarian economy and almost 70% of the population is employed in agriculture, water management in irrigation is extremely crucial for India as currently about 80% of fresh water is being used by this sector only. The situation is going to get worse unless extreme and drastic steps are not employed at the earliest. By 2030, India's water demand is projected to be twice the available supply making more people face the threat of severe water scarcity with high economic consequences that will eventually make India lose around 6% of GDP. There is an ardent need to deepen our understanding of limited water resources and unsustainable usage patterns and put in place interventions that make our water use efficient and sustainable.

Balancing the Act

Making a sufficient amount of potable water available for the people has become a great challenge, especially in large cities. In developed countries, urbanization happened in a structured and planned manner whereas Indian cities have grown without appropriate planning, resulting in chaos for urban infrastructure and undue burden on the existing system. The consequential outcome is water has become less available due to the devastation of protected water source areas and widespread pollution of remaining available sources both at the surface and underground levels. Another big challenge for the Indian cities is the available water supply sources are far away from urban habitats making water exploration and transportation increasingly expensive. Dealing with these problems requires efficient water supply system (WSS) management techniques, in order to maintain a balance between supply and demand. Maintenance of this balance is achieved through operational actions, many of which require the application of forecasting tools.

The essential need of the situation mandate to make a reasonable balance between water supply and demand and that requires efficient water supply system management techniques. The balance can be achieved through suitable actions which require the application of the best suitable technology for monitoring the situation with accurate forecasting concepts and tools. In today's world, developed countries are mostly using 'state of the art' technological solutions with demand forecasting by employing artificial intelligence, guidance regarding methods and models of concepts, and proper data analysis. India being

India has to move to a more holistic way of managing its water sources and reclaiming all generated wastewater resources to reuse while encouraging water demand management through optimum reduction of water losses.



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a vast geographical land, no single global method will be suitable for the entire nation. It is necessary to study each region separately, evaluating the strengths of each model or the combination of methods that will help in achieving the objective. Although there is greater use of statistical applications of machine learning and artificial intelligence, big data analysis, and other modern methodologies, there is still big scope for improvement with regard to water demand forecasting as per regional incongruence.

Challenges Mystified

Many cities in India are at the risk of running out of water including metropolitans like Delhi, Mumbai, Chennai, Bengaluru, Hyderabad, Ahmedabad, etc. With water availability cited as one of the greatest risks to human wellbeing and business growth, it is clear that the way water is managed today poses serious risks to sustainable development. Imagine going through your day with limited access with intermittent supply only for a few hours per day or a couple of days per week, to store water in your home for drinking, cooking, washing, or bathing.



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4000 LPD 6 stage Drinking water plant for Amazon Campus, Hyderabad

Severe water scarcity caught India unaware and is expected to intensify further as water demand continues to increase due to rapid urbanization and on the other hand water supplies tend to decrease due to unsustainable practices and climate variability. It is not only posing a big challenge to achieving urban water security but also a deterrent to achieving the Sustainable Development Goals (SDGs) set forth by the United Nations for all member countries.

The devastating impacts of climate change on people, the environment as well as on the economies are felt in all regions of the world and in every strata of society. People living in economically disadvantaged areas with high poverty and low resources are the most vulnerable to climate change impacts and their most visible effect – water scarcity, which is affecting lives significantly.

Remedial Efforts

It is no secret that municipalities and water utilities across the country are facing budget constraints. Spending on new technology might not seem like the obvious solution, but a growing number are looking to smart water management tools to control on huge water and revenue loss and substantially attend to increasing demands. One good example is Chennai that implemented a conservation and augmentation plan with water harvesting and wastewater reclamation and reuse facilities. After the city faced a severe water shortage in 2019, it has begun to recycle wastewater at scale to meet the water needs of its industries. Two tertiary treatment reverse osmosis (TTR) plants launched in late 2019



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are the first of its kind of facilities of this nature in India with 45 million liters per day (MLD) each and Chennai are able to recycle about 20% of sewage currently to reuse, enabling the city to reduce its consumption of fresh water.

Water demand is far outstripping supply in almost every city in India; it is time to think seriously about alternate sources to meet the water needs rather than extracting precious groundwater or desalinating water at great expense. Recycled water, therefore, adds a new, more sustainable water source for urban settlements, one that saves both fresh and desalinated water, is always available and is more reliable than rainfall which can vary from year to year.

Way Forward

Water is a finite resource. Every day is a reminder to individuals, municipal agencies, and governments of this magnificent resource that blankets the earth, is disappearing from under and over the surface. Water utilities across the globe have the continuing challenge of innovating services and delivering fresh water to their customers. In the face of constant technology innovation and market disruption, where another industry has seen terrific innovation with technology, the water industry is still lagging behind. The pandemic has created havoc and unpredicted disruptions that forced most utilities to begin their digital transformation journeys in one way or another. It is time to walk the talk and rope in smart management in all water utilities and harness the value of data and digital technology to work as a way of not only charting delivery and conservation today but to help us address the next generation of challenges, too.