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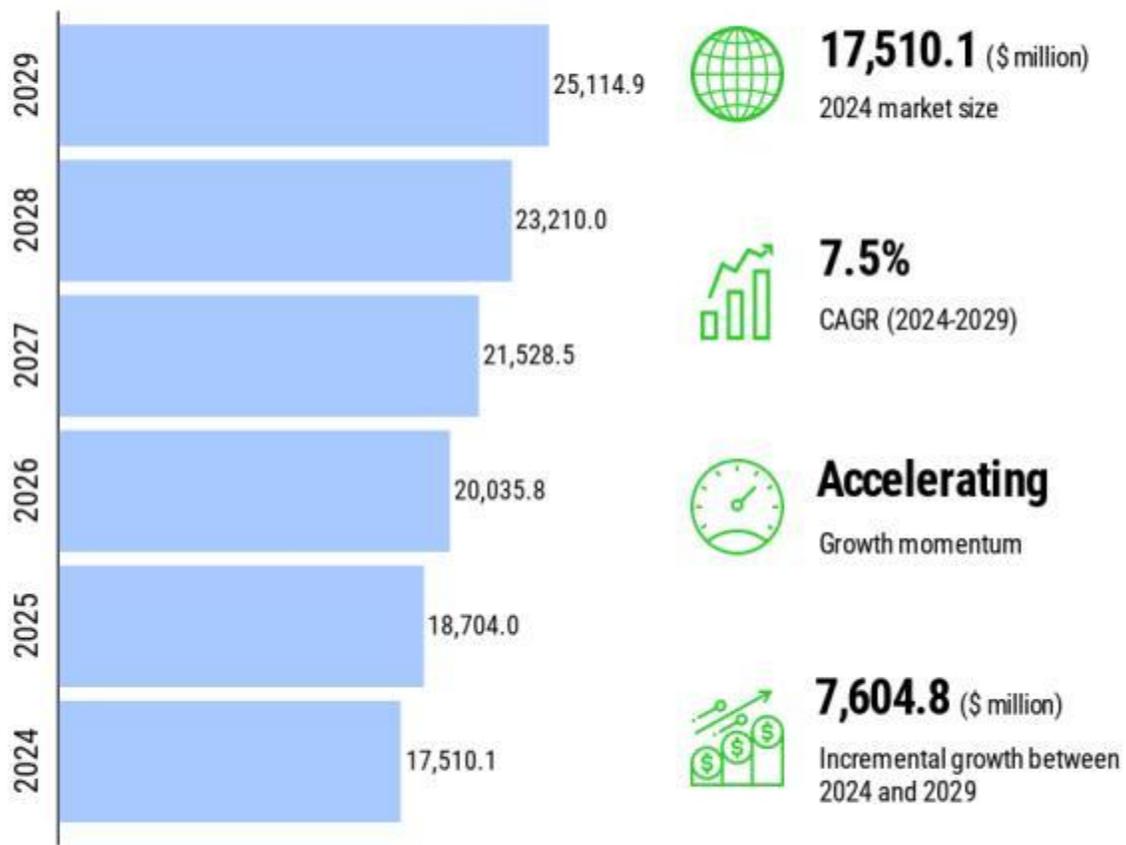
Executive Summary

1.1 Market overview

Executive Summary - Chart on Market Overview

Market Overview

Market size outlook (\$ million)

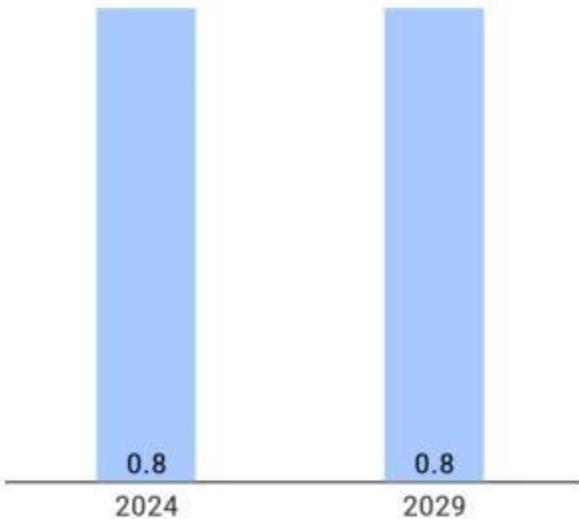


Executive Summary - Data Table on Market Overview

	2024	2025	2026	2027	2028	2029
Market size (\$ mn)	17,510.1	18,704.0	20,035.8	21,528.5	23,210.0	25,114.9

Market Characteristics

Market favorability index for vendors



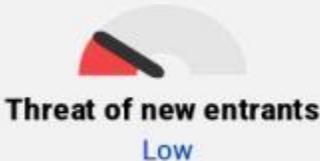
Factors influencing the index

 **Industry structure**
Fragmented

 **Market lifecycle**
Growth

 **Regulatory control**
High

Five forces (2024)



