



## The irrigation with reclaimed water could potentially yield the greatest benefits to water resources.

**MOHAMMED ABDUL RAHMAN**  
CEO, Sahara Industry

### What is the current demand-supply scenario of water in India?

India is the second most populous country in the world, home to almost 18% of world's population and about 500 millions of livestock population. Water Resources are the prime input to the growth and prosperity. Water demand is increasing substantially due to growing population, faster pace of urbanization, rapid industrialization combined with the need for raising agricultural production. The supply of water is inadequate compared to growing demand while per capita availability of water is also continuously decreasing. India's total water demand is expected to reach 843 BCM by 2025, and 1,180 BCM by 2050, from 710 BCM in 2010 whereas the average annual water resources availability in the country is assessed at 1,126 BCM currently. NITI Aayog has estimated that 40% of India's total population will have no access to drinking water by 2030.

### What are the steps needed to minimise wastage in water distribution and usage?

Non-revenue water (NRW) is the cleaned water lost in water distribution system, making

huge resource and revenue losses. The NRW in India is average 50% of municipal supplied water. In volumes terms India is losing 3.4 trillion litres of clean water annually in distribution networks.

Water utilities shall use technology to detect and control the losses. Smart sensors in networks of pipes can effectively detect leaks. These sensors use accelerometers, the same technology that detects movement on smartphones as it pick up vibrations that may be associated with a leak somewhere along the length of a pipe. A sensor with artificial intelligence (AI) system will refine on sounds created by a leaky pipe to issue an alert with precise location. Also important is to rebuild and revamp all aging and dilapidated water infrastructure and create awareness among the farming community and general public for reducing water usage in agriculture and domestic.

### How are government policies helping in better water infrastructure?

The Government of India has taken numerous steps to address the issue, while emphasizing on the use of technology. The dedicated schemes like Jal Jeevan Mission (rural & urban), Dam Rehabilitation and Improvement Project (DRIP), Atal Mission for Rejuvenation and Urban Transformation (AMRUT 2.0), National River Interlinking Project, Pradhan Mantri Krishi Sinchayee Yojana, National Mission for Clean Ganga, Atal Bhujal Yojana, and National Hydrology Programme will help in creating and maintaining better water infrastructure in the country.

### What are the steps needed for maximising sewage water recycling for reuse?

Agricultural sector accounts for majority of freshwater consumption followed by industries. The irrigation with reclaimed water could





potentially yield the greatest benefits to water resources. In fact, reclaimed water is used to supplement agricultural irrigation in almost all arid areas of the world.

A number of sustainable and safe approaches to meeting increasing water demand with municipal wastewater could be implemented in India that includes:

- Substituting reclaimed water for applications that do not require potable water including irrigation and industrial production
- Augmenting existing water sources and providing an additional source of water supply to assist in meeting both present and future water needs
- Protecting water resources by treating wastewater before disposing into water bodies
- Encouraging industries to use reclaimed water as much as possible and provide them with incentives for using maximum quantity
- Complying with environmental regulations by better managing water consumption and wastewater discharges

### What is the trend in seawater desalination in the country?

Desalination of saline water can help in meeting freshwater demand especially in an arid area near the sea. In India, Tamil Nadu has been the pioneer in using this technology, setting up two desalination plants near Chennai. Other states that have plans to setup desalination units are Gujarat, Andhra Pradesh and Maharashtra.

The Minjur desalination plant near Chennai generates around 36.5 million cubic metres of water annually. The second facility near Nemmeli, Chennai, has been operating at 100 million litres of seawater per day. There is no reliable statistics available on number of plants, their capacities, technologies adopted in India. However, rough indications are that there are more than 1000

membrane based desalination plants of various capacities ranging from 20 cubic meters per day to 10,000 cubic meters per day. There are few thermal based desalination plants also.

### How feasible is production of potable water by seawater desalination in India? What are the trending technologies?

Desalination technology is not a new idea as it has been existing in the developed countries for a long time. In India, Chennai already uses desalinated water. One of the major constraints is the high cost of energy, requiring large investments, operation, and plenty of maintenance. Currently, this technology is more expensive to build and operate than harnessing freshwater from rivers or groundwater.

A desalting device requires energy to operate and can use a number of different technologies for the separation. The major desalting processes are thermal, multi stage flash distillation (MSF), multiple effect distillation (MED), vapour compression distillation (VC), membrane, reverse osmosis (RO), electrodialysis (ED) while for limited level, freezing, membrane distillation, and solar humidification could also be used.

### What is your outlook on water sustainability in India?

The Atal Bhujal Yojana and Hydrology projects have been helpful in improvement of groundwater management. Water resources monitoring system is getting expanded to cover all major rivers and water catchments. These focussed approach and right initiatives have laid the foundation to improve the overall management of water resources in the country. Sahara Industry has been working in water treatment sector for a longer time and with the emerging trends and technological intervention, we see a better water future for India.

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