SMART WATER & WASTE WORLD

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WATER DIALOGUE

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WORLD EARTH DAY SPECIAL

QUOTES & GUEST COLUMN

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TECH FOCUS: SMART WATER NETWORK

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SMART WATER FOR SMART & RESILIENT CITIES

Smart Water & Waste World interacts with water consultants, city planners, urban water experts, and technology providers to understand the practical challenges in using smart water techniques to build smart and resilient cities.

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The Water Conundrum

By Subhash Sethi

35 MLD CETP at Bawana, Delhi

Unplanned and haphazard disposal of municipal and industrial solid and liquid wastes, over-exploitation of minerals and groundwater sources, and improper use of soil by inadequate agricultural practices are some of the key contributing factors for changing the landscape and poisoning of our planet. With widespread pollution, smog is increasing in cities and becoming deadly, leading to a sharp decline in biodiversity, endangered species and developmental delays in children.

The air and water pollution is majorly affecting climate patterns with lethal effects on human, animal and plant health. The extensive use of toxic chemicals and pesticides in food and agriculture produce is leading to potentially fatal illnesses like cancer and human respiratory system. Even though most people have a general understanding of pollution, they may not realize the significance of land pollution. The effects of land pollution do not necessarily appear overnight. It is the result of long-term destruction from human activities and for instance, some damages from chemicals can take months or even years to be fully realized. The ever-increasing pollution and contamination of the land has far-reaching consequences that can be catastrophic for water, air, soil, and all living species. The food and water we need to survive is grown and drawn from the surface of the earth. Our lives are as intimately tied to the surface of the earth as the plants that grow from the ground. Anything that degrades, damages, or destroys the land ultimately has an impact on human life and may threaten our ability to survive. Water being the most important element after air has been drastically contaminated.

Effects on Water

The economic and social growth of a nation majorly depends on water. Practically all of society's commercial activities, from agriculture, industrial and electricity generation to the production of consumer goods depend on the availability of water. In India, it is not very long ago when we had plenty of water for our consumption, available more than our total demands. For years, we have taken the water for granted; but the scenario has changed in the last few decades and we are now facing a tough challenge in getting clean water to our taps. Even now, many of us do not give a second's thought that how much of this finite resource we over consume on a daily basis and does not realize that clean drinking water is now a precious commodity.

The 21st century is undergoing a tipping point in the way water supplies are being managed and sustained. The powerful trends of rising human populations, faster urbanization, and industrialization combined with climate change are colliding against outdated water management practices and insufficient, aging infrastructure. It is estimated that on an average, high-income countries treat about 70% of the wastewater they generate, while that ratio drops to 38% in upper-middle-income countries and 28% in lower-middle-income countries. In low-income countries, only about 8% of industrial and municipal wastewater undergoes any kind of treatment.