Market by Geography



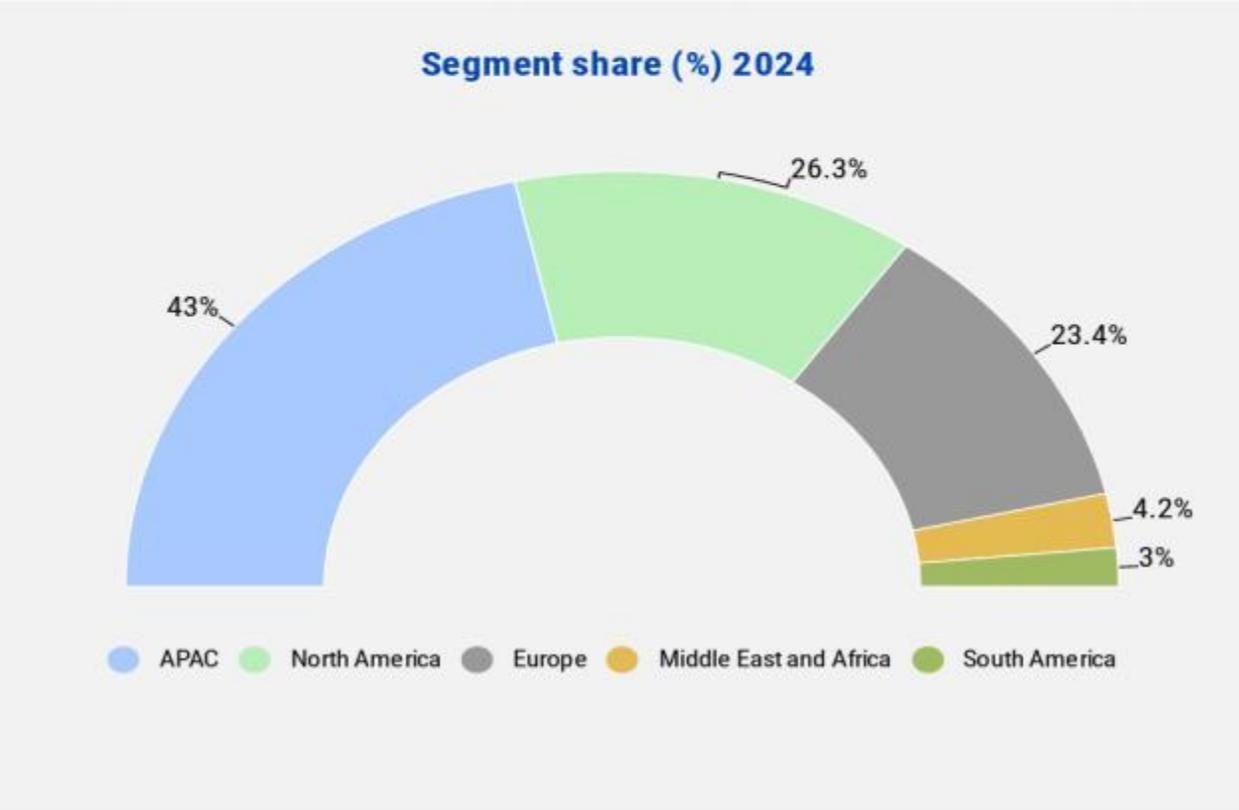
APAC
Largest segment in 2029



APAC
Best performing segment between 2024 and 2029



Middle East and Africa
Slowest growth segment between 2024 and 2029



Market by End-user



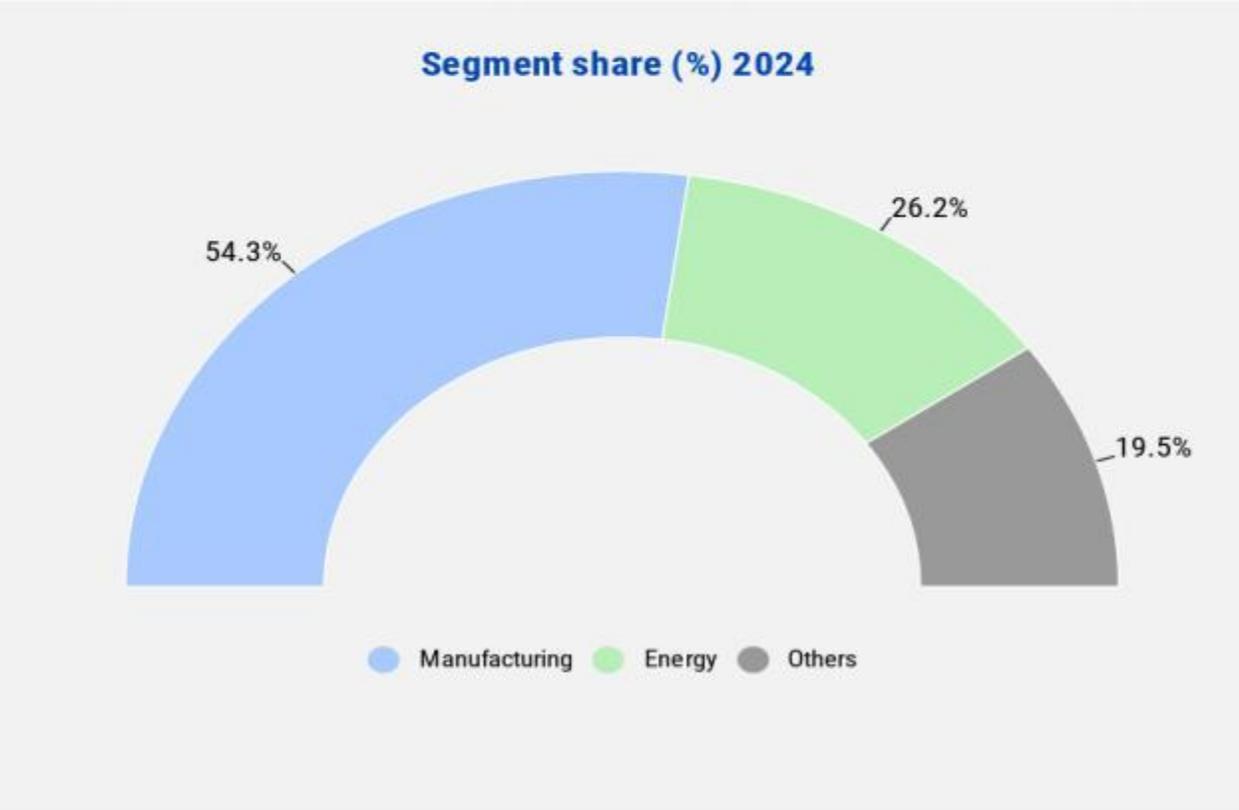
Manufacturing
Largest segment in 2029



Manufacturing
Best performing segment between 2024 and 2029



Others
Slowest growth segment between 2024 and 2029



Market by Product Type



Filtration equipment

Largest segment in 2029



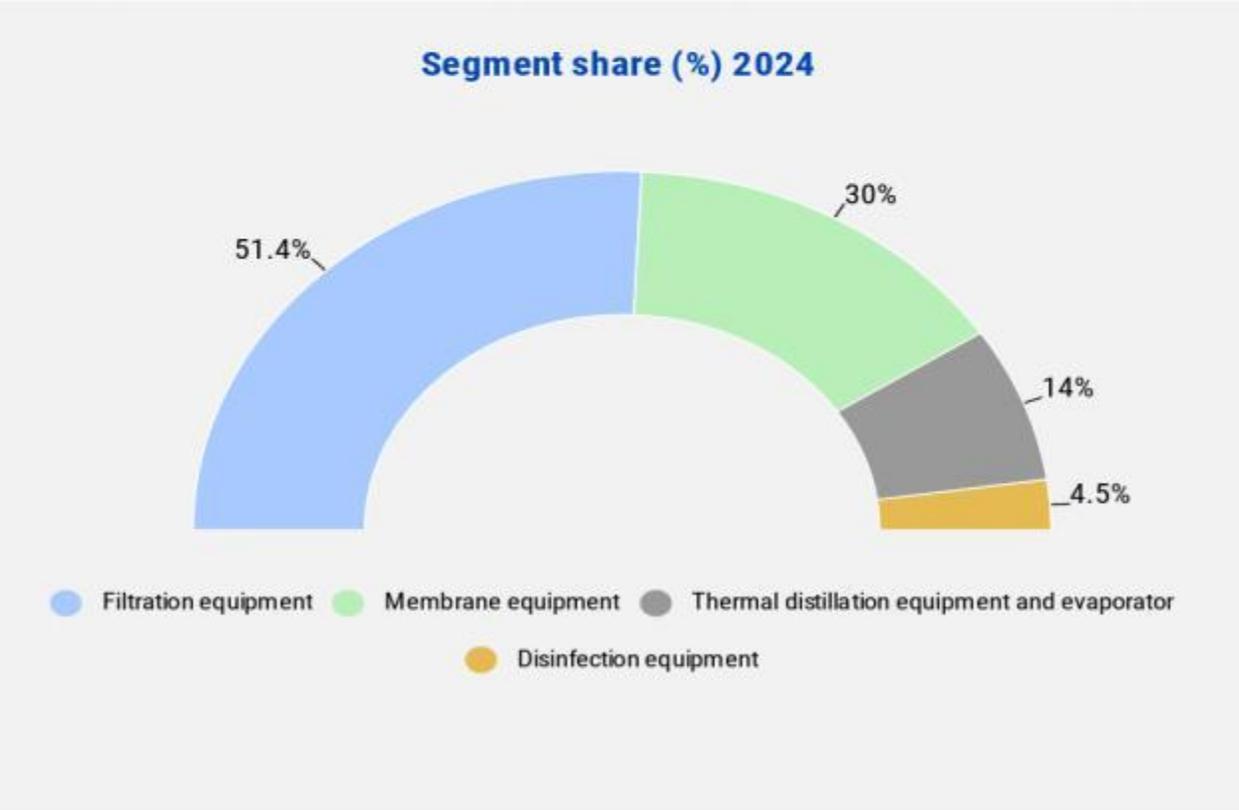
Disinfection equipment

Best performing segment between 2024 and 2029



Thermal distillation equipment and evaporator

Slowest growth segment between 2024 and 2029



Market by Type



Secondary treatment

Largest segment in 2029



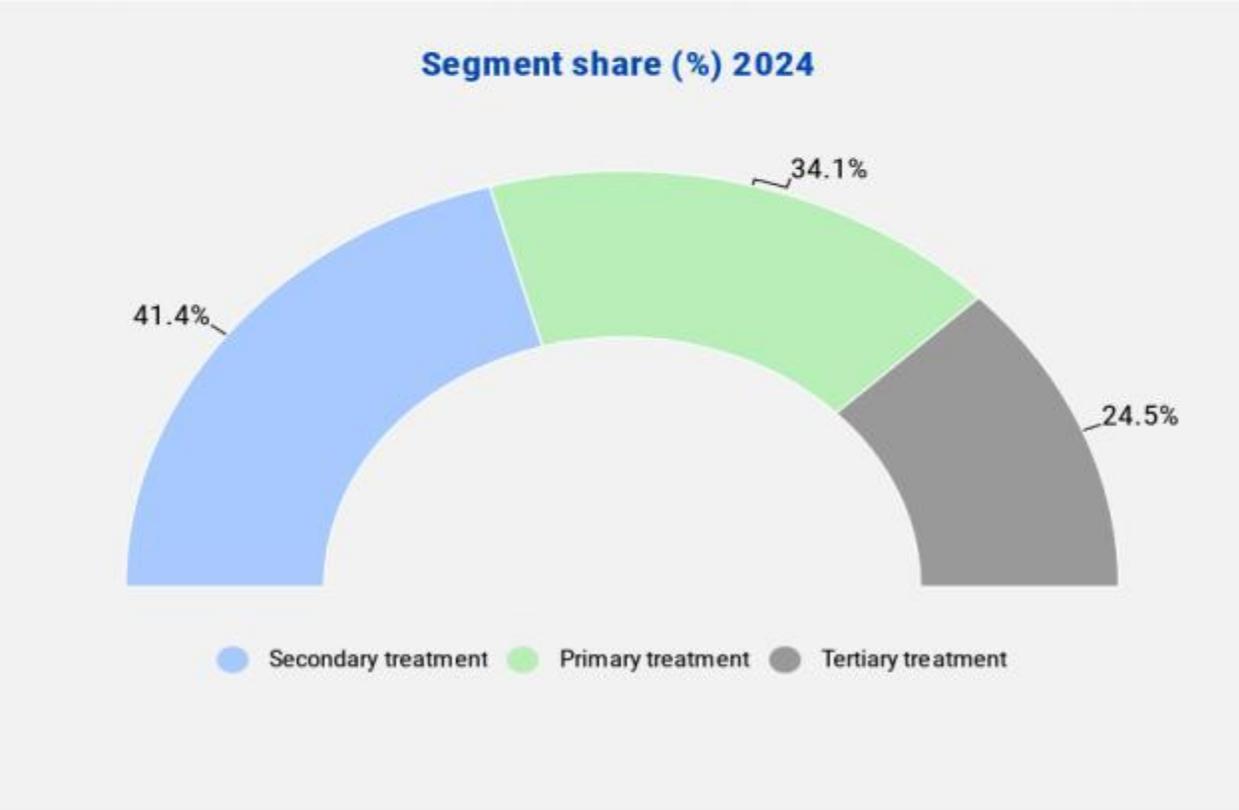
Secondary treatment

Best performing segment between 2024 and 2029

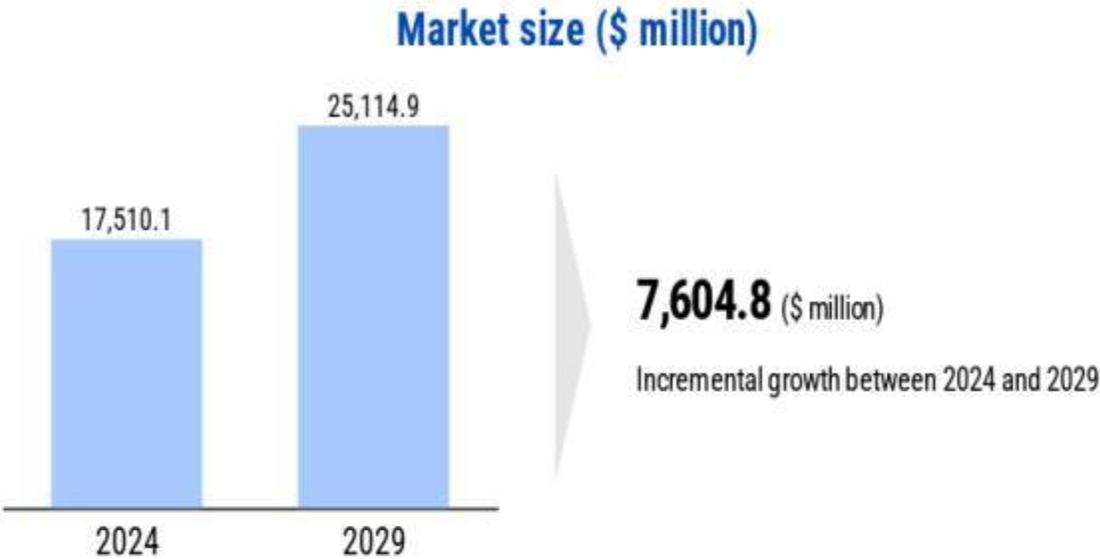


