

Biogas-to-Power Market Forecasts to 2034 – Global Analysis By Feedstock (Agricultural Residues, Energy Crops, Industrial Organic Waste, Municipal Solid Waste, Sewage Sludge and Animal Manure), Technology, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Biogas-to-Power Market is accounted for \$22.0 billion in 2026 and is expected to reach \$44.8 billion by 2034 growing at a CAGR of 9.3% during the forecast period. Biogas-to-power involves transforming organic waste like farm residues, livestock manure, and urban waste into usable electricity and thermal energy via anaerobic digestion. The resulting biogas, primarily methane and carbon dioxide, is treated and utilized in engines or turbines for power generation. This method contributes to lowering emissions, improving waste handling, and offering a sustainable energy alternative. Commonly implemented in both rural and industrial areas, it supports distributed energy systems, strengthens energy independence, and promotes eco-friendly growth while decreasing dependence on conventional fossil fuels and minimizing overall environmental impact.

According to the International Energy Agency (IEA), global combined biogas and biomethane production is expected to expand by 22% between 2025 and 2030, with biogas remaining a key driver for electricity and combined heat and power (CHP) generation in regions like Brazil, India, and China.

Market Dynamics:

Driver:

Rising demand for renewable energy

The increasing focus on sustainable and eco-friendly energy solutions significantly fuels the biogas-to-power market. Both governments and industries are transitioning from fossil fuels to renewable sources to minimize carbon emissions. Biogas-based power generation provides a stable and continuous energy output, unlike variable sources such as solar or wind. By converting organic waste into energy, it offers an economical and environmentally beneficial solution. Concerns over energy security and the push for localized power production also support its adoption. As a result, rising demand stimulates investments, innovation, and supportive policies, driving the expansion of the global biogas-to-power sector.

Restraint:

High initial capital investment

One of the major challenges for the biogas-to-power market is the considerable upfront investment needed to establish facilities. Setting up digestion systems, gas treatment units, and power generation equipment requires significant capital expenditure. This becomes a barrier for small businesses and farmers who lack sufficient funding. The extended time required to recover investments also discourages potential investors. Furthermore, difficulties in obtaining loans and uncertainties regarding profitability add to the challenge. These financial limitations reduce the pace of adoption, especially in emerging economies, thereby constraining the expansion of the biogas-to-power industry.

Opportunity:

Advancements in waste-to-energy technologies

Ongoing improvements in waste-to-energy solutions present significant opportunities for the biogas-to-power market. Developments in digestion methods, gas purification, and power generation enhance system performance and energy output. New technologies enable the use of diverse feedstocks, increasing adaptability and scalability. They also help lower operational expenses and minimize environmental effects. Continuous research leads to better system configurations and automation, improving project feasibility. These innovations attract investors and support wider adoption across multiple sectors such as agriculture and industry. As technology progresses, it plays a crucial role in expanding the potential of the biogas-to-power industry.

Threat:

Competition from alternative renewable energy sources

The growth of the biogas-to-power market is challenged by the presence of other renewable energy options like solar, wind, and hydropower. These technologies often have reduced setup costs, continuous efficiency advancements, and strong government backing. Solar and wind energy, especially, have become more affordable and scalable, attracting greater investor interest. Their relatively simple systems and lower maintenance requirements give them an edge over biogas solutions. As a result, this competition can restrict market expansion and reduce adoption rates, particularly in regions that prioritize economical and easily implementable renewable energy alternatives.

Covid-19 Impact:

The biogas-to-power market experienced both challenges and opportunities during the COVID-19 pandemic. Early stages saw disruptions in supply chains, delays in ongoing projects, and reduced investments due to lockdown measures and workforce shortages. Transportation and collection of organic feedstock were also affected. Despite these issues, the crisis emphasized the need for reliable and localized energy sources, boosting interest in renewable energy systems such as biogas. Changes in waste generation patterns impacted resource availability. Over time, government stimulus measures and support for green energy helped recovery. While short-term growth slowed, the market showed strong resilience and future expansion prospects.