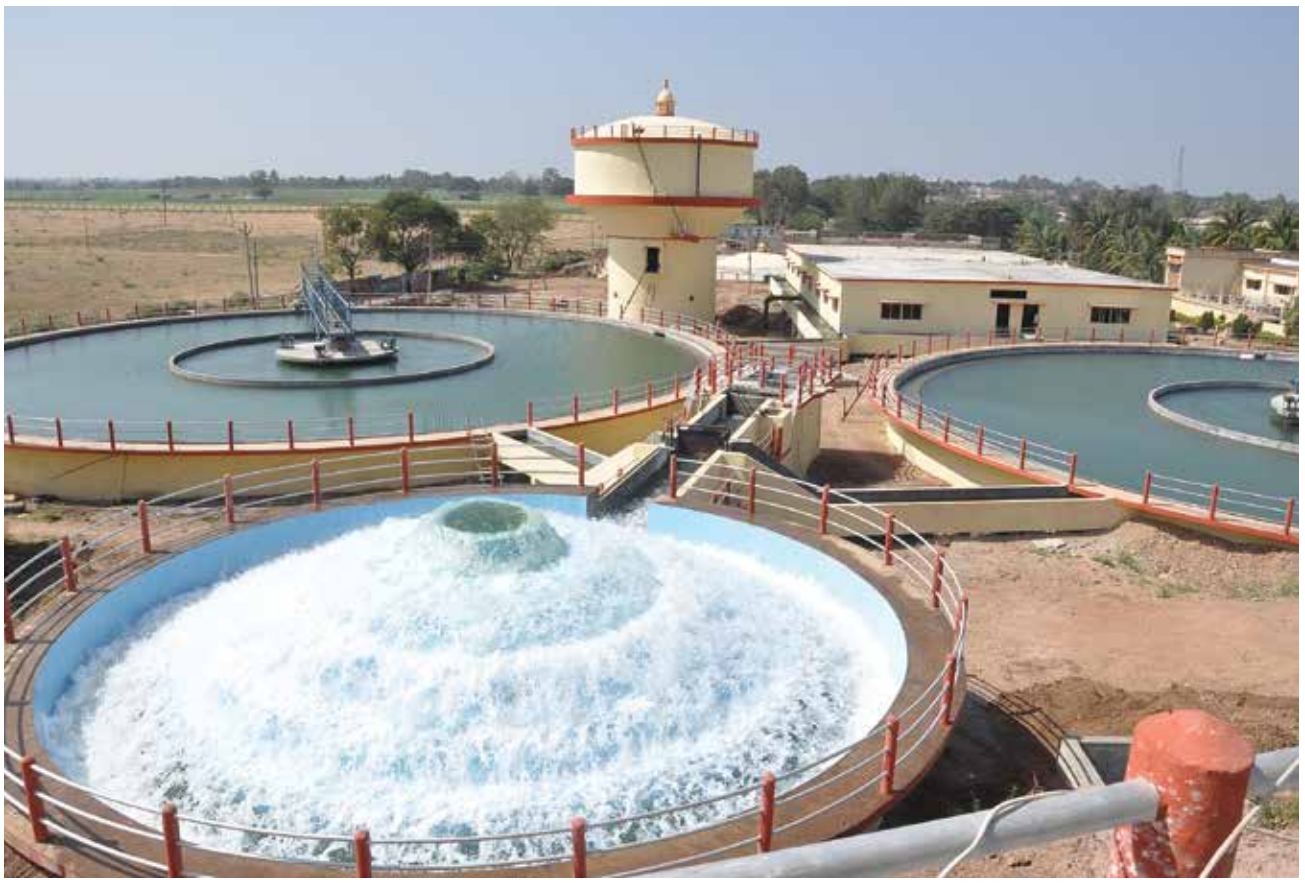
Water Scenario in India

With the world's second largest population at 1.37 billion currently and expected to become the most populous by 2024 and continue growing for years to reach 1.73 billion by 2050 and mammoth 2.5 billion by 2100, India finds it difficult to serve the vast majority of that populace with safe, clean drinking water. Supporting almost 18% of the world's population is a daunting task considering that India possesses only 4% of the world's fresh water. Imagine the crisis that out of the very limited water availability, almost 80% of our surface water is contaminated. Nearly 60% of India's groundwater reserves are already contaminated with biological, organic, and inorganic pollutants. The Central Pollution Control Board (CPCB) has found that water in 18 major rivers in India is unfit for any domestic and industrial use.

By 2050, India's total water demand will increase by 32% from now. Industrial and domestic sectors will account for 85% of the additional demand. Over-exploitation of groundwater, failure to recharge aquifers, reduction in catchment capacities due to uncontrolled urbanization and no reuse facility for treated wastewater are all causes for the precarious tilt in the water balance. If the present rate of groundwater depletion persists, India will have only 22% of the present daily per capita water available in 2050, possibly forcing the country to import water.

