India Water Desalination Market Assessment, By Technology [Thermal Technology, Membrane Technology, Hybrid Technology], By Application [Municipal, Industrial, Others], By Region, Opportunities and Forecast, FY2018-FY2032F

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Report description:

India water desalination market is projected to witness a CAGR of 7.26% during the forecast period FY2025-FY2032, growing from USD 838.82 million in FY2024 to USD 1469.50 million in FY2032. The water desalination market in India is set for significant expansion, driven by rising water scarcity, population growth, and government support. Municipalities, particularly in water-stressed urban areas, are leading the charge by adopting desalination to secure potable water supplies. Advances in membrane technology and energy-efficient desalination processes will further enhance market growth, while industrial and private sector demand will create new opportunities for the future.

Moreover, the rapidly increasing water scarcity and the urgent requirement to provide potable water to India's growing population contribute to the growth of the water desalination market. Desalination is a viable solution to remove salt and other impurities from seawater to make it potable. Several regional and municipal authorities have made large-scale desalination efforts to reduce the widening gap in water demand.

The Indian government proactively supports water desalination markets by launching new tenders to boost the market. For instance, in June 2024, the Tamil Nadu government announced issuing tenders for the construction of a 60 million liters per day (MLD) desalination plant in Thoothukudi, a port city in southern India. The new desalination facility aims to support the influx of industries setting up in the region. The project will operate under a hybrid annuity model, and the proposed desalination plant will feature a conveyance system extending 33.18 kilometers to Mullakadu in Thoothukudi. The total project cost is estimated at around USD 114 million.

Water Scarcity and Rising Population Propel India's Water Desalination Market Growth

India's population is growing rapidly, putting immense pressure on the availability of clean drinking water in the country. In 2024, the population reached 1.45 billion, and the figure is expected to increase further; thus, water consumption in domestic, industrial, and agricultural sectors will continue to elevate. The average annual water availability of any region or country mainly

depends upon hydro-meteorological and geological factors; however, water availability per person depends on a country's population. In India, per capita water availability is continuously decreasing because of the rapidly growing population.
For instance, the average annual water availability per person for 2021 was 1,486 cubic meters and is projected to decline further to 1,367 cubic meters by 2031, as per a projection of the Planning Commission of India. Furthermore, with groundwater depletion and surface water overexploitation at alarming rates, desalination is becoming inevitable to bridge the gap between the deficit of potable water supply and demand, particularly in metropolitan cities.
Municipalities are increasingly looking for this solution to ensure potable water supply. For instance, the Brihanmumbai Municipal Corporation (BMC) sanctioned plans for a 200-million-liter daily desalination project in Mumbai to convert seawater into potable water by using a reverse osmosis process, which will require around 25 acres of land and is expected to come into operation by 2025.

Government Policies Fuel the Water Desalination Market Growth in India

Water management refers to improving availability, conservation, and efficient utilization, which generally falls directly under the purview of state governments. Moreover, the central government provides technological and financial assistance in such schemes through other programs. The Government of India is working with the States on its ambitious plan for implementation of the Jal Jeevan Mission (JJM) for functional household tap connections to be provided to every rural family by 2024. As of January 2025, around 154.54 million rural household tap connections are available, with a penetration of 79.79% of the total rural household count of 193.68 million. Government initiatives and policies are prime factors in the growth of the desalination market in India. For example, the financial allocation of around USD 11.4 billion in 2024-25 by the Ministry of Jal Shakti towards the Department of Drinking Water and Sanitation for developing water-related infrastructure, including desalination plants, reflects the commitment to water security. This aims to address water scarcity issues and promote sustainable water management practices.
In May 2023, the Ministry of Jal Shakti, through its National Water Mission, formulated certain specific targets for new and renewable energy under government programs. Goal 3 of the program focuses on the adoption of RO and MSFD-based desalination with the use of renewable energy such as solar. Various such bodies, including NITI Aayog and the Council of Scientific and Industrial Research- Central Salt and Marine Chemicals Research Institute, in coordination with the Department of Science and Technology under the Ministry of Sci□ence and Technology, are also working with various stakeholders to enable desalination projects to operate on renewable energy.