Tertiary treatment

Slowest growth segment between 2024 and 2029



Incremental Growth



1

 **59.0%**
of incremental growth contributed by

 **Manufacturing**
between 2024 and 2029

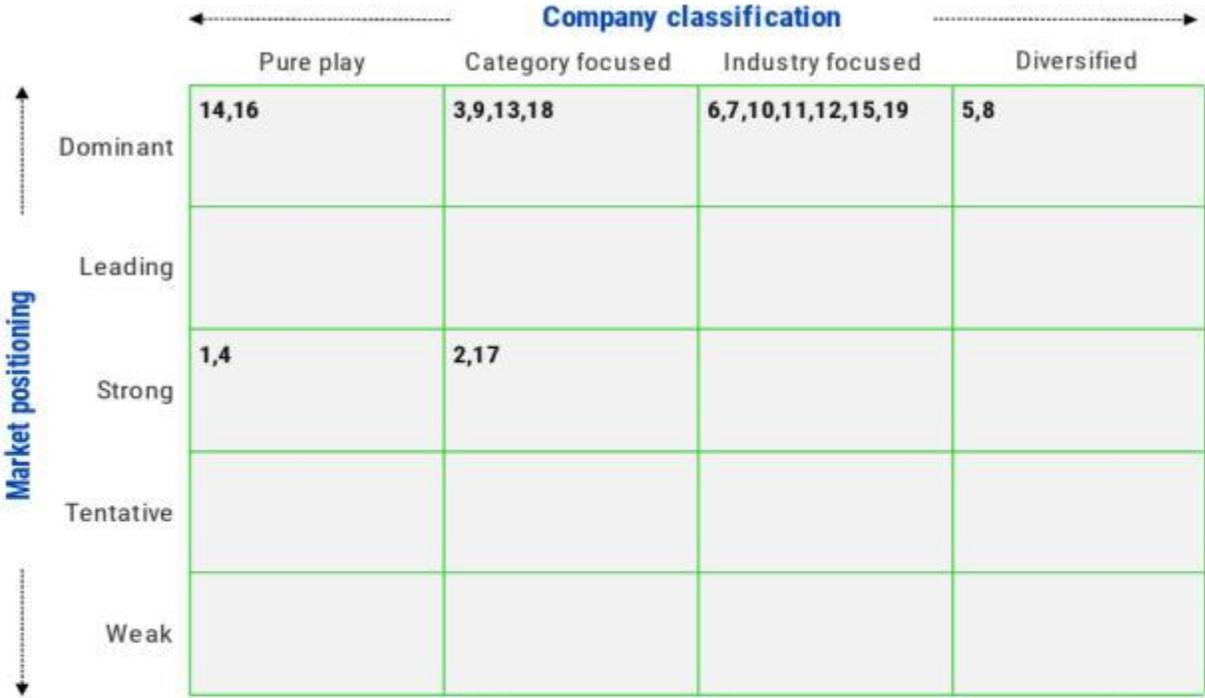
2

 **47.2%**
of incremental growth contributed by

 **APAC**
between 2024 and 2029

	2024	2029
Market size (\$ mn)	17,510.1	25,114.9

Company Market Positioning



- | | |
|-------------------------------|---------------------------------|
| 1. ALAR Engineering Corp. | 11. Kurita Water Industries Ltd |
| 2. Anuj Enterprises | 12. Metso Outotec Corp. |
| 3. Aquatech International LLC | 13. Ovivo Inc. |
| 4. Condorchem Envitech SL | 14. Pentair Plc |
| 5. DuPont de Nemours Inc. | 15. SERECO Srl |
| 6. Ecolab Inc. | 16. SWA Water Holdings Pty Ltd. |
| 7. Fluence Corp. Ltd. | 17. Trojan Technologies |
| 8. Kanadevia Corp. | 18. Veolia Environnement SA |
| 9. Kingspan Group Plc | 19. Xylem Inc. |
| 10. KURARAY Co. Ltd. | |

