

WATER SECTOR IN INDIA

By Subhash Sethi, Chairman, SPML Infra Limited



Water scarcity in India is a manmade problem. Mismanagement of water resources caused the crisis resulting in over 600 million Indians having no access to clean drinking water.

In terms of economic progress, India is competing with developed economies in the world and its growth is expected to hovering around 7-10 per cent in next few years in order to achieve the ambition of world's fourth largest economy with \$5 trillion target. Despite being one of the major economies in the world having about 18 per cent of global population, it only contains 4% of the world's fresh water resources, which is also declining in terms of quantity and quality. Drinking water was once considered safe in India, but today providing nearly 1.40 billion inhabitants with access to safe drinking water is a big challenge. The alarming rate of depleting groundwater sources and rapidly polluting surface water requires immediate and focused attention by all stake holders.

Scarce Resource

India is facing the challenge of rapidly growing water demand, driven by ever increasing population, firm economic growth, faster trends of urbanization and increased industrialization activities. The water scarcity problem is not only a result of quantitative or qualitative shortage but also a consequence of inefficient use and poor water management. The 2030 Water Resources Group has calculated that India's water demand will outstrip supply by almost 50 per cent by the year 2030. A significant challenge faced by India; therefore to increase conservation of water across operations and geographies has become imminent.

India's major dependence on groundwater has resulted in over-extraction which is lowering the water table and adversely impacting drinking water supply. India is the world's largest user of groundwater that extracts more than any other country in the world and accounts for nearly 25 per cent of the world's extracted groundwater.

India will have serious implications for the sustainability of agriculture, long-term food security, livelihoods, and economic growth due to severe water scarcity. It is estimated that over a quarter of the country's harvest will be at risk.

- If current trends continue, in 20 years about 60% of all India's aquifers will be in a critical condition.
- India is the largest user of groundwater in the world. It uses an estimated 230 cubic kilometers of groundwater per year - over a quarter of the global total.
- More than 60% of irrigated agriculture and 85% of drinking water supplies are dependent on groundwater.

Since 1980s, its groundwater levels have been dropping considerably. World Resources Institute has ranked India at 41 in global water stress rankings of 181 countries and among the second high-risk nations. The water stress is extremely high in the northwestern region where levels have plunged from 8 meters below ground to 16-20 meters. Parts of northern region including Delhi face serious water shortages every summer. A decade-long study of wells in Maharashtra shows that over 70 percent of them have declining groundwater levels. Much of the water extracted from the underground sources is non-renewable as the recharge rates are much lesser than the extraction rates.

Central Water Commission is monitoring live storage status of 140 reservoirs of the country on weekly basis and is issuing weekly bulletin one very Thursday. Out of these reservoirs, 45 reservoirs have hydro power benefit with installed capacity of more than 60 MW. The total live storage capacity of these 140 reservoirs is 175.957 BCM which is about 68.25 per cent of the live storage capacity of 257.812 BCM which is estimated to have been created in the country. As per reservoir storage bulletin dated 17.03.2022, live storage available in these reservoirs is 87.703 BCM, which is 50 per cent of total live storage capacity of these reservoirs. Groundwater and surface water is under high risk from both agricultural and urban uses. Declining rates of natural replenishment are threatening the sustainability of aquifers in the Indo-Gangetic basin, which constitute one of Asia's most densely populated and agriculturally productive regions.

Contamination Issues

India's groundwater sources are not only

overexploited but also contaminated. The deep-level groundwater is contaminated by sewage, fluoride, arsenic, and uranium. Incidence of arsenic contamination has doubled in last few years as measured by number of affected habitations.

