Sustainability Outlook

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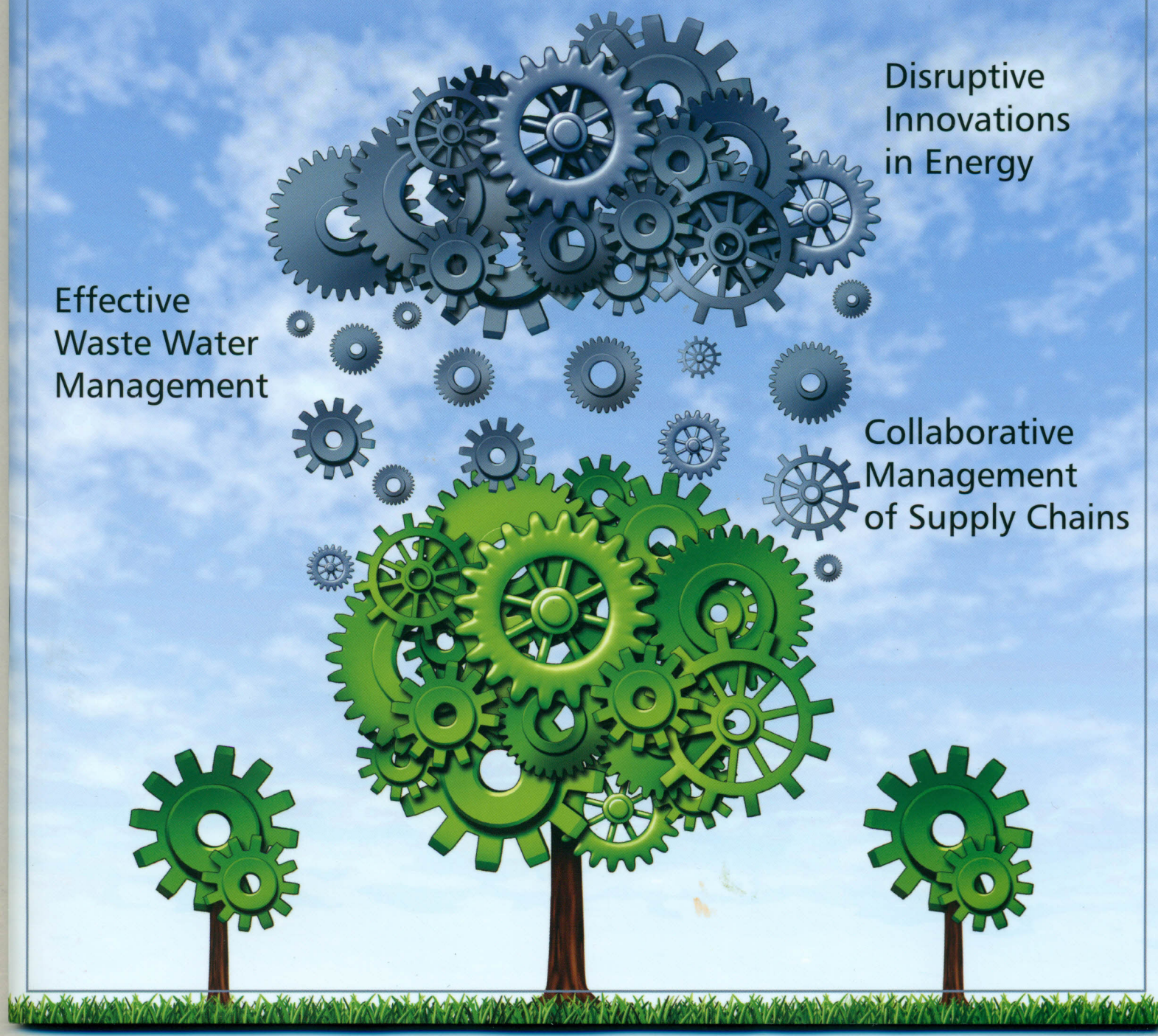
Sustainability as a Key Driver for Innovation



EFFECTIVE WASTE WATER MANAGEMENT: KEY TO WATER SUFFICIENCY IN THE COUNTRY

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Water, the natural resource with no substitute, continues to deplete at unsustainable rates, driven by population growth and industrial expansion. The resources remain constant in terms of quantity whereas the quality is being systematically worsened as a result of human activities and its after-effects. The demand for water is subject to three driving forces: rapid increase in population, improvement in quality of life, and climatic change that lead to an increase in extreme events both in frequency and magnitude.

India has the largest agricultural network in the world which accounts for about 70 per cent of country's total freshwater abstraction. The industry accounts for 22 per cent of the freshwater consumption and remaining 8 per cent is used by the households. More than 73 per cent of wastewater is released without any kind of treatment, thereby polluting the usable water supply.

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The rising costs and growing supply challenges of fresh water makes it essential to treat the municipal waste water for reuse and recharge to water bodies. Since the waste water originates where the people live and in industries, the treatment should be done as close as possible to the source to make it a viable business model. A new research study by Sri Lanka-based International Water Management Institute (IWMI) has stated that more than 1 million hectares of urban land in India could be irrigated for crops if wastewater was made safe for use. But in the absence of accurate data available with municipalities, it is difficult to accurately assess the wastewater generation or estimate the total amount of area under wastewater irrigation, so the potential of urban and semi-urban farming could be even greater.