02

Analysis

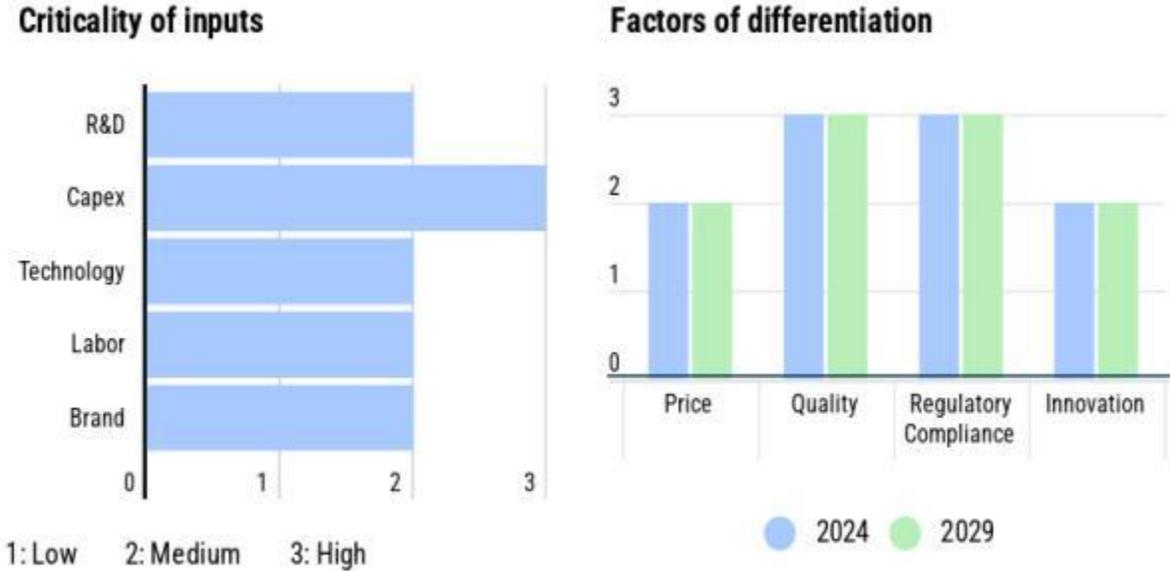
2.1 Analysis of price sensitivity, lifecycle, customer purchase basket, adoption rates, and purchase criteria

Analysis of price sensitivity, lifecycle, customer purchase basket, adoption rates, and purchase criteria



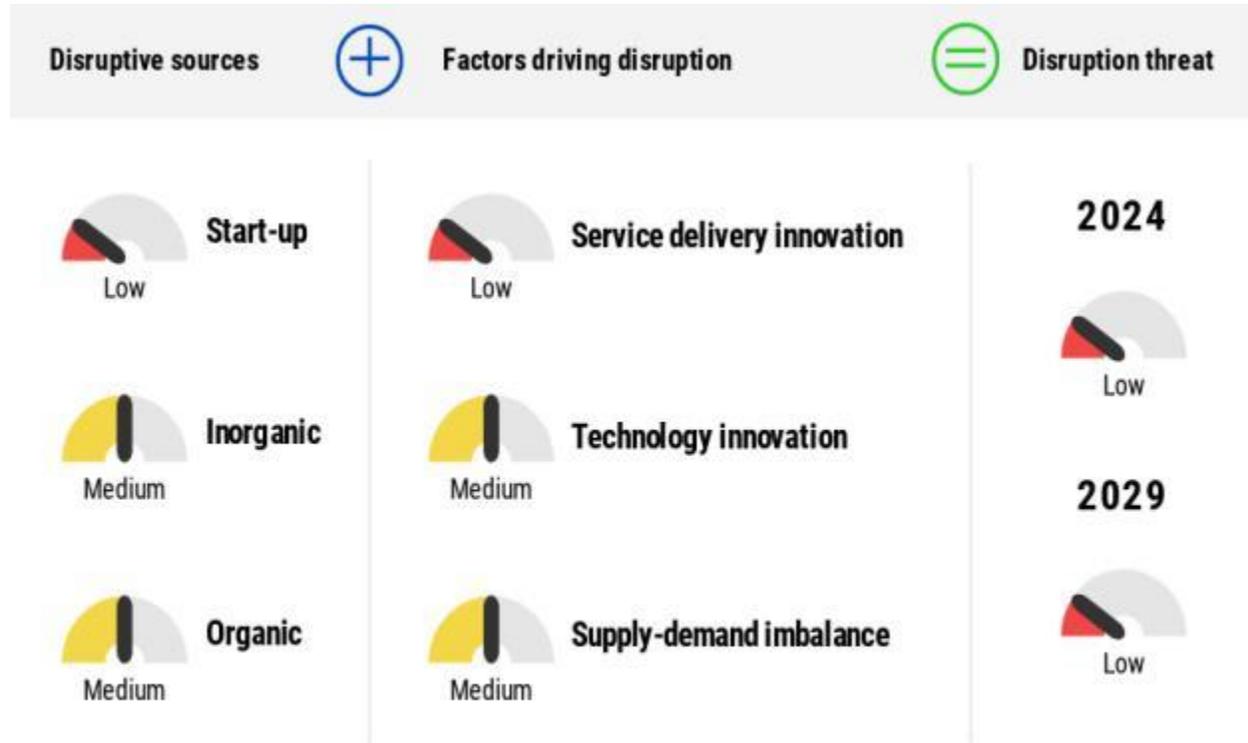
2.2 Criticality of inputs and Factors of differentiation

Overview on criticality of inputs and factors of differentiation



2.3 Factors of disruption

Overview on factors of disruption



2.4 Impact of drivers and challenges

Impact of drivers and challenges in 2024 and 2029



Impact of Drivers

Increase in global energy demand



Rapid growth in industrialization



Stringent regulations on wastewater treatment in industries



Impact of Challenges

Increasing adoption of renewable energy sources



Impact of hard water on water treatment equipment



Increasing decommissioning of nuclear power plants



03

Market Landscape

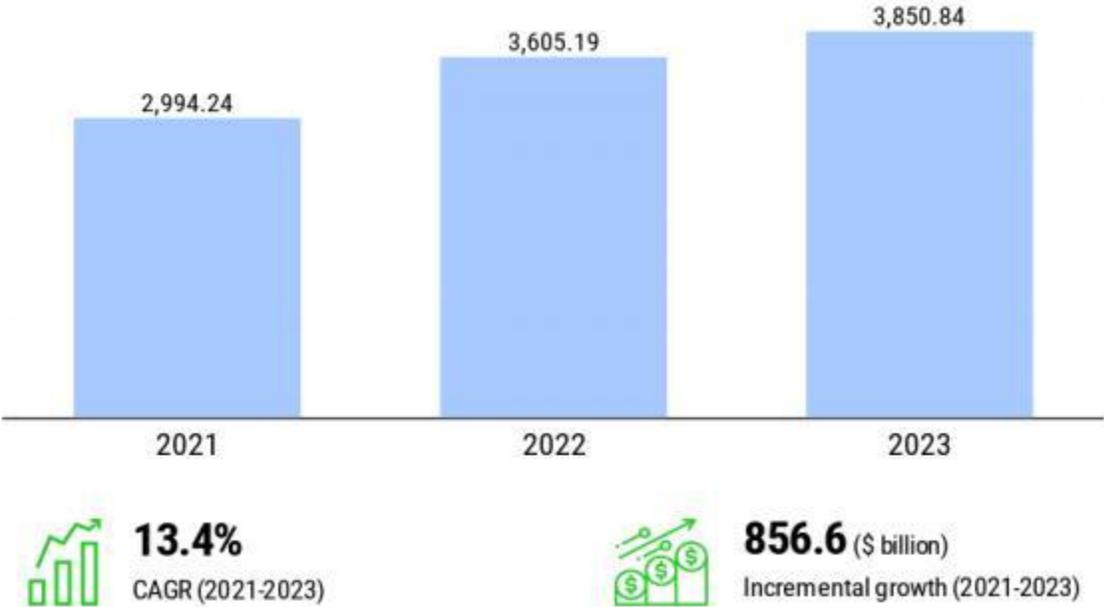
3.1 Market ecosystem

The global industrial wastewater treatment equipment market is a part of the global industrial machinery and supplies and components market. The global industrial machinery and supplies and components market was valued at \$2,994.24 billion in 2021 and reached \$3,850.84 billion in 2023.