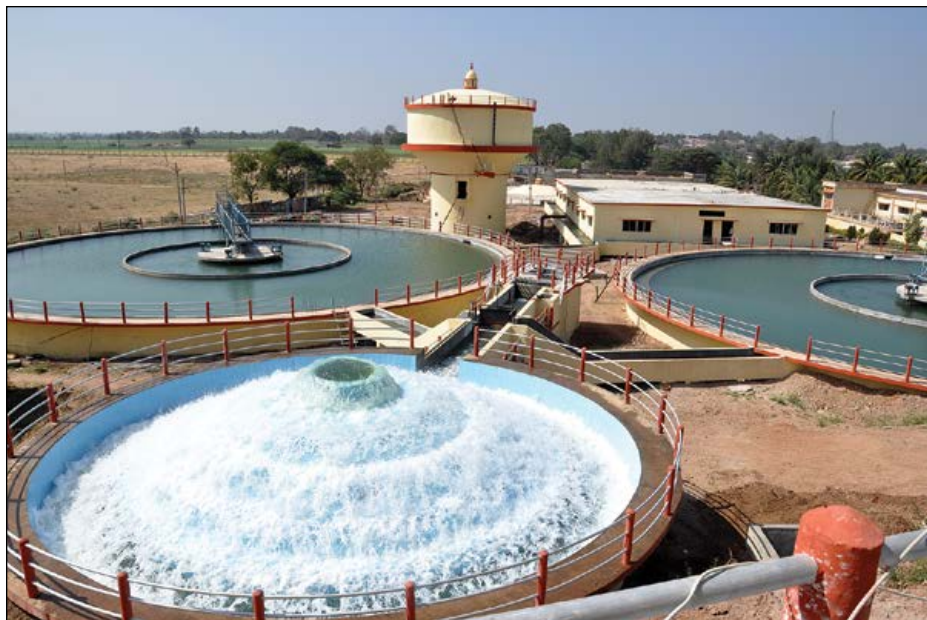
Water Aid, an international organization working for water sanitation and hygiene finds that an alarming 80 per cent of India's surface water

Contaminated drinking-water is estimated to cause 485 000 diarrheal deaths each year.

is polluted. Central Pollution Control Board estimates that 75-80 per cent of water pollution by volume is from domestic sewerage, while untreated sewage flowing into water bodies including rivers have almost doubled in recent years.

India generated 72,368 MLD (million litres per day) sewage whereas the installed capacity of STPs was 31,841 MLD (43.9 per cent), according to the CPCB report. Of this installed capacity, developed and operationalized capacity was 26,869 MLD (84 per cent). Of the total operationalized capacity, 20,235 MLD (75 per cent) was the actual utilized capacity. In other words, out of total 72,368 MLD sewage generated every day, only 20,235 MLD is treated.

India has limited numbers of sewage treatment plants and most of them are performing under their capacity due to poor infrastructure support and lack of funds with local utility bodies. It is estimated that due to lack of sewage treatment



facilities, more than 72 per cent of total sewage is discharged directly into our rivers and other water bodies and further polluting the already limited water resources.

The World Health Organization says that every year more than 3.4 million people die as a result of water related diseases, making it the leading cause of disease and death around the world due to lack of safe drinking water and basic sanitation. 90 per cent of them are children under the age of 5, mostly in developing countries including India. Safe drinking water is a basic requirement and millions of people in India have no access to any source of drinking water.

Water Technologies

The global innovation in water technologies will help in countering water scarcity issues and support utilities with sustainable water management services. The innovative technology has made significant breakthroughs in water supply and distribution, drip irrigation, desalination, waste water treatment, automation, asset management, metering and other aspects of water management. Innovations such as affordable desalination plants are need of the time in water stressed states of Maharashtra, Tamil Nadu and Rajasthan which are investing in such projects for creating drinking water through desalination plants.

Technologies for treating water have also advanced significantly over the past few years as researchers have increasingly focused their efforts on water treatment technologies. Today the availability of clean, safe drinking water is on demand at every location in the world. However, even this highly treated water is subject to degradations in quality once it leaves the treatment plant and enters the distribution system. The new innovations in water treatment technology have enabled us to develop new cities and habitations along with our businesses. Water purification system using nanotechnology offers opportunities to develop next generation water supply systems with advanced level of treatment to improve efficiency as well as to



augment water supply through safe use of water sources.

SPML Infra Limited is quite strong in the Indian water market and the company continues to enhance its presence in new areas with the trust of both clients and stakeholders. Presently, it is executing a number of projects for water supply and management, wastewater treatment, sewerage network, power transmission and distribution, and municipal solid waste management. In a legacy of four decades since SPML Infra is working on water sector in India, it has executed over 650 projects across all segment of water management in the length and breadth of the country and the company is currently involved in providing clean drinking water facilities to over 50 million people in the country.

