Organic Biogas Industry Dynamics: Market Growth Drivers and Challenges

Emerging Technologies Shaping the Future of Organic Biogas: A Research Overview

Organic Biogas Market Analysis

PORTLAND, OREGON, UNITED STATES, December 4, 2023 /EINPresswire.com/ -- Organic biogas is a renewable energy source derived from the anaerobic digestion of organic materials such as agricultural residues, food waste, animal manure, and sewage sludge. Through a controlled decomposition process, microorganisms break down these organic materials, producing a gas mixture primarily composed of methane and carbon dioxide—commonly known as biogas. This sustainable energy solution not only harnesses methane for applications like electricity generation, heating, and vehicle fuel but also addresses environmental concerns by providing an eco-friendly means of managing organic waste. Organic biogas represents an integral component in the broader effort to reduce reliance on fossil fuels, mitigate greenhouse gas emissions, and promote a circular economy by converting organic waste into a valuable energy resource.

> “Government focus on R&D to cut toxic emissions and promote bio-based transportation fuels drives growth in the Organic Biogas market.”
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The organic biogas market size was valued at $10.7 billion in 2021, and the organic biogas industry is estimated to reach $19.7 billion by 2031, growing at a CAGR of 6.4% from 2022 to 2031.

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The growth of the organic biogas market is expected to be driven by a rise in environmental awareness and an increase in supply concerns related to the utilization of fossil fuels. Furthermore, rapid infrastructure development and a rise in energy demand from commercial & industrial sectors have boosted the construction of biogas production plants. In addition, the

implementation of stringent pollution regulations, an increase in understanding of environmental conservation, rise in concern related to economic sustainability in every sector have led to the utilization of organic waste to produce biogas, which is further utilized in the power generation and transportation sector for various purposes.

The organic biogas market has certain restraints. These include the release of harmful compounds and air contaminants, such as CO into the environment during organic production which is expected to lead to a decline in the market share in coming years. The risk associated with soil and water contamination in the process of anaerobic digestion in the landfill industry is high. High capital investment in setting up biogas production plants and technology implementation are hampering the organic biogas market growth.

China has the highest number of biogas plants among the IEA bioenergy with more than 100,000 biogas plants. It is one of the first countries to develop and utilize biogas. The main feedstocks used in biogas production in China are kitchen (food) waste, livestock waste (manures and slurries), and energy crops. There is a big move underway to promote the use of yellow straw as a feedstock. In contrast to the European industry, roughly two-thirds of the economic value of biogas plants in China comes from organic fertilizer, with one-third from energy production. While there are thousands of small biogas plants scattered around the country, the central government is now promoting larger-scale deployment, particularly of agricultural plants, to promote renewable energy growth and improve water and air quality.

Germany is the largest biogas fuel producer and more than 10,000 biogas plants operated in 2020. Half of the European continent's methanisers are in Germany. Currently, 80% of the organic matter used in the biogas industry in Germany comes from plants grown exclusively for this purpose, according to the German Environment Agency.

The organic biogas market forecast is segmented based on source, application, and region. By source, the market is fragmented into poultry & livestock, agriculture waste, landfill gas, and others. The landfill gas segment is further classified into electricity, direct use, combined heat and power, and alternate fuels. The direct use segment is further categorized into boilers, direct thermal & leachate evaporation, and others. In addition, by application, the market is segregated into power generation, cooking, combined heat & power, and clean mobility. Region-wise, the market is studied across North America, Europe, Asia-Pacific, and LAMEA. Presently, Europe accounts for the largest organic biogas market share, followed by North America, Asia-Pacific, and LAMEA.

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The Organic Biogas industry's key market players adopt various strategies such as product

launch, product development, collaboration, partnership, and agreements to influence the market. It includes details about the key players in the market's strengths, product portfolio, market size and share analysis, operational results, and market positioning.

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Xebec Adsorption Inc.
DGE GmbH
Carbotech, Guild Associates Inc.
Dreyer & Bosse (Wolf GmbH)
DMT environmental technology
EnviTec
L'Air Liquide S.A.
Atlas Copco
Biofrigas Sweden AB

The landfill gas segment dominates the global organic biogas market. Landfills for municipal solid waste are a source of biogas. Biogas is produced naturally by anaerobic bacteria in municipal solid waste landfills and is called landfill gas. Landfill gas with a high methane content can be dangerous to people and the environment as methane is flammable. Landfill gas contains many different gases. Methane and carbon dioxide make up 90 to 98% of landfill gas.

The power generation segment dominates the global organic biogas market. Biogas is turned into electricity using a combustion engine, fuel cell, or gas turbine, with the resulting electricity being used on-site or sold onto the electric grid. A cubic meter of biogas contains the equivalent of 6kWh of heat energy. The same volume of biogas converted to electrical power yields 2kWh, the rest of the energy is dispersed as heat that can be reclaimed and applied to other uses.

Europe segment dominated the global organic biogas market. The European organic biogas market is anticipated to witness significant growth during the forecast period. This is attributed to an increase in the installation of biogas plants due to the ongoing transition to a sustainable and circular economy as well as an increase in focus on cost-effective waste management strategies. Furthermore, the introduction of national regulations and EU Directives toward renewable energy utilization is anticipated to act as a key driving force in the European market.

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- As per organic biogas market analysis, by region, the Asia-Pacific organic biogas market is projected to grow at the highest CAGR of nearly 7.1% during the organic biogas market forecast period.
- Based on source, the landfill gas segment garnered the highest share in 2021.

- By application, the power generation segment acquired the largest organic biogas market share in 2021.

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