The global industrial machinery and supplies and components market witnessed an incremental growth of \$856.6 billion and registered a CAGR of 13.4% from 2021 to 2023.

Parent Market

Parent market analysis: Global industrial machinery and supplies and components market (2021-2023) (\$ billion)



Data Table on - Parent Market

Year	2021	2022	2023
Market size (\$ bn)	2,994.24	3,605.19	3,850.84

The parent, the global industrial machinery and supplies and components market, covers companies engaged in manufacturing industrial machinery and components covering presses, machine tools, compressors, pollution control equipment, elevators, escalators, insulators, pumps, roller bearings, and other metal fabrications.

Technavio calculates the global industrial machinery and supplies and components market size based on combined revenue generated by manufacturers of machinery and components used in the industrial environment.

Growth in the global industrial machinery, supplies and components market will be driven by the following factors:

- **Growing industrial output leading to capacity additions in process and discrete industries:** The global demand for energy, chemicals and petrochemicals, pulp and paper products, and processed food and beverages continues to grow because of the rapid economic expansion of developing countries. Thus, investments are being made in new oil refineries, including integrated refining and petrochemical complexes. Similarly, pulp and paper product manufacturers are focused on increasing production capacity for packaging paper to cater to growing demand from online commerce and industrial packaging sectors. Apart from this, there is an increasing requirement for recycling waste (including wastewater and organic waste). This resulted in investment in large-scale utility and industrial water and wastewater treatment plants. Also, the demand for alternative fuels such as biodiesel and ethanol from the transportation sector is leading to increased investment in biofuel production facilities. This is leading to increasing demand for industrial machinery such as pumps, compressors, boilers, and pollution control equipment. Apart from this, large-scale automation and a growing focus on quality, efficiency, and productivity in discrete industries (due to the increasing globalization of best manufacturing standards and practices) are some of the factors that are expected to increase the adoption of automated technologies in several machine tools. These factors are expected to drive the demand for machine tools.
- **Ease of operability of industrial machines:** Most of the manufacturing processes are very complex; critical machine and process parameters are required to be observed continuously to ensure seamless manufacturing. This is leading to increasing demand for industrial machinery with advanced human-machine interfaces (HMIs) as it allows all the critical processes and operating parameters of the machine to be viewed easily on a screen. This not only improves the efficiency of the process but also decreases machine downtime due to improved monitoring and diagnostics. Thus, the demand for industrial machinery with advanced HMIs is increasing rapidly.
- **Implementation of autonomous and robotics in industrial manufacturing:** The global demand for industrial machinery that can perform autonomous operations is increasing. This is leading to increasing demand for industrial robots, especially in the discrete manufacturing sector for metalworking and assembly operations. Autonomous manufacturing leads to a reduction in throughput or lead time and ensures consistent quality and timely order fulfillment. Automation also helps manufacturers contain operational costs in the face of rising labor wages. Thus, increasing demand for autonomous manufacturing solutions is expected to drive the growth of the global industrial robotics market.
- **Extended scope of robotics in personal and professional service sectors:** The global demand for robotics for the personal and professional service sector is expected to increase rapidly. Personal and

professional service robots are gaining widespread acceptance due to benefits such as precise and high-quality delivery of services, high reliability, and reduced cost of operational or human errors. Some of the leading industries that employ professional service robots are healthcare, aerospace and defense, emergency response teams, agriculture, logistics, construction, and professional cleaning, among others. Apart from this, personal service robots are used for various domestic purposes like cleaning, entertainment, and leisure.

- **Digital twins of machines help in developing plants faster and more efficiently:** The term digital twin in the context of industrial machinery refers to the virtual model of a machine or a production facility. A digital twin reflects the development of a machine or a production facility throughout its lifecycle. It enables operators of the engine or the production facility to predict behavior, optimize performance, and implement useful insights from previous design and production experiences. Thus, an improved machine or production facility can be developed in very little time. Also, new machines can be optimized from the design phase only, and potential improvements can be carried out before the actual commissioning. This can also be integrated with machine data to optimize the operation continuously and achieve excellence.
- **Manufacturers are increasingly leveraging the Internet of Things (IoT):** Several industrial types of machinery, such as compressors, boilers, pumps, industrial robots, and machine tools, are being introduced with IoT features. It allows industrial machines to transmit critical operating parameters such as temperature, pressure, and stress; and health and performance parameters over Internet protocol (IP) to a control room or device. Such data helps increase the efficiency of industrial machinery, reduce its downtime, and increase useful life and process safety. Thus, the increasing adoption of IoT-enabled industrial machinery will drive the market in the coming years.

Some of the key issues faced by the global industrial machinery and supplies and components market include:

- **Slowdown in manufacturing industry:** Market dynamics in some major process and discrete industries are undergoing dramatic changes, and manufacturers are gradually bearing the brunt of excess demand fluctuations. The fluctuating prices of oil and gas and metals in the global market and the shortage of a skilled workforce worldwide have directly affected the profitability of manufacturing companies. A sudden and unexpected shift in market dynamics can have a drastically negative impact on manufacturing processes and investments in capital goods. The slowdown in the global manufacturing industry and the rising trade war between the US and China have hampered industrial output globally. Major manufacturing companies have witnessed a decline in demand for industrial machinery and have adopted cyclic production to align output with demand. Industries such as oil and gas, automotive, chemical and petrochemical, and aerospace, which are the major end-users of industrial machinery, have announced drastic measures to overcome the demand-supply imbalance. Such cyclic production in the manufacturing sector and the slowdown in demand for industrial machinery have adversely impacted the CAPEX in new manufacturing facilities, thereby hampering the demand for industrial machinery.
- **Challenges related to technology advancements:** Industrial machinery manufacturers design and build machines to the diverse requirements of the end-users. With the increasing level of technological advancements in the manufacturing industry, vendors with a high level of capital are able to address the rising demand. For medium- and small-sized companies catering to the industrial machinery market, it becomes difficult to change or incorporate new technologies in the machines. This scenario is also

witnessed with the machines sub-component and product-level manufacturers. The level of connected devices evolved in the industrial sector is leading to a significant challenge for machinery builders in terms of addressing the growing demand from the end-user segments.

- **Major consideration toward safety leading to changes in manufacturing set-up:** The increasing safety standards governed by different standardization organizations have increased the level of safety requirements during the manufacturing process. To practice the mandatory safety standards, industrial machinery OEMs are moved to a position to spend on different safety gears and equipment over the existing safety measures followed. For instance, some of the manufacturing set-ups will require specialized material in their flooring, which increases the operational expense of the OEMs. Also, certain operations in a manufacturing set-up have to be designed according to safety standards to avoid any accidents in the plant. To address these safety requirements, OEMs need to restructure the existing operations, which is a challenge for the industrial machinery market.

