SPML
Engineering Life

GUEST ARTICLE

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Water Infrastructure: Build & Revamp

One of the major economies in the world, India is catering to 18 per cent of global population with just 4 per cent of the world's fresh water resources. Even the limited resource of water is also declining in terms of quantity and quality. Drinking water was once considered safe in India, but today providing nearly 1.38 billion inhabitants with access to safe drinking water is a difficult challenge. The alarming rate of depleting groundwater sources and rapidly polluting surface water requires immediate and focused attention by all stake holders.

India's water demand has increased drastically by almost three times in last fifty years on account of rapid population growth, urbanization trends, along with economic, demographic, and industrial changes. The potable water use has escalated, so has the need to collect and treat an increasing volume of wastewater. The water availability remains static whereas the demand escalated over the years and it is projected to very soon overtake the availability of water. The water demand in next few years till 2025 is expected to grow by over 20 percent, fueled primarily by the industrial requirements which are projected to double from 23.2 trillion liters at present to 47 trillion liters. Domestic demand is expected to grow by 40 percent from 41 to 55 trillion liters while irrigation will require 14 percent more to 592 trillion liters up from 517 trillion liters currently. The standing subcommittee of Ministry of Water Resources has estimated that the water demand will escalate from 813 billion cubic meter (bcm) in 2010 to 1093 bcm in 2025 to further 1447 bcm by the year 2050. The per capita availability of water is significantly reduced and is likely to further decrease with the growing population and demand. The ministry also predicts that per capita water availability will reduce by 36 percent in 2025 and by about 60 percent in 2050 from the availability of the 2001 levels.

In some regions of the country, it has already happened. Recent water shortages and drought conditions in several states of India have served a reminder to us about the water resources and highlighting the fact that water efficiency and reuse is important for ensuring reliable and efficient services. When water demand is inflated by wasteful use and losses, water utilities spends more than necessary in capital and operating costs.

The Challenges

India's population has exploded from 449 million in 1960 to 1,370 million currently. India's population is projected to grow for years to surpass China's population by 2024 and projected to touch 1,500 million in 2030 and 1,660 million by 2050 to become the most populous country in the world.

It is going to be a major challenge to provide safe drinking water to such a large population. The complexity arises from the multifaceted aspects of water management, beginning with technical, institutional and organizational issues, the application of new technologies, legal and regulatory concerns, and operational effectiveness. Other aspects include standards, investment, costs, financing, pricing, governance, financial, social and environmental sustainability. The supply of water has also become inseparable from sanitation facilities needed for the treatment of wastewater prior to its discharge back into the environment.

In fact, our water problem turns out to be much more worrying than our energy situation, for three main reasons. First, unlike oil and coal, water is much more than a commodity; is the basis of life. Deprive any plant or animal of water, and it dies. Our decisions about water—how to use, allocate, and manage are deeply ethical ones; they determine the survival of most of the planet's species, including our own.

Second, also unlike oil and coal, water has no substitutes. The global economy is transitioning away from fossil fuels toward renewable energy like solar, hydro, wind, and other non-carbon energy sources, but there is no transitioning away from water. And third, it is through water that we will experience the impacts of climate change most directly.

Resource Scarcity

India is facing the challenge of rapidly growing water demand, driven by ever increasing population, steady economic growth, faster trends in 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 50 per cent by the year 2030. A significant challenge faced by India; therefore to increase conservation of water across operations and geographies.

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. 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 meters. Parts of northern region including Delhi face serious water shortages every summer. A decade-long study of wells in Maharashtra shows that 70 per cent 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.

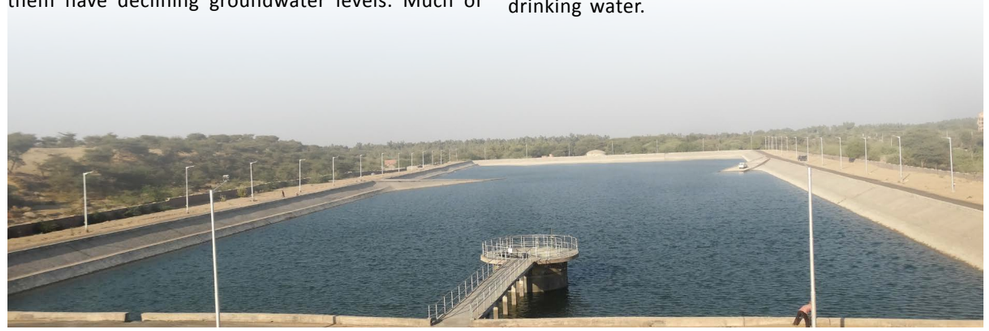
Central Water Commission in its report suggests that India's major dams were at just 27 per cent of their capacity and all major reservoirs are much below its optimum level. Groundwater and surface water is under high risk from both agricultural and urban uses. Declining rates of natural replenishment are threatening the sustainability of aquifers in the Indo-Gangetic basin, which constitute one of Asia's most densely populated and agriculturally productive regions.

Water Pollution 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 increased multi fold 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 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 has just about 270 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 62 per cent of total sewage is discharged directly into our rivers and other water bodies and further polluting the already limited water resources.

World Health Organization finds that about 1.6 million people die every year from water borne diseases 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.



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Future Course

Management of water supply is 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 in order to address the key challenges of water management. We need to have smart water concept with the gradual integration and convergence of 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. 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 Rs 6.3 trillion in next five years with a growth rate of about 18-20 per cent every year.

Nal Se Jal

This ambitious scheme announced by the Govt. of India aims to provide piped water connection to every household in India by 2024. Given the massive number of connecting about 140 million remaining rural and urban households in five years' time will be a challenging task.

The government has placed a well thought plan of providing drinking water facility to every household of the country that will help to cater the urgent need to develop adequate water infrastructure. With the announcement of the Nal se Jal scheme, reports suggest that the water and sanitation sector is likely to attract investment worth Rs 6.3 trillion in the next five years. This ambitious scheme by the Government of India will help in addressing the issues of drinking water supply. The government is planning an aggressive target of providing piped water to all households by 2024. This indeed is a huge challenge given the massive number of connecting about 140 million remaining rural and urban households in five years' time.

With the execution plan in mind, the government has created a single ministry as 'Jal Shakti' by merging rural drinking water & sanitation and the river water, Ganga rejuvenation and water resources ministries. The single water ministry would look into the departments of ground water, surface water and the executing departments under one ministry that could make a big difference in the execution of 'Nal se Jal' scheme.

SPML Infra Limited is optimistic of India's water sector prospects and the company role within. The fact remains that the water infrastructure has not grown in the country 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. Having executed more than 600 infrastructure projects in areas ranging from drinking water, bulk water supply for irrigation, wastewater treatment, and sewerage network, SPML Infra is one of the World's Top 50 Private Water Companies as per Global Water Intelligence, London. With so many water projects executed and under different phases of execution, the company provides drinking water facilities to over 50 million Indian populations that speaks amply about the company's dedication to improving lives of millions of Indians. CM