The animal manure segment is expected to be the largest during the forecast period

The animal manure segment is expected to account for the largest market share during the forecast period because of its steady supply and rich organic composition, which makes it highly suitable for anaerobic digestion processes. Farms with livestock produce significant quantities of manure regularly, ensuring uninterrupted feedstock availability for energy generation. It can be efficiently converted into methane for consistent power output. Moreover, utilizing manure improves waste handling, reduces environmental impact, and controls odors. Farmers benefit from increased energy independence and reduced costs. These advantages, combined with its widespread accessibility, contribute to its strong dominance in the global biogas-to-power industry.

The commercial sector segment is expected to have the highest CAGR during the

forecast period

Over the forecast period, the commercial sector segment is predicted to witness the highest growth rate, driven by rising interest in eco-friendly energy among businesses seeking to cut expenses and emissions. Facilities like hotels, malls, restaurants, and offices produce considerable organic waste that can be utilized for biogas generation. Increasing regulatory pressure and sustainability commitments are pushing companies to adopt such systems. The demand for dependable and localized power sources further boosts adoption. These factors collectively accelerate growth, positioning the commercial sector as a major driver of expansion in the global biogas-to-power market.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share owing to robust policy backing, developed infrastructure, and extensive use of renewable energy solutions. Nations like Germany, the UK, and France have mature biogas sectors supported by incentives, subsidies, and regulatory frameworks. The region's effective waste management practices and abundant feedstock supply from agricultural and municipal sources contribute to its leading position. Strong environmental commitments and emission reduction targets further drive adoption. Ongoing investments and technological progress in green energy enhance market growth, ensuring Europe remains the leading region in the global biogas-to-power industry.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by expanding urban populations, increasing energy requirements, and a stronger emphasis on efficient waste utilization. Nations including China, India, and others in Southeast Asia are significantly investing in renewable energy to decrease dependence on conventional fuels. High availability of agricultural and municipal waste supports biogas production. Supportive government policies, incentives, and rural energy initiatives boost development. Rising environmental concerns and demand for localized power solutions further enhance adoption, making Asia-Pacific the most rapidly growing region in the global biogas-to-power sector.

Key players in the market

Some of the key players in Biogas-to-Power Market include Ameresco, EnviTec Biogas

AG, Gasum Ltd., PlanET Biogas Global GmbH, Wartsila Corporation, Schmack Biogas GmbH, Agraferm Technologies AG, Clarke Energy, Finn Biogas, IES Biogas S.r.l., MT-Energie GmbH, BTS Biogas Srl, Zorg Biogas AG, Greenlane Renewables Inc., Xergi A/S, SEBIGAS, 2G Energy AG and Jenbacher.

Key Developments:

In April 2026, Gasum and Wasaline have extended their bio-LNG supply agreement through 2027, reinforcing a long-standing partnership and both companies' commitment to sustainable maritime transport on the Baltic Sea. Wasaline operates a carbon-neutral shipping corridor between Finland and Sweden, with its vessel Aurora Botnia running on batteries and biogas.

In March 2026, Ameresco, Inc announced a district-wide LED lighting upgrade project at Saginaw Public School District, advancing its commitment to reducing energy consumption and lowering operating costs across all facilities. The comprehensive initiative will modernize lighting systems throughout the district, improve overall building efficiency, and create brighter, more consistent learning and working environments for students and staff.

In August 2025, 2G Energy Inc., the North American subsidiary of global combined heat and power (CHP) systems leader 2G Energy AG, is pleased to announce a strategic partnership with CK Power, headquartered in St. Louis, Missouri. CK Power is a well-established leader in the design, distribution, manufacturing, and servicing of industrial engines and generator systems, serving as the corporate center of the broader CK Power Family of Companies.

Feedstocks Covered:

Agricultural Residues

Energy Crops

Industrial Organic Waste

Municipal Solid Waste

Sewage Sludge

Animal Manure

Technologies Covered:

Anaerobic Digestion

Gasification

Pyrolysis

Landfill Gas Recovery

Applications Covered:

Electricity Generation

Heat Generation

Combined Heat & Power (CHP)

End Users Covered:

Utilities

Industrial Sector

Commercial Sector

Residential Sector

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World

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