Membrane Technology Dominates the Water Desalination Market in India

India water desalination market is dominated by membrane technology, primarily because of its effective use in reverse osmosis (RO) and other cutting-edge technologies. The need for clean drinking water, coupled with a growing shortage of freshwater, has led to a preference for membrane-based systems. These systems can remove impurities efficiently without high energy consumption.
The widely used process of reverse osmosis, which is perfect for desalination, uses semi-permeable membranes to filter out salts and other impurities. Other technologies, including nanofiltration and ultrafiltration, complement RO systems to achieve specific treatment objectives, including the removal of smaller particles and pathogens.
For instance, in Lakshadweep, the National Institute of Ocean Technology (NIOT), an independent organization under the Union Ministry of Earth Sciences (MoES), is building a self-sufficient and environmentally friendly desalination plant. The NIOT is working on a project to use Low-Temperature Thermal Desalination (LTTD) technology to supply drinkable water to six islands in Lakshadweep. The NIOT is currently working to eliminate emissions from this procedure. Diesel generators currently power the desalination facilities, which each produce at least 100,000 liters of drinkable water every day. The proposed desalination facility will be powered by a mix of renewable energy sources, including wind, solar, and wave energy. Reverse osmosis (RO) technology will be used at the plant to desalinate saltwater and create drinkable water.

Southern India is the Largest Hub for Water Desalination

The southern region of India is highly susceptible to water scarcity due to rapid population growth, industrialization, and reliance on seasonal rainfall. Cities such as Chennai have been the worst affected by these situations, thus creating an increased thrust towards desalination for supplementing freshwater sources in the region. Recent desalination projects in Southern Indian waters have emerged as the key focus, especially for states such as Tamil Nadu and Andhra Pradesh.
Chennai has been one of the leaders in India in terms of water desalination, as large projects have been already commissioned.

For instance, the Minjur desalination plant in the city with a capacity of 100 million liters daily (MLD), and the Nemmeli desalination plant currently producing 150 million liters daily (MLD), inaugurated in February 2024, are pivotal in providing the city with enough water.
Furthermore, in April 2023, Chennai Metropolitan Water Supply and Sewerage Board awarded a project to Va Tech Wabag for the development of a 400 million liter daily (MLD) Seawater Reverse osmosis (SWRO) based desalination plant. With this, the water treated through the unit would cater to the water requirement of around 750 MLD in the city.
Future Market Scenario (FY2025 - FY2032F)
-Initiatives toward accomplishment of sustainable development goals, will be the top-notch efforts by the government to provide clean and affordable water for its people which will therefore align with the development of environmentally friendly desalination technologies.
-The southern region will maintain its dominance in the future as well, as most of the desalination projects surface here.
-India faces a growing challenge from water scarcity due to rising urbanization, which increases the need for desalination. The government may increase allocations and incentives for desalination projects, focusing on improving infrastructure development to enhance water security across the country, especially in cities like Mumbai and Chennai.
-Developments in desalination technologies such as reverse osmosis and solar desalination will help decrease the costs of operation and make desalination more efficient and economically viable.
-Environmental factors, particularly brine disposal and energy consumption must be addressed to be able to practice sustainable desalination and give credibility in the market.
Key Players Landscape and Outlook
India water desalination market is innovative, with key players developing methods to make their production more efficient, environmentally friendly, and of higher quality. Companies are optimizing production processes and adding capacity to keep up with increasing demand and maintain competitiveness. Intensified competition among major participants is fostered through strategic collaborations and advanced development in major production technologies within this dynamic market.
For instance, in October 2024, water treatment player VA Tech WABAG Ltd announced that it had received an order of around USD 114 million from Indosol Solar Pvt Ltd to set up a seawater desalination plant, its maiden venture into the solar photo-voltaic segment. According to the city-headquartered firm, the scope of the order includes engineering, procurement, design, supply, installation, testing, and commissioning of the 100 million liters per day seawater desalination plant at the company's solar photo-voltaic manufacturing facility in neighboring Andhra Pradesh.

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