The global economy is stagnating. Global economic growth contracted to 2.6% in 2024, just above the 2.5% threshold commonly associated with a recession. This is stark in contrast when compared between 2015 and 2019, when global economic growth averaged 3.2%. Economic stagnation can severely impact the industrial machinery and supplies sector, as reduced capital expenditures by businesses typically lead to decreased demand for machinery. Companies may postpone or scale back investments in new equipment, which can affect manufacturers' sales forecasts. Pricing pressures may intensify due to increased competition and overcapacity, squeezing profit margins. Additionally, as firms focus on cost-cutting measures, investments in research and development may decline, hindering innovation and technological advancement. The slowdown in global trade can further complicate growth prospects, particularly for companies reliant on exports, leading to a more challenging environment for industrial machinery producers.

The growth of the global industrial machinery and supplies and components market is accelerated by the growing adoption of the interoperable and operator-friendly environment in the machines and the extended scope of automation, including industrial robotics implementation. However, fluctuations in the CAPEX from end-user industries and declining capacity addition in the oil and gas and automotive industries are expected to limit the market growth.

The global industrial machinery and supplies and components market comprises the following segments:

- **Mechanical products and equipment:** Include mechanical transmission products; hydraulic and pneumatic equipment; industrial blowers and fans; pumps; cooling systems like dryers and evaporators; and processing equipment like industrial mixers and blenders and reaction vessels.
- **Welding equipment and consumables:** Include welding equipment, consumables, and accessories
- **Pollution control equipment:** Include pulse jet fabric filters, NOx control systems, flue gas desulfurization, and dry sorbent injection systems
- **Compressors:** Include compressors used for processing gas

-
- **Boilers:** Include boilers used in industrial, commercial, and residential applications
 - **Robots:** Include industrial robotics, professional robots, and personal robots
 - **Portable generators:** Include generators with low-power output fueled by diesel, gas, and gasoline
 - **Power tools:** Include both stationary and portable types of power tools that are used for industrial and commercial applications
 - **Machine tools:** Include machine tools used for cutting, forming, and special-purpose applications
 - **Process equipment:** Include all process-related machines and equipment in both process and discrete industries
 - **Elevator and escalator:** Include elevators, escalators, and moving walkways for transportation in residential, commercial, and industrial sectors
 - **Conveyor systems:** Include conveyor belt used for transporting materials and automating assembly

3.2 Market characteristics

Market characteristics analysis

Factors that define the market characteristics

Life cycle stage



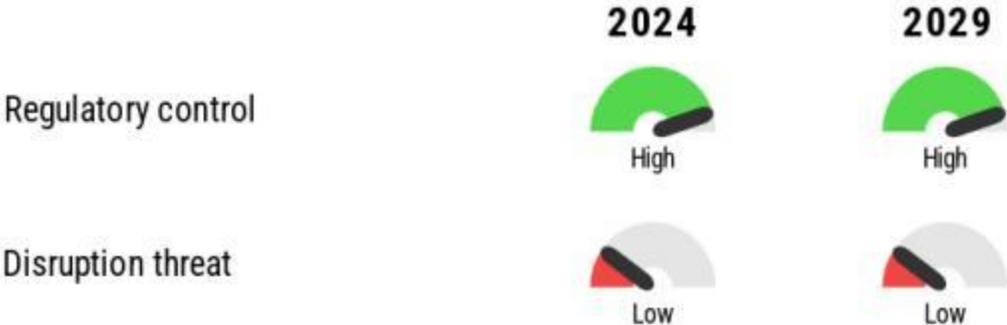
Market structure



Market behavior of participants



Impact of external force

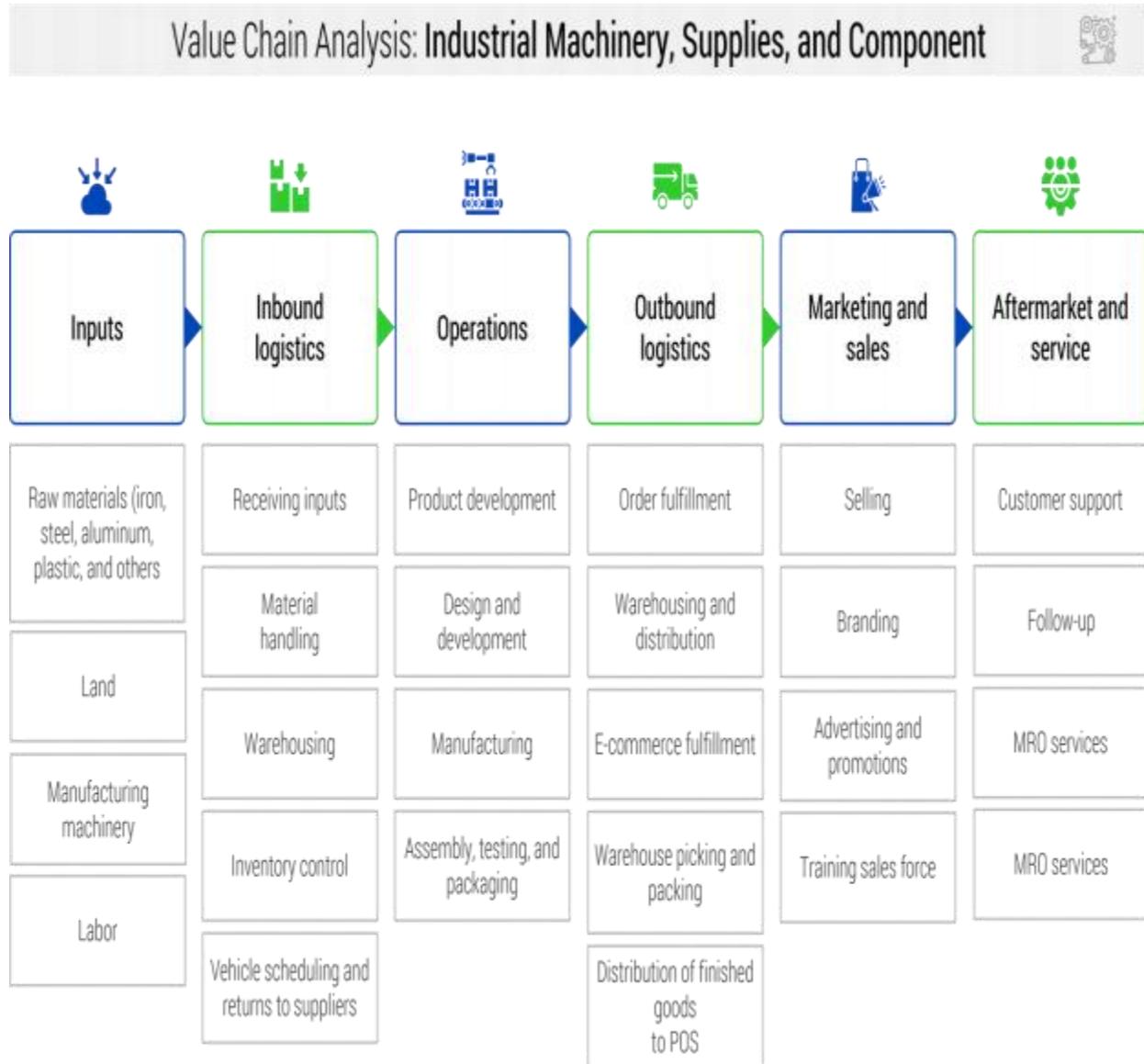


To assess the characteristics and behavior of the global industrial wastewater treatment equipment market, the interplay of market participants and external forces is analyzed. The global industrial wastewater treatment equipment market was at the growth stage and exhibited a fragmented market environment in terms of participants in 2024.

The most important market behavior of participants were innovations and mergers and acquisition in 2024. Regulatory control was a significant force that impacted market in 2024. Disruption threat was a considerable force that impacted market in 2024.

3.3 Value chain analysis

Value chain analysis



The value chain of the industrial machinery, supplies and component market includes raw material suppliers, sub-component manufacturers, component manufacturers, machinery manufacturers, marketing and sales, and aftermarket service of products.

