

*"When the well is dry we will know the worth of water."*

*Water is a finite resource with its demand escalating with each passing day. Unlike alternate sources of energy being discovered and utilised, it is alarming to acknowledge the fact that there is no alternative to this panacea of life. To maintain the demand-supply cycle of safe drinking water, the over-stressed water infrastructure needs a new lease of life. Mr. Subhash Sethi suggests a dire need to consider a more integrated approach to water infrastructure development and management with reliability and financial sustainability. He further elaborates that a perfect symphony between government and private players may be the answer to quench the thirst of the parched soul of this fast depleting resource.*



## FINANCING WATER INFRASTRUCTURE

**Bolstering the foundation today for a better tomorrow!**

➤ ➤ ➤ BY MR. SUBHASH SETHI







Water is increasingly becoming a precious commodity as a very limited source of freshwater is available for consumption. Every third person in the world suffers hardship in life due to non-availability of water. The root cause of this problem is our negligence towards the use of water sources that nature has provided us with. Estimates suggest that in the next thirty years more than half of humanity on planet earth would be threatened by severe water stress. To keep up with population growth, ever depleting water table, shrinking resources, and climate considerations, we need to adopt the best possible industry practices for water efficiency and new strategies that adjust for changes in water quantity and quality.

India's water demand has increased drastically by almost three times in the last fifty years on account of rapid population growth, urbanisation trends along with

economic, demographic, and industrial changes. Potable water use has escalated, so has the need to collect and treat an increasing volume of water. The Water availability remains static whereas demand has escalated over the years and it has been projected to very soon overtake the availability of water. Water demand in next few years till 2025 is expected to grow by over 20 percent, fueled primarily by the industrial requirements which have been 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 being used 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 1,093 bcm in 2025 to further 1,447 bcm by the year 2050.

The per capita availability of water has reduced significantly and is likely to further decrease with the growing population and demand. The ministry has also predicted that per capita water availability will reduce by 36 percent in 2025 and by about 60 percent in 2050 as compared to the levels available in 2001.

In some regions of the country, it has already become a reality. Recent water shortages and drought conditions in several states of India not only serve as a reminder to us about the water resources but also highlight 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 spend more than necessary in capital and operating costs. Water efficiency and reuse are also important for meeting environmental goals. Life for an average citizen in India is going to be much tougher in the coming







times. Water supply per capita could drop from an average of 105 liters to only 65 liters or less a day, with a large section of the population having no access to potable water at all.

## THE CHALLENGES

India's population has exploded from 449 million in 1960 to 1,340 million by 2017. India's population is projected to continue growing for years to surpass China's population by 2024, and is projected to touch 1.5 billion in 2030 and 1.66 billion in 2050 to become the most populous country in the world.

The main challenge will be faced in providing access to safe drinking water to the population. The complexity arises from the multifaceted aspects of

water management, beginning with technical, institutional and organisational issues, the application of new technologies, legal and regulatory concerns, and operational effectiveness. Other aspects include standards, investment costs, financing, pricing, governance and 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 is more likely to be a cause of concern than our energy situation primarily for these three reasons. First, unlike oil and coal, water is much more than a commodity, it is after all the very basis of life. Deprive any plant or animal of water, and it dies. Our

decisions about water—how to use, allocate, and manage it are deeply ethical ones; they determine the survival of most of the planet's species, including our own.

Second, 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.

## STRESSED WATER INFRASTRUCTURE

The urban population in India has tripled within a century from 11.4 percent in the beginning of

20<sup>th</sup> century to about 32 percent currently. A conservative estimate suggests that about 32 percent of people in India live in cities that are expected to double in population by 2050. The growing economy and changing lifestyle of people with much more water consumption has put tremendous pressure on the already strained water infrastructure in the country. Most cities in India are water-stressed and require immediate attention with regard to proper water and wastewater management. The Central Pollution Control Board (CPCB) has estimated that there are 269 Sewage Treatment Plants (STPs) in India, of which only 231 are functioning. Even the operational treatment plants are not working to their designed capacity, leaving a big gap between generation of sewage and its treatment. Almost 80% of generated wastewater is not being treated before its release to water bodies, leading to large scale groundwater contamination. The situation is not very different in water supply infrastructure where the treatment plants, still continuing with traditional methods of treatment and water supply pipelines, are dilapidated with leaks and spillage issues in every water utility in the country. In cities with more than one million population, the official water supply after average 35 percent loss in leakages is just about 125 litres per capita per day which is considerably lower than the demand of daily 210 litres per capita. Infrastructure development and regulations have not kept pace with population growth and urbanisation and as a result, water management has become a major challenge.

## LARGE INVESTMENT REQUIREMENT

Investment in urban water supply and sanitation has increased over the last

two decades by Central Government grants made available under AMRUT scheme, Clean Ganga Mission, Water Supply and Irrigation Funds and earlier under JNNURM etc., and international funding from development agencies such as ADB, World Bank and JICA. However, overall investment required in the sector is estimated to be INR 6,20,000 crore (USD 129 billion). India currently spends about 6 percent of its GDP on infrastructure, less than several countries in Asia, and nearly half of the 11 percent invested by China.

