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Waste-to-Energy (WtE) - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Waste-to-Energy Market size is estimated at USD 38.37 billion in 2024, and is expected to reach USD 65.29 billion by 2029, growing at a CAGR of 11.22% during the forecast period (2024-2029).

Key Highlights

Over the medium term, factors such as the increasing amount of waste generation, the growing concern for waste management to meet the need for sustainable urban living, and the increasing focus on non-fossil fuel sources of energy are expected to drive the waste-to-energy market.

On the other hand, the expensive nature of incinerators, declining energy prices decline, and the inability of several plants to cover operating costs are expected to hinder the growth of the market. These factors pose a threat to the waste-to-energy market during the forecast period.

Nevertheless, emerging waste-to-energy technologies, such as Dendro Liquid Energy (DLE), which is four times more efficient in terms of electricity generation, with additional benefits of no emission discharge and effluence problems at plant sites, are expected to create significant opportunities for the market players, over the coming years.

Asia-Pacific is expected to dominate the market, with the majority of demand coming from countries such as China, India, and Japan.

Waste-to-Energy (WtE) Market Trends

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Thermal-based Waste-to-Energy Segment to Dominate the Market

Thermal technology is expected to account for the highest market share in the waste-to-energy market during the forecast period, owing to the increasing development of waste incineration facilities worldwide.

It is estimated that plants that utilize thermal power cogeneration (heating and cooling) and electricity generation can reach optimum efficiencies of 80%. In January 2024, three municipalities of Serbia, Vrnja?ka Banja, Trstenik, and Kraljevo, held deliberations with Comef to provide waste-to-thermal-based waste-to-energy solutions. This is likely to help Serbia curb carbon emissions primarily originating from the power generation sector.

In the present scenario, incineration is the most well-known waste-to-energy technology for municipal solid waste (MSW) processing. However, waste-to-energy technologies, particularly incineration, produce pollution and carry potential health safety risks. To reduce particulate and gas-phase emissions, incineration plant owners have adopted a series of process units for cleaning the flue gas stream, which has, in turn, led to a significant improvement in environmental sustainability.

Moreover, the heat generated from burning waste is also used as thermal waste for energy generation. In October 2023, the council of Hull District in England gave consent to establish a project worth about USD 33 million that would utilize the energy from building waste. The heat energy obtained would facilitate district heating applications in the city. As per the International Renewable Energy Agency, the installed capacity of renewable municipal waste in 2023 accounted for 21,436 MW, a rise of 5.1% from the previous year.

Thermal-based waste-to-energy conversion is expected to lead the market, especially in Asia-Pacific's growing economies. The rising urban population is projected to be the key contributing factor to increasing municipal solid waste (MSW).

Asia-Pacific to Dominate the Market

Asia-Pacific witnessed significant development in the waste-to-energy industry in the past few years. The region dominates the market with increasing efforts taken by the

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governments to adopt better municipal solid waste (MSW) management practices, providing incentives for waste-to-energy projects in the form of capital subsidies and feed-in tariffs and financial support for R&D projects on a cost-sharing basis.

Due to economic development and rapid urbanization in India, the generation of municipal solid waste (MSW) has increased rapidly. The Indian government is actively pursuing waste-to-energy projects for electricity generation.

For instance, in August 2023, the power finance corporation inked a loan agreement with Japan worth about USD 1.28 million to set up an 11 MW waste-to-energy project in Karnataka. The project is likely to consume over 600 tonnes per day of municipal solid waste for electricity generation.

Japan is one of the leading waste-to-energy markets in Asia-Pacific. The country's waste-to-energy market is driven by efficient solid waste management and financial support for waste-to-energy projects from both national and local governments. The country is expected to introduce waste management and recycling technologies to preserve the environment, effectively turning waste into resources or appropriately disposing of it.

As per the International Renewable Energy Agency, the total installed capacity of renewable municipal waste in Asia-Pacific hovered around 15063 MW, a rise from 14089 MW from the previous year.

Therefore, factors such as the increasing amount of waste generated and the efforts taken by various governments to tackle this situation are expected to boost the demand for waste-to-energy plants in Asia-Pacific during the forecast period.

Waste-to-Energy (WtE) Industry Overview

The waste-to-energy (WtE) market is semi-fragmented. Some of the major players operating in this market (in no particular order) include Mitsubishi Heavy Industries Ltd, Waste Management Inc., A2A SpA, Veolia Environnement SA, and Hitachi Zosen Corp., among others.

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