

Decentralized Water Treatment Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Treatment Type (Wastewater Treatment, Effluent Treatment, Sewage Treatment, Greywater Treatment, Drinking Water Treatment), By Technology (Membrane Filtration, Chemical Treatment, Biological Treatment, Electrochemical Treatment, Hybrid Systems), By Application (Municipal, Industrial, Agricultural, Commercial, Residential), By Region & Competition, 2020-2030F

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Abstracts

Market Overview

The Global Decentralized Water Treatment Market was valued at USD 18.67 Billion in 2024 and is projected to reach USD 38.09 Billion by 2030, growing at a CAGR of 12.45% during the forecast period. This market is witnessing substantial growth, fueled by growing concerns over water scarcity, increasing demand for clean water in underserved and expanding urban regions, and the limitations of centralized infrastructure. Decentralized water treatment systems, designed to function close to the point of consumption, offer cost-effective, scalable, and adaptable solutions for areas without access to extensive water networks. These systems are vital in remote, disaster-hit, or underdeveloped regions. Technological advancements, including membrane filtration, UV disinfection, and biological treatments, have enhanced the performance and dependability of these systems, making them suitable for both potable and non-potable uses.

Key Market Drivers

Rising Water Scarcity and Climate Stress

The escalating global water crisis, fueled by population growth, increased consumption, and unpredictable climate patterns, has intensified the demand for sustainable water solutions. By 2030, freshwater availability is projected to fall short by 40%, with over 2.3 billion people already residing in water-stressed regions. Agriculture consumes nearly 70% of the world's freshwater, and regions such as India and the U.S. Southwest face rapid groundwater depletion. In Africa, approximately 400 million people still lack access to safe drinking water, while in Asia, 21% of surface water sources are unfit for human use. Rising sea levels and extreme weather events further threaten freshwater reserves. In response, decentralized water treatment systems are gaining traction for their ability to deliver localized, flexible, and rapid solutions. These off-grid systems can be deployed in drought-prone areas and support water reuse across households, agriculture, and industries. Additionally, they help minimize losses associated with centralized distribution, where up to 30% of water is lost due to leakage and theft. As environmental pressures increase, decentralized treatment is becoming critical for resilience and sustainable resource management.

Key Market Challenges

High Capital and Operational Costs

The adoption of decentralized water treatment systems faces significant hurdles due to the high initial investment required. Although these systems can be cost-effective over time, the upfront costs for installation, equipment, and site development are substantial, especially for smaller organizations or developing communities. Advanced technologies like MBRs, UF, and UV systems often involve costly components that increase initial expenditure by up to 30% compared to traditional systems. Additionally, small-scale systems do not benefit from economies of scale, resulting in higher per-liter treatment costs—15–25% more than centralized plants. Ongoing operational costs are also elevated, driven by the need for consistent maintenance, skilled labor, and consumables. In remote locations, logistical issues related to sourcing parts and technical services can raise expenses by 30–40%. Energy requirements, particularly in non-solar-powered units, pose further financial burdens. Many potential users lack access to financial incentives, government subsidies, or affordable loans, particularly in emerging economies. Without strong ROI models, adoption remains limited among

SMEs and municipalities. Addressing this barrier calls for innovative funding strategies, public-private partnerships, and enhanced access to low-interest financing or development aid.

Key Market Trends

Growing Use of Decentralized Systems in Industrial Applications

Industries such as food and beverage, pharmaceuticals, textiles, oil & gas, and chemicals are increasingly deploying decentralized water treatment systems for on-site process and wastewater treatment. These systems enable companies to reduce freshwater consumption and comply with strict discharge regulations. Many facilities now reclaim up to 70% of their wastewater for reuse, especially in water-scarce regions. The flexibility of decentralized systems allows scaling based on operational needs. For instance, textile plants in Southeast Asia utilize containerized RO and MBR systems to recycle dyeing water, while European breweries implement compact anaerobic units for treating organic waste and generating biogas. In the pharmaceutical sector, decentralized UV and ozone systems ensure compliance with high purity standards. These technologies are also key to zero-liquid discharge strategies, where every drop of water is reused or evaporated safely. By reducing dependence on municipal supply and mitigating tariff fluctuations, decentralized systems support industry sustainability goals and bolster environmental, social, and governance (ESG) performance.

Key Market Players

Veolia Environnement S.A.

SUEZ SA

Xylem Inc.

Evoqua Water Technologies Corp.

Pentair plc

Kurita Water Industries Ltd.

Hitachi Ltd.

Toray Industries, Inc.

GE Water & Process Technologies

Alfa Laval AB

Report Scope:

In this report, the Global Decentralized Water Treatment Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Decentralized Water Treatment Market, By Treatment Type:

Wastewater Treatment

Effluent Treatment

Sewage Treatment

Greywater Treatment

Drinking Water Treatment

Decentralized Water Treatment Market, By Technology:

Membrane Filtration

Chemical Treatment

Biological Treatment

Electrochemical Treatment

Hybrid Systems

Decentralized Water Treatment Market, By Application:

Municipal

Industrial

Agricultural

Commercial

Residential

Decentralized Water Treatment Market, By Region:

North America

United States

Canada

Mexico

Europe

Germany

France

United Kingdom

Italy

Spain

South America

Brazil

Argentina

Colombia

Asia-Pacific

China

India

Japan

South Korea

Australia

Middle East & Africa

Saudi Arabia

UAE

South Africa

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Decentralized Water Treatment Market.

Available Customizations:

Global Decentralized Water Treatment Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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