Inputs:

This is the first step in which raw materials are received from the suppliers. The manufacturers of industrial machinery receive and store raw materials to avoid challenges during the product development phase. The suppliers include the network of raw material suppliers, component suppliers, and system/module suppliers. The raw materials include steel, aluminum, plastic, and others that are used for manufacturing parts down the value chain.

Inbound logistics:

The inbound logistics process in the industrial machinery, supplies and component market includes activities associated with handling, warehousing, and disseminating raw materials. Other activities included in this process are inventory control, vehicle scheduling, and returns to suppliers.

Operations:

This stage covers the production of industrial machinery, supplies and component. In this stage, the manufacturers focus on the production of the equipment in such a way that it cuts down the cost and time by integrating innovative technologies. The machinery manufacturers are the final assemblers that have their own brands. They are pioneers of efficiency and creativity across the value chain and are identified as the most vital cog in the wheel. Although the machinery manufacturers produce some of the components or parts, they also buy parts from raw material suppliers. The industrial machinery manufacturing process includes several significant steps, including product design, development, forging, heat treatment, machining, finishing, inspection, packaging, and delivery. The other support activities involved are machine concept, production planning, engineering, and execution.

Outbound logistics:

This stage includes the activities that deliver the industrial machinery, supplies and component to buyers by passing through different intermediaries. It also comprises processes such as material handling, warehousing, scheduling, order processing, transporting, and delivering to the end-users. Manufacturers have their own outlets or can operate through franchisees. The logistics providers distribute aftermarket parts and finished vehicles to vehicle warehouses and vehicle distribution hubs positioned globally. These components and vehicles will be dispatched to dealer networks when required.

Marketing and sales:

This stage aims at making end-users aware of the features and advantages of agricultural and farm machines. It includes advertisements, promotions, customer relationship management, and sales force management to ensure that the industrial machinery, supplies and component reaches the targeted end-user. The manufacturers are focusing on having adequate and integrated marketing activities to develop the brand equity of the industrial machinery and help it stand out in the competition.

Aftermarket and service:

This is the final stage that adds value to the product down the value chain. It comprises customer support after the sale of the product and continuous support for its maintenance. Service programs also ensure the retention of customers. The better the organizations customer support, the greater will be its brand identity, and the higher will be its number of retained customers. Servicing is one of the essential features of picking a brand of industrial machinery, supplies and component. This stage focuses on adding value to the brand. It includes support for the maintenance of industrial machinery and focuses on retaining customers. This stage includes services such as maintenance, repair, and overhaul (MRO) and technical training. Repair and maintenance procedures include annual maintenance contracts.

Industry innovations:

The industrial machinery, supplies and component market is experiencing massive social and technological change. The major industrial machinery manufacturers are focusing on certain approaches for innovation, including the adoption of advanced technologies and continuous enhancement and optimization of the manufacturing process and the supply chain. Some of the recent innovations that are adopted by industrial machinery manufacturers are mentioned below:

- Connected mobile apps
- 3D-printed products
- Smart factory
- Wearable technology for workers
- Augmented reality technologies to allow workers to design and build products

04

Market Sizing

4.1 Market definition

Industrial wastewater treatment equipment refers to the machinery and systems used to treat and manage wastewater generated by industrial processes before it is discharged into the environment or reused. These systems are designed to remove contaminants such as chemicals, heavy metals, oils, solids, and other pollutants to ensure compliance with environmental regulations and to protect public health and ecosystems.

Offerings of companies included in the market definition

Company	Products/Services included in the market definition
Aquatech International LLC	Industrial wastewater treatment equipment
DuPont de Nemours Inc.	Industrial wastewater treatment equipment
Ecolab Inc.	Industrial wastewater treatment equipment
Fluence Corp. Ltd.	Industrial wastewater treatment equipment
Kanadevia Corp.	Industrial wastewater treatment equipment
Kingspan Group Plc	Industrial wastewater treatment equipment
KURARAY Co. Ltd.	Industrial wastewater treatment equipment
Kurita Water Industries Ltd	Industrial wastewater treatment equipment
Metso Outotec Corp.	Industrial wastewater treatment equipment
Pentair Plc	Industrial wastewater treatment equipment

4.2 Market segment analysis

The global industrial wastewater treatment equipment market has been analyzed based on various dimensions and segments to help suppliers within the industry have a better understanding of the structure of current demand and the components of demand, which will drive growth in the future. Suppliers in the global industrial wastewater treatment equipment market outperforming the overall industry are expected to focus on the higher potential segments within the market.

Market segments

Segment name	Description
Geography	APAC, North America, Europe, Middle East and Africa, South America
Type	Secondary treatment, Primary treatment, Tertiary treatment
End-user	Manufacturing, Energy, Others
Product Type	Filtration equipment, Membrane equipment, Thermal distillation equipment and evaporator, Disinfection equipment

4.3 Market size 2024

To estimate the market size of the market in focus Technavio has tracked the recent trends and developments in the industry. The market size has been developed considering the following factors:

- **Ex-manufacturer sales:** Price when sold from manufacturer to dealers or direct to consumers) reported by vendors in the industry. The market size excludes all discounts and allowances, government subsidies, and rebates.
- **Revenues:** Taken in local currencies, if not available in US dollars, for each country and vendor and then converted to US dollars using the yearly average currency exchange rate of 2024, the base year. This implies that the figures reflect industry trends, not distorted by fluctuations in international exchange rates.
- **Exclusions:** The report does not consider the effect of inflation and price fluctuation over the forecast period.
- **Currency:** Unless explicitly mentioned, all revenues are represented in US dollars.

The market sizing has been built and validated using multiple demand-side and supply-side approaches for a detailed understanding of the market in focus. The specific market sizing approaches used for evaluating the market in focus are:

- **Top down:** Validated the market based on the contribution of the market in focus to the overall global industrial machinery and supplies and component market
- **Bottom up:** Validated the market based on the revenue of companies across various sectors such as industrial machinery and components and supplies.
- **Primary research:** Validation of Technavio estimates with inputs from industry participants across the value chain, including but not limited to industrial machinery manufacturing companies, distributors of industrial machinery, industrial machinery manufacturers associations and organizations, and industry key opinion leaders (KOLs)
- **Combination:** Using a combination of more than one approach described above and integrating the results in a data model

Within the above-mentioned market sizing models, analysts have made assumptions and estimates listed below:

- Revenue generated by the industrial machinery, supplies and component manufacturing companies

