

A close-up photograph of a dark, textured metal pipe on the left side of the frame. A stream of clear, blue-tinted water is pouring out from the end of the pipe, curving downwards and to the right. Several individual water droplets are captured in mid-air, falling from the stream. The background is a soft, out-of-focus blue sky with a hint of a light-colored horizon or ground.

“ENSURING WATER AVAILABILITY IN A CHANGING CLIMATE”

THEME LEAD

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INTRODUCTION

The prospective water availability scenario is set to be the greatest challenge of the 21st century amongst all the users or sectors due to continual rising and competing demand, inefficient use, pollution, and added risks due to climate change. With its continuously declining per capita water availability (from about 5,177 m³ in 1951 to 1,545 m³ in 2011), India stands 'water stressed' and is close to being categorized 'water scarce'. Of the 20 major river basins in India, 14 are already water-stressed and are further expected to become water scarce by 2050. Water demand (mainly from the agriculture, industrial, and domestic sectors) in India is expected to grow annually by 2.8 per cent to reach 1,500 bcm (by 2030) while the current supply is only about half (viz., 744 bcm). A World Bank estimate suggests that the water demand for industrial uses and energy production will grow at an annual rate of 4.2 per cent, increasing from 67 bcm in 1999 to 228 bcm by 2025. The situation has been compounded by overexploitation of groundwater in several

KEY QUESTIONS

While there are several opportunities, the crucial step towards this initiative could be contributions towards addressing the following challenges:

- Can corporate India achieve an overall 20 per cent reduction in water consumption? What immediate steps are required to reduce their water foot-print (including its own premises and its value chain)? The value-chain approach includes adopting advanced technology, increasing water productivity, reducing pollution, conserving water, and setting benchmarks & standards.
- What are the significant actions needed to mainstream enhancement of water use efficiency in water-intensive industries?
- How can industries/corporate support their regional water management? This involves sustainably reducing the shared risk (physical, regulatory, and environmental) on water through participatory management involving local communities and other stakeholders under public private partnership (PPP) mode.
- How can corporate/industries contribute in nationwide programmes to conserve water and reduce losses (inefficiencies) in the irrigation (agriculture), domestic (water supply and distribution), and industrial sectors through promotion of cost-effective water-efficient technologies and practices?

regions (e.g., the stage of groundwater development in Delhi, Punjab, Rajasthan, and Gurgaon is 170 per cent, 145 per cent, 125 per cent, and 311 per cent, respectively).

Despite an increasing and competing demand amongst various sectors, the water use in different sectors in India remains inefficient. Agriculture sector that consumes more than 80 per cent of India's water resources has a very low overall average water use efficiency (about 38 per cent). Likewise, water supply and distribution in cities in India are inefficient with high leakages/losses. Compared to international standards, Indian industries consume relatively higher amount of water for production. The ratio of water consumption and economic value creation is around \$7.5, which is low, as compared to many countries such as Argentina (\$30), Brazil (\$23.4), Sweden (\$92.2), and the UK (\$443.7). Further, groundwater pollution, water pollution as well as pollution of surface water sources (rivers and lakes) due to discharge of untreated or partially treated sewage and industrial wastewater in many parts of India, continue to be prime areas of concern.

The multifarious and mounting stress on water resources is further expected to be exacerbated by the impacts of climate change which is expected to affect the hydrological cycle across various regions as well as frequency and intensity of precipitation (rainfall). This is likely to have a direct effect on the runoff rates and influence the occurrence and intensity of floods and droughts which may indirectly affect the ground and surface water supply for irrigation, domestic, industrial supply, hydropower generation, etc.

SUPPORT/LEVERAGES FROM EXISTING GOVERNMENT AND CORPORATE INITIATIVES

It is essential that the current and future path of growth and development in India encompasses the strategies to address the water scarcity involving interventions like demand management, enhancing water use efficiency, water conservation, recycle and reuse, etc., through a participatory and integrated approach.

The Government of India launched its National Water Mission (NWM) under the National Action Plan on Climate Change (NAPCC, 2008) that emphasizes the need to develop a framework for increasing the water use efficiency by 20 per cent. It further emphasizes on integrated water resource management, focus on over-exploited areas, promotion of water conservation, wastewater minimization, recycle and reuse, etc.

In addition to the Government's efforts, there are few examples of private sector initiatives as well. ITC introduced a programme on adaptation to climate change impacts through diversification of farming systems including research and development (R&D), farmer's education, watershed development, water conservation, and leveraging digital technology and customized extension services to empower farmers, and raise rural incomes.

PepsiCo India is involved in promoting water-saving strategies such as direct seeding of rice that helps growers avoid water-intensive steps in rice cultivation. PepsiCo also partnered with Punjab Agri Export Corporation (PAGREXCO) to start a 'Citrus Development Initiative', to promote crop diversification and help farmers adapt in a water-constrained climate. There are several other corporate entities that are engaged as far as promotion of water conservation and climate change adaptation interventions are concerned.

The road to sustainable water use ensuring water availability has to be carved through integrated water management, participatory planning, and implementation involving all the stakeholders. Industries have a major role to play in not only transforming their own policies and operations to enhance water use efficiency, but also pivot their role in reducing the growing stress on the water resources in the regional context, as well as their value chain. In meeting this challenge, there is an opportunity to increase efficiency and productivity in a sustainable way. The key areas of interventions where corporates can play a major role includes conducting water audits, mapping water footprints and undertaking water conservation and efficiency improvement interventions within the industry and its entire value chain. These include an integrated industrial water management strategy which optimizes efficient use of water, improves water productivity, reduces losses, and promotes water conservation interventions (such as recycling and reuse of wastewater, zero discharge, rainwater harvesting, groundwater recharge, etc.). Besides, several of such water related interventions (e.g., micro-irrigation system, household rainwater harvesting, check dams, groundwater recharge, rejuvenation of water bodies, drinking water provision, etc.) can be undertaken with involvement of the local communities at the watershed and basin scale under the Corporate Social Responsibility (CSR) activities. Besides ensuring water availability this shall also foster community resilience to water stresses in the region.

KEY CHALLENGES

Corporates have an opportunity to be proactively responsive to the potential vulnerabilities of climate change and water scarcity by leading the initiatives on efficient water use and resource conservation, while also setting a benchmark for regulatory environment.