Despite India's efforts to improve wastewater treatment, the country is finding it difficult to keep pace with a rapidly-growing economy and increasing population. In some cities, industrial pollution has made areas unsuitable for crop and fish farming. Based on a comprehensive survey of water and wastewater management in 71 Indian cities, Delhi-based Centre for Science & Environment has reported that Indian cities produce nearly 40,000 million litres of sewage per day. But, experts are of the view that barely 20 per cent of this sewage gets treated, which is an enormous waste of a critical resource.

Sinking Water Table

One needs to reflect on the criticality of this in context of water practices in the country. Over 80 per cent of the domestic water supply in India is dependent on groundwater. However, groundwater is fast depleting. Water tables have fallen significantly in most urban areas. As a result, the water bodies and river basins are being exploited beyond their capacity and several of them are already becoming water scarce.

The situation is grim with per capita availability of fresh water in India constantly getting reduced:

from 5177 cubic meter in 1951to 1820 cubic meters in 2001. It is predicted that by 2025, per capita fresh water availability will only be about 1340 cubic meters.

Treatment of Wastewater

In the last one decade, one third of India's population has become urban. It is expected that the India's urban population by 2020 will reach 465 million from the existing 340 million. The growth of the Indian economy has also increased water usage across sectors. As a result, wastewater is increasing significantly and the facilities to treat wastewater are not adequate in urban as well as rural areas. Presently, only about 20 per cent of the generated wastewater is treated; the rest is discharged into ground and water bodies without any treatment. There is an urgent need for better infrastructure and organization with regard to wastewater management. The existing facilities are conventional and not effective in terms of technology that is being used as per the modern standards. Most wastewater can be recycled and cleaned to the levels where it can be reused. The rising cost of fresh water and increasing pollution control enforcement are persuading industry to look at wastewater recycling. For instance, the 35 MLD common effluent treatment plant built by SPML Infra for Delhi State Industrial and Infrastructure Development Corporation (DSIIDC) will serve more than 20,000 industrial units and the treated water can be made fit for reuse in agriculture thus leaving a lot of fresh water for drinking purposes. The standardization criteria followed by most responsible and large industrial players makes it mandatory to install zero liquid discharge plants. Refineries' wastewater can be reused as make-up water for firefighting, green belt development and other non-potable purposes after its treatment.

With over three decades of experience, SPML Infra has gained a strong foothold in the area of design and construction of wastewater treatment plants. SPML provides solutions for proper treatment and disposal of municipal and industrial wastewater to ensure that the generated wastewater does not harm our delicate ecosystem and is recycled for further usage.

Some of the signature wastewater treatment plants constructed and maintained by SPML are:

- 240 MLD Sewage Treatment Plant, Ahmedabad, Gujarat
- 72 MLD Sewage Treatment Plant, Okhla, Delhi
- 70 MLD Sewage Treatment Plant, Nasik, Maharashtra
- 60 MLD Sewage Treatment Plant, Mysore, Karnataka
- 42 MLD Sewage Treatment Plant, Kanpur, Uttar Pradesh
- 10 MLD Tertiary Treatment Plant, Bangalore, Karnataka
- 35, 24 and 21.6 MLD Effluent Treatment Plants in Delhi

The Issues

The current gap between treated and untreated urban wastewater is growing with every passing year. As the water supply and sanitation services in India are managed by the state or local

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municipal bodies, the biggest hurdle to improve the water supply & sewerage network have been lack of requisite financial resources. As a result, Urban Local Bodies (ULBs) in many Indian cities are unable to upgrade their water supply and distribution infrastructure and continue to work on outdated transmission & distribution networks for water & wastewater. The country urgently needs adequate wastewater treatment, management and reuses facilities. Many Indian cities are still working without any treatment facilities. Existing installations are in a bad shape and are inefficient due to outdated technology and poor maintenance. The immediate rehabilitation or replacement to keep up with the pace of the growing urbanization is becoming more important for India.

Way Forward

As water concern continues to grow, we need newer technologies and electronic devices for the treatment of wastewater. Refining current wastewater treatment technologies through innovation, instrumentation and analytical automation to enable cost reduction and increase competitive advantages is the fastest way forward. However, the cost of wastewater management equipment, the frequency at which equipment may need to be added during plant expansion and assuring compliance with future environmental regulations are important factors to be considered.

A single wastewater treatment technology would be inappropriate for a country like India which can be customized based on different geographical and geological regions, varied climatic conditions and levels of population. It is more appropriate to address the potential by identifying appropriate solutions for different regions. The solutions for wastewater treatment depends on several factors including: i) the volume of wastewater; ii) type of pollutants; iii) the treatment cost; iv) extent of water scarcity in the region, and v) dilution of pollution in the water resources.

SPML is using new generation technologies such as Membrane Bio Reactor (MBR) and Moving Bed Bio Reactor (MBBR) that can treat the wastewater near to the quality of river water. It is pertinent to mention that the cost for activated sludge process is much lower than that for MBR process. If the treated sewage from MBR technique is recycled and transported to industry as a substitute of fresh water for non-process use, then the requirement for fresh water will be reduced and revenue generation shall be significant.

There are real and perceived risks from installing new equipment and technologies. There are strong internal pressures to ensure that investments are carried out at the right time and in the right direction. This basically means that these interventions need to enable strong business plans that reveal a clear return on investment. The utilities also need to adopt asset management programs to achieve reduction in operation and maintenance costs through economies of scale.

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