Water Quality

One of the major concerns is the poor quality of water that is available in many states of India. Millions of people in India are still deprived of piped water supply and despite progress made in several fields; the level of water pollution is increasing considerably. Many residents of urban areas are not connected to a proper sewerage system and the wastewa-



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ter from these households is released into the environment without any form of treatment, polluting groundwater in the process. Solid waste is also frequently dumped into water sources. Industrial effluents are inadequately treated and being dumped into local rivers and water bodies further limiting the availability of clean water resources. It is estimated that almost 80% of generated wastewater in India is not being properly treated and untreated sewage is released to water bodies thus contaminating the already depleting groundwater sources. The range of potential pollutants is enormous, threatening the environment and human health, and their impacts are widespread. Excessive groundwater extraction increases soil salinity. Heavy metals and toxic compounds from industrial processes further contaminate drinking water. Chemicals, such as nitrogen are frequently used for agriculture where only a small portion of the nutrients end up benefitting the crops and the remainder usually ends up in water that is populated by fish, algae, and other species. The nutrient-heavy water saps up most of the oxygen, which leaves little for fish and other life and thus it is unable to support most life forms.

The 2,525 kilometers long river Ganga passing through 5 major states is credited to be India's lifeline as it provides water facility to around 40% of India's population. But the rampant pollution and indiscriminate dumping of domestic, industrial and other waste for years has resulted in the Ganga becoming one of the most polluted rivers and unfit for use in many parts of the country leaving the large population with water scarcity.

The impact of water and land pollution is not just limited to animals only. Humans also face harmful consequences that can influence the quality of life and health. Some of the potential consequences include birth defects, breathing disorders, ailments related to the digestive and nervous system, skin diseases, and more lethal ones like cancer. Most of these ailments develop in humans after constant exposure to waste from water poisoning and soil contamination. Land pollution has also been linked to developmental deficits in children. Chemicals that are commonly found in contaminated soil and water can impact a child's cognitive development even if the exposure is very low.

The Way Forward

We need to think differently the way our resources are being managed in the face of growing challenges of sinking availability and increasing land and water pollution. By adopting and implementing sustainable practices, preserving natural resources such as land and water will become easier. Proper disposal of solid and liquid waste that focuses on treating it and disposing of it in the safest manner possible will reduce the impact of pollution. Reusing materials to reduce the need for the harvesting of resources and decreasing the usage of non-biodegradable materials such as plastic bags etc can help cut down on water and land pollution. Creating awareness and promoting reuse of treated wastewater with improved infrastructure and better-managed services can lead to access to reliable and safe water supplies for drinking purposes. The negative consequences of pollution can be greatly reduced with the cooperation of everyone. We don't just need to stop polluting our land, but we also need to clean up the many contaminated areas that already exist. By making a conscious effort to contribute to a safer environment, the health and well-being of all can be protected.

All these things offer hope for a better future - a future where we value the environment more, not damage the land anymore and realize that earth itself is a limited and precious resource.

SPML Connect

SPML Infra Limited has been promoting sustainable solutions for water and waste management, an important and complex task as natural resources continue to deplete and pollution rises. SPML's expertise in wastewater treatment as well as strong credentials in municipal solid waste management has given it a clear edge over others to execute and deliver complex and large environmental projects. The number of wastewater and municipal waste projects executed by it confirms the added-value solutions and expertise that the company possesses. Aiming for sustainable growth with excellent return on investment, SPML Infra has completed more than 600 projects. Considering the extraordinary growth that it has achieved in just 38 years, it's no wonder that SPML Infra Limited counts among '1000 High-Growth Companies in Asia-Pacific', and among the 'World's Top 50 Private Water Companies'.

The company is currently operating in over 20 states across India apart from international projects in African countries like Ghana and Rwanda. The company's expertise, sectorial knowledge and pan India experience increases its ability to deliver complex water and environment projects and make it ideally placed to provide sustainable infrastructure development solutions to the people.

About the Author

Subhash Sethi *is the Chairman of SPML Infra Limited. SPML is a leading infrastructure development company of India.*