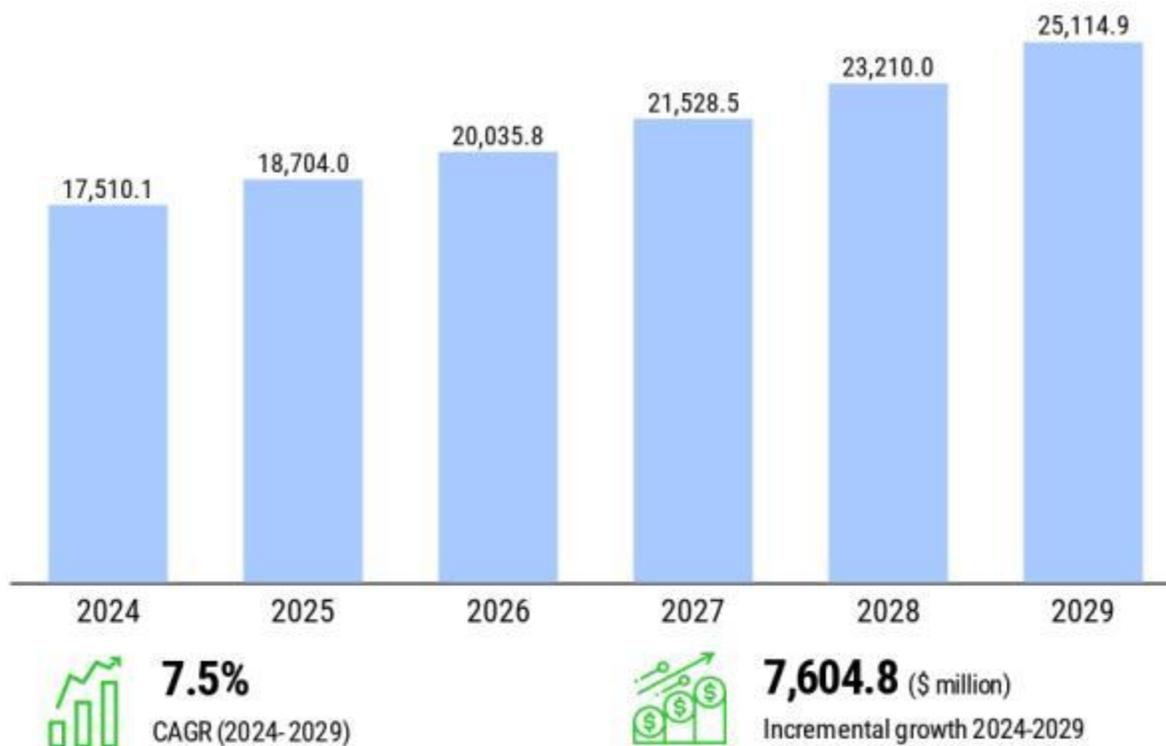
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- Investments related to CAPEX from the industrial sector
 - Greenfield projects, brownfield projects, retrofits, and maintenance and installation services

For this report, we have also used the following macro data in modeling the market size for 2024:

- GDP growth
- Commodity price fluctuation
- Purchasing managers index (PMI)

4.4 Market outlook: Forecast for 2024-2029

Chart on Global - Market size and forecast 2024-2029 (\$ million)



Data Table on Global - Market size and forecast 2024-2029 (\$ million)

Year	2024	2025	2026	2027	2028	2029
Market size (\$ mn)	17,510.1	18,704.0	20,035.8	21,528.5	23,210.0	25,114.9

The global industrial wastewater treatment equipment market was valued at \$17,510.1 million in 2024 and is estimated to grow to \$25,114.9 million in 2029. This will create an incremental growth opportunity worth \$7,604.8 million between 2024 and 2029, which translates to around 44% of the market size in 2024. In this low growth environment, companies must be both aggressive and defensive while leveraging the growth opportunities available. With limited growth opportunities, gaining market share from competition will be an important lever to drive growth for market participants.

The overall growth of the global industrial wastewater treatment equipment market is built on consistent growth across all the years of the forecast period between 2024 and 2029. The year-on-year growth will vary between a range of 6.8% and 8.2%.

Estimating growth rates for emerging and high-growth markets

Modeling developing and high-growth markets is a challenge, given the uncertainties around the evolution of the market. Hence, we start by developing an optimistic and pessimistic range and then use it to build a realistic estimate of the market size based on various market modeling techniques and inputs from industry participants.

Estimating growth rates for mature markets

Mature markets are characterized by stable and high adoption rates, having a moderate growth rate due to several factors, including:

- Technology maturity
- Availability of substitutes
- Low level of the addressable market
- Change in product mix
- The growth forecast is a realistic assessment of the market.

However, the market could grow at a rate higher than the projected figure if the following factors come into play:

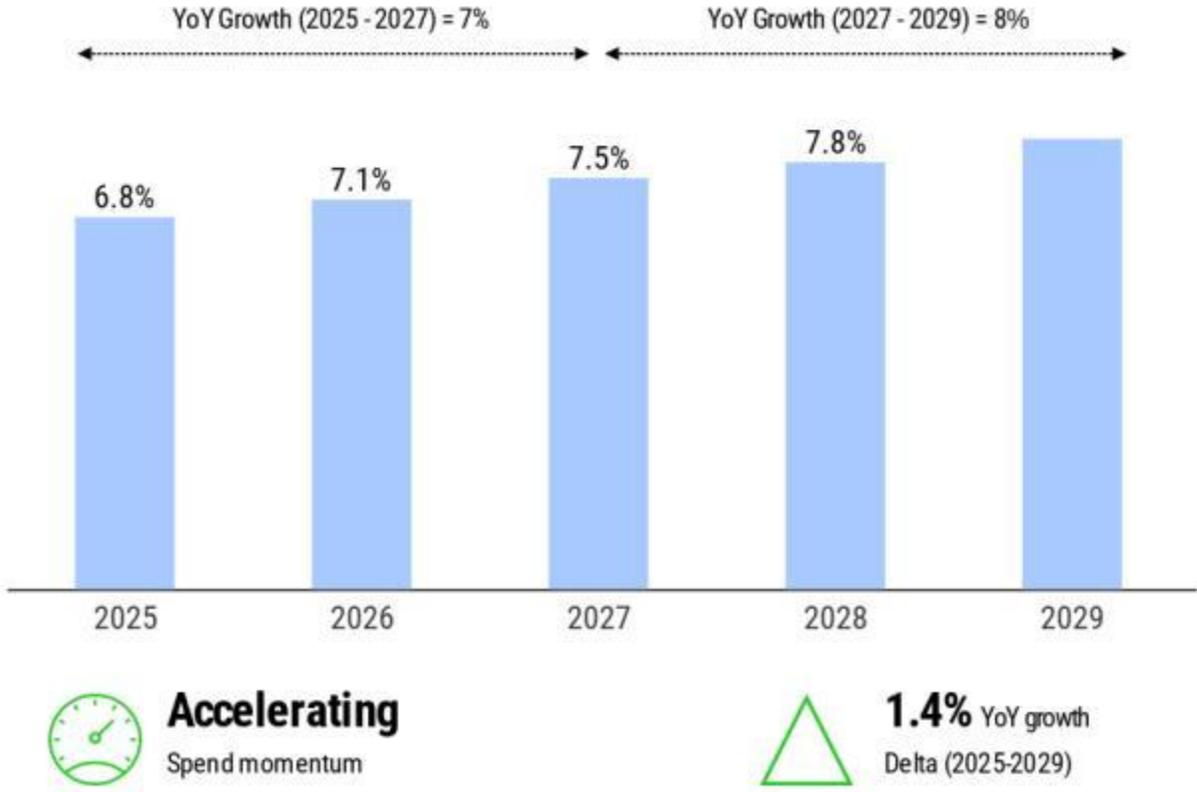
- Increase in adoption level
- Increase in replacement demand
- Increasing investments in end-user segments

Conversely, the growth forecast could be missed with the market growing slower than expected if the following factors come into play:

- Increasing competition from local or regional players

- Disruption from technologically advanced products
- The decline in CAPEX by major end-user segments

Chart on Global Market: Year-over-year growth 2024-2029 (%)



Data Table on Global Market: Year-over-year growth 2024-2029 (%)

Year	2025	2026	2027	2028	2029
Year-over-year growth	6.82%	7.12%	7.45%	7.81%	8.21%

Among the end-users, industries have been driving the growth of the global industrial wastewater treatment equipment market significantly. The rapid economic development has increased the demand for power, particularly from emerging countries such as China and India. As a result, coal-fired power generation has increased.

As the wastewater generated by these industries varies in their composition and criticality of their impact on the environment, industrial wastewater treatment equipment should be designed specifically for different applications. For instance, fossil fuel power plants produce wastewater with significant levels of metals like cadmium, chromium, mercury, arsenic, and nitrogen compounds, while wastewater produced from the food and beverage industry is biodegradable and non-toxic with a high concentration of BOD and TSS. Hence, companies offer wastewater treatment equipment for specific industries such as chemical processing, food and beverage, oil and gas, and microelectronics.

The need for water reuse is increasing, owing to rapid industrialization and depleting freshwater reserves. As a result, the demand for industrial wastewater treatment equipment is expected to grow significantly, which in turn, is anticipated to drive the growth of the market in focus during the forecast period.