Smart Water Grid

Smart water grid integrates information and communication technology (ICT) into a single water management scheme. This is a promising solution for resolving critical water problems to ensure the security of water quantity, quality with the help of ICT-based water management

solutions. In Singapore, the implementation of a Smart Water Grid system supports the mission to supply 24 x 7 good water supplies to its people. With sensors and analytic tools deployed to provide a real-time monitoring and decision support system, the Smart Water Grid system enables utility to manage the water supply network efficiently, ensuring that all residents will continue to enjoy a reliable and sustainable water supply for generations to come.

The Smart Water Grid system covers the key operational aspects of a water distribution system like asset management, leak and non-revenue water management, water quality monitoring, automated meter reading and water conservation. For going forward in India, we need to consider the implementation of smart

Investing in enhancing water security protects society and sectors from specific water risks, and can have a profound positive effect on economic growth.

water grids in our cities, especially in the planned smart cities to help service provider with real time monitoring of assets and water quality to enhance planning and network operations;

it also enables consumers to make informed choices towards water conservation. In addition, the usage data from automated meter readings will enable more accurate demand prediction for optimizing pumping schedules, water turn-over in service reservoirs, and water required to be treated and pumped. The further research and testing are being done to realize the full benefits of a Smart Water Grid.

Water Governance

Improving governance in water segment remains a matter of concern since arrangements are generally fragmented which needs a radical transformation to be able to address new challenges. In India, water is being a state subject; water supplies, irrigation and canals, drainage and embankments and storage falls in the state list. There is a need to recognize water as a finite and vulnerable resource. The government should take urgent action to set the stage for enactment of a comprehensive national legislation on water after evolving a national consensus to bring it in the concurrent list and formulate an over-arching national legal framework for effective water management, conservation, development and equitable distribution with regulatory authority to deal exclusively with the matter.

The existing legislations on water should also be comprehensively reviewed. Legislation and executive action must continue to be undertaken as water ranks higher priority than any other. The Uttarakhand High Court has recognized the rivers - Ganga and Yamuna as a living entity, which means that anybody found polluting the river would be seen as harming a human being. It reflects a sense of urgency in containing water contamination and trying to rescue our rivers from rampant pollution.

India's agriculture sector consumes more water to grow same amount of crops compared to global average. Despite being a water scarce country, our agricultural produce is extremely water intensive. While the agriculture sector needed urgent water reforms, non-agriculture use of water also suffers from unplanned usage and wastage. A majority of India's households are using private means such as bore-wells to extract groundwater without any regulation or concern for conservation. The policy planning and implementation must have the participation of principal water stakeholders of our country like





farmers, industry, energy producers, government agencies, rural and urban consumers etc. for improving the governance of water.

Future Course

Management of water supply required to harmonize demands and needs which are getting more and more complex and sophisticated. The first thing we must do is to mitigate the causes of water shortages as much as possible. A strategic and pragmatic approach, based on practical implementation has to be implemented in order to address the key challenges of water management. We need to have smart water management concept with the integration and convergence of modern tech and ICT solutions implemented within the water domain.

The water management requires a collaborative approach between the public and private sectors, and within the different levels of government from centre to state to local levels. Private expertise is essential in closing the water gap across the segment.

Optimism

The Indian water sector is on the crossroads today. In a developing country with huge requirements, there is a vast scope for growth. The total Indian water market is estimated to be about USD 14 billion with a growth rate of about 18 per cent every year. At SPML Infra, we are optimistic of India's water sector's prospects and our role within. We believe that the water infrastructure has not grown even to the extent of

10 per cent of its true potential, which indicates that this single vertical holds out decades of sustainable growth potential.

India has for decades been a consumption-driven economy, but it needs to swing the needle towards infrastructure growth. We are pleased to see that the present Indian government appears to share the same view. Over the last three years, the Indian government has addressed the sector's potential with an unusual but highly effective response in terms of huge budgetary allocations of INR 6.7 trillion under the flagship Jal Jeevan Mission (rural-urban). The government has selected to correct the sectorial framework with the declaration of large projects under several new schemes having dedicated budgets for water sector. We believe that this sequential correction is critical and logical in policy framework and once it becomes a reality, we believe that projects will be completed faster, cash inflows will be quicker, in-project disputes will be addressed and resolved closest to real-time, the unproductive investment in long-drawn arbitration will decline, infrastructure growth will accelerate and the country will benefit.

About the Author

Mr. Subhash Sethi is the Chairman of SPML Infra Limited. A leading water infrastructure & management company in India with a legacy of 650 completed projects providing drinking water facilities to more than 50 million people in the country.

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