In earlier days, the government was solely responsible for financing of water infrastructure but now the investment pours in from multiple forums including international organisations like ADB that has invested for water supply improvement in Karnataka to privately owned systems on an experimental basis in various cities. As the need for investment is becoming more urgent, the government is finding it difficult to provide enough funds to utilities. At the same time, economic and demographic change is driving demand for investments in water infrastructure. The possible solution lies in the growth of private investment in the water infrastructure sector. Yet obstacles remain. Water in India will remain heavily subsidised and a non-lucrative business proposition. Political opposition to private ownership and control of water remains strong.

The consumers in India pay much less for water as a percent of gross domestic product than citizens in most other developing countries. Water tariffs in different parts of the country don't reflect scarcity issues and the high cost of providing and maintaining water infrastructure.

Given the consideration of tariff based water supply system in India, the overall water infrastructure remains an immature asset class from an investment perspective.

## FINANCING WATER INFRASTRUCTURE

Water infrastructure financing models are changing as the need for investment is becoming more critical and urgent. Governments are finding themselves increasingly constrained to fund large infra-development projects. We could consider the following approach to promote sustainable water infrastructure:

**Better Management:** Utilities could emphasise on cutting costs and investing in water systems using a risk-based approach, along with adopting best practices and sharing them throughout the industry.

**Full Cost Pricing:** Utilities may consider charging consumers for the full cost of construction, operation and maintenance of water systems that are essential for sustainability.

**Water Efficiency:** Utilities must adopt water efficiency at all levels, from assets - pipeline, treatment, pumping, supply line, metering & setting water efficiency levels for manufacturers and others to promote water efficiency.

**Watershed Approach:** The importance of infrastructure development and growth decisions within the context of how water flows through a watershed must be taken universally, barring boundaries of cities and states. Watershed boundaries may not conform to state or municipal boundaries, so partnership amongst centre, state, and local authorities is essential for



development and financing of a pan India water infrastructure.

Alternate financing of water infrastructure has become significant due to several factors, including limited public money and increasing construction and maintenance costs that are encouraging governments to explore alternative investment models. For India, some financing alternatives could be:

### BONDS

Bonds are one of the most common methods for financing large water infrastructure projects. Bonds are useful for financing capital infrastructure projects that will generate services and income for many years, as the money can be repaid over time. The advantage to municipal and public utility bonds are typically tax-advantaged,

which allow the borrowing entity to pay lower rates to investors. But increasing water scarcity creates a hidden risk for investors in utility bonds. If water supplies run short, utility revenues will drop, which would mean less money available with utilities to pay off their bonds. The water supply problem needs to be considered on a long term basis before going for such bonds.

### PUBLIC-PRIVATE PARTNERSHIP (PPP)

Public-private partnerships have been tried earlier in India with water infrastructure projects, but with limited success, as people think of water as their right and as a government obligation to provide it to them.

Utilities use private companies for operations and management only. The need is to provide complete control

of water infrastructure from source to tap, metering, billing and with cost implication. It is not a gratifying proposition for the private sector to invest in water when the rates are so low and the returns on the investment made would be uncertain. Investors get more returns for their investment with toll roads or power projects as compared to water supply projects.

It is imperative for utilities and government to change their attitude towards private players and treat them as their partners in achieving the desirable goals. They need to understand that the private players will further reinforce the effort of the government in making 24/7 water supply vision a tangible reality and also help to reduce the work burden of the utilities by bringing in the much needed efficiency. SPML Infra had mixed experience with PPP projects for cities water distribution.





## LOCAL TAXES

The funding of water infrastructure development can be done through levying some kind of local taxes from consumers rather than depending upon government funding. The tax amount and period can vary depending upon the requirements of specific municipalities with consideration of water availability, and future demand.

## INSURANCE, PENSION FUNDS

India has a huge reserve in insurance and pension segment, and these funds can be utilised for financing water infrastructure projects directly or through the Viability Gap Funding (VGF) scheme which is a one-time grant to augment Public-Private-Partnerships (PPPs) projects to fill

the funding gap for making projects commercially viable.

## DEVELOPMENT FINANCE

Major development institutions such as the World Bank, Asian Development Bank, JICA and others provide funding for water infrastructure projects and also explore blended finance and local pooled finance facilities to mobilise private sector investment.

## ALTERNATIVE RATE STRUCTURES

Utilities can adjust water tariffs to encourage efficiency and conservation. This practice would not only save water but also generate money for infrastructure development and management by making everyone aware that water is not a

free or infinite resource. Utilities can consider higher water rates for any water used beyond the fixed quantity which will also further improve the efficiency of its system operations.

## WAY FORWARD

Water infrastructure funding is the need of the hour as our existing infrastructure is on the verge of perishing. Given this dynamic, there should be an ongoing role for the private sector in the development of water infrastructure and the public services delivered through it. We need to consider a more integrated approach to water infrastructure development and management with reliability and financial sustainability. Improved cost recovery by adopting a systematic approach to review towards water supply services will be essential.

## ABOUT THE AUTHORS

**Mr. Subhash Sethi** is the Chairman of SPML Infra Limited. Over the last three decades, he has worked relentlessly with a mission to achieve the impossible and create value and wealth for the country and the organisation. Under his guidance and leadership, SPML Infra went on to establish itself as a leading Engineering and Infrastructure Development organisation in India, with over 600 completed projects in the domains of Water, Power, Sanitation, Environment, Coal and Civil Infrastructure. With a number of water supply projects, SPML Infra provides drinking water facilities to over 40 million people. It is also the only Indian company among the World's Top 40 Private Water Companies according to Global Water Intelligence, London.

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