



## Editorial

### Water Management during the Pandemic Times

The Covid-19 has wrought havoc on the entire world and more so in developing countries like India. Pessimism and fear, hunger for food and thirst for water, unemployment and reverse migration to rural areas were pervasive. The pandemic has also shown in bold relief our vulnerabilities and an urgent need to focus on health, agriculture, water and economy.

During these challenging times, freshwater is the most important resource for mankind. UNESCO has advised that to achieve water security, we must protect vulnerable water systems, mitigate the impacts of water related hazards, safeguard access to water functions and services and manage water resources in an integrated and equitable manner. COVID-19 has reinstated the need of guaranteed access to safe water and sanitation. It has emerged as the biggest challenge in different parts of India. WHO recommends hand and face hygiene (washing hands frequently) as an extremely important measure to prevent transmission of the virus. Going by the ICMR guidelines, a family of four would need anywhere close 100-200 liters of water per day only to clean themselves and their living spaces- an increase in water consumption by about 1.5 times. This extra demand of clean water in the regions that are already struggling with water scarcity may worsen the situation for the poorer sections of the society. This implies severe water scarcity for millions, which may also not have adequate access to health services. This growing demand for water comes at a time when potential for augmenting supply is limited and water quality of the available resources is alarmingly deteriorated. Locking in of the population and increased use of water for personal and premises sanitation will generate additional amounts of polluted and wastewater. The lack of efficient wastewater disposal and sewage management infrastructure can worsen the impact of disease outbreaks such as COVID-19. We need to redesign demand through smart water engineering to reduce water usage and thus the volumes of water wastage. Nature based solutions for reuse and recycle of the treated wastewater can be one good option. Decentralized wastewater management approach with location specific interventions can play a vital role in tackling this new reality. “Think global, act local” could be a key point to face this kind of situation. This crisis, despite its devastating effect on well-being, health and general deprivation for a large section of the population should bring a sense of community to face the common threat.

The fast spread of the virus has forced us into planning for improved urban and rural water resilience and to seriously consider the long-term impacts of unplanned urban expansion and low agricultural water productivity on the national water security. In large towns and cities and especially in low-income communities, specific disinfection and monitoring process in water supply is required. All the stakeholders in the water supply system should be in constant communication and collaboration. Monitoring water leakages and improved detection and immediate repairs shall moderate the high demands. Internet of Things (IoT) can be employed in smart water management. In this set-up, high-end sensors fixed across reservoirs and overhead tanks are employed to establish the level of water present in the tank or reservoir. Sensor based IoT device will optimize water as a resource and help reduce demand for water by tracking real-time water flow. Smart water management is the key to prevent another pandemic outbreak. Pandemic like COVID-19 certainly increase the intensity and frequency of our water consumption. We must learn from it and innovate new methods to manage freshwater in an economic, smart and environmentally benign manner. Implementing smart water management solutions will prove transformative in the long run and help to contain the spread of the pandemic among the vulnerable communities.





Undoubtedly, COVID-19 has brought fearful and unprecedented sufferings for the human beings but it has also emerged as a blessing for natural environment providing an escape and a “recovery time”. Scientific reports and media stories reveal the improvement of quality of rivers of India including the Ganga, Cauvery, Sutlej and Yamuna. The primary cause for this improvement is reduction in volume of industrial effluent entering the rivers due to lockdown and reduced industrial operations. Many other factors have also contributed in enhancing the quality of water in rivers and streams like additional amounts of snowmelt in the rivers during summer, reduction of irrigation water demand for paddy and other crops, above average monsoon rainfall. Human born activities like reduction of religious and cultural activities, puja, collective bathing and cremation on the riverbanks was also helpful. Researchers believe that self-cleaning property of Ganga and other rivers has improved which has enhanced water quality by 40-50 per cent and a vibrant aquatic life during the lockdown. This additional amount of good quality water now constitutes an important source for meeting the enhanced domestic demand.

This pandemic situation has provided an opportunity to reflect on unfolding of the various events and new normal of human behavior and then have a better understanding of who we are, what we should do and how would we do. We are learning to be grateful to use of successful technologies but also to simple things in life. Humans in this pandemic situation have clearly understood the importance of nature, mother earth, clean water and other precious natural resources. This is a signal for us to understand, reflect, and react with responsibility. This healing process and the wider lesson has come at a huge cost and should not become just a small blip on the human screen. Everyone in the society and especially researchers and practitioners who develop, implement, and publish technologies, practices and policies for efficient and sustainable use and reuse of the water resources have a greater responsibility. The occurrence and spread of the pandemic affecting every aspect of human life and every economic sector of human well-being has thrown additional challenges. We all must rise to the occasion and ask ourselves, “What are the important issues in my area of expertise? And if I am not working on them, why not?”

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